



THE 5TH INTERNATIONAL CONFERENCE ON FINANCE AND ECONOMIC | ICFE 2018

PROCEEDINGS OF THE 5TH INTERNATIONAL CONFERENCE ON FINANCE AND ECONOMICS

ICFE 2018

*Ho Chi Minh City, Vietnam,
September 20-21, 2018*



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THE 5th INTERNATIONAL CONFERENCE
ON FINANCE AND ECONOMICS**

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September 20th – 21st, 2018

Ton Duc Thang University, Ho Chi Minh City, Vietnam

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Ton Duc Thang University, Ho Chi Minh City, Vietnam
September 20th-21st, 2018

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PREFACE

Dear conference Participants!

Welcome to the 5th International Conference on Finance and Economics (ICFE 2018) on September 20th - 21st, 2018 at Ton Duc Thang University, Ho Chi Minh City, Vietnam. The Conference is co-organized by:

Ton Duc Thang University, Ho Chi Minh City, Vietnam

Tomas Bata University, Czech Republic

The Institute of Chartered Accountants in England and Wales, United Kingdom

Corvinus University of Budapest, Hungary

University of the West of England, Bristol, United Kingdom

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We are also grateful to the support and cooperation of our partners:

University of Economics, Prague, Czech Republic

Feng Chia University, Taiwan

European Cooperation Center, Ton Duc Thang University, Ho Chi Minh City, Vietnam

Highlighting of prior conferences' success as well as contributing for our university's 21st ceremony with many recently obtained dramatic achievements, we would like to present a forum of cutting-edge research in the field of Accounting, Finance, Economics and Management. We have four magnificent keynote speakers who have significant domination in academia and industry for this year. Further, all papers submitted to the ICFE 2018 went through a double peers reviewed process. In addition, acceptance was based on quality and relevance of the research.

All accepted and presented papers are published in the conference proceedings. Moreover, authors of accepted papers will have opportunities to publish their extended work in following scientific journals: Prague Economic Papers, University of Economics, Prague, Czech Republic; Journal of Competitiveness, Tomas Bata University, Czech Republic; one special issue of Institutions and Economies, as well as one special issue Malaysian Journal of Economic Studies, both from University of Malaya, Malaysia.

We definitely appreciate entire members of the General Committee Chairs, Program Committee, Organizing Committee, and volunteers who endeavor tremendously to qualify the

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conference, invite keynote speakers, chairs of the sessions and formulate the conference proceedings. Thus, we believe that ICFE 2018 will be delightful and pleasurable to all participants.

We wish you a wonderful ICFE 2018 and looking for forthcoming conferences!

Chairs

Prof. Drahomira Pavelkova, Vice-rector,
Tomas Bata University, Czech Republic

Dr. Le Thi My Hanh, Dean of Faculty of Accounting,
Ton Duc Thang University, Vietnam

Co-chair

Mr. Mark Billington, Regional Director, South East Asia,
The Institute of Chartered Accountants in England and Wales (ICAEW)

MESSAGE FROM THE HOST UNIVERSITY

Inheriting from prior conferences' success, Ton Duc Thang University is proudly hosting The 5th International Conference on Finance and Economics (ICFE 2018). In the merry atmosphere, I would like to send my warm and sincere greeting to all presenters and participants of the conference. The conference administers an opportunity for universities' leaders; educationists; experts and scholars from all over the world to convene and share their novel ideas as well as developed tendency in the field of Accounting, Finance, Economics, Marketing and Management. Furthermore, I definitely appreciate to all the renowned authors for their participations that dignify this science conference and enhance the quality of the conference. For the mission of educating of high quality human resources and contributing genius for our country; executing applied and science research for the development of prosperity, stability and sustainability Vietnam in globalization context, Ton Duc Thang University continuously evolves and is ranked as the top University of Vietnam regarding scientific research in 2017. For long-term objectives, I hope that Ton Duc Thang University will become one of the best sixty universities of Asia in the year 2037, within three decades of development and be in the list of leading research universities of the world in 2087.

ICFE 2018 was hosted as the time of TDTU proclaiming about established and developed 21th ceremony. We are proud of referring as the second best university of Vietnam; the top 250 sustainability development universities of the world; leading in scientific publishing of Vietnam's universities; and the first university of Vietnam was ranked 4 stars by QS Stars University Ratings (England).

On behalf of TDTU, I would like to present here my highly appreciation to our great partners - **Tomas Bata University** in the Czech Republic; **Institute of Chartered Accountant in England and Wales (ICAEW)**; **Corvinus University of Budapest** in Hungary; **University of the West of England** in Bristol (UWE); **University College of Northern** in Denmark (UCN); **University of Economics Prague** in Czech Republic (VSE) and **Feng Chia University** in Taiwan (FCU) - especially to **Tomas Bata University** that has been accompanying with us in many years, as well as to gratefully thank to presenters and authors from all over the world for their contributions and considerations on this conference.

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I absolutely believe that all your participations will lead the conference to the success and devote significant advantages to the research and development in financial and economic fields. Hope all you have a fantastic time in ICFE 2018!

Prof. Le Vinh Danh, Ph.D.

President

Ton Duc Thang University, Vietnam

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TAX EFFECTS OF EMPLOYEE BENEFITS

Eva Kolářová and Vendula Kolářová

Abstract

Nowadays, many companies realise that motivation of employees is important. Tax relief is being used by taxpayers to reduce their tax liability, and research has not yet been conducted to clarify whether tax reliefs actually implemented meet the purposes for which they were implemented in tax laws and how they are subsequently used by taxpayers.

The aim of this research is to find out how employee benefits are actually used. Research began in early 2018 and will continue in future as well. The survey included a total of 453 respondents and two companies. Methodologically, research will be based on the analysis of secondary static data and data from own questionnaire research. The most commonly used benefits in the Czech Republic and the European Union were included in the research.

Keywords: Employee benefits, Tax deductibility, European Union.

JEL Codes: M21, M41.

INTRODUCTION

The main objective of the business activity is to achieve profit and they want to achieve this goal also in a long term. Nowadays, more and more companies are focusing on employee benefits to keep good employees in the company, and to attract new potential employees. These employee benefits can increase profit of the company. Every company can decide what benefits it will offer to its employees. Employee benefits can be in many forms (Stýblo, 2009). There are both financial and non-financial benefits, and according to management's decisions, these benefits are offered to employees under the remuneration strategy (Armstrong and Taylor, 2015). Non-financial benefits include, for example, a business car, mobile phone, corporate products, forms of insurance, sports and cultural contributions, and others (Pauknerová, 2012). Among the financial benefits we include any form of financial reward, which has either a fixed or a variable component (Armstrong, 2002). Each company has its remuneration strategy, which also includes benefits. According to Trevor Jonathan, this remuneration strategy is a

form of competitive advantage. Remuneration strategy describes diversity and is influenced by the legacy of the past and by the future development (Armstrong and Murlis, 2007).

Remuneration for employees can be divided into four sectors according to (Armstrong, 2015): cash rewards, employee benefits, education and development, working environment.

These benefits can also be broken down into flexible and flat benefits, where flat benefit is a benefit that every employee receives (Armstrong, 2009). Flexible benefits work on the cafeteria principle, and for each employee these benefits are decided individually (Hutchingson, 2004). This flexible benefits system has its advantages and is also beneficial to organizations (Bloom, 2016).

From the point of view of the tax advantages, providing employees with some form of benefits is more advantageous than the actual increase in wages, despite the confusing variety of forms and types of employee benefits currently available on the labour market. The question of the existence, elimination or complete abolition of tax relief was dealt with by Hall and Rabuszk (2007). Faricy and Ellis (2014) compare the total costs to the state in the case of social programs funded by direct expenditure with indirect financing through tax reliefs. Prasad (2011) highlights that high income individuals are favoured in the Union by comparing tax reliefs with state social spending.

Employee benefits are important in terms of motivating employees to work. Every employee can feel an external stimulus to work from these benefits, and such employee benefits can serve to increase employee performance and thereby improve company performance as well.

The problem of employee motivation, their education, the acquisition of talented employees and the building of effective teams are addressed by a number of authors. These issues are still up to date, and the benefits used to motivate employees are constantly changing as a result of developments both in companies and in employee's attitude. Achor Shawn (2010) and Stewart Henry (2013) work in their paper with the classical idea of creating a happy work environment and bring about 80 ideas on how to do that. A similar issue is also addressed by author Clow Julie (2012) in his work entitled *The Work Revolution: Freedom and Excellence for All*. One of the most recent publications on human capital is the monography of author Jack J. Phillips and Patricia P. Phillips (2015), which identifies the latest trends in the field. Corporate education is also dealt with by Paine Nigel (2015).

THEORETICAL SOLUTION

Benefits in the World

Employee benefits are the various forms of compensation granted to employees in addition to their normal salary. Today, when companies compete for the best talents on global scale, employee benefits are an essential element of each organization's remuneration strategy.

There are many countries in the European Union that offer employee benefits that are generally above standard. According to The Most Wanted Employee Benefits of the Human Resources Management Company of 2017, the most desirable employee benefits are health care, health prevention, personal care, retirement savings, the ability to work from home, and the use of leisure time.

The Eurostat survey, which is available in the International Conference of Labour Statisticians, has dealt with the statistics of labour cost.

The labour cost includes both direct and indirect costs.

Direct costs (compensation of employees):

- gross wages and salaries paid in cash;
- direct remuneration (pay) and bonuses;
- wages and salaries in kind (company products, housing, company cars, meal vouchers)

Direct costs are dominated by wages and salaries paid in cash.

Indirect costs:

- employers' actual social contributions (i.e. statutory, collectively agreed, contractual and voluntary social security contributions);
- employers' imputed social contributions (mostly guaranteed pay in the event of sickness or short-time working, plus severance pay and compensation instead of notice);
- vocational training costs;
- recruitment costs and work clothes given by the employer;
- taxes paid by the employer (based on their wages and salaries bill or on the numbers they employ)
- minus subsidies received by the employer (intended to refund part or all of the cost of direct pay)

Indirect costs are dominated by employers' actual social contributions, in particular by employers' statutory social security contributions (Eurostat, 2017).

Benefits in the Czech Republic

In the Czech Republic Jareš (2010) identified tax reliefs which he classified according to the purpose for which they were introduced. Together with Kubátová (2011), he dealt with the quantification of these tax reliefs by the method of foregone earnings, the method of additional earnings and the method of expenditure equivalent. The Ministry of Finance published the Report on Tax Reliefs in the Czech Republic for the years 2011-2015 for the first time in 2017. Employee benefits are not new in the Czech work environment. Already Tomas Bata provided his employees with benefits in the form of preferential housing, the possibility of raising the qualification or of support in illness.

The survey conducted by NN Insurance Company and the Union of Industry and Transportation among 110 domestic employers shows that the most widespread employee benefits are mobile phone and education allowance. The other most widespread benefits include workplace drinks, medical check-ups and supplementary pension insurance. All these benefits are offered by about three out of four companies.

Tab.1. Employees benefits in 2015 in Czech Republic.

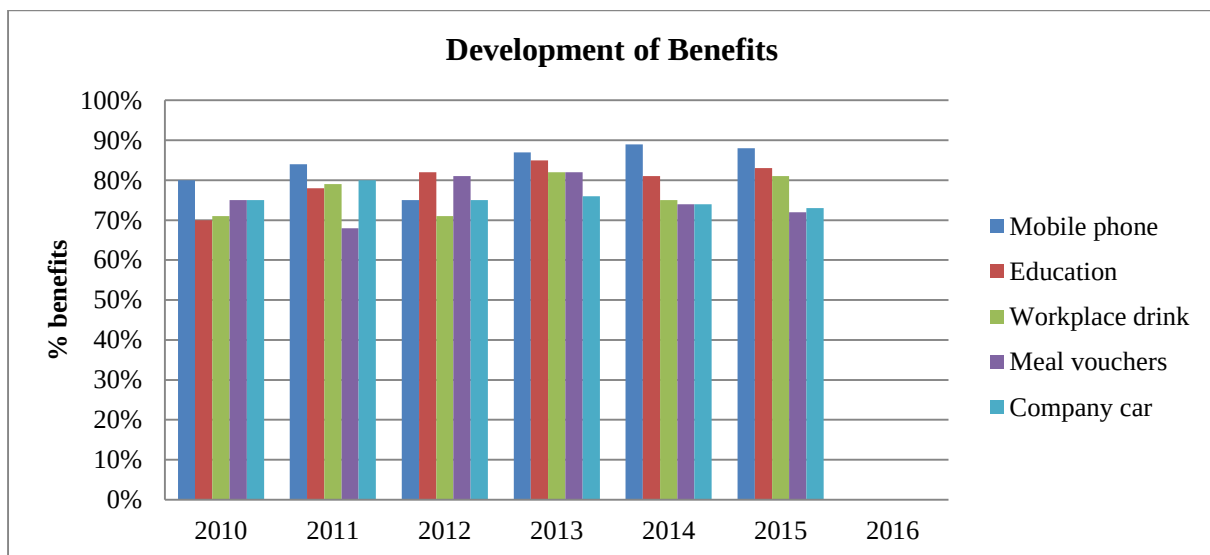
Benefit types	% of companies
Mobile phone	88 %
Education	83 %
Workplace drinks	81 %
Medical check-ups	77 %
Pension insurance contribution	77 %
Company Car	73 %
Meal tickets	72 %
Tangible gifts, One time rewards	66 %
Life insurance contribution	60 %
13th wage	47 %
Culture	42 %
Employee loans	40 %
Health (e.g. vitamins, rehabilitation)	36 %
Sport	35 %

Sick days	33 %
Flue vaccination	31 %
Vacation contribution	30 %
Flexi pass vouchers	24 %
Contribution for travelling expenses	14 %

Source: NN Insurance Company and the Union of Industry and Transportation

The Czech Republic is obliged, based on the requirements of the European Commission, to carry out a systematic analysis of tax relief and to publish information on the impact of tax expenditures on public revenues. This requirement is based in particular on Article 14. 2. Directive 2011/85 / EU. However, given the absence of a uniform definition of tax relief, it is difficult to establish a common methodology for all Member States of the European Union so that the resulting data can be compared internationally. So the European Commission only makes recommendations for the creation of a given statement. However, the resulting amount and impact of tax reliefs should be one of the bases for fiscal policy, thus contributing to a better budgetary process.

Fig.1. Development of Benefits.



Source: own

The most common benefit that organizations provide is a mobile phone. In recent years, there has also been a growing interest in life insurance or pension insurance contributions. Organizations start to perceive benefits as an employee investment and therefore choose long-term benefits. On the contrary, benefits such as meal vouchers have long been dropping in

popularity. People often forget about these benefits, and they also have the character of fast consumption.

Tax deductibility of benefits in the Czech Republic

According to Act No. 586/1992 Coll. on income taxes in the Czech Republic, these benefits are tax deductible and non-deductible from the point of view of the employer and the employee as well. Table 2 lists the ones that we will deal with in our research.

Tab.2. Tax of benefits

Benefits	
Income tax exempt income of employees	Tax deductible expenses of employers
Meal contributions provided by third party entities and provided up to 55% of the price of one meal for one work shift	Meal contributions provided by third party entities and provided up to 55% of the price of one meal for one work shift are tax deductible
Nonmonetary contribution for development of employees related to their work position.	Nonmonetary contribution for development of employees related to their work position are tax deductible
Contribution to supplementary pension insurance and life insurance subject to legal conditions	Contribution to supplementary pension insurance and life insurance up to CZK 50 000 in total are tax deductible

Source: own

Nowadays, with a low unemployment rate, we can still find new types of employee benefits (Macháček, 2017). Thus, in the current labour market, employers who do not provide employees with employee benefits should be afraid that a skilled employee or a well-functioning team will be drawn away from them by a company which offers these benefits to employees. Among the traditional employee benefits that employers normally offer to their employees, we can include a meal contribution, a mobile phone, a notebook and a company car.

OBJECTIVES AND METHODOLOGY

The previously published results of tax relief research focus primarily on their quantification, identification and mainly examine their impacts on revenues of the state budget. While tax relief is a well-known concept used both by politicians to support their sectors and taxpayers

as a method to decrease their tax liability, the research has not yet been conducted to clarify whether tax reliefs actually implemented meet the purposes for which they have been implemented in tax laws; how they are subsequently used by taxpayers. If a specific tax relief is unable to support the objective of public policy for which it was implemented or, if its use for the taxpayer is unreachable or exploitable, it thereby loses its importance and becomes unwelcome to public finance.

Methodologically, the research will be based on the analysis of secondary static data provided by the Czech Financial Administration, which processes them on the basis of tax returns and analysis of OECD secondary static data. These sets of statistics will be confronted and further processed, mainly using mathematical-statistical methods.

The research was started in 2018 and carried out in early 2018. A total of 453 respondents from different professions and different companies were approached (examined). The research was mainly focused on employees. Two companies were selected for purpose of comparison.

There were 2 companies that took part in this research. A total of 180 employees of one company from different positions and of 49 employees of second company were addressed. The first company has its headquarter in the capital, and the other company is located in smaller city. The research was conducted in the form of a questionnaire containing closed and open questions. Statistical methods were used for data analysis and interpretation of findings, including quantitative research, where basic types of dependence were demonstrated and basic hypotheses, including zero hypotheses testing, were tested.

Following hypothesis:

Hypothesis H1 - Systems of employee benefits are used by employees of big and small companies alike.

Hypothesis H2 - In the European Union in all member states meal vouchers that are tax deductible are used.

RESULTS

Research was conducted in two companies. The first selected company was an international company founded in 1945, which has branches in more than 140 countries and does not have

its own catering facilities. The second selected company was a smaller company with 49 employees and also did not have a catering facility.

One goal of the questionnaire survey was to find out what employee benefits and rewards the employer offers. And only some of the most commonly used benefits were selected and the respondent could choose multiple options.

Tab.3. Offered benefits in larger company

Employee benefit	Percentage of answers	Employee benefit	Percentage of answers
Meal vouchers	94 %	5 weeks of vacation	15 %
Allowance	55 %	Workplace drinks	9 %
Mobile phone	39 %	Notebook	5 %
Sick day	23 %	Company car	3 %
Multisport card	17 %	13th wage	1 %

Source: own

The most frequently respondents answered that the employer offers meal vouchers and as a form of a benefit a discount (Allowance) on its products and mobile phone.

Questionnaire survey for smaller company

Tab.4. Offered benefits in smaller company

Employee benefit	Percentage of answers	Employee benefit	Percentage of answers
Meal vouchers	100 %	5 weeks of vacation	0 %
Allowance	0 %	Workplace drinks	10 %
Mobile phone	4 %	Notebook	4 %
Sick day	0 %	Company car	4 %
Multisport card	24 %	13th wage	0 %

Source: own

Questionnaire survey for all respondents

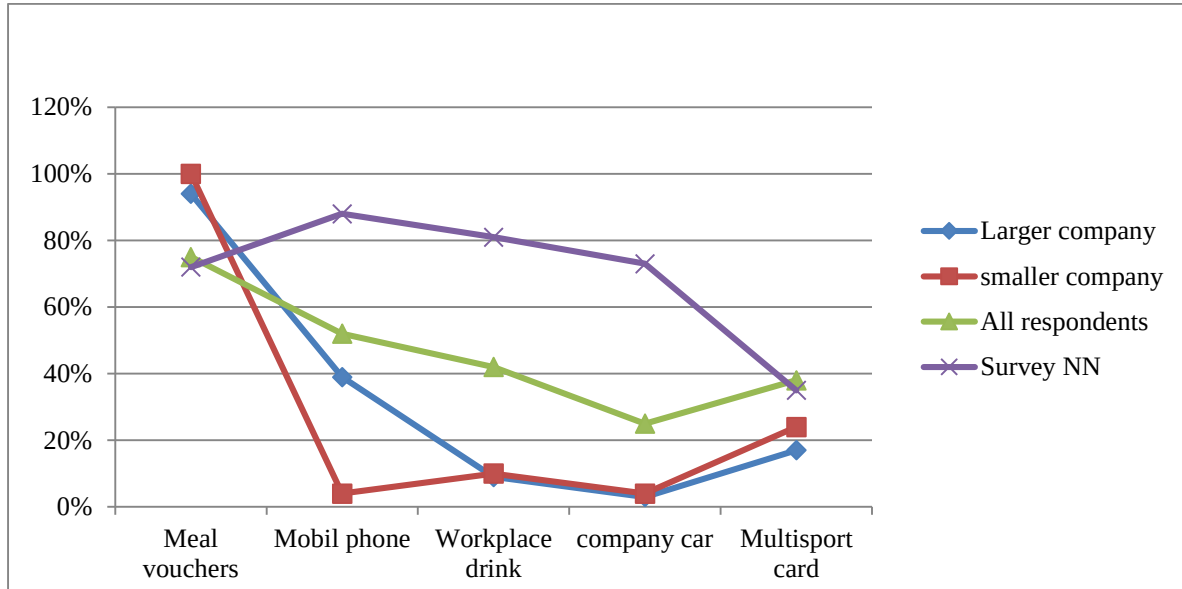
Tab.5. Offered benefits in all respondents.

Employee benefit	Percentage of answers	Employee benefit	Percentage of answers
Meal vouchers	75 %	5 weeks of vacation	12 %
Allowance	12 %	Workplace drinks	42 %
Mobile phone	52 %	Notebook	21 %
Sick day	2 %	Company car	25 %
Multisport card	38 %	13th wage	3 %

Source: own

Comparison larger company, smaller company, all the survey respondents and the survey conducted by NN Insurance Company and the Union of Industry.

Fig.2. Comparing Benefits offers.



Source: own

From Fig.2. it is clear that most often used benefit in the Czech Republic is the Meal Voucher a lowest spread is for Multisport card.

To demonstrate the H₂ hypothesis, we conducted research within the EU. We focused on the meal vouchers benefits. We conducted research only in selected countries of the European Union. From the countries with above-average economy, we have selected four and from other states we selected those that border with the Czech Republic.

Tab.6. Meal vouchers in the European Union

Selected EU states			
Above average level of Economy	Employers without their own catering facilities provide meal vouchers?	Use of meal vouchers by company employees	Tax exemption for employees
Belgium	Yes	67 %	50 %
France	Yes	83%	50 %
Germany	Yes	85%	50 %
Austria	Yes	72%	25 %
Other states			

Czech Republic	Yes	72 %	55 %
Hungary	Yes	74%	No
Poland	Yes	82%	No
Slovakia	Yes	23 %	55 %

Source: own

In the countries of the European Union, the Tax Act and the Labor Code is complex, often updated and subject to change. There are other conditions for exemption in each country.

DISCUSSION

In the first part of the research, we focused on the benefits that companies offer. At present, when there is a low level of unemployment, there are already new types of employee benefits. Employer who does not provide benefits will have the problem of employing capable employees. Table 3 and table 4 show that there is a difference in offered benefits between large and small business. The average number of benefits in a large company was 26.1% and 14.6% for a small company, which is 11.5% less. One value is the same for both types companies, and that is the use of meal vouchers. There is also a great difference in the perception of benefits by employees of a small rural company and large city companies. Employees of a small business are not interested in benefits as such and want to increase their salary. Employees of larger companies, who are satisfied with their salary, want especially those benefits that bring them leisure-time satisfaction.

According to table 3 and 4, companies offer mainly meal vouchers. For the benefits we examined, we focused on the dependency relationship between amount of employees and benefits usage. For this dependence we used the Pearson correlation coefficient r .

Meal vouchers $r = -0.993$; this means that there is a strong negative correlation between the number of employees and the use of meal vouchers.

Allowance $r = -0.648$; this means that there is an average negative correlation between the number of employees and the use of allowance.

Mobil phone $r = 0.966$; this means that there is a strong positive correlation between the number of employees and the use of mobile phones.

Sick day $r = -0.094$; this means that there is a very weak negative correlation between the number of employees and the use of sick days.

Multisport card $r = 0.775$; this means that there is a strong positive correlation between the number of employees and the use of the multisport card.

5 weeks of vacation $r = 0.169$; this means that there is a very weak correlation between the number of employees and the use of 5 weeks of vacation.

Workplace drinks $r = 0.931$; this means that there is a strong positive correlation between the number of employees and the use of workplace drinks.

Notebook $r = 0.955$; this means that there is a strong positive correlation between the number of employees and the use of the company notebook.

Company car $r = 0.158$; this means that there is a very weak positive correlation between the number of employees and the use of company car.

13th wage $r = 0.084$; this means that there is a very weak correlation between the number of employees and the use of 13th wage.

In further research we have dealt with these meal vouchers and their use in the European Union. According to the survey, it was found that they are used on average 69.75% by those employees who are entitled to them. This implies that there are no differences in the use of vouchers, but there are differences in tax claims that affect the use of meal vouchers.

CONCLUSION

Employee benefits are an important part of the overall value offered by the employer, making it a sort of competitive tool for recruiting new employees and retaining an existing employee. Managers, too, are well aware that a satisfied employee can return the investment in better performance. Employees look for more than just pay these days when they are considering

whether to stay with the current employer or to look for a new job. Employee benefits have a great impact on this decision and we wanted to prove it in our research. Young employees want to stay healthy and take care of their children, which their employers allow. In particular, according to HR staff, the contributions to leisure activities, language courses and catering are on the rise. In many large companies there are "catering canteens" which offer a quality comparable to restaurant level and offer a wide range of dishes. In some companies, different meals and drinks are available throughout the whole day.

An important decision-making factor for choosing the right employee benefits is definitely their tax impact, both on the employee's side and on the employer's side. Employee benefits that are extremely beneficial are those that are tax deductible for employers and income tax exempt for employees. This includes catering up to the limit, meal vouchers, employee contributions to retirement and life insurance up to CZK 50,000 per year, courses and trainings related to the employer's activities and payment for temporary accommodation of employees up to CZK 3,500 per month. Other benefits are not tax deductible for employers, but they do not have to pay social and health insurance for them, and for employees they represent a tax-exempt income. Examples can be a non-monetary contribution for culture, sports and health, provision of recreation in non-cash form up to CZK 20,000, provision of soft drinks at the workplace and free use of company kindergarten. Other benefits are neutral, for employers they are a tax-deductible expense and, on the employee's side, this income is subject to taxation, social and health insurance. This can be for example the use of a company vehicle for private purposes, an extra week of vacation, a transport allowance and sick days.

In the first hypothesis, we argued that flexible solutions are more typical for large companies and the results of our survey confirm that the use of a flexible system is directly proportional to the size of the company. As for the use of benefits, the situation is more complex. Some are used by both company's sizes - meal vouchers, mobile phone, workplace drinks and company notebook. Others are business-specific.

The second hypothesis dealt with the vouchers provided in the European Union and we examined their use in all countries and found out which are tax-exempt.

Tab.7. Confirmation of hypotheses.

	Confirmation of hypothesis	Decline of hypothesis
Hypothesis H ₁		√
Hypothesis H ₂		√

Source: own

We have confirmed the Hypothesis H₁ using the test criterion G, which has a chi quadrate distribution, and confirmed that the flexible employee benefits system is directly proportional to the size of the firm.

We rejected the H₂ hypothesis. When we divide the EU states into states with above-average levels of the economy and other states we could conclude from tab. 6 that countries with above-average levels of the economy use food vouchers more than other countries. As far as tax issues are concerned, it is very complicated because each country has its own specificities in terms of benefits.

This research is the basis for further research into this issue of tax reliefs and whether the tax reliefs are capable of supporting objectives of the public policy.

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Act No. 586/1992 Coll. on income taxes in the Czech Republic

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THE CAUSALITY OF CARBON EMISSION AND ECONOMIC GROWTH: TESTING THE ENVIRONMENTAL KUZNETS CURVE HYPOTHESIS

Duc Nha Le

Abstract: Environmental issues have been ranked among the most intense debates over the past decades by governments around the world. Sustainable development goals have been top priorities in the working agenda of national cabinets and administrations which questions the chronic trade-off between environment and economic performance. This paper aims at contributing further insights into the above-mentioned linkage to the contemporary literature by testing the validity of the Environmental Kuznets Curve (EKC) hypothesis. By conducting a panel data analysis on ASEAN countries' statistics of Carbon Emission per capita (COEpc), real Gross Domestic Product per capita (rGDPpc), Foreign Direct Investment inflow (FDIif), Trade Openness Index (TOI), and Urbanization (URB), the findings have empirically confirmed the valid causality running from economic growth, international trade and demographic changes to environmental degradation. Additionally, the existence of an earlier inverted U-shaped and a later N-shaped EKC has been investigated and significantly confirmed which reveals the cyclical changes of the *eco-enviro* trade-off. Also, this paper provides implications for policymakers to consider the cost-benefit issue in the establishment and implementation of economic and environmental protection policies.

Keywords: carbon emission, economic growth, EKC hypothesis.

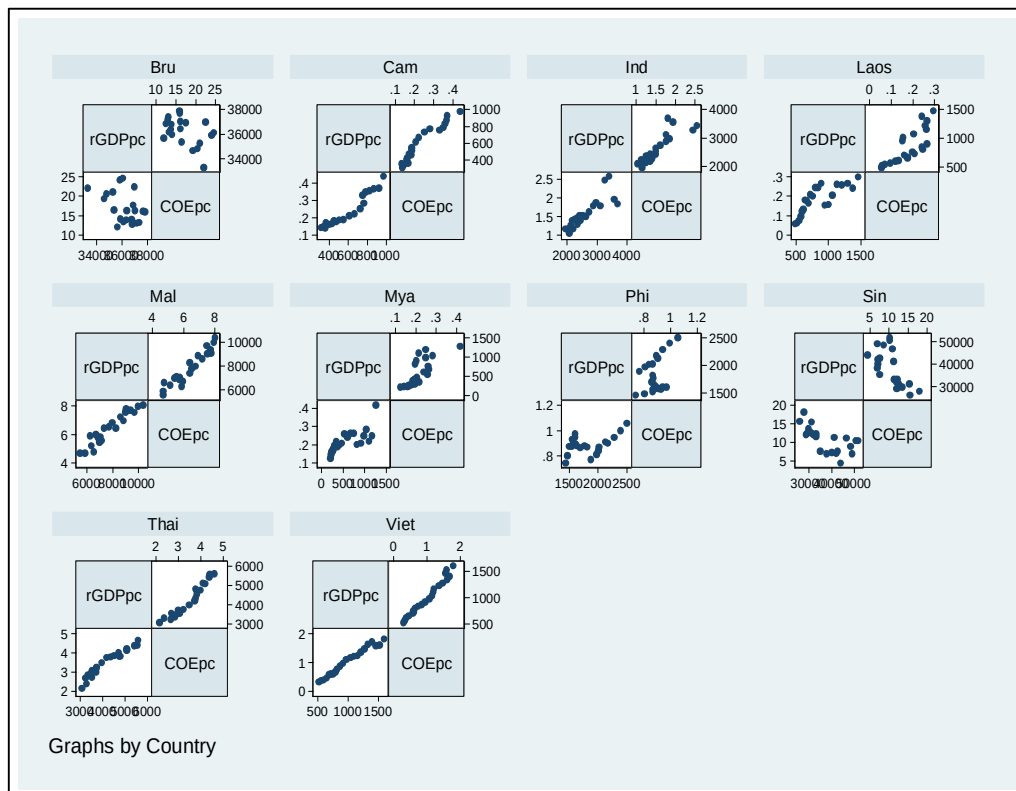
JEL Codes: O13, Q56, Q58.

INTRODUCTION

Along with the rising concern of Sustainable Development Goals (SDGs) increasingly prioritized in policy objectives of worldwide nations, the environmental issue which is considered as one of the three pillars of sustainable development has been taken into serious account by diverse stakeholders and the entire community (Carley & Christie, 2017; Fulekar, 2016; Rowledge et al., 2017). Among relevant areas, climate change and its concomitant global warming are the grand challenges facing the most vulnerable countries in Africa and

Asia, especially Southeast Asian region (Allison et al., 2009; Amran et al., 2016; Ford et al., 2015; Loo et al., 2015; Saito, 2013). Of the main causes of those environmentally-destructive phenomena, the emission of carbon dioxide (CO₂) has been blamed for most of the cases (Change, 2007; Ghosh, 2010; Gustavsson et al., 2017; Paul & Bhattacharya, 2004; Pittock, 2017; Skjærseth & Wettstad, 2016; Tang & Tan, 2015). In the case of ASEAN countries, emission volume has been increasing over the past three decades since 1990s (Figure 1). Among which, Vietnam has observed an unprecedented economic growth while also generating a large amount of CO₂ gas (Al-Mulali et al., 2015b; Tang & Tan, 2015; Zimmer et al., 2015), specifically, the most recent emitted amount of CO₂ recorded in 2014 has been tripled that recorded two decades ago in 1993, while this figure in Thailand, Malaysia and Philippines has nearly doubled since 1990s, Lao PDR nearly six times, Cambodia and Myanmar nearly four times.

Fig. 1: Scatter plots of CO₂ emission and economic growth of ASEAN economies, 1990 – 2014



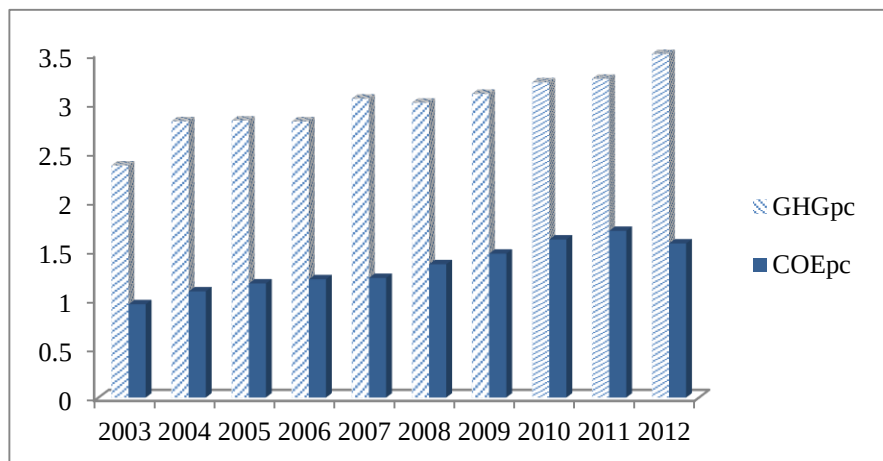
Source: World Bank Statistics

As could be seen in Figure 1, there is a strong correlation between Vietnam's economic growth (measured by GDP per capita constant 2010 US\$, rGDPpc) and COEpc (metric tons per capita) in the observed period. However, it seems that within the ten countries of ASEAN there have been 02 separate trends describing the two reverse relationships between rGDPpc and COEpc. Figure 1 indicates the similarities among Indonesia, Cambodia, Lao PDR, Myanmar, Malaysia, Philippines, Thailand and Vietnam which suggest the positive association between the two indicators. Conversely, the situations of Singapore and Brunei Darussalam prove the negative relationship which seems to suggest the existence of Environmental Kuznets Curve (EKC) in the higher stage of development of a country (Kasman & Duman, 2015; Heidari et al., 2015).

In Vietnam, the call for an economic development with low rate of gas emission has been disseminated by the high-profile officials of Vietnamese government¹. Carbon dioxide has also been officially blamed for most cases of unsustainable development as stated in the Kyoto Protocol and has been placed at the first position among 06 types of Greenhouse Gases (GHG) “Kyoto basket” including Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF₆) (Lin, 2010; Lin & Sun, 2010).

Fig. 2: CO₂ emission per capita and GHG emission per capita of Vietnam, 2003 – 2012

Unit: Metric ton per capita



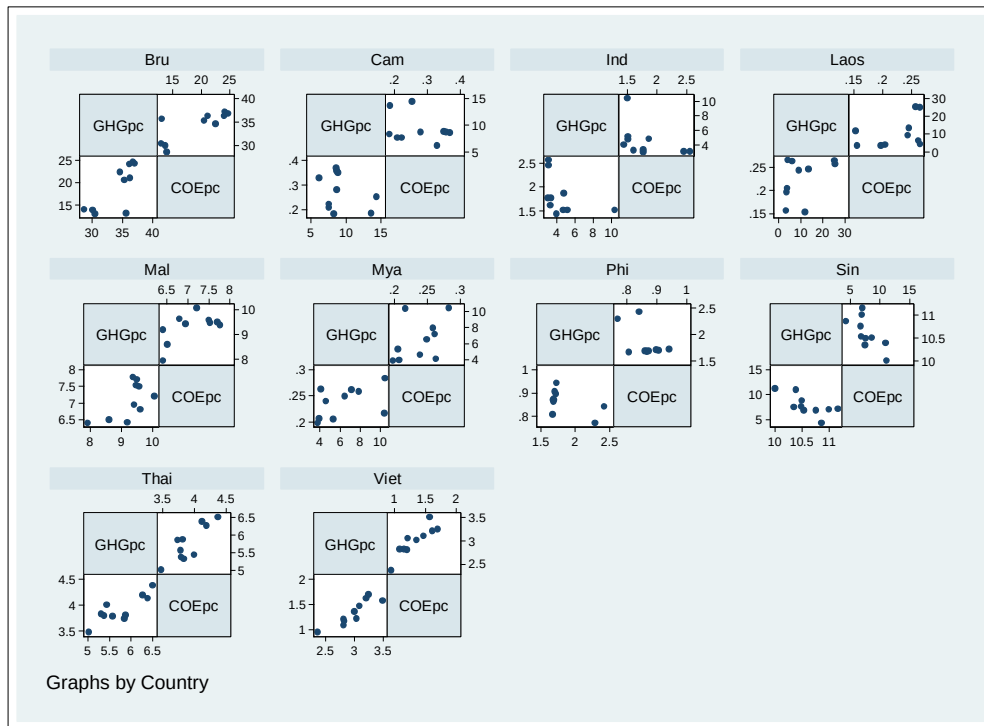
Source: World Bank Statistics

¹ <http://nhandan.com.vn/kinhte/item/33876602-huong-toi-mot-nen-kinh-te-co-muc-phat-thai-thap.html>, accessed on April 2nd 2018

Figure 2 indicates the domination of CO₂ emission fraction in the “Kyoto basket” of Vietnam as it accounted for almost 44.35% on average during the period 2003-2012. The volume of CO₂ emission has also seemed to be positively associated with the GHG emission in most cases of ASEAN countries except Singapore and Indonesia (Figure 3).

Fig. 3: Scatter plots of CO₂ emission per capita and GHG emission per capita of ASEAN countries, 2003 – 2012

Unit: Metric ton per capita



Source: World Bank Statistics

By using data of ASEAN nations, this Paper is about to test whether the causality between economic performance indicators and environment-related measurement exists, also, the shape of EKC will be explored and confirmed. The structure of the Paper includes four parts. Part 1 provides a review of relevant literature which has been built on a platform of “eco-enviro” interactions. Part 2 will be the introduction of quantitative method to examining those interactions and be an elaboration on how related statistics were collected and calculated. Part 3 will show results of the quantitative analysis on the established panel data using STATA software version 12. Part 4 ends the Paper with conclusions and recommendations for the policy-making process especially that of ASEAN countries.

LITERATURE REVIEW

The relationships or more particularly the trade-offs between environmental status measured by COE and indicators of economic performance (real GDP per capita – rGDPpc), trade (TOI), inward foreign direct investment (FDIif) and urbanization (URB) have been analyzed and confirmed by various studies applied in diverse global, national, regional or even provincial levels. Carbon emission is the direct and best-reflective evidence of national industrialization achievements which have contributed greatly to the economic growth thus confirming the valid positive relationship between the two concepts (Asumadu-Sarkodie & Owusu, 2016; Hartwell, 2017; Omri et al., 2014; Xu & Lin, 2017). In the case of emitters achieving miraculously rapid pace of growth, governments tend to promote and incentivize the expansion of economic pie while ignoring the deteriorating environment and ecosystem (Long et al., 2015; Xu & Lin, 2017). Carbon dioxide gas could be emitted from various economic activities especially those of industrial manufacturing sectors which consumed large amount of fossil fuels, specifically coal and natural gases (Long et al., 2015; Xu & Lin, 2017).

Reversely, the output has also contributed to the deterioration of environment especially in the early stage of development of emerging economies and economies in transition whose most sectors appear to depend largely on obsolete production technologies (Lee et al., 2017; Yang & Li, 2017) and foreign direct investors seeking for natural resources and cost efficiency may be the critical target of these economies external engine for economic growth (Abbes et al., 2015; Adams, 2009; Boateng et al., 2015). However, at later stages when technology advancements have been achieved as a result of economic growth and more demanding stakeholders with improved real income has raised their voices for the need of a healthy living environment (Lee et al., 2017; Yang & Li, 2017), renewable energy production technologies, which consume solar and biomass energy, electricity and wind power instead of fossil fuels, would replace unclean ones thus mitigating the environmental degradation (Hosseini & Wahid, 2016).

The above-mentioned two-way interconnectedness has been the hot issue which attracted most of scholar concerns, which is called the “bi-directionality”, which has been tested frequently and widely in worldwide geographic regions (Begum et al., 2015; Dogan & Aslan, 2017; Dogan & Turkekul, 2016; El Montasser et al., 2018; Long et al., 2015; Omri et al., 2014; Salahuddin et al., 2015; Tang & Tan, 2015). To consider the trade-off between environmental

degradation and economic growth, previous research has tested the EKC hypothesis with the traditional inverted U-shaped in various countries and regions (Bakirtas & Cetin, 2017; Begum et al., 2015; Dogan & Turkekul, 2016; Pata, 2018; Tang & Tan, 2015; Zhang et al., 2017a), thus suggesting policy implications for nations in pursuit of SDGs. Nevertheless, separate and comprehensive attentions to the presence of EKC in ASEAN countries have not been paid adequately enough as this region is an emerging vibrant pole in the multipolar world arena (Al-Mulali et al., 2015b; Al-Mulali et al., 2015c; Borhan et al., 2012; Chandran & Tang, 2013; Katircioglu, 2014; Lean & Smyth, 2010; Saboori et al., 2012; Saboori & Sulaiman, 2013; Zhu et al., 2016).

To include external variables which may affect the central causality, it has been argued that other economic performance indicators should be added to the research model. Firstly, the positive relationship between environmental performance (carbon emission and its major antecedent – energy consumption) and investment has been statistically confirmed by most recent research (Alshehry & Belloumi, 2015; Azam et al., 2015; Lau et al., 2014; Omri et al., 2014; Pao & Tsai, 2011; Tang & Tan, 2015; Zaman et al., 2016). In these studies, scholars have posited that inward FDI may be a solution to the lack of capital for economic development as the public purse of many developing countries is not sufficient and domestic savings are weak and restricted. Thus, inward FDI serves as the engine for economic growth of such countries. Also, the flow of this external resources may entail the transfer of technologies, management know-how and innovative processes, and facilitate the market competition and subsequent productivity enhancements which then ultimately spur the economic performance and carbon emission. From the perspective of theories related to foreign direct investment and environmental regulations, among deciding motivations of multinationals behind global strategies, resource-seeking investors may choose developing countries as attractive destinations for offshoring their production facilities with embedded backward and high-carbon emission technologies due to the less strict environmental rules and weaker enforcement which is known as “Pollution Havens Hypothesis” (PHH) (Millimet & Roy, 2016; Shahbaz et al., 2015; Zaman & Abd-el Moemen, 2017).

Secondly, international trade could accelerate or hamper the pace of carbon emission as it influences both domestic production (exports) and consumption (imports) (Al-Mulali et al., 2015a; Bento & Moutinho, 2016; Ertugrul et al., 2016; Kanemoto et al., 2014; Lau et al., 2014;

Ren et al., 2014) which are known as “production-based emission” and “consumption-based emission” (carbon footprint) respectively. Also, the concept of “*carbon emission embodied in trade*” has also been an increasingly-observed phenomenon (Böhringer et al., 2018; Sakai & Barrett, 2016; Su & Ang, 2014; Wu et al., 2016a; Yunfeng & Laike, 2010). As a result, trade openness, which enables the simultaneous increases in export and import whose embodied carbon emission amount is different, may possibly either improve or worsen the environmental degradation (Shahbaz et al., 2013) due to the three types of trade liberalization’s impacts on environmental quality, specifically scale, technique and composition effects (Shahbaz et al., 2013). Each of those effects performs different associations with carbon emission (Cole & Elliott, 2003). According to Cole & Elliott (2003), the scale effect means free trade regime enhances both foreign and domestic market access thus expanding the current size of the economy and creating more industrial manufacturing activities which ultimately lead to the worsening environmental quality. In terms of the technique effect, when free trade spurs income and capital accumulation, the production technologies may emit less carbon dioxide gas as the increased investment in technologies to gain higher productivity and the raising demand for the healthy living environment of a richer community of stakeholders. This implies that, *ceteris paribus*, technique effects will mitigate the environmental degradation as trade is more open. The composition effect is related to the national comparative advantage as each country will specialize in, as a result of free trade, goods which they could produce most efficiently. Various national characteristics lead to diverse comparative advantages which suggest that specialized goods will vary among nations thus the different extent of carbon emission. The author expects the findings of this research confirm a negative impact of trade openness on carbon emission as ASEAN countries are mostly emerging and in-transition economies which are largely export-led and all of them belong to the Non-Annex I list in Kyoto Protocol (list of countries not promising to reduce GHG emission) (Zhang, 2012). This means countries from Annex I list will reduce their domestic emission as promised and replace it by importing goods from those of Non-Annex I list including ASEAN nations thus increasing the carbon emission embodied in export while also increasing carbon emission avoided by import. However, the impact may not be strong as ASEAN countries’ main exporter, China, does not belong to Annex I list.

Last but absolutely not least, the expansion of urban population leads to more diverse and concentrated production and consumption activities which contributes significantly to the

degradation of environment by emitting larger amount of CO₂ gas (Al-Mulali et al., 2015a; Liddle, 2014; Wang et al., 2016; Wang et al., 2015; Wu et al., 2016b; Zhang et al., 2014; Zhang et al., 2017b). For example, Wang et al. (2015) have confirmed the urbanization-emission EKC hypothesis which means the inverted U-shaped curve of this relationship in OECD (Organization for Economic Co-operation and Development) countries. Zhang et al. (2017a) and Zhang et al. (2017b) have posited that non-renewable energy consumption of urban regions with rapid expansion in China and Pakistan is among the main causes of carbon emission, thus confirming the positive association between urbanization and environmental degradation. Similarly, Wu et al. (2016b) validated the relationship between urbanization, energy intensity (energy consumption per LCU of GDP), energy carbon emission coefficient (CO₂ emission/Energy consumption) and carbon emission in developing countries while stressing the increasing disparity between rural and urban development also worsens the situation.

ECONOMETRIC METHOD AND MEASUREMENT

As stated in the Literature Review section, a cubic estimation equation has been recommended to validate the causality between environmental degradation and economic growth:

$$COEpc_{i,t} = \beta_0 + \beta_1 * rGDPpc_{i,t} + \beta_2 * rGDPpc_{i,t}^2 + \beta_3 * rGDPpc_{i,t}^3 + \beta_4 * FDIif_{i,t} + \beta_5 * TOI_{i,t} + \beta_6 * URB_{i,t} + \varepsilon'_{i,t}$$

where the subscript $i = 1, \dots, N$ denotes the country ($N = 10$ in this study) and $t = 1, \dots, T$ denote the time period, u and u' are the error terms, $COEpc$ is the *annual carbon emission volume* (metric tons per capita), $rGDPpc$ is the *annual real Gross Domestic Product per capita* (constant 2010 US\$), $FDIif$ is the *annual foreign direct investment inflow* (current US\$), TOI is the *annual Trade Openness Index* (the sum of exports and imports of goods and services measured as a share of gross domestic product), and URB is the *annual urbanization rate* (the number of people living in urban areas as defined by national statistical offices as a share of total population). In the above equation, the author expects six possible outcomes which reflect the shape of the causal curve as follows:

(i) $\beta_1 > 0$, $\beta_2 < 0$, and $\beta_3 > 0$ suggests an N-shaped EKC curve;

(ii) $\beta_1 < 0$, $\beta_2 > 0$, and $\beta_3 < 0$ suggests an inverted N-shaped EKC curve;

- (iii) $\beta_1 < 0$, $\beta_2 > 0$, and $\beta_3 = 0$ suggests a U-shaped EKC curve;
- (iv) $\beta_1 > 0$, $\beta_2 < 0$, and $\beta_3 = 0$ suggests an inverted U-shaped EKC curve;
- (v) $\beta_1 > 0$, and $\beta_2 = \beta_3 = 0$ suggests a monotonically increasing linear causality;
- (vi) $\beta_1 < 0$, and $\beta_2 = \beta_3 = 0$ suggests a monotonically decreasing linear causality.

Panel data regression would be used in this paper as the collected data includes both time-series and cross-section dimensions (Baltagi, 2008). Panel data has also been applied in recent studies (Ahsan et al., 2016; Alves & Francisco, 2015). All of the data, collected for the period 1993–2014, has been sourced from World Bank National Accounts of ten ASEAN countries including Brunei Darussalam, Indonesia, Cambodia, Lao PDR, Myanmar, Malaysia, Philippines, Singapore, Thailand and Vietnam. The descriptive profile of variables is provided in Table 1.

Tab. 1: Descriptive statistics of variables

Stats	rGDPpc	COEpc	FDIif	TOI	URB
Mean	9361.666	4.193468	5.57e+09	126.3081	46.57305
SD	14282.31	5.72305	1.08e+10	94.15814	24.64008
CV	1.525617	1.364753	1.931365	.7454642	.529063

Notes: SD indicates the standard deviation; CV indicates the coefficients of variation (standard deviation-to-mean ratio).

Source: Own calculation

Firstly, the correlations among proposed variables have been tested to determine whether the quantitative analysis is statistically worth employing (Table 2).

Tab. 2: Correlation matrix of variables

	COEpc	rGDPpc	FDIif	TOI	URB
COEpc	1.0000				
rGDPpc	0.8276	1.0000			
FDIif	0.2463	0.5981	1.0000		
TOI	0.4775	0.7163	0.6468	1.0000	
URB	0.7740	0.8684	0.5766	0.7639	1.0000

Source: Own calculation

The central correlation between $rGDP_{pc}$ and COE_{pc} has been strongly confirmed as the coefficient is up to 0.8276, while demographic changes seem to be considerably correlated with both economic growth and environmental degradation as their correlation coefficients are 0.8684 and 0.7740 respectively. Also, the correlation between foreign direct investment and economic growth seems to be relatively significant, specifically 0.5981 while this may not necessarily be obtained at the expense of the environment as the FDI- COE_{pc} correlation is only 0.2463. The impacts of international trade are also statistically-significant whose correlations with $rGDP_{pc}$ and COE_{pc} are 0.7163 and 0.4775 respectively. This may pose a possible concern of multicollinearity as the three independent variables FDI_{if} , TOI and URB are 0.6468, 0.5766 and 0.7639 respectively and their Variance Inflation Factor (VIF) figures in the Pooled OLS regression are greater than the lower threshold of 2.0 (Sun et al., 2014), specifically 5.78, 2.92 and 10.89 respectively. Also, as the Pooled OLS is considered not be able to take account for the heterogeneity of variables in the case of panel data (Galindo & Méndez, 2014). Thus, the Fixed Effect Model (FEM) and Random Effect Model (REM) would be exploited to lessen this phenomenon (Baltagi, 2008). Also, the opposite situations of Brunei Darussalam and Singapore out of the ten ASEAN countries have challenged the use of Pooled OLS as this regression method ignores the heterogeneity among individuals in the sample (Baltagi, 2008). Furthermore, as the panel data of this research is an unbalanced set which could be analyzed by FEM (Qureshi et al., 2017; Wooldridge, 2015). Also, as the time dimension is limited in 22 consecutive years and the number of spatial observations is ten countries, FEM is considered to be appropriate for panel data analysis on this size (Galindo & Méndez, 2014) while allowing examining the changes of y-intercept of regressive graphs which is meaningful for cross-country analyses (Galindo & Méndez, 2014; Gambacorta et al., 2014; Wooldridge, 2015). Additionally, Hausman test will also be employed to determined which model FEM or REM is chosen (Baltagi, 2008; Wooldridge, 2015).

Tab. 3: FEM & REM analysis results

	FEM	REM
Variables	COEpc	COEpc
rGDPpc	0.001* (0.095)	0.002*** (0.000)
rGDPpc2	-0.000*** (0.000)	-0.000*** (0.000)
rGDPpc3	0.000*** (0.000)	0.000*** (0.000)
FDIif	0.000 (0.906)	-0.000** (0.048)
TOI	-0.011** (0.030)	-0.013*** (0.000)
URB	0.084* (0.054)	-0.065*** (0.000)
Constant	2.275* (0.055)	1.563*** (0.000)
Hausman test	Prob>chi2 = 0.0003	
Observations	205	205
R-squared	0.360	0.908

pval in parentheses; *** p<0.01, ** p<0.05, and * p<0.1

Source: Own calculation

Table 3 indicates that the FEM appears to be more appropriate for the cubic estimation function (Prob.>chi2 = 0.0003 < 0.05 of the Hausman test). As could be seen in Table 3, there is valid causality running from real gross domestic product per capita and its squared and cubic variables, trade openness and urbanization to carbon emission, except inward foreign direct investment. As questioned in Introduction section when considering the scatter plots of Singapore and Brunei Drarussalamin Figure. 1, the results in Table 3 reveal the existence of an early inverted U-shaped and N-shaped EKC in the long run (Begum et al., 2015; Fodha & Zaghdoud, 2010; Heidari et al., 2015). However, in the context of this paper, the slight negative relationship of the two central variables may generate some implications for re-orienting eco-socio policies. Meanwhile, accelerating urbanization may be the signal of increasing consumption and emerging production large-clustering whose “hot” development may be achieved at the expense of the environment. Interestingly, the findings also reveal the negative impacts of trade openness on carbon emission which could be found in other previous academic

work (Ali et al., 2016; Al-Mulali et al., 2015a; Shahbaz et al., 2014). This suggests that exports may lead to the increased volume of carbon emission which has been called “*carbon emission embodied in trade*” or “*production-based emission*” phenomenon while imports from developed countries in Annex I help ASEAN economies avoid domestic emission which is called “*consumption-based emission*” as depicted in the Literature Review section. Before coming to Part 4 of the research, Table 4 will provide a summary of valid linkages which have been significantly confirmed by findings of the equation.

Tab. 4: Summary of causality

Independent vars Dependent var	rGDPpc	rGDPpc ₂	rGDPpc ₃	FDIif	TOI	URB
COEpc	(+)	(-)	(+)	ns	(-)	(+)

ns: non-significant

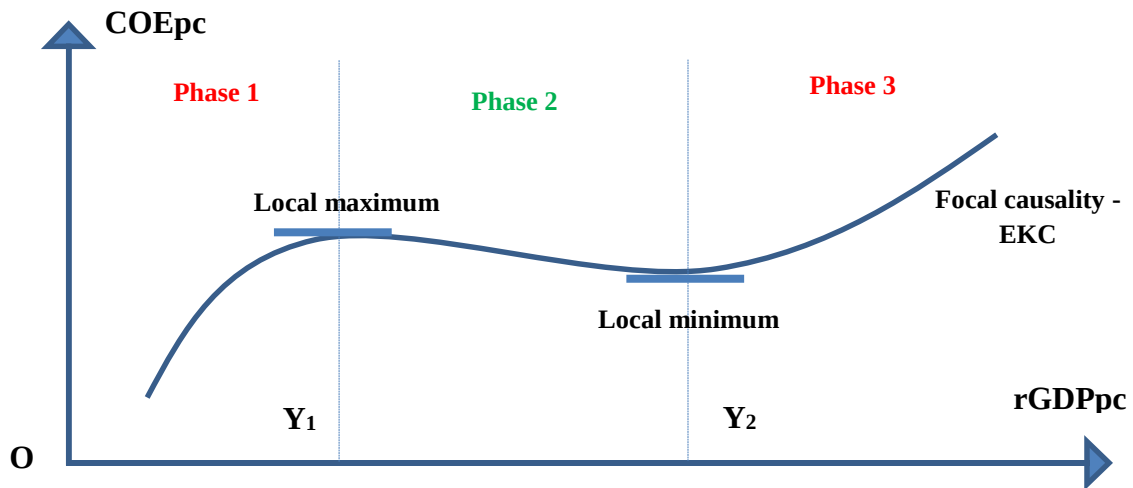
Source: Own calculation

CONCLUSIONS AND RECOMMENDATIONS

This research has confirmed both positive and negative causality between carbon emission and economic growth in the case of ASEAN countries, specifically the inverted U-shaped EKC in the early stage of development and the N-shaped EKC hypothesis in the long run. Also, the findings support policies towards achieving SDGs by enhancing environmental control and protection while encouraging economic activities of low-carbon technologies which limits environmental negative externalities. ASEAN nations could choose alternative energy which is carbon-neutral such as nuclear energy, photovoltaic energy, wind, water and geothermal energy to mitigate negative impacts of human economic activities on environment. Moreover, tax policies imposed on carbon emission should also be considered as this may help restrict the emission volume. As the coefficient of cubic variable of real income appears to be positive, it reveals the cyclical characteristic of the trade-off as larger size of the economy may further deteriorate the environment after just a short time of improvement. It is also critical that policymakers should calculate accurately the local maxima and the minima of the N-shaped EKC as these values are the turning points which signal the better and worse prospects of environment consistent with the growth of the economy. This helps governments synchronize

their economic policies with the environmental degradation, specifically as could be seen in Figure 4, when real output has not yet reached the maxima point ($O \rightarrow Y_1$), stricter emission restraint needs to be put into effect and more relaxing one may be considered as advanced production technologies and expanding international trade has alleviated the negative impacts ($Y_1 \rightarrow Y_2$), and again, the repetition of the positive causality may occur but at higher levels of carbon emissions ($Y_2 \rightarrow +\infty$). The existence of an N-shaped EKC has been investigated and significantly confirmed which reveals the cyclical changes of the *eco-environ* trade-off and a suggested multi-phase approach to related debates as could be seen in Figure 4.

Fig. 4: The N-shaped EKC



Additionally, the findings indicate that governments could in one hand accelerate economic growth while mitigating the environmental consequences in the other hand by promoting freer trade through multilateral and bilateral commitments regarding international trade, especially in the case of Non-Annex I countries including ASEAN economies. Trade facilitation policies also need to be further shaped and implemented to diversify and encourage more international business transactions which ultimately results in increased trade openness and the concomitant environmental improvement. Finally, while the increase of urban population seems to be the worrisome issue against environmental protection efforts taken by ASEAN governments. This opens up another concern related to spending more public expenditure on basic infrastructure to establish new *satellite* and *peripheral* centers for economic development surrounding current large cities in ASEAN countries which strengthen the pressure of urbanization on environment. Policies towards encouraging efficient energy consumption of households and institutions and

use of renewable energy in production should go hand in hand with the industrialization and modernization strategies to offset the adverse influences of urbanization on environment.

LIMITATIONS AND FUTURE DIRECTIONS

This research uses FEM & REM estimations to test the validity of proposed linkages which could be more deeply examined by other regression methods to panel data sets such as Granger causality test which allows exploring the two-way relationships among variables. Furthermore, the cross-sectional dimension of the data set includes only 10 ASEAN economies which may weaken the generality and applicability of the findings, thus including more data of Northeast Asian countries is a future prospect as this allows examining the differences among groups of nations. Also, carbon emission is only one of many indicators of environmental impacts, thus, future research should include more related yardsticks such as energy consumption (per capita), GHG emission (per capita), electricity consumption (per capita), fossil fuels consumption (per capita), energy intensity (energy consumption per LCU of GDP), energy carbon emission coefficient (CO_2 emission/Energy consumption), etc. to more comprehensively assess proposed causality between economic performance and environmental impacts, especially the consumption of non-renewable energy as a stepping stone between carbon emission and the other economic indicators. Additionally, the nexus of urbanization and carbon emission also needs to be separately investigated in future research especially the existence of the urbanization-carbon emission EKC hypothesis. Similar concern should also be imposed on the relationship between trade and carbon emission as the aggregate impact of three component effects of free trade on environment may be either positive or negative depending on individual magnitude. Further research needs to calculate the specific value of rGDPCpc at turning points of the EKC to help nations better design environmental protection policies in pace with estimated economic growth.

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THE IMPACTS OF CEO AGE AND EDUCATION LEVEL ON EARNING MANAGEMENT: EVIDENCE FROM VIETNAMESE LISTED REAL ESTATE FIRMS

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Nguyen

Abstract

Purpose: This study aims to examine the impact of CEO age and education level on earning management of real estate companies listed on Vietnam stock market.

Design/methodology/approach: The author has used a research sample of 388 observations of 46 real estate companies in the period from 2007 to 2016 listed on Vietnam stock market. The adjusted Jones model of Kothari et al. (2005) was applied to identify earning management of these companies.

Findings: The results show that CEO age and CEO education level have a negative relationship with earning management. Besides, Return on Asset (ROA) and financial leverage have a positive relationship with earning management; however, company size has a negative relationship with earning management.

Research/practical implications: The results of this research help investors make the decision to invest in a company, investors need to pay attention to CEO age and educational level information. In the future, research will improve the value of the thesis by interviewing experts on earning management, doing surveys amongst the accountants in real estate companies to find out the causes as well as the motives for earning management regarding to real estate companies.

Originality/value: Empirical studies focusing on the impact of the age and educational level of CEO on earning management are still rare in a developing country like Vietnam. This study is one of the first studies to contribute such an issue in the case of Vietnam, a developing economy.

Keywords: Earning management, CEO age, CEO education level, Real estate firms, Vietnam.

JEL Codes: M41, G34.

INTRODUCTION

Recently, there are more and more accounting scams related to frauds on the financial statements, many accounting regulations have been built to prevent these phenomena. Financial statements of listed companies are generally audited; nonetheless, there are some limitations in the scope of audit which limit the abilities to detect errors and frauds. Erickson & Wang (1999) showed the evidence that companies inflate earnings to increase the stock price before merger. Aygun et al. (2014) stated that managers who own a significant portion of firm' equity have more motives to distort information on financial statements, increasing the probability of implementing earning management of the company.

According to report of Vietnam Real Estate Association (2016), the real estate market accounts for 20% of the total social investment which has a very important meaning in the context of Vietnam. However, in recent years, real estate companies have suffered from the serious shortage of capital, low debt ratio and low liquidity. Since then, many projects have not been completed on schedule, even falling into unfinished and wasted investment situations. In order to maximize the investment capital, in addition to favorable conditions which the companies have such as company size, business sectors, attractive projects, etc. Earning is also an important target which most of real estate companies tend to inflate.

The author has not found any research which is published in Vietnam mentioning about how CEO age and CEO education impact on earning management of listed companies on Vietnam stock market. With the purpose of providing more experimental evidences about impacts of characteristics of CEO, including age, education level, and earning management, especially examining in the real estate sector, this research investigated the impact of CEO age and education level on earning management of real estate companies listed on Vietnam stock market. Our results find that firms with older CEOs and higher educational level are associated with higher-quality financial reporting. Our findings are also consistent with prior studies suggesting that older individuals are more conservative (Sundaram and Yermack, 2007; Huang et al., 2012).

The research gives the contribution to the theoretical framework about the relationships amongst the characteristics of CEO, particularly age and education level of CEO regarding to interest management. First, the research concentrated on Vietnam market, a developing country with an inadequate management mechanism which should be improved (World Bank, 2014; World Bank, 2016). Second, the research also went deeply into analyzing the characteristics of

CEO including age and education level and figured out that firms hiring older CEOs benefit and higher educational level by having higher-quality financial reporting, which lowers the cost of capital and increases firm value. Finally, to be different from the previous research about the factors which effect on earning management of companies in Vietnam (Essa et al, 2016; Duong V. B. and Diep H. N., 2017), this research deeply investigated the situations of earning management of real estate companies and pointed out the trends of increase or decrease management of each group of real estate company listed on Vietnam stock market.

The remainder of the paper is organized as follows. Section 2 will present the literature review and theoretical framework. In this section, the study also develops the hypotheses. Methodology will be mentioned in section 3. Section 4 will show the research results and discussions. Finally, section 5 will give the conclusion and limitations of the research.

LITERATURE REVIEW AND HYPOTHESIS

Literature review and hypothesis

Earning management might reduce the credibility of the information on financial statements. When the companies carry out earning management, the investors may not have information sufficiently and exactly about earnings for earnings and portfolio risk assessment. Therefore, income is one of the parameters used to evaluate the management efficiency. Income is also used as the preference for investors to make decisions. For the creditors, the quality of information is very useful for making credit decisions as well.

There are many prior studies about factors which impact on earning management. Naz et al. (2011) indicated that capital structure has a negative impact on earning management; in contrast, company size has no meanings. Naz et al. (2011) stated that for companies which have high financial leverage, creditors play a role as executives in managing earning management.

Wuryani Eni. (2012) has been proved that company size has a negative impact on earning management and large-size company will reduce the earning management implementation. The research of Lusi & Swastika (2013) was conducted based on the listed food and beverage companies in Indonesia, which showed that the number of members in board of directors has a positive relationship with earning management, while company size and the quality of audit company have a negative relationship with earning management and the independence rate of board of directors is not statistically significant. Aygun et al. (2014) has proved that ownership

and board-of-director size have a negative effect on earning management while the influence of managers' ownerships and ROA have a positive relationship with earning management. However, financial leverage negatively impacts on earning management.

Hypothesis development

Yim (2013) stated that CEO motivation may change with age. The older managers have accumulated much experience; thus, they will play a good role as consultant more efficiently. Yin & Chun (2014) found that CEO age is one of the significant factors which affect the behaviors of CEO. According to Iceoglu et al. (2012), for the older people, the influence of reward and rival motive will be less than the young people.

Besides, the higher the CEO age is, the more they will carefully consider their safety in career and finance, avoiding the risky decisions (Vroom & Pahl, 1971; Sundaram & Yermack, 2007; Huang et al., 2012). The younger generation tends to be more individual and has higher selfish characteristics that could lead to unethical behaviors (Twenge & Campbell, 2008). Huang et al. (2012) found the negative relationship between CEO age and financial reporting quality. Vroom & Pahl (1971), Yin & Chun (2014) figured out the negative relationship between CEO age and earning management. The authors stated that the older people tend to be more careful than the young people. This shows that older CEO has less probability in earning management. In order to illustrate the impact of CEO age on earning management as argued above, the following hypothesis is tested:

H₁: CEO age has a negative relationship with earning management.

There are many prior researches examining the relationship between characteristics of CEO and earning management or financial reporting quality. However, there is a shortage of studies investigating the association between earning management and CEOs' education level. In the management literature, scholars have made attempts to investigate whether the educational backgrounds of CEO and top managers influence on managerial behavior. Education level is often viewed as a good proxy for human capital, knowledge base, or intellectual competence (Hambrick & Mason, 1984; Wiersema & Bantel, 1992; Datta & Rajagopalan, 1998; Wailderdsak & Suehiro, 2004; Barro & Lee, 2010). Bantel & Jackson (1989) suggests that CEOs with higher educational attainments are better able to process information and accept significant changes within the firm. Wiersema & Bantel (1992) proved that CEO with a higher education level are more likely to undertake significant changes in corporate strategy.

Graham & Harvey (2002) suggested that chief financial officers (CFOs) holding Master of Business Administration (MBA) degrees are more likely to follow academic advice and employ current value techniques in evaluating new projects. Gottesman & Morey (2006a) argued that educational qualification may be a proxy for intelligence. Cheng et al. (2010) explored that the educational level of upper echelons is positively associated with financial performance. Darmadi (2013) proposed that CEO holding post-graduate degree will be more likely to have a positive influence on operation efficiency of business. It is also revealed that managers holding MBA degrees from top business schools are likely to show significantly better performance than those without MBAs or holding MBAs from unranked programs (Gottesman & Morey, 2006b).

In the business where there are CEOs with post-graduate degrees, the financial reporting quality will be higher (Men T. L, 2016). The author expects that the higher the education level of CEO is, the more limited earning management of manager is. The determination and measurement of CEO capabilities are not easy, nevertheless, it is possible to use education level as a preference for CEO capability measurement (Bhagat et al., 2010). Education level helps to enhance knowledge and understanding of CEO, CEO could have a profound of professional skills and aware of complicated issues. In addition, education level helps to expand knowledge and enhance the ability to argue.

Base on the aforementioned discussion, the following hypothesis is proposed:

H₂: CEO education degree has a negative relationship with earning management.

RESEARCH DATA AND METHODOLOGY

Measurement of variables

Earning management

The previous studies figured out that earning management is defined as the deduction between Total Accruals (TA) and Non-Discretionary Accruals (NDA) occurred within the business (DeAngelo, 1986; Dechow et al, 1995; Healy, 1999; Jones, 1991). Kothari et al. (2005) have further developed the model of Jones – Dechow et al. (1995) based on examining the company's current and past economic performance measured by ROA. By applying the same method implemented by Han et al. (2010) (4.52) and Swastika (2013), this research also employs model of Kothari et al. (2005) to examine earning management as follow:

First, we use a cash-flow approach to estimate total accruals TA_{it} (Collins and Hribar, 2002; Davidson et al., 2005). This approach involves deducting the cash flow from operations obtained from statement of cash flows from the amount of net income (before extraordinary items) from the income statement as follow:

$$TA_{it} = \text{Net income} - \text{Cash flow.}$$

Where TA_{it} : Total accruals of firm i in year t

Second, the modified Jones model seeks to measure the total discretionary accruals using the following variables, as described by Kothari et al (2005):

$$\frac{NDA_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right) + \alpha_4 ROA_{it-1} \quad (1)$$

Where:

NDA_{it} : Non-Discretionary Accruals for firm I in year t;

A_{it-1} : Total assets for firm i in year t-1;

ΔREV_{it} : Change in net revenues for firm i in year t;

ΔREC_{it} : Change in net receivables for firm i in year t;

PPE_{it} : Net property, plant and equipment scaled by assets;

ROA_{it} : Return on total assets for firm i in year t;

Where, $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ are industry-specific coefficients estimated from ordinary least squares (OLS) for all firms in our sample at time t

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right) + \alpha_4 ROA_{it-1} + \varepsilon_i \quad (2)$$

ε_i : The residuals from the regressions are used as proxy for discretionary earnings management.

Having estimated nondiscretionary accruals (NDA) from equation (1) above, the number of discretionary accruals (DA) for firm I for year t is calculated as the residual value from equation (3)

$$DA_{it} = TA_{it} - NDA_{it} \quad (3)$$

At the different point of time, managers have motives to inflate earnings ($DA > 0$) or deflate earnings ($DA < 0$) within the period, thus, DA value can be positive or negative depending on each company.

Age of CEO

Yin & Chun (2014) proposed that CEO age is one of the significant factors which impact on experience as well as behavior of CEO. In this research, the author expects the negative relationship between CEO age and earning management as same as prior studies expected such as Vroom & Pahl (1971), Yin & Chun (2014). Authors stated that older people tends to be more careful than young people. Iceoglu et al. (2012) showed that for the older people, the influence of rewards or rival motive is less attractive to them; in contrast, young people are more likely to be stimulated. It can also be understood that older CEOs also built a foundation for public responsibility, and cautious behaviors to avoid causing negative results to the job or the lack of positive work.

Additionally, Yim (2013) considered young CEOs who are between the age of 27 and 52 and Yim also believed that these young CEOs are less risk adverse than older CEOs. Moreover, Yim (2013), Yin & Chun (2014) all claimed that older CEOs are risk averse and less motivated to manage earnings than younger CEOs. In this study, director age is classified into five groups: under 36 years, 36–45, 46–55, 56–65, and over 66, following Mahadeo et al. (2012)². The information about CEO age is collected from annual reports, appointment decision or curriculum vitae of CEO.

Education level of CEO

According to Darmadi (2013), CEOs with post-graduate degrees have positive influence on company's performance. In the business where there are CEOs with post-graduate degrees, the financial reporting quality will be higher (Men T. L, 2016). There is a shortage of research which mentions the relationship between CEO education level and earning management of real estate company in Vietnam.

With respect to the education backgrounds of CEO, we find that 32 percent of sample firms have a CEO of a postgraduate qualification. Furthermore, 58 percent of CEOs completed at graduate qualification. Therefore, CEO education levels are classified following Darmadi (2013), in there, if CEO holding post-graduate degree has scale of 1, otherwise 0.

²This classification is following Mahadeo et al. (2012) because they also study in the developing countries. However, no director is over 76 in our sample firms, this subgrouping is not in the classification of director age.

CEO education level information is collected from the CEO's information on annual reports, particularly in the education progress section of CEO's resume.

Control variables:

Apart from the above-mentioned dependent variables, earning management of prior research was influenced by other factors (Yin & Chun, 2014). Thus, the study adds some other control variables to model in order to ensure that research results are more comprehensive when analyzed.

Return on asset (ROA)

According to Aygun et al. (2014) and Ali et al. (2008), company's performance is measured by ROA positively related to earning management, which means that the higher ROA of the company is, the higher earning management is. Dechow et al. (1995) showed that the company with high profit will have high earning management and vice versa. On the contrary, Jiang et al. (2013) pointed out that the company with high ROA will limit earning management.

Company size (SIZE)

This factor is measured by using logarithm of total assets of company. The company with high asset value always remains the prestige and trust, which attracts the attentions of investors, creditors, governments and analysts. This results in avoiding the implementation of earning management (Wuryani, 2012). Many studies have proved that the larger the size of company is, the less the earning management is (Ali et al., 2008; Wuryani, 2012; Swastika, 2013).

Financial leverage (LEV)

Financial leverage is measured by using total payable debt divided by total assets of the company. Financial leverage has a negative relationship with earning management (Naz et al., 2011; Jiang et al., 2013; Aygun et al. 2014), which means the higher debt of the business is, the lower level of earning management is. In the opposite side, Ali et al. (2008) argued that financial leverage has a positive relationship earning management.

Tab.1: Measurement of variables in the model

Variable	Description	Definition
Dependent variable		
DA	Earnings management	The value of discretionary accruals for firm i in year t.
Independent variables		
Age	Age of CEO	Under 36 years, 36–45, 46–55, 56–65, over 66
Education	Education level of CEO	CEO holds a postgraduate degree: 1. Otherwise: 0
Control variables		
ROA	Return on Total Assets	The ratio of Return on total Assets
SIZE	Firm size	The natural logarithm of total Assets in year t
LEV	The ratio of debt	The total liabilities on total Assets

Source: Compiled by authors

Sample and data

The data used in this research is collected from real estate companies listed on Vietnam stock market in the period between 2007 and 2016. This research chose the data from 2007 because there is a scarce of data before this time. Information released on Vietnam stock market before this period is unstable and inadequate. This research also eliminated some observations which have revenue, total assets, or market capitalization less than or equal to 0, or lack of data. This study filtered out 46 firms of real estate companies, corresponding to 388 observations in the period of 10 years, from 2007 to 2016.

This data was collected from information on the financial statements, annual reports and so on published on the website of HOSE, HNX and securities companies. From the regression results, the authors carried out analysis, evaluation and drew conclusions about the relationship between age of CEO, education of CEO and earning management.

Regression model

$$DA_{it} = \alpha + \beta_1 AGE_{it} + \beta_2 EDUCATION_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \varepsilon_{it}$$

RESULTS AND DISCUSSIONS

The author used SPSS 23 software to determine descriptive statistics, correlation analysis, multi-collinear testing, and regression analysis. The research model has 6 variables (1 dependent variable, 5 independent variables) within the period from 2007 to 2016.

Tab. 2: Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Earning management	388	.000051	2.10637	.11386	.15419
CEO age	369	32.00	71.00	50.3333	8.8572
ROA	388	-.1284	.4527	.04112	.05215
Company size	388	3.4995	8.2563	6.2134	.5895
Financial leverage	388	.0235	.8910	.50228	.1795
CEO with post-graduate degree	362	0	1	.35	.476
Valid N	362				

Sources: Author's calculation

The results in table 2 show that:

In real estate companies, DA variable has an average value of 0.113, the smallest value is 0.00005 and the maximum value is 2.1. It can be seen that earning management of each company is different, showing the non-uniformity of the performance of earning management of real estate companies on Vietnam stock market.

Age variable has an average value of 50.3 and standard deviation value of 8.8. It can be seen that the average age of CEO in real estate companies is about 50. With a relatively low standard deviation, it is implied that the range of CEO age is between 41 and 59. The youngest and oldest CEO are 32 and 71, respectively. For education, the result shows that 35% of CEOs have post-graduate degree.

Tab. 3: Descriptive Statistics

	Count	Rate
CEO under 36 years old	35	9%
CEO from 36 to 45 years old	112	29%
CEO from 46 to 55 years old	96	25%
CEO from 56 to 65 years old	136	35%
CEO above 66 years old	9	2%
Valid N (list wise)	388	100%

Sources: Author's calculation

As mentioned in table 3, the rate of CEO from 56 to 65 years old is highest (35%) and the rate of CEO above 66 years old is lowest (6%).

In SPSS 23, the author conducted a regression analysis amongst 5 groups of age with earning management; the result found the significance value of CEO from 56 to 65 years old statistically significant. This means that CEO from 56 to 65 years olds is associated with earning management.

Tab. 4: Correlations

		Earning management	CEO from 56 to 65 years old	CEO with post-graduate degree	ROA	SIZE	LEV
Earning management	Pearson Correlation	1	-.081	-.129*	.112*	-.051	.123*
	Sig. (2-tailed)		.110	.014	.027	.317	.015
	N	388	388	362	388	388	388
CEO from 56 to 65 years old	Pearson Correlation	-.081	1	-.347**	.079	-.151**	-.043
	Sig. (2-tailed)	.110		.000	.121	.003	.397
	N	388	388	362	388	388	388
CEO with post-graduate degree	Pearson Correlation	-.129*	-.347**	1	-.026	.223**	-.095
	Sig. (2-tailed)	.014	.000		.621	.000	.072
	N	362	362	362	362	362	362
ROA	Pearson Correlation	.112*	.079	-.026	1	-.059	-.094
	Sig. (2-tailed)	.027	.121	.621		.248	.065
	N	388	388	362	388	388	388
SIZE	Pearson Correlation	-.051	-.151**	.223**	-.059	1	.304**
	Sig. (2-tailed)	.317	.003	.000	.248		.000
	N	388	388	362	388	388	388
LEV	Pearson Correlation	.123*	-.043	-.095	-.094	.304**	1
	Sig. (2-tailed)	.015	.397	.072	.065	.000	
	N	388	388	362	388	388	388

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Sources: Author's calculation

Correlation coefficient of variables is described in Table 4. The results showed that there are no correlation coefficients of variables higher than 0.35 (the highest of 0.304). It can be confirmed that as using the regression model, it will be less likely to encounter the phenomenon of multicollinearity. For a more secure test, we also re-tested by using coefficient of VIF (Variance Inflation Factor) when running the regression and results revealed no phenomenon of multicollinearity (VIF<5) (Tab. 7).

Tab. 5: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.268 ^a	.072	.059	.153471300

a. Predictors: (Constant), Financial leverage, CEO with post-graduate degree, ROA, Company size, CEO from 56 to 65 years old.

Sources: Author's calculation

Tab. 6: ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.651	5	.130	5.532	.000 ^b
	Residual	8.385	356	.024		
	Total	9.036	361			

a. Dependent Variable: Earning management

b. Predictors: (Constant), Financial leverage, CEO with post-graduate degree, ROA, CEO from 56 to 65 years old.

Sources: Author's calculation

Table 5 and table 6 show that P-value = 0,000 less than $\alpha = 1\%$, which means that the variables in the model are statistically significant.

Tab.7: Coefficients

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.207	.090		2.305	.022		
	CEO with post-graduate degree	-.053	.019	-.158	-2.818	.005	.824	1.214
	CEO from 56 to 65 years old	-.056	.018	-.172	-3.115	.002	.853	1.172
	ROA	.412	.155	.137	2.657	.008	.984	1.016
	SIZE	-.019	.015	-.072	-1.325	.186	.877	1.140
	LEV	.107	.050	.114	2.126	.034	.903	1.107

a. Dependent Variable: Earning management

Sources: Author's calculation

As mentioned in table 7, the significance value of age (0.002) and significance value of education (0.005) are less than 0.05, which means CEO age and education are statistically significant with the reliability of 95%. Thus, H₁ and H₂ are supported, which means that CEO

age and education level have a negative relationship with earning management. Besides, ROA and financial leverage have a positive relationship with earning management, company size has a negative relationship with earning management.

The regression equation is written as follow:

$$DA_{it} = \alpha - 0.056AGE_{it} - 0.053EDUCATION_{it} + 0.412ROA_{it} - 0.19SIZE_{it} + 0.107LEV_{it}$$

CONCLUSION

The purpose of this research is to examine the impacts of CEO age and education level on earning management in real estate companies listed on Vietnam stock market. The authors used a sample of 46 real estate firms for the period 2007 - 2016, with a total of 388 observations. The results show that the CEO age and CEO education levels have a negative relationship with earning management. This means that the older CEO will have more limitations in earning management than young CEO, especially CEO from 56 to 65 years old because people belonging to this age group will be more likely to be careful compared with young people. This has led them to have less willingness to implement earning management. The results of this research help investors make the decision to invest in a company, investors need to pay attention to CEO age information. This is the useful information to help investors make the most optimal investment decisions. Assigning older CEOs will be more reliable than young CEOs, especially CEOs from 56 to 65 years old. The results also show that the higher the CEO's level, the more likely it is to limit the earning management of a real estate company because the level of education enhances the knowledge and understanding of the CEOs and helps the CEOs understand the areas of expertise and cognition. This also helps the CEOs avoid some behaviors which influence on their prestige. This result is consistent with the results of Huang et al. (2012), Iceoglu et al. (2012), Vroom & Pahl (1971), Yim (2013), Darmadi (2013) and Yin & Chun (2014).

In addition to independent variables, control variables such as ROA also has a positive relationship with earning management, which means the higher the ROA of company is, the higher the level of earning management implementation is. This finding is consistent with the prior studies by Ali et al. (2008), Aygun et al. (2014), Dechow et al. (1995). Besides, financial leverage has a positive relationship with earning management, which mean the higher financial leverage (debt ratio) is, the higher the level of earning management implementation is. The reason for that is to prove their good image to lenders in order to be able to borrow more debt

or maintain the debt term. This finding is consistent with the study by Ali et al. (2008). Also, the size of the company has a negative relationship with earning management, which means the company with larger size will limit the level of earning management of managers in real estate companies listed on Vietnam stock market. Real estate is a valuable asset. Companies with larger assets always maintain their prestige and credibility in order to attract the attention of their target in order to maintain the reputation of the company. Therefore, it is difficult for managers to implement the earning management. This finding is consistent with the studies by Ali et al. (2008), Wuryani (2012), Swastika (2013).

LIMITATION AND FUTURE RESEARCH

This research provides some useful evidence for real estate companies to choose the CEOs. In the future, research will improve the value of the paper by interviewing experts on earning management, doing surveys amongst the accountants in real estate companies to find out the causes as well as the motives for earning management regarding to real estate companies. From the above limitations, future research could concentrate on the other research objects in the different industries so as to make comparisons amongst different industries, different periods of time. In addition, future studies need to add other independent variables to the research model, as 91.7% of the change in earning management is explained by other factors in order to give the more adequate and persuasive conclusion.

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TRANSPORT ECONOMICS, CONNECTIVITY BETWEEN ASIA AND EUROPE BY RAIL AND ITS COMPARISON TO OCEAN SHIPPING: THE FOCUS ON THE LANDLOCKED HINTERLAND OF THE CZECH REPUBLIC - QUALITATIVE CASE STUDY

Petr Kolar

Abstract

Purpose: Since the 2000s, Trans-Asian Railway (TAR), including the links of Trans China Railway (TCR) and Trans-Siberian Railway (TSR), started to serve as inland transport routing alternative to the predominant container shipping on the maritime Royal Route (RR) between Far East Asia and Europe. However, once aiming on further integration of all the segments in order to speed up transit times, reduce high transport costs compared to maritime RR, these complex Eurasian intermodal transport chains face challenges.

Design/methodology/approach: Based on qualitative data analysis of empirical data resulting from semi-structured in depth interviews of key actors in the Czech Republic, the paper examines the perception of container inland transport chains by a diverse set of market players that are active in such a landlocked market in Central and East Europe (CEE).

Findings: Study findings show that intermodal transport via TAR is offered by a relatively limited number of service providers to a limited number of cargo beneficiaries originating from industries such as automotive or electronics where transport cost account for relatively lower share of the product's sales price. From business perspective, the providers neglect its high service time reliability compared to seaborne RR.

Research/practical implications: The geographically scoped case study results provide empirical evidence that may help exporters and importers that demand complex services by logistics providers to better comprehend dynamic transformation in cargo routing options and logistics service providers' regionally applied strategies.

Originality/value: The paper investigates the position taken by ocean carriers and freight forwarders as their customers and competitors in regard to TAR links. The paper empirical primary data analysis and findings complement, question and challenge preconditions and conclusions by reviewed literature dealing with Trans-Asian Railway and its linkage to Belt Road Initiative framework as emerging subject of research in the field of transport geography and transport economics.

Keywords: Belt Road Initiative, container, hinterland, Trans-Asian railway, transport economics.

JEL Codes: L91, M21, R40.

INTRODUCTION

Global transportation of the containerized goods exports and imports highly depends on maritime shipping (Bernhofer, El-Sahli & Kneller, 2016). For containerized freight distribution, road haulage and rail (or air cargo for high-value goods) play a vital and complementary role of intermodal door-to-door transportation while using different cargo routings for different cargo beneficiaries (Rodrigue, 2017).

Most quantitative or qualitative transport research papers and studies focus on the European intermodal transport markets with direct access to maritime ranges but completely neglect inland markets and hinterlands (De Langen, 2007). However, in the case of landlocked markets, beneficial cargo owners, transport providers and intermediaries such as freight forwarders face a different mix of additional constraints while participating in the global supply chains (Lam & Gu, 2015). The issues include for instance lack of economies of scale due to relatively smaller traffic volumes between seaports and CEE hinterland origins and destinations, involvement of a higher number of market players in the transport chain, more distant consumption and production centres together with lower competition levels for transport providers and intermediaries.

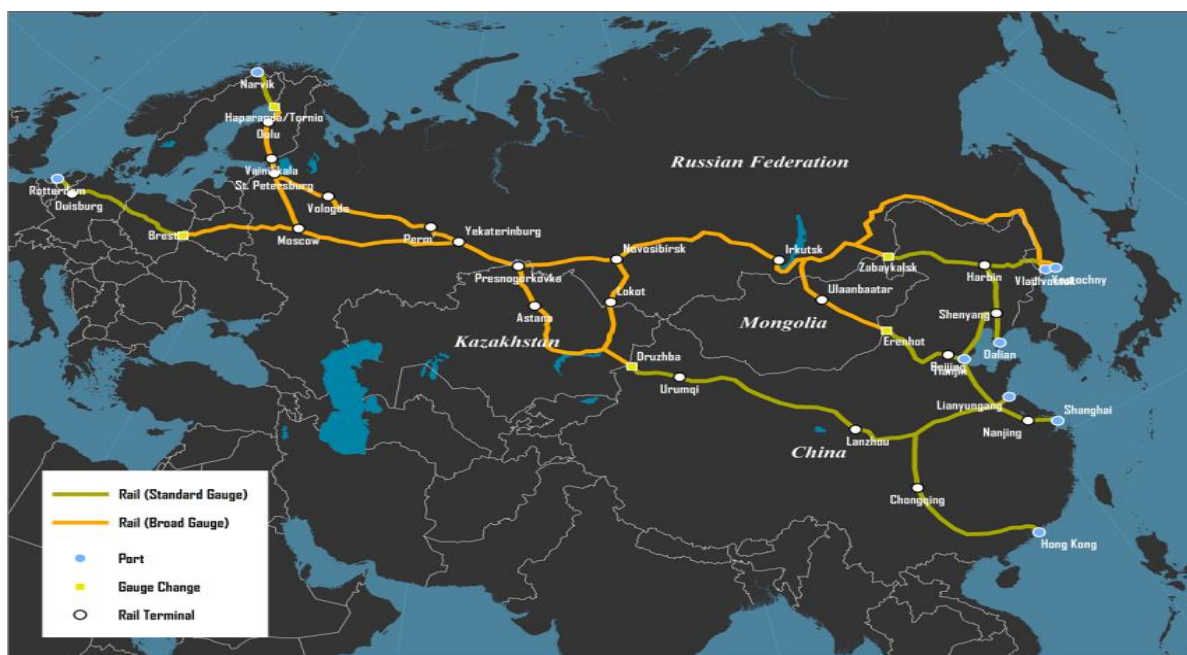
In recent years, TAR started to act as a vital routing alternative for intermodal transportation between Far East Asia and European markets. Under the TAR, there are different existing classifications and routing descriptions that include (Song & Na, 2012):

- Trans-Siberian Railway (TSR) together with additional connections via Baikal Amur Mainline (BAM), Trans Manchurian Railway (TMR) or Trans Mongolian Railway (TMGR) and
- Trans China Railway (TCR) connecting to New Eurasian Land Bridge (NELB) established in 1992.

For the TAR illustration, see Figure 1. In regard to intermodal transport between Far East Asia and Europe, container shipping via RR (and Suez Canal) with the length of 22,000 km is the most dominant transportation mode covering almost all Twenty-foot-Equivalent Units (TEU) that are shipped on this route annually (UNCTAD, 2015). The key Far East Asia hub container

ports include Shanghai, Hong Kong, Tianjin, Ningbo, Pusan or Kobe. In Europe, the key container shipping origins and destinations are Rotterdam, Antwerp, Hamburg and Bremerhaven with a port to port transit time ranging from 26 to 35 days (Rodrigue, 2017). Regarding TAR links, intermodal rail operators are primarily active within TSR and NELB connecting the People's Republic of China (PRC) inland economics centres via Kazakhstan, Russia and Belarus with Poland and Germany (Arduino, 2016).

Fig. 1: Asia – Europe transport connectivity by rail



Source: Rodrigue, 2017 (online)

The paper aims to question the apparent view on TAR as rather constrained alternative to RR while geographically scoping the case study on the area neglected in the aforementioned studies and reports, namely European landlocked hinterland with a focus laid on the crossroad market of the Czech Republic. Additionally, it illustrates the importance of TAR as part of the Belt Road Initiative (BRI) development framework which was introduced and asserted by Chinese government (NDRC, 2015) and is one of the key driving forces of Chinese global investment activities (Du & Zhang, 2018) while already affecting the international trade routings and patterns both within and outside Asia (Lee, Hu, Lee, Choi & Sung, 2018).

Table 1 provides numbers on the latest development and comparison of rail door-to-door (terminal-to-terminal) transit times for Forty-Foot Equivalent Unit (FEU) booked as Full Container Load (FCL) Freight-of-All-Kind (FAK) between PRC ports or inland destinations

and the Czech Republic while comparing RR to NELB and TSR. Currently, most operated rail services connect the terminals in the PRC and the rail hubs in Germany where the containers are transhipped to the rail shuttle between German terminals and the ones located in the Czech Republic.

Tab. 1: Comparison of selected routings and their door to door transit times

Routing	Transit time NELB/TSR (days)	Transit time including RR and all modes (days)
Zhengzhou (PRC) via NELB – Frankfurt (DE)	17	30-37
Chongqing (PRC) via NELB – Duisburg (DE)	16	32-36
Shanghai (PRC) via NELB – Prague (CZ)	17	33-40

Source: DB Schenker, 2016, Rodrigue, 2017

METHODOLOGY

The qualitative approach was selected since the research subject and related issues are complex. Additionally, it appeared useful to alternate between the empirical field and different theoretical frameworks in order to enable additional comprehension of the research subject (Yin, 2003).

Qualitative research application

A qualitative methodology based on a limited set of interviews is applied to answer the research questions (RQs) and to better address the perception of the research subject by different managers representing different organizations, companies and bodies (McCracken, 1988). The managerial perspective was chosen to identify the points of view by managers of various market players related to intermodal transports between Far East Asia and the Czech Republic. The purpose of the paper is to establish how TAR (and BRI projects respectively) is perceived by different market players. Therefore, the study aims to answer the following three research questions:

- RQ 1: What are the perception of TAR and general knowledge of BRI by intermodal transport market top management representatives?

- RQ 2: How are the competitive pricing, service time reliability and door to door transit time important in terms of TAR products positioning compared to RR shipping connecting Far East Asia with the European landlocked hinterland?
- RQ 3: How can be current TAR advantages strengthened and disadvantages reduced in comparison to RR and other routing alternatives?

Interviewees

The author applied judgmental sample qualitative research technique to select the most efficient sample of interviewees to answer the defined RQs. This intellectual pragmatic strategy is based on the researchers' knowledge of the research field from practical perspective, available literature and the defined methodology for the research study itself (Glaser and Strauss, 1967).

To address the RQs, semi-structured interviews were carried out as expert interviews including questions about different sub-topics within the TAR and the BRI focus. For a set of narrowly defined research questions (RQs), such a qualitative research approach is sufficient (McCracken, 1988).

Empirical primary data was collected through these expert interviews. For the study, the research subject questioned in the interviews was structured into the following areas:

- Overall knowledge of TAR and BRI by top management representatives.
- Specification of the company's position in the intermodal transportation market including maritime (RR) and non-maritime transport options (TAR).
- Perception of TAR from the perspective of the market competition, service complementarity substitution and service characteristics.

Since the data obtained from these interviews was comprehensive in terms of information, qualitative data analysis by Creswell (2007) was applied. It consists of the following steps:

- Data collection (interviews supplemented by business-to-business marketing presentations, web pages information and company documents).
- Data organization.
- Preliminary listening to recordings and notes reading.
- Data classification and analysis.
- Representation and outcome.

The analysis was conducted to understand relevant transport processes linked to TAR and TSR from the perspective of the service provider (supply) or customer (demand) managers. Furthermore, data was validated through triangulation by using not only recordings and insights from the interviews, but also from observations of official available companies' documents (in print or electronically), information from companies' website or their business-to-business event presentations.

The limited sample of representatives is always purposeful while the interviewees are selected by the researcher according to the needs of the study. The pivotal part of such selection is the belief of the researchers that the interviewees have broad general knowledge of the subject or the relevant experience (Morse, 1991). Table 2 illustrates the selected interviewees' distribution. The author contacted two key ocean carriers acting as multimodal transport operators (MTO) on Far East Asia – Czech Republic intermodal routes including the RR, PRC or Far East Asia and doing business in the Czech Republic, two ocean carriers with the dominance of merchant haulage, two of the globally biggest freight forwarders and two global cargo beneficiaries having production and distribution facilities in the country.

Tab. 2: Interviewees, company position, type of interview

Original title of position	Organization	Type of interview
Country top manager	Ocean carrier (OC 1)	Personal
Country top manager	Ocean carrier (OC 2)	Personal
Country top manager	Ocean carrier (OC 3)	Personal
Operations manager	Ocean carrier (OC 4)	Personal
Ocean-freight head	Freight forwarder (FN 1)	Personal
Country FCL manager	Freight forwarder (FN 2)	Personal
Procurement manager	Cargo beneficiary (CB 1)	Personal
EMEA SCM director	Cargo beneficiary (CB 2)	Personal

Source: author

Firstly, the author explained the research objective. Secondly, the design of the interview was communicated. At the start of the interview, grand-tour question were asked. This type of questions enables the in-depth interpretation during the subsequent interview analysis process (McCracken, 1988).

In total, there were eight personal interviews, lasting from 41 minutes to 115 minutes at the premises of the interviewees and based on their available time frames. With the permission of

the interviewees, the interviews were recorded. Besides the recording, the interviewer took notes and made observations. The interviewees were also encouraged to share information they considered as relevant for the research from their point of view. The objective of this approach was to find out their opinion about what is important and whether the researcher should look closer into other aspect related to the RQs.

The applied interview structure consisted of three main sections. In the first sections, the research motivation was explained. Secondly, the design of the interview was communicated. Thirdly, a predefined set of open-end questions per RQs was asked. An open-ended characteristics keep the flexibility and freedom of an interview. The semi-structured form enables the interviewees to focus on specific and key issues. Moreover, similar questions in different forms were asked to guarantee the consistency of the received information. Overall, the interview recordings increased the reliability of this study while easing its coding and the follow-up qualitative data analysis. All eight interviewees and the interviewer are Czech, therefore the interviewees decided to give the interview in Czech language. The transcripts were read two to three times. Besides, the interviews were transferred to MAXQDA, a qualitative analysis software tool (Hatani, 2015). Other information used in the coding came from the field notes taken and observations made during the interviews. In the following section, we present primarily findings from these interviews.

RESEARCH FINDINGS: BASIC HIGHLIGHTS

The key research results of the qualitative analysis using the MAXQDA are briefly discussed below given the article extend scope limitations. Regarding RQ 1 focusing on general knowledge of TAR and BRI, all interviewees are familiar with Asia-Europe rail links of NELB as seen in their transcribed and key worded responses to the related sub-questions. They referred “BRI” term (abbreviated and explained) to the very same current rail connections. However, with notable exception of OC 3 and CB 1, none of the interviewees made any reference or knowledge of BRI linked to the word “initiative” nor to a development strategy or framework term launched and applied by Chinese government. CB 1 is familiar with BRI as a strategic development term since it is a global company closely linked and regularly communicating with Chinese operators and local government representatives. CB 2 showed in depth knowledge of current TAR rail links alternatives. FN 1 offers its service both on RR and TAR. Therefore, it is well informed about current service possibilities including NELB and

TSR. Based on the responses analysis, regional knowledge of BRI term and its limited understanding challenges the BRI global visibility within the transport industry and outside the policy makers domain stated by reviewed authors (Arduino, 2016, Lee et al., 2018).

With the sub-questions addressing RQ 2, all interviewees stated pricing and limited available capacity of TAR routing alternatives being its long-term major disadvantage or shortcoming compared to RR. Such responses support the research preconditions by Du & Zhang (2018) regarding the inland modes freight prices and their capacity limiting the TAR competitive potential to maritime shipping between Far East Asia and Europe. Only FN 1, CB 1 reported TAR time reliability as its major advantage comparable to transit time while all interviews quoted a shorter transit time as the most important competition factor. All but OC 2 (having empty containers lease contract with one key local customer for TAR Europe – PRC export routing) and CB 1 were not aware of TAR higher transit time reliability compared to RR routings linking Chinese and Mediterranean or North Sea Range ports. OC 1, OC 2, OC 4 as well as both FNs and CBs agreed, that once transit time is shorter and cargo is characterized as high-value, TAR alternatives will find customers from industries such as electronics or automotive. Therefore, the study results question the universal type of cargo potential shipped via TAR as stated in Lee et al. (2018). OCs have such information from their customers that regularly contact them to quote RR option while monitoring if they plan to act as MTOs there in future.

While discussing the areas related to RQ 3, FN 1 and FN 2 expressed the necessity to increase flexibility and level of competition in the market of rail operators offering NELB and TSR service if TAR service providers want to attract more Less-than-Container-Load (LCL) shipments and spot customers represented mostly by small enterprises. In this regard, they find a long-term TAR competitive edge in LCL shipments while combining NELB and TSR rail links with air transportation via cargo hubs in Central Asia countries such as Kazakhstan, Iran or Russia. CB 1 questioned a trade-off between increased TAR competition, TEU turn over and capacity (generating possible congestions) and drop in transit time reliability. FN 1 and CB 1 mentioned the issue of distinct Chinese business and political culture being one of the key communication bottleneck while negotiating and organizing cooperation with local service providers in the long term.

Table 3 illustrates the individual importance of RQs as perceived by interviewees with key factors being time and number of characters while responding to the RQs and their sub-

questions delivered by MAXQDA. The most important RQ by time and number of characters is highlighted (X).

Tab. 3: Individual perception by interviewees – RQ by time frame (recording) and number of characters (transcripts)

Interviewee's organization	RQ 1	RQ 2	RQ 3
OC 1	X		
OC 2		X	
OC 3		X	
OC 4			X
FN 1		X	
FN 2		X	
CB 1		X	
CB 2			X

Source: author using MAXQDA, 2018.

By far, most interest among the interviewees drew RQ 2 and its related sub-questions. It was relatively narrow structured compared to other RQs. Besides, it included gravitating and multiple times by interviewees mentioned key words “pricing” (8 to 12) and “time” (10 to 13). Regarding relative nonimportance of RQ 1 addressed by the interviewees, the limited or vague understanding of BRI by industry professionals can be identified as the key determinant for their inability to elaborate on RQ 1 outside the TAR related sub-questions. Summarizing the RQ 3 relatively short (time-wise and number of characters-wise) responses, all interviewees were prompt to identify the TAR disadvantages' determinant. Yet, they were not specific regarding the tools or strategies to mitigate TAR disadvantages while further promoting its proven business advantages such as streamlined customs processes in terms of e-customs potential, rail transport e-bills of freight credibility or easy and relatively non expensive tracking technologies compared to maritime shipping options (Choi, Moon, Kim, Lee, Lee & Shin).

CONCLUSION

The geographically scoped empirical findings show that intermodal transport via TAR is offered by a relatively limited number of service providers to a limited number of cargo beneficiaries originating from industries such as automotive or electronics where transport cost account for relatively lower share of the product's sales price. TAR's main advantage is considered to be shorter door-to-door transit time while neglecting its high service time reliability compared to seaborne RR nowadays.

Based on current usage and potential of TAR rail links, is it important to reveal the dynamics and perception of this set of intermodal transport options from the perspective of inland logistics markets and their players located in the European landlocked hinterland since they generate substantial demand for TAR that in turn plays a pivotal role in the BRI initiative.

Although the qualitative research study has been limited to a sample of diverse intermodal transport market players in the Czech Republic, the results provide useful empirical evidence that can help cargo beneficiaries and trade intermediaries demanding or offering inland intermodal services to better understand ongoing changes in cargo routing and transport service provider strategies. Besides, the interviewed managers represent only multinational companies so that opinions of small and medium-sized companies are missing. On the other hand, such a sample of the EU member state economy located between such mature transport and logistics markets such as Germany or the Netherlands and emerging ones such as Ukraine or Belarus illustrates typical market structure controlled by transport and logistics service providers headquartered in Western EU member states.

Future research should focus on the cargo beneficiaries in particular and how to improve their awareness in regard to TAR advantages based on quantitative data. More empirical data needs to be collected from a cargo beneficiary perspective outside transportation service provision, its planning, organization and pricing. Further research could be done in order to develop a quantitative methodology and to conduct the quantitative assessment if possible. Such quantitative data must include in detail information on portfolio of goods being shipped and associated total supply chain cost structure.

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ASSET-LIGHT STRATEGY, MANAGERIAL ABILITY AND CORPORATE PERFORMANCE OF THE ASIAN TELECOMMUNICATIONS INDUSTRY

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Abstract

Purpose: This paper examines the effects of the asset-light strategy on the corporate performance of Asia listed telecommunications corporations. Further, this paper aims to investigate how managerial ability affects the association between the asset-light strategy and corporate performance.

Design/methodology/approach: The asset-light valuation model is employed to evaluate the degree of asset-light operation. Then, this study develops and integrates the dynamic slacks-based measure (DSBM) model and Tobit regression to measure managerial ability.

Findings: The empirical results show that the asset-light strategy positively affects corporate performance. Moreover, the results also reveal that managerial ability has a significant moderating effect on the relationship between the degree of asset-lightness and corporate performance. The findings further show that the greater the managerial ability, the stronger the relationship between the DAL and corporate performance.

Research/practical implications: First, this study extends prior research on the use of the asset-light strategy to a unique industry, which is the Asian telecommunications industry due to its rapid growth. Second, we make the first attempt to test the moderating effect of managerial ability on the asset-light strategy and corporate performance nexus.

Originality/value: Overall, the study makes the first attempt to test the moderating effect of managerial ability on the asset-light strategy and corporate performance nexus.

Keywords: Asset-Light Strategy, Managerial Ability, Dynamic Slacks-based Measure, Corporate Performance, Asia Telecommunications Industry.

JEL Codes: L1, L25.

INTRODUCTION

Corporations must develop the ability to sustain competitive advantage under greatly changing environments (Eisenhardt and Martin, 2000). This study analyzes how well Asian

telecommunication corporations continuously manage, act and allocate resources to ensure their survival or growth. According to the International Telecommunication Union's report³, mobile phone penetration grows substantially from 12% in 2000 to 67.9% in 2009. There are 2.7 billion people worldwide who can connect to networks via a fixed internet or mobile internet as of the end of 2013.⁴ The Asian telecommunications market not only has great potential, but it poises for rapid development. Similarly, the Crisil Research Corporation⁵ indicates that when more Asian telecommunications corporations launch 3G services, the number of subscribers will increase considerably.

Generally, most of the corporations are facing serious challenges along with the changes in telecommunications market (Lee, 2011; Schweizer, 2006). Traditionally, managers' primary objective is to maximize the interests of its shareholders, and this is also meant for corporate value's maximization. Moreover, managers would also set a goal to create the greatest possible benefits under the limited available resources in the corporations. In other word, fully utilizing the corporate resources is the key to improving corporate performance. Liou (2011) further argues that the limited available resources of the corporations are not only limited to tangible assets or intangible assets, which are recognized in the statement of financial position, but also including the intangible strategic resources. Obviously, these intangible strategic resources, such as corporate brand, customer relationship, and operating strategy are not disclosed in the financial statement.

As shown in Gannon, Roper, and Doherty (2010)'s study, they find that the asset-light strategy creates valuable equity and opportunities in international hotel companies (IHCs). Subsequently, Liou (2011) concludes that the asset-light strategy generates competitive advantage in the telecommunication industry, especially in the wireless communication industry. More recently, Wen, Huang, and Cheng (2012) examine the asset-light strategy influences sustainable competitive advantage in Japanese semiconductor corporations and reveal that semiconductor corporations would have achieved better corporate performance and increased capital investment through the asset-light strategy. It can be seen that key resources

³ Please refer to the report of International Telecommunication Union (ITU) 2010, page 79. https://www.itu.int/ITU-D/ict/publications/idi/material/2010/MIS_2010_without_annex_4-e.pdf

⁴ Please refer to the report of International Telecommunication (ITU) 2013. https://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013_without_Annex_4.pdf

⁵ https://www.crisil.com/Ratings/Brochureware/News/CRISIL-Research-corp-profitability-pr_250313.pdf

which can create competitive advantage and corporate value have been transformed from tangible assets into intangible assets.

However, a virtual network corporation in U.K has been struggling under an intensely competitive environment when the corporation focuses on using asset-light strategy when it raids the European market.⁶ Therefore, the key issue here is asset-light strategy dominant and playing a significant role in improving corporate performance?

Most of the previous studies (Gannon et al., 2010; Liou, 2011; Wen et al., 2012) limit their studies on the asset-light strategy and corporate performance. This paper improves from the literature by adding a moderating effect of managerial ability in the study. Chen, Podolski, and Veeraraghavan (2015) document that managerial ability is a driving factor to corporate success. Moreover, in recent years, rapid economic change has led to globalization and knowledge-intensive products (Ahuja, 2011). Additionally, Bertrand and Schoar (2003) agree that manager-specific features (managerial style, managerial ability, talent, and reputation) affect economic outcomes. Furthermore, Demerjian, Lev, and McVay (2012a) confirm that higher-ability chief executive officers can enhance the operating process or improve corporate performance. They also suggest that high managerial ability can improve corporate performance. However, to the best of our awareness, there is a noticeable absence on asset-light strategy, managerial ability and corporate performance in one go. Thus, this paper seeks to fill the gap. Following Demerjian et al. (2012a), this study employs MA-Score to measure managerial ability and further investigates how managerial ability affects the relationship between the asset-light strategy and corporate performance.

This paper contributes to the debate of asset-light strategy from several dimensions. First, this study extends prior research on the use of the asset-light strategy to a unique industry, which is the Asian telecommunications industry due to its rapid growth. Second, we make the first attempt to test the moderating effect of managerial ability on the asset-light strategy and corporate performance nexus. Third, this study employs market value added (MVA) as proxy of corporate performance to examine the impact of asset-light strategy on corporate performance. It is hoped that the findings of this study could serve as an indicator in assessing the association between asset-light strategy, managerial ability and corporate performance for the Asian telecommunications industry.

⁶ Global Insight. 2006. World: Global telecoms predictions for 2007. http://www.gei.it/UserFiles/pubblicazioni/rossi/Telecoms_2007.doc. (accessed January 7, 2011).

LITERATURE REVIEW

Asset-light Strategy

Empirical study has classified corporate assets into two types, heavy and light assets (Liou, 2011). In general, heavy assets are defined as the assets that have been reported in the statement of financial position. Meanwhile, some examples of the light assets are including goodwill and intangible assets (e.g. patents and trademark rights) and there are not disclosed in the statement of financial position. Amit and Schoemaker (1993) further explain that corporation's operating strategy, marketing and innovative ability, corporate brand, human resources, organizational learning ability, distinctive competence, and relationship resources are considered a part of the asset-light strategy. Consistently, Wernerfelt (1984) highlights that light assets must be rare and imperfectly imitable, without strategically equivalent substitutes, and have unique ability. Precisely, the purpose of implementing asset-light strategy is to minimize physical resources, utilize them wisely and effectively while increasing corporate profitability. Consistently, Wang et al. (2017) explain that taking full advantage of limited resources should be the main goal in a business as efficient management of limited resources means better performance.

Barney (1991) emphasize that the resource-based approach is an important factor for corporate performance. According to the resource-based approach, well controlled of strategic resources will lead to corporation's competitive advantage. The approach makes two assumptions. The first assumption is that the corporation's resources are heterogeneous, and it gains competitive advantage by owning specific resources that others lack. The second assumption is that the resources cannot fully flow between the corporations, thus heterogeneity is maintained. In the other words, the competitive advantage can be sustained. As a summary, intangible assets have become the key resources to enhance the competitive advantage and corporate value in a corporation.

In term of the measurement of asset-light strategy implementation, Liou (2011) suggests two indicators: either the light assets' dollar value or the degree of asset-lightness. This study adopts the degree of asset-lightness as the proxy as it represents the corporate ability to generate intangible value with physical assets in place.

Managerial Ability

Managerial ability is a key mechanism in realizing the congruence between changing environmental conditions and corporate's competency (Adner and Helfat, 2003). Tripsas and

Gavetti (2000) point out that managers are the key person in recognizing new technologies and product applications, redefining corporation's growth, improving corporation's competitiveness, and creating opportunities. Adner and Helfat (2003) further emphasize that managers can integrate and operate corporate competencies and resources efficiently. Therefore, managerial ability is certainly the essential driver within corporations.

Empirical studies use different proxies of managerial ability produce mixed results. Fee and Hadlock (2003) adopt prior industry-adjusted stock returns as a proxy for managerial ability. The study concludes that CEOs who generate high returns are more likely to be hired away and will receive higher salaries at new corporations. Rajgopal, Shevlin, and Zamora (2006) use prior industry-adjusted return on assets as a measure of managerial ability and find that managerial talent positively influences outside employment opportunities. On the other hand, Tervio (2008) employs executive pay to infer managerial ability directly to measure managerial ability and suggests that CEO effects on corporate performance depends on corporate characteristics. Meanwhile, Leverty and Grace (2012) adopt DEA method to estimate the managerial ability and the finding show that high-ability managers are positively related to lower likelihood of bankruptcy.

Additionally, Francis, Huang, Rajgopal, and Zang (2008) reveal that corporate size is one of the influential factors when evaluating the effects of managerial ability on corporate performance. They confirm that medium-ability managers of larger-size corporations may have better performance than better-ability managers of small-size corporations. Recently, Demerjian et al. (2012a) develop and combine traditional DEA and Tobit regression to find out the corporate efficiency as a measure of managerial ability. They highlight that this measure of managerial ability is better than existing proxies since it can distinguish the effect of the manager from the effect of the corporation and contains less noise than existing proxies of managerial ability. Thus, this study develops and integrates dynamic SBM (DSBM), instead of traditional DEA, and Tobit regression (Demerjian et al., 2012a; Demerjian, Lev, Lewis, and McVay, 2012b) to estimate MA-Score, which is a measure of managerial ability.

Corporate Performance

Since 1950s, researchers have been increasingly interested in examining the antecedents of corporate performance. The goal of a corporation is to make money and add value for the owners. Hence, maintaining and improving corporate performance is the main key to strike for

corporation's goal. Furthermore, corporate performance is a good indicator to measure its achievement as it can quantify a corporation's history and value, presenting its current operating situation within society and planning strategies for the future. It can also help to achieve managerial success and continuous improvement in corporations (Achterbergh, Beeres, and Vriens, 2003).

Prior studies have employed several accounting-based approaches as a proxy of corporate performance, including ROE (Wan, 1998), return on sales (ROS) (Geringer, Tallman, and Olsen, 2000), ROA (Krivogorsky, Grudnitski, and Joh, 2013), ROIC (Liou, 2011), and net income (Lahiri and Narayanan, 2013). Generally, corporations apply accounting-based proxies to evaluate the effectiveness of management (Hsu, 2006). However, recent studies have advocated the use of value-based analysis methods since they can reflect the market reaction. These include Tobin's Q (McGahan, 1999) and the market value added (MVA) approach (Hawawini, Subramanian, and Verdin, 2003). Hawawini et al. (2003) indicate that most accounting-based measures cannot reveal value maximization. The findings also show that MVA is better than ROA. With that, this paper employs MVA as a proxy of corporate performance.

Hypotheses Development

Effects of the asset-light strategy

There are many studies discussed the asset-light strategy and corporate strategy from different dimensions. Gannon et al. (2010) examine the influence of the asset-light strategy on international human resource management practices in International Hotel Companies (IHCs). They support that the asset-light strategy creates valuable equity and opportunities in IHCs. Consistently, Liou (2011) examines the impact of asset-light operations on corporate performance in the telecommunications industry. The findings demonstrate that the asset-light strategy generates competitive advantage in the telecommunication industry, especially in the wireless communication industry.

Subsequently, Wen et al. (2012) investigate how the asset-light strategy affects sustainable competitive advantage in Japanese semiconductor corporations. The findings show that semiconductor corporations have achieved better corporate performance with the increment of capital investment through the asset-light strategy. Sohn, Tang, and Jang (2013) propose that disposing fixed assets has a positive impact on corporate value. In other word, the corporation

should have enhanced asset-light strategy and less dependency on fixed assets to increase its value. They find consistent results in year 2014 when the study was extended to hotel industry in U.S. Sohn, Tang, and Jang (2014) confirm that the efficient management of core intangible assets act as driving forces to corporation growth. Similarly, Wang et al. (2017) point out asset-light strategy significantly enables global airlines to have better corporate performance. Hence, this study proposes the following hypothesis:

Hypothesis 1: The asset-light strategy is positively related to corporate performance.

The moderating role of managerial ability

Many previous studies have confirmed that managerial ability has important influence on corporate structure decision. The study of Bertrand and Schoar (2003) show that manager ability has fixed impacts on corporation's Research and Development (R&D) activity. Dyreng, Hanlon, and Maydew (2010) further illustrate that aggressive managers are likely to influence the corporate effective tax rate (ETR). From corporation's earnings perspective, the Chief Finance Officers' (CFO) individual styles is found to be affecting corporations' choice of accounting principles or financial reports (Ge, Matsumoto, and Zhang, 2011). In other words, the quality of corporations' earnings can be altered by their CFOs.

Tan and Jamal (2006) highlight that a high foresight manager is more likely to smooth earnings than a low foresight manager and reduce accounting discretion. Demerjian et al. (2012a) recommend that capable manager is related to higher earnings, accruals persistence, higher quality accrual estimations, and fewer subsequent restatements.

Previous findings have mentioned that managerial ability is expected to show peculiarities in corporate performance from different dimensions. Ample evidence supports the relationship between managerial ability and corporate performance. However, minimal attempts have been made to empirically examine the moderating effect of managerial ability in the relationship between asset-light strategy and corporate performance. Moreover, absence is evident in the monitoring role of managerial ability. Therefore, the present study makes an early attempt to extend this line of inquiry by exploring the moderating role of managerial ability on the impact of asset-light strategy on corporate performance. Thus, the following hypothesis is proposed:

Hypothesis 2: The greater the managerial ability, the stronger the relationship will be between the asset-light strategy and corporate performance.

RESEARCH DESIGN

Samples and Data Collection

A large dataset from the COMPUSTAT database (wireless and landline telephone communications corporations) is gathered to examine the above hypotheses. Some data is hand collected from annual reports and websites. The initial sample is based on the 76 Asian telecommunication corporations listed in the COMPUSTAT database for the period of 2007 to 2012. The study excludes 2 samples due to the incomplete information. At last, the study finalizes 74 public listed companies for 6-year period with full data available as our sample. The final sample comprises 444 corporation-year observations.

Measure of Asset-light Strategy

Following Liou (2011), this paper uses the degree of asset-lightness (DAL) as a proxy of the asset-light strategy. Moreover, the study follows the asset-light business model which is developed by Tang and Liou (2010). The model combines both DuPont equation and financial ratios. Traditionally, researchers use the following financial ratios as a measure of corporate performance: (i) *Liquidity Ratio*: It is to measure the short-term liquidity of a corporation; (ii) *Debt Ratio*: It is to measure the appropriate structure of capital and debt; (iii) *Profitability Ratio*: It is to measure corporate profitability; (iv) *P/E ratio*: It is to predict the stock price. (v) *Return on Equity (ROE)*: It is to measure the net income generated by shareholders' equity. However, ROE does not consider debt and undervalues the actual invested capital. Therefore, this study improves the limitation of the previous measurements by employing *Return on Invested Capital (ROIC)* which is modified from ROE as the book rate of return. This study also evaluates the degree of asset-lightness (DAL) with the following equations:

$$ROIC = \frac{NOPLAT}{IC} \quad (a)$$

where $NOPLAT = EBIT \times (1 - t) + \text{Deferred income tax (if it exists)}$; $t = \text{Tax expense/Pre-tax income}$, and $IC = \text{Net fixed assets} + \text{Net working capital} + \text{Other assets} = \text{Total assets} - (\text{Account payable} + \text{Other current liabilities})$ and

$$WACC = \frac{D}{D+E} \times R_d \times (1-t) + \frac{E}{D+E} \times R_e \quad (b)$$

where Rd (Cost of debt) = Interest expense/(Short-term debts + Long-term debts); Re (Cost of equity) = Risk-free interest rate⁷ + Beta $\times$ Risk premium.

The Weighted Average Cost of Capital (WACC) represents the opportunity cost of resources deployed to create future returns. If $ROIC$ is greater than $WACC$, this means that corporate performance is good. In contrast, if $ROIC$ is less than $WACC$, this means that corporate performance is poor. The $WACC$ reflects the risk of capital resources under the efficient market. Corporations can also deposit money in banks and receive the risk-free rate (r) if they do not invest capital in heavy or light assets to earn returns of $ROIC$. Liou (2011) indicates that if corporations choose to invest capital in heavy or light assets, then $ROIC$ (output) should be greater than cost (input) plus the risk-free rate. Hence, corporate value, which is estimated based on excess return, should not be less than the book value of fixed annual deposits (Liou, 2011). Equation (c) reveals the relationship between $ROIC$, $WACC$ and r :

$$\frac{ICA}{(ROIC - WACC)} \geq \frac{ICB}{r} \quad (c)$$

where ICA denotes the real value of the deployed assets, ICB denotes the book value of the deployed assets, equal to total assets minus intangible assets, and r is the risk-free interest rate. Rearranging Equation (c), this paper calculates ICA using Equation (d) as follows:

$$ICA \geq \left(\frac{ROIC - WACC}{r} \right) \times ICB \quad (d)$$

which is equal to Equation (e):

$$ICA \geq \frac{1}{r} \times ICB \times (ROIC - WACC) \quad (e)$$

Equations (d) and (e) show that ICA increases when the ratio of excess return to the risk-free rate $[(ROIC - WACC)/r]$ increases. Off-balance-sheet light assets:

$$ICA - ICB = \frac{1}{r} \times ICB \times (ROIC - WACC) - ICB \quad (f)$$

which is equal to Equation (g), off-balance-sheet light assets:

$$ICA - ICB = \frac{ICB \times (ROIC - WACC - r)}{r} \quad (g)$$

Equations (f) and (g) reveal the value of off-balance-sheet light assets, which is the difference between the real value and book value of the deployed assets, respectively. In other words, the excess interest is equal to ICA minus ICB . Thus, this paper evaluates the value of asset-lightness

⁷ Risk-free interest rate is based upon 2007-2012 Treasury bill rates.

(LA) using the “asset-light valuation model.” Equation (h) adds goodwill and intangible assets to Equation (g):

$$LA = \frac{1}{r} \times ICB \times (ROIC - WACC - r) + GW + IA \quad (h)$$

where LA represents the value of light assets, the term $(ROIC - WACC - r)$ is the rate of *Return on Light Assets (ROLA)*.

Further, the degree of asset-lightness (*DAL*) is calculated as the value of the light assets (*LA*) divided by the book value of the assets deployed (*ICB*) as shown in Equation (i):

$$DAL = LA / ICB \quad (i)$$

The excess returns $(ROIC - WACC)$ can be divided as in the formula $[(NOPAT - WACC \times IC) / IC]$. Liou (2010) indicated that $(NOPLAT - WACC \times IC)$ exactly shows the corporation's economic value added (*EVA*). As a result, the “asset-light valuation model” developed by Tang and Liou (2010) can reflect the *EVA* of corporations.

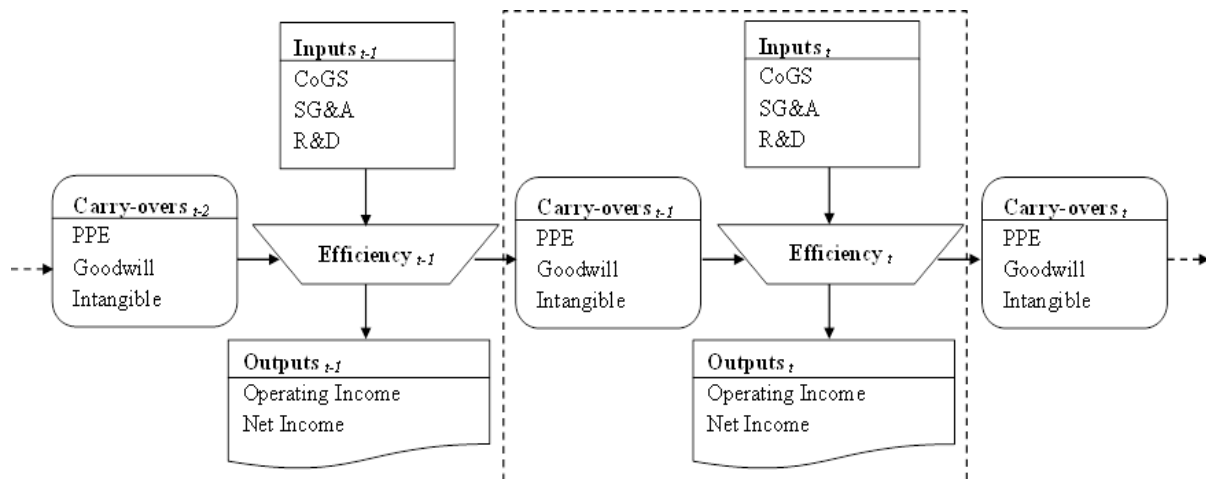
Measure of Managerial Ability

Prior researches include several influential factors (i.e., corporate size and market share) in measuring managerial ability (Francis et al., 2008). Following (Demerjian et al., 2012a), this study applies dynamic SBM (DSBM) and Tobit regression to estimate managerial ability (MA-Score). Specifically, managerial ability (MA-Score) is measured as follows: Firstly, DSBM is applied to evaluate corporate efficiency. Secondly, this study regresses efficiency scores on corporate characteristics using a Tobit regression (Demerjian et al., 2012a; Demerjian et al., 2012b) to measure managerial ability (MA-Score). Demerjian et al. (2012a)'s approach is able to reveal the efficiency of managers in using corporate resources for revenues generation purposes. Moreover, this approach can capture both firm-specific and manager-specific efficiency drivers. Therefore, this approach is able to distinguish managerial ability from corporate advantages and contains less noise than existing proxies of managerial ability (Demerjian et al., 2012a; Demerjian et al., 2012b).

However, the DEA model used in Demerjian et al. (2012a) may not provide a real picture of actual business operations, in which corporations must pay attention to long-term investment, budgets rolling and strategies of projects. Tone and Tsutsui (2010) emphasize the importance of variation in corporate efficiency over long periods of time based on the going concern concept. From the accounting viewpoint, carry-over items are known as permanent accounts (Reeve, Warren, Duchac, and Wang, 2011). Take Figure 1 as an example: PP&E are

continually carried forward and accumulated from prior periods ($t+1$) at one term (t). In this study, DSBM, which considers multiple periods and handles long-term operations, is thus substituted for traditional DEA in evaluating corporate efficiency (Lu, Wang, and Kweh, 2014; Lu, Wang, and Lee, 2013; Tone and Tsutsui, 2010).

Fig. 1 - Dynamic business process



In the first step, following previous studies (Demerjian et al., 2012a; Demerjian et al., 2012b), the cost of goods sold, the selling and administrative expense, and the R&D expense are adopted as input variables; then, the study classifies PPE, Goodwill, and Intangible as carry-over items. For outputs, this study included operating profit and net income (Demerjian et al., 2012a). Table 1 summarizes the input, output, and carry-over variables used in the corporate efficiency analysis.

Tab. 1 - Definitions of inputs and outputs

Variable	Definition	Carry-Over (Y/N)
Inputs		
CoGS	Cost of goods sold - the accumulated total of all costs attributable to the production of the goods sold.	N
SG&A	Selling and administrative expense - operating costs that are not included in the cost of goods sold.	N
R&D	Net research and development expense - any expenses associated with the research and development of goods or services.	N

PPE	Net property, plant, and equipment - the beginning balance of tangible items that are expected to be used in more than one period, and that are used in production. Demerjian et al. (2013) indicated that for the data obtained from Compustat, operating leases are included in net PPE.	Y
Goodwill	Purchased goodwill - the beginning balance of an intangible asset that arises because of the acquisition of one company by another for a premium value.	Y
Intangible	Intangible assets - the beginning balance of the assets that are not physical in nature and have a useful life span greater than one year.	Y
Outputs		
OI	Operating income - the amount of profit realized from a business's operations after taking out operating expenses.	N
NI	Net income - the excess of revenues over expenses.	N

In the second step, the study captures managerial ability (MA-Score) using a Tobit regression, which reduces estimated errors and enhances the accuracy of measurements of residuals. This study includes firm-specific efficiency drivers, including corporate size, market share, cash, corporate age, operating complexity, and foreign operations as the explanatory variables, in line with Demerjian et al. (2012b). The residuals derived from the Tobit regression shown below represent the MA-Score.

$$\begin{aligned}
CorporateEfficiency_i = & \alpha_0 + \beta_1 \ln(TotalAssets)_i + \beta_2 MarketShare_i \\
& + \beta_3 FreeCashFlowIndicator_i + \beta_4 \ln(Age)_i \\
& + \beta_5 BusinessSegmentConcentration_i \\
& + \beta_6 ForeignCurrencyIndicator_i + Year_i + \varepsilon_i
\end{aligned}
\tag{j}$$

where Corporate Efficiency is the efficiency score obtained from the DSBM model. Ln(Total Assets) represents the natural logarithm of total assets at the fiscal year end. Market Share is the percentage of sales by the corporate. Free Cash Flow Indicator is a dummy variable equal to one if positive free cash flow is observed. ln(Age) represents the natural logarithm of corporate age. Business Segment Concentration is sales of individual business segment divided by overall sales. It equals one if data cannot be collected. Foreign Currency Indicator is a dummy variable equal to one if a nonzero foreign currency adjustment is observed. Year represents the fiscal year. It is important to note again that the residual (ε) reveals managerial ability, which is clean of any influence of corporate characteristics.

Measure of Corporate Performance – Market Value Added

As mentioned before, most accounting-based measures cannot reveal corporate value maximization, while value-based measures can reflect the market reaction (Hawawini et al., 2003). It seems that for evaluating corporate performance, value-based measures, which show market perspective on a corporate's future success, are better than accounting-based ones. Therefore, this study adopts market value added (MVA), following Hawawini et al. (2003), as the measure of corporate performance. MVA is measured as the market values of equity and debt of a corporation divided by total capital employed.

Measurement of Control Variables

In addition, the study also controls for corporate characteristics based on the previous studies to enhance the models. Hence, the paper uses three control variables which are including Shadow rate of return (SR), Book value of the assets deployed (ICB) and corporate size (SIZE) represents the natural logarithm of total assets at the fiscal year-end.

FINDINGS AND ANALYSIS

Descriptive Statistics

Table 2 reports the descriptive statistics full observations of Asian telecommunication corporations. The mean of MVA is 46.42, indicating the difference between the current market value of a corporation and the capital contributed by investors is 46.42. On average, the DAL of these Asian telecommunications corporations is 6.48. The degree of asset-lightness is considered low since the Asian telecommunication industry has more heavy assets in the past.

Tab. 2 - Descriptive statistics for the 74 Asian telecommunication corporations

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
MVA	46.42	0.83	4325.27	0.01	353.91
DAL	6.48	-2.75	4654.87	-668.08	226.27
MA	0.01	0.07	0.42	-0.63	0.27
SR	0.51	0.47	4.36	0.07	0.30
ICB	45098.69	3777.07	1014291.00	-2024.77	127164.60
SIZE	3.43	3.69	6.02	0.38	1.37

Source: Author's calculations

Note: MVA is the measure of corporate performance, which is return on assets, DAL represents the degree of asset-lightness, MA is managerial ability, SR represents the shadow rate of return, ICB represents the book value

of the assets deployed, and SIZE represents the natural logarithm of total assets at the fiscal year-end.

Pearson correlation test is applied to test the relationship among the variables. The results of correlation analysis which examining the magnitude among the regressors are shown in Table 3. MVA is found to be significantly and positively correlated with DAL. The findings also show that SR is negatively correlated with MA and SIZE. The results also suggest that adoption of a high-level asset-light strategy is positively related to corporate performance. Similar to Liou (2011), this research indicates that the asset-light strategy generates competitive advantage in the telecommunication industry.

Tab. 3 - The Pearson correlation coefficients

Variable	MVA	DAL	MA	SR	ICB	SIZE
MVA	1.00					
DAL	0.57***	1.00				
MA	-0.11**	-0.04	1.00			
SR	0.08*	0.25***	-0.08**	1.00		
ICB	-0.05	-0.03	-0.03	-0.18***	1.00	
SIZE	-0.08**	0.10	-0.10**	0.10**	0.52***	1.00

Note: *, **, ***, denotes significance at <10%, <5%, and <1% levels, respectively.

Source: Author's calculations

Regression Results

Table 4 shows the results of a series of hierarchical regression analyses examining Hypothesis 1 and Hypothesis 2. In Model 1, this study uses three control variables which are including SR, ICB and SIZE. It is found that SR and SIZE are significantly correlated with corporate performance ($\beta=111.72$, -27.62 , $p < 0.10$, respectively, $p < 0.10$).

Tab. 4 - Regression results of DAL and moderating effect

<i>Model : $MVA = \beta_1 + \beta_2 DAL + \beta_3 MA + \beta_4 (DAL \times MA) + \beta_5 SR + \beta_6 ICB + \beta_7 SIZE + FR + \varepsilon$</i>					
	Dependent Variable: MVA				
	Pred.	Model 1	Model 2	Model 3	Model 4
Intercept		118.08*	171.97***	184.75***	182.81***
Independent variables					
DAL	+		0.91***	0.91***	0.28
Moderators					
MA	+			-127.66**	-143.73***
Interaction terms					
DAL $\times$ MA	+				-2.89***
Control variables					
SR	+	111.72*	-70.76	-78.30	-85.70*
ICB	+	0.01	0.01	0.01	0.01
SIZE	+	-27.62*	-19.66	-22.05*	-19.96*

Model F		1.979*	44.648***	38.713***	34.962***
R ²		0.018*	0.336***	0.348***	0.360***
ΔR^2			0.318	0.012	0.012

Note: *, **, ***, denotes significance at <10%, <5%, and <1% levels, respectively.

Source: Author's calculations

The main effect of asset-light strategy

For Model 2 in Table 4, the independent variable, DAL is added to the regression model. The result shows that the coefficient of the independent variable, DAL, is positive and significant ($\beta=0.91$, $p<0.01$), which is consistent with Hypothesis 1. This finding indicates that asset-light operation positively affects corporate performance. DAL explains a significant amount of variability in corporate performance beyond that of the control variables ($\Delta R^2=0.318$). In order to enhance the validity of the main test, this study employs SR (Liou, 2011), ICB (Liou, 2011), and SIZE (Contractor, Kundu, and Hsu, 2003; Kotabe, Srinivasan, and Aulakh, 2002) as control variables since they can potentially reduce the effects of asset-lightness on corporate performance.

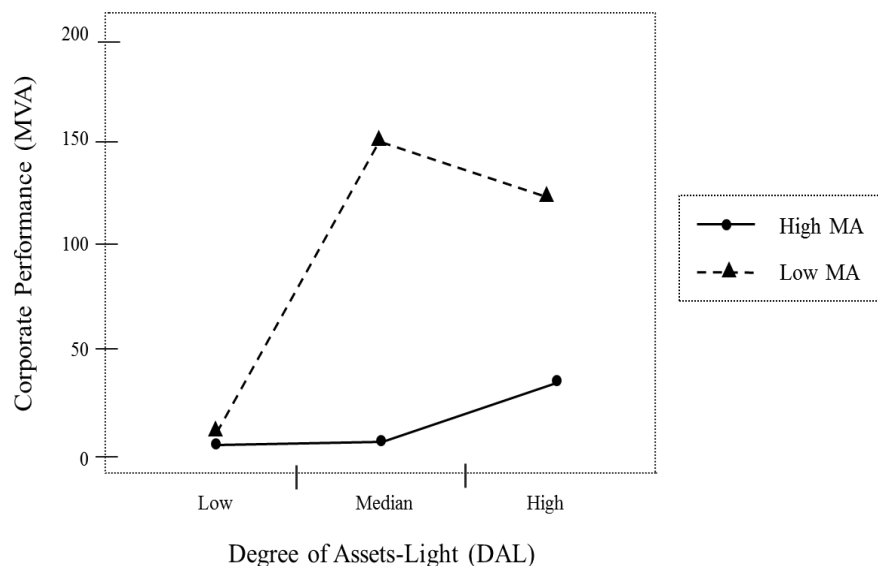
The moderating effect of managerial ability

This study further performs hierarchical regression to analyze how managerial ability affects the relationship between asset-lightness and corporate performance, and the results are shown in Table 4. For Model 3, MA acts as a moderating variable is added to the regression. The findings show that MA has a significant amount of variability in corporate performance beyond that of the independent and control variables ($\Delta R^2=0.012$). The coefficient of MA is significantly negative ($\beta=-127.66$, $p<0.05$), indicating that managerial ability negatively affects corporate performance.

Finally, the study employs a moderated model in which an interaction term ($DAL \times MA$) is included to the regression in Model 4. To avoid any multicollinearity problem, this study tests the relationship between control, independent, and moderating variables before creating interaction-term variables. The study finds no multicollinearity among the variables, which infer no multicollinearity problem for multivariate analysis. The interaction term ($DAL \times MA$) is found to be negative and significant ($\beta=-2.89$, $p<0.01$) to MVA. The findings demonstrate that the moderating effect of managerial ability significantly influences the relationship between the degree of asset-lightness and corporate performance.

Furthermore, the study discovers a significant two-way interaction between DAL and MA ($\beta = -2.89, p < 0.01$). Figure 2 shows the shape of interaction (DAL $\times$ MA) and it indicates that when DAL is relatively low, the moderating effect of managerial ability on corporate performance under the asset-light strategy is insignificant. In contrast, when DAL is relatively high, the moderating effect of managerial ability on corporate performance under the asset-light strategy is positive. Additionally, the result suggests that the corporation with lower managerial ability outperforms the corporation with higher managerial ability. This finding is consistent with Francis et al. (2008) who proves that a manager with high capability is related to poor earnings quality.

Fig. 2 - The moderating effect of managerial ability



Based on Figure 2, the result also shows that when DAL is relatively high, the relationship gradually deteriorates when managerial ability is lower but gradually improves when managerial ability is higher. This finding is consistent with Demerjian et al. (2012a) who argue that it is possible for high-ability managers to have artificially smooth or stable earnings and thus appear to achieve higher earnings persistence. It is possible that managers with higher ability are more likely to have smooth earnings or otherwise use earnings management as a signaling mechanism (Tan and Jamal, 2006); nevertheless, it is also possible that they can more effectively use earning management to extract personal benefits (Demerjian et al., 2012a). Overall, those results further support Hypothesis 2, indicating that the greater the managerial ability, the stronger the relationship between DAL and corporate performance.

Discussion and Managerial Implications

This study examines the impact of DAL to corporate performance. As predicted, the findings demonstrate that DAL positively impacts corporate performance. This result is consistent with prior studies, which indicating that adoption of the asset-light strategy can generate competitive advantage and superior performance (Gannon et al., 2010; Liou, 2011; Tang and Liou, 2010; Wen et al., 2012). In general, financial statements can provide an objective measure of corporate assets but cannot capture the value of light assets, which can create more value for corporations. In other words, financial statements cannot totally reflect the true value of a corporation. Light assets are resources which can generate competitive advantage and corporate value. As a result, light assets can reasonably predict the potential future growth of corporations.

Second, the study further investigates the moderating effect of managerial ability on the relationship between DAL and corporate performance. Prior researchers provide empirical evidences that corporate performance is positively influenced by managerial ability (Bertrand and Schoar, 2003; Demerjian et al., 2012a; Demerjian et al., 2012b; Tripsas and Gavetti, 2000). According to the concept behind the asset-light strategy, a company's core capabilities (i.e., intellectual capital and managerial ability) are the driving factors to enhance the value of light assets.

Third, the empirical results of this study further show that the greater the managerial ability, the stronger the relationship between DAL and corporate performance. As illustrated in Figure 2, when the DAL is relatively low, the moderating effect of managerial ability on corporate performance under the asset-light strategy is insignificant. In contrast, when the DAL is relatively high, the moderating effect of managerial ability on corporate performance under the asset-light strategy is positive. The results also suggest that the corporation with lower managerial ability outperforms the corporation with higher managerial ability and it is consistent with Francis et al. (2008).

Fourth, when the DAL is relatively high, the relationship gradually worsens when managerial ability is lower but gradually improves when managerial ability is higher. Tan and Jamal (2006) explain that high ability managers tend to make their corporate' earnings appear smoother and it explains the good earnings prospects to the investors. Finally, this study shows that managerial ability can affect the relationship between the DAL and corporate performance. The findings suggest that higher-ability managers can make better judgments and choose more

profitable strategies thus, improve the corporate performance. In other word, managers who are knowledgeable and having higher-ability can play a significant role in sustaining or achieving competitive advantage and increasing corporate value, particularly in the telecommunications industry.

CONCLUSION

This research explores how implementation of the asset-light strategy would influence corporate performance of the Asian telecommunications industry. Furthermore, this study examines the moderating effect of managerial ability on the relationship between the DAL and corporate performance. The empirical results suggest that the implementation of the asset-light strategy positively affects corporate performance. The findings further show that the greater the managerial ability, the stronger the relationship between the DAL and corporate performance.

As stated before, this paper has shed new light on the telecommunication industry and creates new opportunities for further study. The sample size is limited to only telecommunication listed companies in Asian. Further studies in other countries are open for debate. Other aspect such as non-monotonic relationship of corporate governance could be considered in future studies for different objectives.

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Evaluation of Corporate Efficiency Using the Dynamic DEA (DSBM) Approach

The managerial ability measure was developed by Demerjian et al. (2012b), who combined traditional data envelopment analysis (DEA) and Tobit regression to evaluate MA-Score. Traditional DEA only considers a single period and ignores long-term operation. Consequently, the dynamic slack-based measure (DSBM) DEA model, proposed by Fare and

Grosskopf (1997), was used in place of traditional DEA in this study. The dynamic DEA (DSBM) approach which evaluates corporate efficiency is employed as described below.

Assume that the dynamic process shown in Fig. 2 deals with n corporations ($j = 1, \dots, n$) over T terms ($t = 1, \dots, T$). At each term, corporations have common m inputs ($i = 1, \dots, m$), s outputs ($r = 1, \dots, s$), and g carry-over items ($h = 1, \dots, g$). Let x_{ij}^t , y_{rj}^t , and z_{hj}^t represent the input, output, and carry-over values of the j th corporation at term t , respectively. The DSBM model under variable returns to scale estimates the corporate efficiency of the observed corporate by solving the following fractional program:

[DSBM]

$$ATE_0 = \min \frac{\frac{1}{T} \sum_{t=1}^T [1 - \frac{1}{m} (\sum_{i=1}^m s_{it}^- / x_{io}^t)]}{\frac{1}{T} \sum_{t=1}^T [1 + \frac{1}{(s+g)} (\sum_{r=1}^s s_{rt}^+ / y_{ro}^t + \sum_{h=1}^g s_{ht}^c / z_{ho}^t)]} \quad (1)$$

subject to

$$x_{io}^t = \sum_{j=1}^n x_{ij}^t \lambda_j^t + s_{it}^-, \quad i = 1, \dots, m; \quad t = 1, \dots, T, \quad (2)$$

$$y_{ro}^t = \sum_{j=1}^n y_{rj}^t \lambda_j^t - s_{rt}^+, \quad r = 1, \dots, s; \quad t = 1, \dots, T, \quad (3)$$

$$z_{ho}^t = \sum_{j=1}^n z_{hj}^t \lambda_j^t - s_{ht}^c, \quad h = 1, \dots, g; \quad t = 1, \dots, T, \quad (4)$$

$$\sum_{j=1}^n z_{hj}^t \lambda_j^t = \sum_{j=1}^n z_{hj}^t \lambda_j^{t+1}, \quad \forall h; \quad t = 1, \dots, T-1, \quad (5)$$

$$\sum_{j=1}^n \lambda_j^t = 1, \quad t = 1, \dots, T, \quad (6)$$

$$\lambda_j^t \geq 0, \quad s_{it}^- \geq 0, \quad s_{rt}^+ \geq 0, \quad s_{ht}^c \geq 0.$$

where x_{io}^t , y_{ro}^t , and z_{ho}^t are connected to x_{ij}^t , y_{rj}^t , and z_{hj}^t by the intensity variable λ_j^t . The constraints (2) to (6) are defined as the production possibility set. Constraint (5) guarantees the continuity of carry-over items between terms t and $t+1$, while constraint (6) corresponds to the variable returns-to-scale assumption. s_{it}^- , s_{rt}^+ , and s_{ht}^c are slack variables representing, respectively, input excess, output shortfall, and carry-over shortfall. This objective function is an extension of the non-oriented SBM model and deals with excesses in both input resources and carry-over values. The numerator is the average input efficiency, and the denominator is the inverse of the average output efficiency.

[DSBM] can be transformed into a linear program by multiplying constraints (1) to (6) by a scalar $\delta (> 0)$. This causes no change in ATE_0 . We adjust δ so that constraint (8) becomes 1. Thus, we have:

[DSBMt]

$$\tau_0 = \text{MIN} \frac{1}{T} \sum_{t=1}^T [\delta - \frac{1}{m} (\sum_{i=1}^m \delta s_{it}^- / x_{io}^t)] \quad (7)$$

subject to

$$1 = \frac{1}{T} \sum_{t=1}^T [\delta + \frac{1}{(s+g)} (\sum_{r=1}^s \delta s_{rt}^+ / y_{ro}^t + \sum_{h=1}^g \delta s_{ht}^c / z_{ho}^t)] \quad (8)$$

$$\delta x_{io}^t = \sum_{j=1}^n x_{ij}^t \delta \lambda_j^t + \delta s_{it}^-, \quad i = 1, \dots, m; \quad t = 1, \dots, T, \quad (9)$$

$$\delta y_{ro}^t = \sum_{j=1}^n y_{rj}^t \delta \lambda_j^t - \delta s_{rt}^+, \quad r = 1, \dots, s; \quad t = 1, \dots, T, \quad (10)$$

$$\delta z_{ho}^t = \sum_{j=1}^n z_{hj}^t \delta \lambda_j^t - \delta s_{ht}^c, \quad h = 1, \dots, g; \quad t = 1, \dots, T, \quad (11)$$

$$\sum_{j=1}^n z_{hj}^t \delta \lambda_j^t = \sum_{j=1}^n z_{hj}^t \delta \lambda_j^{t+1}, \quad \forall h; \quad t = 1, \dots, T-1, \quad (12)$$

$$\sum_{j=1}^n \delta \lambda_j^t = 1, \quad t = 1, \dots, T, \quad (13)$$

$$\lambda_j^t \geq 0, \quad s_{it}^- \geq 0, \quad s_{rt}^+ \geq 0, \quad s_{ht}^c \geq 0.$$

[DSBMt] is a nonlinear programming problem because it contains the nonlinear terms

δs_{it}^- , δs_{rt}^+ , δs_{ht}^c and $\delta \lambda_j^t$. Nevertheless, we can transform it into a linear program by defining

$S_{it}^- = \delta s_{it}^-$, $S_{rt}^+ = \delta s_{rt}^+$, $S_{ht}^c = \delta s_{ht}^c$ and $\Lambda_j^t = \delta \lambda_j^t$. Afterwards, [DSBMt] becomes the following linear

program (LP) in δ , S_{it}^- , S_{rt}^+ , S_{ht}^c , and Λ_j^t :

[DSBMt_LP]

$$\tau_0 = \text{MIN} \frac{1}{T} \sum_{t=1}^T [\delta - \frac{1}{m} (\sum_{i=1}^m S_{it}^- / x_{io}^t)] \quad (14)$$

subject to

$$1 = \frac{1}{T} \sum_{t=1}^T [\delta + \frac{1}{(s+g)} (\sum_{r=1}^s S_{rt}^+ / y_{ro}^t + \sum_{h=1}^g S_{ht}^c / z_{ho}^t)] \quad (15)$$

$$\delta x_{io}^t = \sum_{j=1}^n x_{ij}^t \Lambda_j^t + S_{it}^-, \quad i = 1, \dots, m; \quad t = 1, \dots, T, \quad (16)$$

$$\delta y_{ro}^t = \sum_{j=1}^n y_{rj}^t \Lambda_j^t - S_{rt}^+, \quad r = 1, \dots, s; \quad t = 1, \dots, T, \quad (17)$$

$$\delta z_{ho}^t = \sum_{j=1}^n z_{hj}^t \Lambda_j^t - S_{ht}^c, \quad h = 1, \dots, g; \quad t = 1, \dots, T, \quad (18)$$

$$\sum_{j=1}^n z_{hj}^t \Lambda_j^t = \sum_{j=1}^n z_{hj}^t \Lambda_j^{t+1}, \quad \forall h; \quad t = 1, \dots, T-1, \quad (19)$$

$$\sum_{j=1}^n \Lambda_j^t = 1, \quad t = 1, \dots, T, \quad (20)$$

$$\Lambda_j^t \geq 0, \quad S_{it}^- \geq 0, \quad S_{rt}^+ \geq 0, \quad S_{ht}^c \geq 0.$$

Let an optimal solution of [DSBMt_LP] be:

$$(\tau_o^*, \delta^*, \Lambda_j^{t*}, S_{it}^{-*}, S_{rt}^{+*}, S_{ht}^{c*}).$$

Then, we have an optimal solution of [DSBM] as defined by:

$$ATE_o^* = \tau_o^*, \quad s_{it}^{-*} = S_{it}^{-*} / \delta^*, \quad s_{rt}^{+*} = S_{rt}^{+*} / \delta^*, \quad s_{ht}^{c*} = S_{ht}^{c*} / \delta^*, \quad \lambda_j^{t*} = \Lambda_j^{t*} / \delta^*.$$

This study defines non-oriented overall corporate efficiency as a ratio that ranges between 0 and 1, and is 1 while all slacks are zero. This objective function value is also unit-invariant. If

the optimal solution for [DSBM_t] satisfies $ATE_o^* = 1$, then the observed corporate is considered non-oriented overall efficient or, briefly, overall efficient:

$$TE_o^t = [1 - \frac{1}{m} (\sum_{i=1}^m s_{it}^- / x_{io}^t)] / [1 + \frac{1}{(s + g)} (\sum_{r=1}^s s_{rt}^+ / y_{ro}^t + \sum_{h=1}^g s_{ht}^c / z_{ho}^t)] \quad (21)$$

If all optimal solutions of equation (21) satisfy $TE_o^t = 1$, then the observed corporate is considered non-oriented term efficient or, simply, term efficient for term t . This implies that the optimal slacks for term t in equation (21) are all zero. The fractional program can be transformed into LPs (see Tone, 2001; Tone and Tsutsui, 2010).

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AN EMPLOYEE STOCK OWNERSHIP PLAN FROM ECONOMIC THEORY POINT OF VIEW

Lada Rusmichova

Abstract

An employee stock ownership plan (ESOP) is a specific form of employee participation on ownership of a company. An American investment expert Louis Kenso is considered an inventor and founder of the concept. Over last seventy years the ESOP has taken its important position in American economy. Its spread is significantly influenced by the fact, that the ownership plan is financed by a loan which is repaid by the pre-tax funds, consequently it can be partially seen a means to benefit from a tax advantage. At the same time the ESOP is seen a retirement program as the employee shares are obligatory sold back to the company at the moment an employee is retired.

The subject of this paper is a description and a theoretical approach to the ESOP. From an economic theory point of view the concept is a way to overcome capitalistic divisions between capital and labour. The ESOP is able to create a new relation between the two. The traditional unions wage increasing interests of labour are replaced by profit sharing that consequently creates stronger economic system. There are several historical evidence of an advantages of the employee owned firms over traditional in an ability to cope with difficulties and of their higher viability.

Key words: ESOP, employee ownership, labour-managed economy, shared capitalism.

JEL Codes: A10, B50, D11.

INTRODUCTION

Author of this paper was one of a small group of Czech economists who, with the support of Czech-American professor, one of important authors in the field of participative economy Jaroslav Vaněk, at the beginning of the 1990s, believed that an ESOP could be a quick and effective way to privatize state property in former Czechoslovakia. (Vanek, 1990) The idea

was not accepted, voucher privatization project won. After many years, I personally still believe, that an ESOP would have been better alternative.

Thirty years later, the idea of workers' ownership in the Czech Republic seems even less acceptable. The Czech Republic is the exception of ten percent among EU countries, which does not have the legally defined term employee ownership (Machado, 2016).⁸

Neither economists nor economics students in post-communist countries are aware of the important role of employee ownership and workers participation in decision-making in the US economy. An ESOP is the most notable part of it.

WHAT IS AN ESOP?

The Employee Stock Ownership plan (ESOP) is an American special type of benefit plan authorized by the Employee Retirement Income Security Act (ERISA)⁹ of 1974. As in any employee benefit plan in the United States, the employee contribution to an ESOP is deductible from taxable corporate income. But, unlike an ordinary pension trust, an ESOP invests its assets mostly of fully in the employee stock. This makes an ESOP a way to create worker ownership.

The ESOP arrangement allows using the borrowing power of a company to borrow funds on behalf of employees. The funds are used to purchase new company shares or to purchase old shares from existing owners (private or public). The company commits itself to pay back the loan, but these loan payments leave the company as an ESOP contribution treated as a labor expense. In that way, not only interest but also the loan payments are deductible from taxable corporate income. When the loan is repaid, the employees are owners of the shares and the company profits of tax savings and the increasing productivity and other positive impacts which tends to follow employee shareholdings (see below).

⁸ The term employee stock was removed from the Czech legal in 2001. Under the current legislation, the sale of shares to employees can be perceived as the sale of special shares, which may have to be covered by the company's own assets. (Zak.c. 90/2012 Sb.)

⁹ The Employee Retirement Income Security Act of 1974 (ERISA) is a federal law (PUBLIC LAW 93-406-SEPT. 2, 1974) that sets minimum standards for most voluntarily established pension and health plans in private industry to provide protection for individuals in these plans. Source: United States department of Lab. <https://www.dol.gov/general/topic/retirement/erisa>; <http://www.legisworks.org/GPO/STATUTE-88-Pg829.pdf>

Technically, in an ESOP, the employee (worker) shares are the issued and outstanding shares held in trust by a firm for inside owners, the "workers" - including entrepreneurs and managers of the firm. The outstanding shares can vote and receive dividends.

Each worker has an internal capital account in the firm which represents the worker's capital interest in the company. The balance of the capital accounts may be kept either in terms of number of shares or in terms of value.

As the ESOP loan is paid off, new shares are allocated from a temporary trust to the individual capital accounts of the workers. The value of the shares is split between the individual accounts in proportion to each worker's compensation, not in proportion to the number of shares already in each worker's account. This is a partnership-like allocation of new value in accordance with the flow of active participation in the firm. It means, the value of individual accounts may vary only depending on length of employment of individual workers. The non-partnership-like part of allocation takes its place at the moment when dividends are paid in proportion to the stock of shares already accumulated in each worker's account.

An ESOP unlikely a cooperative does not follow the principle one man - one vote. Often, the principal part of the stock held by an ESOP is non-voting stock. The workers are participating on benefits rather than on control, the power to vote usually is not exercised by the beneficiaries of the plan at all.

An exception of the convention are publicly-held corporations, where the voting power must be passed through to the workers on all ESOP stock which are allocated to the workers.(Hansmann, 1990) In this case, the workers vote on one share - one vote rule that means the number of votes depends on the value of an individual account of a worker. The issue of allocating voting rights in a large company has often rather a symbolic significance than a practical importance. The voting rights are on regular basis applied only to elect the board of directors that appoints the management (the managers are not directly elected). In an ESOP this symbol may be important as it creates, as we will discuss later, roots of motivation.

Whether an ESOP is used to purchase new company shares or to purchase old shares from existing owners, the number of worker stocks can vary from 1% to 100%. Employee-owned (worker-owned) companies are called those in which an employee share is over 50%. Even in these cases, when workers are getting most or even all net earnings of the firm, control usually

remains in hands of investors of equity capital or in hands of management which is not selected by employee stock holders but is suggested to managing the firm on the workers behalf. Such firms are best described as being beneficially rather than directly owned by their workers. (Hansmann 1990)

THE FIRST ESOP

The concept of employee ownership had had a longer history and had existed quite a long time before an ESOP was created. Many American companies including for example worldwide well known Proctor & Gamble profited from the idea that employee stock ownership can be an important incentive that results in an increase of productivity. An IRA¹⁰ tax-qualified plan was designed at twenties of the 20th century for such investment in shares of company stocks and at 1921 was added to the tax code. Some of the companies invested more than half of their funds into the plan, so became the employee-owned firms. (Menke, Buxton, 2010).

San Francisco lawyer and economist Luis O. Kenso is considered the author of the concept of an ESOP. Before him, no one had got an idea to use the IRA to keep a business that is on sale with benefits for all employees. There had been two possibilities for retiring (or for any other reason leaving a business) owners of a company. They could sell the company either to foreign investors, or they could sell it to few important employees who were able to cash out theirs shares.

At 1956, two founders of Peninsula Newspapers, Inc., who were in their 80s, asked Louis Kelso who had believed as well as them that the company's employees should be the best buyers and future owners of the company (Kelso, 1958) to figure out the way to make the sale. The owners knew that to sell the company to foreign buyers meant to sell it to competitors what would mean in the best case a loss of identity, reductions in quality of the newspapers or even a loss of jobs for their loved employees.

No one of employee had enough money to buy the business. Nevertheless, Kelso noted, that the company had been contributed to an IRA profit-sharing plan and that the accumulated funds

¹⁰ Individual retirement arrangement (IRA) - provides tax advantages for retirement savings, established by ERISA. Normal IRA existed before ERISA, Source: IRA Publication 590-B
<https://www.irs.gov/forms-pubs/about-publication-590b>

were sufficient to pay more than one third of the company. It was risky for the employees to use the retirement funds to buy 30% of company, but with the regard to expected reduction of jobs in a case of an outside buyer, all employees agreed with the Kelso's proposal. The bank loan could subsequently be repaid with the after-tax dollars instead of making contributing to the profit-sharing plan. At this moment, Kelso had an unique idea to let the profit-sharing plan itself borrow the money and to repay the loan with the regular contribution into the plan, it means with pre-tax dollars, what would principally increase an amount for repaying.

This was in direct contradiction to the IRA Code. Nevertheless, the code permitted an exemption from prohibited transactions in a case when the transaction should be in the best interest of the participant. As Kelso was experienced and capable lawyer, he successfully got the exception for Peninsula Newspapers, Inc. and so the very first ESOP was created. The business would be successfully operated for another 25 years and his participants would been paid out million dollars in benefits over the years. (Menke, 2010).

LATER ESOPS

Over the next twenty years since Peninsula Newspapers, Inc., several ESOPs were created by Kelso in the similar way. They all were initially bought from original owners instead of being sold to competitors, but in the course of time, the ESOP was used to buy any stock according to actual need. The portion of stock from the shareholder who wanted to be retired or leave a company for any reason, or a certain percentage of everyone's stock could be cash out without selling whole company if needed. Until 1974, ESOPs, however, were exceptional.

The big boom of ESOPs since the mid-1970s has been driven partly by the ERISA which was accepted at 1974 and partly by the deep crises in American economy, deepest since 1929. It showed that an ESOP can be a good way to prevent bankruptcy and rescue jobs when traditional stock ownership was directed a company to its end. There were many companies that used an ESOP for this reason over 1970s and 1980s, including Chrysler corporations or American Airlines. In some cases, as soon as the corporate disaster was recovered through an ESOP, the shares were sold back in the open market, in other cases, an ESOP has continued. Later this reason would become minor.

There have been a wide variety of reasons to use an ESOP since late 1980s. As was said above, in many cases, an ESOP has been an alternative retirement plan or a way to create minor employee ownership as an incentive to employee to work harder. It has been playing important role in a small business. For so called S corporations ¹¹ that are becoming in the context of 4,0 economy ¹² of the gradual reorientation of the US economy from production to service an overwhelming form of business, an ESCA¹³ has been formed as a legislative support for ESOPs. These last cases are obviously closest to the original Kelso's idea of employee ownership. (Menke, 2010)

AN ESOP IN STATISTICS

Official Statistics about the share of ESOPs in the total numbers of American companies does not exist. According to an NCEO's qualified guess, every fourteenth American employee (approximately 7%) is connected with an ESOP.

The total number of ESOPs and participants we can see in the table:

Tab.1: The total number of ESOPs and participants

	Number of ESOPs	Total participants	Total plan assets (millions \$)
Large private companies	2451	2,949,904	256,941
Small private companies	3689	153,265	13,603
Public companies	528	11,328,454	1,025,660
Total	6668	14,431,623	1,296,204

Source: NCEO, 2016

Approximately 5,000 ESOP companies are majority-owned by the ESOP and approximately 4,000 are 100% owned by the ESOP. (The ESOP Association)

¹¹ S corporation is closely hold (family firm) corporation, recognized by the Internal Revenue Service of the U.S. for the purpose of federal income tax imposition: it is able to avoid double taxation because it is not required to pay corporate income tax on the profits of the company, until 1998 an ESOP was not allowed for S corporations.

¹² 4.0 economy defined for example (Sirůček, 2017) and a digitalization that causes the rapid development of the tertiary sector and small business

¹³ Employee-Owned S Corporations of America (ESCA), established by Congress at 1998 Source: ESCA, <http://esca.us>

The most ESOPs operate in the service sector (28%), slightly smaller number in manufacturing sector (22%), the next one is the sector "finance, insurance, real estate" (17%), the last important is the construction sector (11%)¹⁴

While the number of ESOPs has slightly declined in recent years, the number of participants has increased, in the same period in average 229 new ESOPs have been created every year. Almost half of existing ESOPs (47%) was created before 1998, it means they have been working for thirty years or more.

According to NCEO, the economic power of Employee Ownership can be illustrated with following numbers:

- ESOP companies are 25% more likely to stay in business.
- Employee owners were 4 times less likely to be less of over recent recession.
- Employee at ESOP companies receive 5% - 12% more in wages and have 2.5 times higher retirement accounts.
- Productivity improves by 4% - 5% on average in the year an ESOP is adopted. (NCEO,2016).

Despite the numbers are impressive¹⁵, from economic theory point of view, the most important is the statement presented by NCEO that though companies that adopt employee ownership plans do not have to treat employees any differently than before, it will be to their advantage if they do. (Klingler, 2018)

Many employee ownership companies have found, and NCEO's research confirms, that a more participative approach to management makes for a workplace that it is more productive. It means an ESOP may not always be, but in many cases it is a partnership company. (NCEO)

The managerial approach to an ESOP can be "value added to employee ownership. (Kruse, 1995)_While employee not only are but they feel to be owners, they are involved into decision making and managing, the incentive factors of employee ownership are multiplied.(McCarthy,2010) For economic theory that moment is crucial. Insiders exercise

¹⁴ The largest ESOP is Publix Super markets with 188,000 employees, the largest among 100% employee-owned is Penmac (Stuffing) with 24,470 employees, Source:NCEO,2016

¹⁵ The most extensive statistical analysis of ESOPs have carried out Kruse an Blasi, presented in (Kruse,1995) the selected results can be found in (PR Newswire, 2001)

property rights, and problems associated with managerial capitalism recede into the background.

ESOPS AND SHARED CAPITALISM

Contemporary capitalism is not very similar to its original form of the nineteenth century. The technical development and the associated capital demand of production led to the new phase of capitalism based on public ownership and power of managers. With the concentration of capital the owner disappears from the production process; they become a passive stockholder and have no influence on the company activity. Managerial capitalism brings bonding of economic and political power, planning instead of market competition, pricing, the corporations are getting bigger with more and more power being given to the managers - "technostructure", whose will for power leads to further growth. (Galbraith, 1991)

In developing countries and newly industrialized economies, this form of capitalism, whether through domestic or foreign investment, fulfils its function adequately, as it leads to the high GDP growth rate that is expected in these economies. On the other hand, in developed countries that which has been turned into a post-industrial society, needs are created to be satisfied for companies and their revenue growth, many economists believe that further economic growth is not desirable.

Jaroslav Vaněk in his participative economy theory understands ESOP as one of the possible ways to gradually create a new structure of private ownership, where those who work together in the company owns and manages it. Vanek sees an ESOP a possible universal solution to create new "labor-managed" economy. In his General Theory of Labour-Managed Market Economies Vanek describes a picture of an economy dominated by employee-owned and managed firm. He uses a standard neoclassical approach to describe the behaviour of a labor-managed firm. Theoretical analysis proves its claim that in the long run, a fully competitive labour-managed firm must operate always at a point of maximum physical efficiency and consequently with the regard to all new labor-managed economy conditions, its short-run supply elasticity is negative or zero.

These firms' goal is no longer maximize profit or total revenue but to maximize revenue per employee. It means the participative firms would be smaller and effective, as the goal brings them to the point where economies of scale are fully realized. Consequently, participative

economy would mean more competition, less production based on advertising and consumer persuasion and less pollution as owners live close to plants which they work in. (Vanek, 1970)

On the other hand, opponents of participation suggest that employee ownership cannot work at any circumstances. The neoclassical idea about current consumption preferences has been main argument against employees' participation in decision-making and management. In the opinion of opponents, the self-managed firm will not ever invest or develop; wage growth will be the only goal. Also, employees have not education and skills and ability to decide and manage. (Jensen, 1998)

There are several historical evidences against this claim. Firstly, at 1980s in many cases, unions accepted an ESOP (which means future revenue) in exchange for wages or benefits reduction (Kruse, 2010). Secondly, as was mentioned above, an ESOP adoption statistically means better competitiveness and productivity growth. In fact, the ESOPs, where employee ownership is accompanied by participation in decision-making and so become labor-managed firms (Bonin, 2001) are those which bring improvement. In cases where an ESOP is only a form of retiring plan or a mean for tax savings and employee are treated traditionally, the improvement does not occur. (NEAO)

Another argument against employee ownership and participation can be described as "to many eggs in one basket" problem. While in a traditional company, the risk is spread among the owners who risk losing their capital investment and the employee risking losing their job, in an employee-owned firm workers are on the risk of losing both. (Hockett, 2006) The argument is partly true. Nevertheless, this portfolio diversification recommendation comes from the assumption, that the person carrying the basket is independent of who are eggs in the basket. If the one who is carrying the basket is an owner of the eggs or a part of the eggs, the chance that the basket will be dropped is principally reduced.

Moreover (to continue a metaphor) ESOPs basket is usually larger and more eggs are in it. As was shown in statistics above, the job loss is significantly lower and wages and retirement accounts are considerably higher for ESOPs, than for traditional firms. In an ESOP a bank loan is used to purchase company shares, employee are paid full wages all the time and as their wages are higher than average they have a possibility to reduce risk through additional savings. ESOPs themselves quite often use other retirement plan simultaneously thus principally

reduces the risk for participants. On this count, an ESOP is favoured over a cooperative, where "to many eggs in one basket" problem is more legitimate.

CONCLUSION

It is estimated that 8% of capital property is in the hands of employee in the U.S. while an ESOP is a principal part of it. (Douglas 2010) It is obvious, that shared capitalism is an important part of an American economic model. It statistically improves American employees' well-being through higher wages, benefits, greater job security and better labor-management relation practices. Shared capitalism is effective in firms' performance when is accompanied by employee participation on management and decision-making.

Employee ownership is American reality and the fact is surprisingly little known among economists worldwide, as well as an ESOP is, as a fast and effective way to the shared capitalism.

The number of ESOPs has stagnated in recent decades, but at the same time, as has been said, during the last depressions, they have shown greater viability than the conventional companies.

From my point of view a role of the ESOP in overcoming managerial capitalism is even more important. The managerial capitalism brought a separation of ownership and control and large autonomy of managers from anonymous stockholders. The ESOP brings the owners back to production and management that can be a way to a new economy. The future of an ESOP is based on a unique combination of insider owners in the conditions of large companies. An ESOP may become a solution where a society recognizes the undesirable behaviour of multinational corporations owned by anonymous shareholders and controlled by managers who pursuit their goals leading to uncontrolled growth and globalization. It is solution for the society where well-being and sustainability are more important than a profit and material consumption growth.

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NCEO, The National Centre for Employee Ownership: <https://www.esop.org>

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ASSESSING FACTORS AFFECTING THE EFFECTIVENESS OF INTERNAL CONTROL SYSTEM IN CONSTRUCTING ENTERPRISES IN BA RIA-VUNG TAU PROVINCE, VIETNAM

Hung Tang Tri - Phuong Thi Kim Tran - Thien Nguyen Huu

Abstract

Many constructing enterprises in Viet Nam have been facing too much competition to survive and develop, especially constructing small and medium enterprises (SMEs). Thus, this research was conducted to investigate what factor affecting to the effectiveness of internal control system of these enterprises in Ba Ria-Vung Tau Province. A quantitative and qualitative method was used based on COSO 2013 Framework and some hypotheses were proposed. In addition, data were collected using questionnaire from 304 constructing small and medium enterprises. The results of the multiple regression test revealed a positive impact of five factors comprising internal control; risk assessment; control activities; information and communication; and monitoring on the systematic effectiveness, in which the monitoring factor illustrated the strongest affection and control activities factor demonstrated the least affection on the effectiveness. Furthermore, the legal sanction policy factor did not show the relationship with the effectiveness of internal control system. Hence, researcher suggested a number of relevant recommendations to enhance awareness about the importance of internal control system to managers of these constructing SMEs and leaders of local governmental institutions.

Purpose: The research was carried on to identify what factors comprising five factors as five components and legal sanction policy as well as their levels of affection on the effectiveness of internal control system of constructing enterprises in Ba Ria-Vung Tau Province.

Design/methodology/approach: A quantitative and qualitative method was applied based on COSO 2013 Framework combined with interviewing to specialists to build hypotheses and research model. Furthermore, data were collected from questionnaires of 304 small and medium construction enterprises in Vung Tau province and processed using 22th edition SPSS software.

Findings: The results revealed a positive impact of five factors including internal control; risk assessment; control activities; information and communication; and monitoring on the

systematic effectiveness, in which the monitoring factor was the strongest affection and the control activities factor was the least affection. Moreover, the legal sanction policy factor did not show the relationship with the effectiveness of internal control system.

Research/practical implications: The outcome was a proof supporting for authors in suggesting some policies to construction SMEs and leaders of local governmental offices to boost the effectiveness of internal control system in Ba Ria-Vung Tau's constructing enterprises.

Originality/value: The paper contributes to extensive researching about this field in Vietnam

Keywords: COSO, effectiveness of internal control system, internal control.

JEL Codes: M41, M42.

INTRODUCTION

Ba Ria-Vung Tau is one of the most important economic province in the South-East area of Viet Nam. The development in economy of Ba Ria-Vung Tau has recorded the huge contribution of constructing industry with nearly 70% of economic structure (according to statistic data of the committee of people, 2017).

All of constructing enterprises are facing with many difficulties and challenges, especially small and medium enterprises – SMEs, in approaching to capital, reducing cost and enhancing the operation effectiveness (Li Y. et al, 2016; Mahadeen et al, 2016). Until now, there were nearly 110.000 enterprises operation in constructing area in Ba Ria-Vung Tau, and the constructing SMEs accounted for more than 30.000. Hence, boasting effective and efficient operation of these enterprises' internal control system is really essential and critical nowadays (Doyle et al, 2007; Briciu et al, 2014; Mary & Byaruhanga, 2014; Mahadeen et al, 2016; Li Y. et al, 2016). Therefore, the identification and assessment what factors affecting to the effectiveness of this system will support to SMEs achieving their goals (Li Y. et al, 2016).

Internal control system is a crucial method in reduction of a negative impact of various types of financial, operational and strategic risks to the planned business results and value created to shareholders and other company's stakeholders (Doyle et al, 2007). And building and operating this system effectively support to enterprises attaining their goals about cutting down cost; profit; asset safety; information quality; resource control; etc. (Briciu et al, 2014; Mary & Byaruhanga, 2014; Mahadeen et al, 2016; Li Y. et al, 2016).

Furthermore, Viet Nam is a country possessing the code law system. Thus, every policy from state and local managed offices affects significantly to the enterprises' effective and constant operation (Jensen, 1993; Beck et al, 2003).). Hence, legal sanctions will be affecting on the constructing area as well as the operation of constructing SMEs. And these punitive policy will influence on how managers build and operate their internal control system. And, it maybe lead to failure of the enterprises' internal control system (Jensen, 1993; Beck et al, 2003)

Thus, this research was conducted to find out what factors comprising 5 factors are 5 components of internal control system and 1 factor is legal sanction policy affecting to the effectiveness of internal control system in constructing SMEs in Ba Ria-Vung Tau province based on the foundation of The 2013 COSO Framework to enhance the performance and advanced competition of these enterprise in a current competitive economy.

LITERATURE REVIEW

Definition of internal control system

According to The Internal Control – Integrated Framework, internal control system is defined in COSO 2013 as “a process, effected by an entity’s board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance”. With the internal control system, organization enhances efficient and effective operations and preserves resources against loss due to waste by ensuring adherence to laws/regulations (Hanim et al., 2005; Doyle et al, 2007).

Components of internal control system

Control environment: illustrates the philosophy of the firm's risk comprising types of risk, the risk management, ethical culture, human resource policies, assignment of responsibility and the organizational structure to manage risks (COSO, 2013). In the same way, it sets the tone of an organization, influencing the control consciousness of its people (Mahadeen et al, 2016; Mary & Byaruhanga, 2014).

Risk Assessment: tests the likelihood, frequency and the impacting level of events through a range of possible outcomes to support enterprises attaining objectives based on identifying and analysing relevant risks and determining the appropriate responses (COSO, 2013). Further, this component was understood like risk management and sometimes referred to as Enterprise Risk Management (ERM) (Mahadeen et al, 2016; Mary & Byaruhanga, 2014).

Control Activities: constitutes risk policies and procedures that properly applied in business operation to effectively manage the risk. Control activities comprise authorizations, supervisions, segregation of duties, reconciliation and verification (COSO, 2013). By applying these, the organizations will achieve objectives, protection of its assets, and measurement of its performance (Elahi, 2013; Mahadeen et al, 2016)

Information and Communications: postulates that internal and external sources should be used to provide appropriate and timely risk related information that enables people to execute their responsibilities (COSO, 2013) or transmitting information and common understanding from one person to another (Briciu et al, 2014; Mahadeen et al, 2016). This factor require to be integrated throughout the value chain and impacted organizations in embedding all control objectives (COSO, 2013).

Monitoring: present and determines how well it is working and it can be revised and/or expanded to assess the quality of internal control system's performance over time. Monitoring includes routine or separate activities or a combination of both (COSO, 2013). The monitoring process also assists timely decision making, ensure accountability, and provide the basis for evaluation and learning (Masa'deh et al., 2015; Mahadeen et al, 2016) .

The effectiveness of internal control system

According to The Internal Control – Integrated Framework COSO 2013, it provides three categories of objectives in building an effective and efficient internal control system:

- Operations objectives: to pertain the effectiveness and efficiency of the entity's operations, including operational and financial performance goals, and safeguarding assets against loss.
- Reporting objectives – to pertain the internal and external financial and non-financial reporting and may comprise reliability, timeliness and transparency.
- Compliance objectives – to pertain adherence to laws and regulations.

And the effectiveness of internal control system must be simultaneously operated by its all five components. If one of its was wrongly conducted, it will be lead to the weakness of internal control system and organization's objectives will not be achieved (Hanim et al., 2005; Doyle et al, 2007; Elahi, 2013). From above theory framework, we appraised the effectiveness of internal control system in the constructing SMEs in Ba Ria-Vung Tau province including three observations:

- The trustworthy and reliability of the report;
- Compliance with relevant legal requirements, international regularities and standards;

- The effectiveness and efficiency in using resources.

METHODOLOGY

Research model

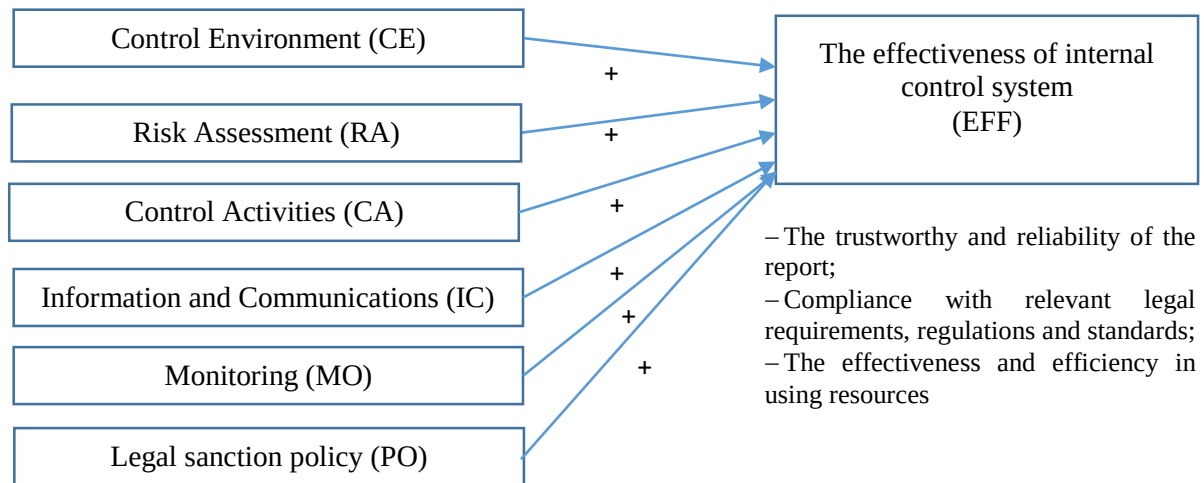
Research model to find out what factor affecting to the effectiveness of internal control has identify in many studies. All of these, the model were built from the knowledge foundation of The Internal Control – Integrated Framework COSO, Tulbul, Cobit (Briciu et al, 2014; Mary & Byaruhanga, 2014; Mahadeen et al, 2016). However, they maybe differ from the terminology, all of framework about internal control system have the same goals and functions (Doyle et al, 2007; Briciu et al, 2014).

Many studies could be conducted by authors to find out all of 5 components of internal control system - as five independent variables – (Mahadeen et al, 2016) or one to four of 5 components of internal control system (Mary & Byaruhanga, 2014). And the dependent variable were the effectiveness of internal control system (Doyle et al, 2007; Briciu et al, 2014; Mary & Byaruhanga, 2014; Mahadeen et al, 2016). In which, the effectiveness achieved when three main objectives of the internal control system were fulfilled by enterprizes Briciu et al, 2014; Mary & Byaruhanga, 2014; Mahadeen et al, 2016).

Every enacted policy from state and local managed offices affects significantly to the enterprises' effective and constant operation (Jensen, 1993; Beck et al, 2003), constructing SMEs' internal control system in particular. Moreover, some critical characteristics of policies affecting to enterprises as element of accommodated quality, political stable, effectiveness of government, accounting responsibility, and corruption control (Beck et al, 2003; Kaufmann et al, 2009). And these characteristics of legal sanctions may be affecting to the building and operation of internal control system, constructing SMEs' internal control system in particular (Jensen, 1993; Beck et al, 2003).

From the above researchers' studies and interviewing the director board of five constructing enterprises in Ba Ria-Vung Tau province, we proposed a research model (with six independent variables encompassing Control Environment; Risk Assessment; Control Activities; Information and Communications; Monitoring; and legal sanction policy) to investigate the effectiveness of internal control system of those constructing SMEs as follows:

Fig. 1 - Proposed model of factors affecting to the effectiveness of based-risk internal control system in constructing SMEs in Ba Ria-Vung Tau province.



Source: Authors' proposed model

Research hypotheses

From above proposed model of authors, hypotheses would be tested as follows:

- **Hypothesis 1:** The Control Environment have the positive affection on the effectiveness of internal control system in constructing SMEs.
- **Hypothesis 2:** The Risk Assessment have the positive affection on the effectiveness of internal control system in constructing SMEs.
- **Hypothesis 3:** The Control Activities have the positive affection on the effectiveness of internal control system in constructing SMEs.
- **Hypothesis 4:** The Information and Communications have the positive affection on the effectiveness of internal control system in constructing SMEs.
- **Hypothesis 5:** The Monitoring have the positive affection on the effectiveness of internal control system in constructing SMEs.
- **Hypothesis 6:** The Legal sanction policy have the positive affection on the effectiveness of internal control system in constructing SMEs.

In the other hand, authors would conduct multiple regression analysis to identify the equation assessing factors' effect on the effectiveness of internal control system in the constructing SMEs in Ba Ria-Vung Tau province. The specific standardized equation is:

$$EFF = \beta_1 CE + \beta_2 RA + \beta_3 CA + \beta_4 IC + \beta_5 MO + \beta_6 PO$$

For: EFF – The effectiveness of internal control system in enterprises

CE – The Control Environment

RA	–	The Risk Assessment
CA	–	The Control Activities
IC	–	The Information and Communications
MO	–	The Monitoring
PO	–	The legal sanction policy

DATA

Based on above researches and other papers as well as the COSO framework 2013, a qualitative survey was used to interview director board members of 5 constructing SMEs and 5 experts who has a thorough knowledge about internal control system as lectures to confirm the dependent variable and independent variables as well as observations of variables by using interview technique of Seidman (1998). After that, author used the qualitative survey to interview 10 other companies in the same field in order to find out the clarity and comprehensibility of questions and run pre-test to determine the reliability of questions.

Then, a completed survey in which observations were measured with a typical five-level Likert scale was sent to respondents who belong to the leader board of constructing SMEs in Ba Ria-Vung Tau province. In which, the Control Environment factor toward to investigate the disseminated and established behavioural disciplines of the top manager, creating the foundation of the personal and professional integrity; ethical values and competence of all staffs in an entity. The second factor, the Risk Assessment factor assess the frequency and level of risk. The third factor, Control Activities, researched on the risk identified activities and risk responses whether or not conducted seriously. The fourth factor, Information and Communication, evaluated the record, process and communication internal and external information in a conformist timeliness and procedure supporting for staffs perform seriously their responsibility. The factor of Monitoring appraises the qualitative evaluated process of timeline control system comprising on-going monitoring and periodic monitoring or the combination of both. And, the last factor, Legal sanction policy, encompassing four characteristics of effectiveness, stabilization, transparency, accounting responsibility.

Furthermore, the three perspectives encompassing the trustworthy and reliability of enterprises' reports; the compliance with relevant legal requirements and standards in operation; the effectiveness and efficiency in using resources investigated the effectiveness of

internal control system. Moreover, the survey must be conducted by respondents who have professional knowledge enough to understand and answers questions. And, to fulfil the validity and reliability of the research result, the sample in Multiple Regression Analysis (Green, 1979) (Tabachnick and Fidell, 2007) is at least as:

$$N = 50 + (8 \times m) \quad (1)$$

Where: **N**- The select sample; **50** – The constant; **m** – independent variables

In addition, the sample size in EFA minimize as (Hair et al., 1998):

$$N = 5 \times p \quad (2)$$

Where: **N**- The select sample; **p** – Total of observations

In this study, the sample size was maximum of formula (1) and formula (2) as well as the least sample demand to suffice this study should be 160 samples. Thus, to conduct the research, author sent the survey to directors, vice directors, chief accountants and deputy managers of 350 constructing SMEs in Ba Ria-Vung Tau province (to make a good sample, it should be at least tenfold observations, equivalent with 350 surveys, Hair et al., 1998). In addition, the questionnaire was designed with 39 questions divided into two sections concluding: section one with seven questions related to enterprise and respondents' information, section two with 32 questions toward to 6 factors as independent variables with 3 questions concentrated on dependent variable. Furthermore, the questions in section two and three were designed as following Alreck & Settle (2004) and based on a five (5) point Likert scale, ranging from strongly disagree to strongly agree, where 1 represented for strongly disagree and 5 represented for strongly agree.

In addition, the software Statistical Package for Social Sciences (SPSS) was run to analyze and present data in the form of mean and standard deviation for each question and factor. A Cronbach's Alpha, that value of it is generally accepted at 0.7, also was run to test dependent variable and independent variables. Furthermore, authors conducted Exploratory Factor Analysis (EFA) before Multiple Regression Analysis (MRA) as well as performed One-way Anova Test to evaluate above hypothesizes.

RESULTS AND DISCUSSIONS

There were total of 350 questionnaires sent to directors, vice directors, deputy managers and chief accountants in 350 enterprises. And 328 were returned accounting for 93.71%. After testing the appropriate answers, total usable responses accounted 304 higher than the minimum

sample requirement of this study. Therefore, the collected data was validity and reliability to conduct EFA and MRA method. Table 1 illustrated the respondents' profiles.

Tab. 1: Respondents' profiles

	Items	Frequency	Percent (%)
Position	Director	29	9.54
	Vice director	64	21.05
	Deputy manager	60	19.74
	Chief accountant	151	49.67
Experience	Between 1 and 3 year	106	34.87
	Between 3 and 5 year	73	24.01
	Upper 5 year	125	41.12
Time at enterprise	Under 1 year	6	1.97
	Between 1 and 3 year	154	50.66
	Between 3 and 5 year	69	22.70
	Upper 5 year	75	24.67
Firm type	Private	68	22.37
	Limited	157	51.64
	Stock	79	25.99
Equity (Billion)	Under 10	120	39.47
	Between 10 and 50	144	47.37
	Upper 50	40	13.16
Active time	Between 3 and 5 year	79	25.99
	Between 5 and 10 year	153	50.33
	Upper 10 year	72	23.68
Labor quantity	Between 3 and 5 year	79	25.99
	Between 5 and 10 year	153	50.33
	Upper 10 year	72	23.68

Source: SPSS analysis result of own

The figures of Tab. 1 illustrated a significant quality of respondents with the equivalent between managers and chief accountants, 50.33% and 49.67%. Furthermore, the experience of respondents were dramatic with 65.13% over 3 years. And the time working at enterprise were very high with 98.03% over 1 year. Thus, it showed the valid of respondent's quality to understand and answer question from the survey. Moreover, the figures also presented characteristics enterprises as SMEs standard according to Viet Nam's Business Law.

In next step, authors used descriptive statistics to show mean and standard deviation values of observations and appraised the effectiveness of six independent variables (including CE; RA; CA; IC, MO and PO) and dependent factor (EFF). Figures display as below.

Tab. 2: Descriptive Statistic of variables

	Mean	Standard Deviation	Minimum	Maximum	Median	Mode
Control Environment						
CE1	3.14	1.17	1.00	5.00	3.00	3.00
CE2	3.15	1.22	1.00	5.00	3.00	3.00
CE3	3.23	1.20	1.00	5.00	3.00	3.00
CE4	3.11	1.19	1.00	5.00	3.00	3.00
CE5	3.23	1.27	1.00	5.00	4.00	4.00
Average	3.17					
Risk Assessment						
RA1	3.60	1.00	1.00	5.00	4.00	4.00
RA2	3.49	1.09	1.00	5.00	4.00	4.00
RA3	3.55	1.13	1.00	5.00	4.00	4.00
RA4	3.46	1.15	1.00	5.00	4.00	4.00
Average	3.53					
Control Activities						
CA1	3.55	1.15	1.00	5.00	4.00	4.00
CA2	3.55	1.18	1.00	5.00	4.00	4.00
CA3	3.39	1.15	1.00	5.00	3.00	3.00
CA4	3.39	1.26	1.00	5.00	4.00	4.00
CA5	3.60	1.23	1.00	5.00	4.00	5.00
Average	3.50					
Information and Communications						
IC1	3.68	1.08	1.00	5.00	4.00	4.00
IC2	3.74	1.05	1.00	5.00	4.00	4.00
IC3	3.66	1.10	1.00	5.00	4.00	4.00
IC4	3.77	1.08	1.00	5.00	4.00	4.00
IC5	3.98	0.72	2.00	5.00	4.00	4.00
Average	3.77					
Monitoring						
MO1	3.42	1.29	1.00	5.00	4.00	4.00
MO2	3.37	1.25	1.00	5.00	3.00	4.00
MO3	3.48	1.22	1.00	5.00	4.00	4.00
MO4	3.41	1.17	1.00	5.00	4.00	4.00
MO5	3.33	1.20	1.00	5.00	3.00	3.00
MO6	3.25	1.21	1.00	5.00	3.00	3.00
Average	3.38					
Legal sanction policy						
PO1	3.87	1.08	1.00	5.00	4.00	4.00
PO2	3.74	1.15	1.00	5.00	4.00	4.00
PO3	3.83	1.06	1.00	5.00	4.00	5.00
PO4	3.01	1.10	1.00	5.00	3.00	3.00
Average	3.61					
The Effectiveness						
EFF1	3.31	0.58	2.00	5.00	3.00	3.00
EFF2	3.26	0.58	2.00	5.00	3.00	3.00
EFF3	3.24	0.58	2.00	5.00	3.00	3.00
Average	3,26					

Source: SPSS analysis result of own

According to the figures of tab. 2, all the average value of factors were above the 3.0 of scale. In which, there were two factors over 3.5 of scale embracing Information and Communications and Legal sanction policy with the value of 3.77 and 3.61, respectively. In addition, the value

of the effectiveness internal control system in constructing SMEs was just above average with 3.26 of scale. This result reflected respondent's evaluation about internal control system is not so high.

Tab. 3: Result of Cronbach' Alpha analysis

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Rating scale of factor Control Environment, Cronbach' Alpha = 0.820				
CE1	12.72	14.322	.631	.779
CE2	12.71	14.195	.611	.785
CE3	12.63	14.512	.584	.793
CE4	12.75	14.254	.622	.782
CE5	12.63	13.890	.612	.785
Rating scale of factor Risk Assessment, Cronbach' Alpha = 0.806				
RA1	10.51	7.901	.567	.783
RA2	10.62	7.254	.626	.755
RA3	10.56	7.027	.637	.750
RA4	10.64	6.811	.660	.738
Rating scale of factor Control Activities, Cronbach' Alpha = 0.836				
CA1	13.93	14.593	.642	.802
CA2	13.93	14.001	.692	.788
CA3	14.08	14.577	.637	.803
CA4	14.09	14.191	.605	.813
CA5	13.88	14.316	.614	.810
Rating scale of factor Information and Communications, Cronbach' Alpha = 0.791				
IC1	15.15	9.528	.511	.772
IC2	15.10	9.040	.623	.734
IC3	15.17	8.558	.672	.716
IC4	15.06	9.320	.543	.761
IC5	14.86	10.980	.538	.769
Rating scale of factor Monitoring, Cronbach' Alpha = 0.872				
MO1	16.84	22.336	.719	.842
MO2	16.89	22.516	.737	.839
MO3	16.78	23.145	.694	.846
MO4	16.85	24.589	.590	.864
MO5	16.93	23.672	.661	.852
MO6	17.01	23.855	.635	.857
Rating scale of factor Policy, Cronbach' Alpha = 0.780				
PO1	7.5625	3.811	.608	.714
PO2	7.6908	3.482	.634	.686
PO3	7.6020	3.844	.613	.708
Rating scale of factor The Effectiveness, Cronbach' Alpha = 0.855				
EFF1	6.50	1.142	.715	.807
EFF2	6.55	1.087	.766	.758
EFF3	6.57	1.143	.698	.823

Source: SPSS analysis result of own

Then, authors tested Cronbach' Alpha to demonstrate reliability of observations. Basing on the figures in table 3, the reliability of observation with Cronbach' Alpha from 0.780 to 0.872. Thus the data of table 3 showed the reliability of observations which was very good. In addition, with the PO factor, authors had analysed Cronbach' Alpha two times and deleted observations

PO4. Because, they have the Corrected Item-Total Correlation value under 0.3. Hence, this observation should be eliminated when testing hypothesizes and conducting EFA and Multiple regression analysis.

In the next step, authors conducted EFA analysis. The result demonstrated a good consequence with the value of the KMO and Bartlett's Test was 0.787 (value of Sig. $\approx$ 0.000) for six independent variables and 0.724 (value of Sig. $\approx$ 0.000) for dependent variable. Furthermore, the result of Rotated Component Matrix was illustrated in Table 4.

Tab. 4: Result of EFA analysis

Rotated Component Matrix ^a						
	Component					
	1	2	3	4	5	6
MO2	.824					
MO1	.805					
MO3	.797					
MO5	.757					
MO6	.740					
MO4	.714					
CA2		.818				
CA3		.784				
CA1		.750				
CA5		.729				
CA4		.698				
CE1			.780			
CE4			.771			
CE5			.762			
CE2			.749			
CE3			.742			
IC3				.778		
IC1				.739		
IC5				.711		
IC2				.706		
IC4				.680		
RA3					.805	
RA4					.796	
RA2					.789	
RA1					.717	
PO2						.837
PO3						.824
PO1						.818

Source: SPSS analysis result of own

Moreover, before conducting Multiple regression analysis, author tested six mentioned hypothesizes in above, part 3.2, to discover the relationship between factors and the effectiveness of internal control system. By using One-way Anova test, the result was shown in table 5 that all the value at Sig. column of $H_1 - CE \rightarrow EFF$; $H_2 - RA \rightarrow EFF$; $H_3 - CA \rightarrow EFF$; $H_4 - IC \rightarrow EFF$; $H_5 - MO \rightarrow EFF$ were $\approx 0.000 < 0,05$ and $H_6 - PO \rightarrow EFF$ were $\approx 0.659 > 0,05$. Hence, five hypothesizes from H_1 to H_5 were accepted and H_6 was eliminated. It means

that the effectiveness of five factors of internal control system comprising Control Environment; Risk Assessment; Control Activities; Information and communication; Monitoring related to the effectiveness of internal control system in constructing SMEs.

Tab. 5: The relationship of variables

H₁ - CE--->EFF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.011	17	.589	2.614	.001
Within Groups	64.427	286	.225		
Total	74.438	303			
H₂ - RA--->EFF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.186	16	1.262	6.674	.000
Within Groups	54.253	287	.189		
Total	74.438	303			
H₃ - CA--->EFF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.767	19	1.198	6.586	.000
Within Groups	51.671	284	.182		
Total	74.438	303			
H₄ - IC--->EFF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21.602	17	1.271	6.878	.000
Within Groups	52.836	286	.185		
Total	74.438	303			
H₅ - MO--->EFF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.150	24	1.131	6.674	.000
Within Groups	47.288	279	.169		
Total	74.438	303			
H₆ - PO--->EFF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.126	11	.193	.781	.659
Within Groups	72.312	292	.248		
Total	74.438	303			

Source: SPSS analysis result of own

From above result, authors conducted multiple regression analysis to consider the affected level of factors on the effectiveness of internal control system and investigated what factors have the strongest effect and the least effect. The result was expressed in table 6 and 7 below.

Tab. 6: The correlations between variables

	CE	RA	CA	IC	MO	PO	EFF
Pearson Correlation	1	.040	-.059	.029	-.027	-.023	.199**
Sig. (2-tailed)		.491	.305	.615	.641	.695	.000
N	304	304	304	304	304	304	304
Pearson Correlation	.040	1	.307**	.169**	.121*	-.031	.407**
Sig. (2-tailed)	.491		.000	.003	.035	.588	.000
N	304	304	304	304	304	304	304
Pearson Correlation	-.059	.307**	1	.311**	.107	.054	.340**
Sig. (2-tailed)	.305	.000		.000	.062	.351	.000
N	304	304	304	304	304	304	304

IC	Pearson Correlation	.029	.169**	.311**	1	.195**	.000	.418**
	Sig. (2-tailed)	.615	.003	.000		.001	.998	.000
	N	304	304	304	304	304	304	304
MO	Pearson Correlation	-.027	.121*	.107	.195**	1	-.153**	.491**
	Sig. (2-tailed)	.641	.035	.062	.001		.008	.000
	N	304	304	304	304	304	304	304
PO	Pearson Correlation	-.023	-.031	.054	.000	-.153**	1	-.080
	Sig. (2-tailed)	.695	.588	.351	.998	.008		.163
	N	304	304	304	304	304	304	304
EFF	Pearson Correlation	.199**	.407**	.340**	.418**	.491**	-.080	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.163	
	N	304	304	304	304	304	304	304

Source: SPSS analysis result of own

Based on the number in table 7, the correlation between dependent variable EFF and independent variables CE; RA; CA; IC and MO was significant at the 0.01 level, as well as the validity at 99%. In addition, the correlation between dependent variable EFF and five these independent variables was the positive correlation. And the PO factor did not illustrated the correlation with EFF as the Sig. Value was $0.163 > 0.05$.

Tab. 7: The result of multiple regression analysis

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.705 ^a	.497	.487	.35505	.497	48.918	6	297	.000	1.938

a. Predictors: (Constant), PO, IC, CE, RA, MO, CA

b. Dependent Variable: EFF

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.999	6	6.166	48.918	.000 ^b
	Residual	37.439	297	.126		
	Total	74.438	303			

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	.838	.180		4.667	.000		
	CE	.108	.201	4.854	.000	.989	1.011
	RA	.149	.262	6.006	.000	.890	1.124
	CA	.083	.154	3.412	.001	.826	1.211
	IC	.159	.242	5.484	.000	.871	1.149
	MO	.207	.399	9.336	.000	.929	1.077
	PO	-.008	-.015	-.357	.722	.970	1.031

Source: SPSS analysis result of own

The figure of the table Model Summary^b demonstrated of the Adjusted R Square = 0.481. It means that five factors CE; RA; CA; IC and MO of internal control system explained 48.10% the effectiveness (EFF) of constructing SMEs' internal control system and the remaining 51.90% of the effectiveness (EFF) was affected by other factors. Furthermore, we have the

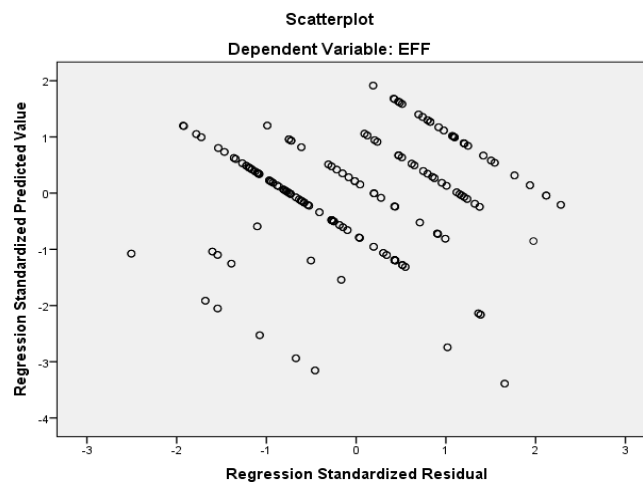
value of Sig. $\approx 0.000b < 0.05$ in table ANOVA^a. Consequently, regression model was an absolutely appropriate and acceptable model.

In addition, with the table Coefficients^a, all the Sig. value of five factors were $\approx 0.000 < 0.05$. Hence, these factors CE; RA; CA; IC and MO expound the change of the effectiveness' value. Moreover, based on the value of Standardized Coefficients column in Coefficients^b table, we had the standardized regression model as below:

$$EFF = 0.201CE + 0.262RA + 0.154CA + 0.242IC + 0.399MO$$

In general, according to Model Summary^b table, we have the value of Durbin-Watson = 1.938 ≈ 2 . It means that there was not autocorrelation phenomenon. Then, we could affirm that the collected data is trustworthy and validity to reflect the research result. With the ANOVA^a table, we had the value of $F = 48.918$ which is significant and the value of Sig. $\approx 0.000b < 0.05$. Thus, the research model conducted by authors was appropriate with meaning level of 5.00%. On the other hand, with the value of VIF column in Coefficients^b table, we also had the figures of six factors less than 2. Therefore, we could conclude that there was no multicollinearity phenomenon. As the same as according to the figure 2, there was no infringe in linear relationship assumption of research model.

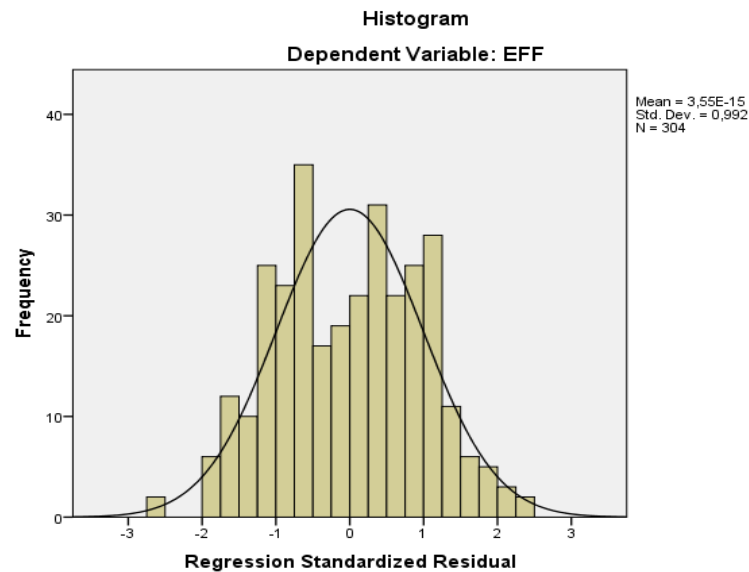
Fig. 2: Linear relationship



Source: SPSS analysis result of own

Furthermore, we also conducted testing of the standard distribution of residual. The result was interpreted in figure 3 as follows.

Fig. 3: Residual frequency



Source: SPSS analysis result of own

It could be seen in figure 3 the standard distribution curve superimposed the histogram. Moreover, the value of Mean ≈ 0 as well as standard deviation value (Std. Dev.) = 0.986. We could infer that the residual distribution was almost standard.

With the regression model, the figures demonstrated that Monitor factor (with $\beta = 0.399$) affected strongest to the effectiveness of internal control system of constructing SMEs in Ba Ria-Vung Tau province. This result was the same at Masa'deh et al. (2015); Elahi (2013); Briciu et al (2014); and Mahadeen et al (2016) and it could be explained that operation constructing area happened directly at workshop as well as the monitoring skill of supervisors has been improved recently (Elahi, 2013). Thus, enterprises need to be focus on monitor dimension to fulfil the effectiveness of activities (Doyle et al, 2007; Briciu et al, 2014; and Mahadeen et al, 2016). Further, the Control Activities factor (with $\beta = 0.154$) affected least to the effectiveness of system. This result was not like the COSO (2013) with control environment holding vital role and covering four last components. The reason for this could be that the owners could not dignify it because the cost to deploy solutions boosting the effectiveness of control activities is high (Doyle et al, 2007; Elahi, 2013; Masa'deh et al., 2015). Furthermore, Legal sanction policy factor (with Sig. value = 0.722) did not effect to EFF. The result was contrast to viewpoint of Jensen (1993) and Beck et al (2003). It could be due to SMEs' managers ignore or execute insufficiently laws or regulations as well as the level of penalty with manipulations is not tremendous and deterrent enough.

Tab. 8: The result of hypothesis test

<i>Hypothesis</i>	One-way Anova Sig. Value	Correlation (Pearson)		Regression		Result
		Cont.	Sig. Value	Beta	Sig. Value	
MO → EFF	0.001	0.199**	0.000	0.201	0.000	Accepted
RA → EFF	0.000	0.407**	0.000	0.262	0.000	Accepted
CA → EFF	0.000	0.340**	0.000	0.154	0.000	Accepted
IC → EFF	0.000	0.418**	0.000	0.242	0.000	Accepted
MO →	0.000	0.491**	0.000	0.399	0.000	Accepted
PO →	0.659	-0.080	0.163	-0.015	0.722	Eliminated

Source: own

According to the figures of the table 8, five of six hypotheses were accepted and one was eliminated. The result illustrated the positive relationship of five factors comprising MO; RA; CA; IC và MO to the effectiveness of internal control system in constructing SMEs in Ba Ria-Vung Tau province. However, the Legal sanction policy independent variable did not present the relationship with dependent variable.

CONCLUSIONS

This study aimed to discover the affection of factors as five components belong to internal control system embracing Control Environment; Risk Assessment; Control Activities; Information and communication; Monitoring and Legal sanction policy factor on the effectiveness internal control system in constructing SMEs in Ba Ria-Vung Tau province. Vietnam. The result expatiated that the effectiveness of five above factors belong to internal control system incorporate the effectiveness of internal control system. In addition, they had the positive relationship and the Legal sanction policy factor did not show the relationship with this system.

Furthermore, according to the regression model, all five factors belong to the internal control system could elucidate the alteration of the effectiveness of this system. Simultaneously, the MO factor (with $\beta = 0.399$) had the strongest affection and the CA factor (with $\beta = 0.154$) had the least affection on the effectiveness of the internal control system in constructing SMEs.

Thenceforward, we advocate some suggestions to constructing SMEs in Ba Ria-Vung Tau province from the result of research as follow:

- Proceeding enhancing the effectiveness of five factors encompassing Control Environment; Risk Assessment; Control Activities; Information and communication; Monitoring sponsoring to the effectiveness of internal control system. In which. the main factor what necessitate to focus on is Monitor;

- Enhancing the internal control knowledge basing on the foundation of COSO framework for the managers as well as staffs in constructing SMEs to ensure these factors more and more effective and efficient.
- The governmental departments should focus more on seriously monitoring activities and escalation of the penalty level, even revoking business license to force constructing SMEs in Ba Ria-Vung Tau province complying with the law.

To sum up, this paper's consequence enriches the knowledge in research of internal control system in Viet Nam's constructing sector, especially constructing SMEs in Ba Ria-Vung Tau province by adopting COSO theory. Notwithstanding, in order to encounter new characteristic factor affecting to the effectiveness of internal control system, authors will carry out research in future of this field with higher sample quantity to figure out the result.

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BEHAVIORAL INVESTING IN VIETNAM HO CHI MINH STOCK MARKET

Hoang Khang Tran - Florin Aliu - Lan Thanh Nguyen

Abstract

Most of economic and financial concepts are based on the assumptions that individuals act rationally and decisionmaking process stands on the available information. In contrast, behavioural finance challenges the assumptions that people act always rationally. The study tends to observe financial movements of the individual investors. Moreover, additional aim of the work tends to capture influence of investment advisors and portfolio managers on determining the investment strategy in Vietnam. However, each category has different behavioral biases and risk profiles. The data samples are composed from over thirty experienced investors in the Vietnam stock market and the Vnindex's movement in 18 months. The result is expected that investor's sentiment has tendency to follow the herd mentality, it also shows why it accounts for the majority. Understanding which categories, the clients fall into might cooperate effectively to go a long way toward producing better returns and building stronger relationship.

Key words: behavioral finance, the investor, sentiment, herd mentality and Vietnam.

JEL Classification: G10.

INTRODUCTION

In the stock market, investors do not always make the decisions and actions based on reason, but they are driven by psychological factors. When they have good mentality, they become more optimistic in assessment process. Nevertheless, they become more pessimistic if their mentality is not good. Standard finance fails to explain determinants of investment performance. The reason for this failure can be found with the assumption which is usually taken by traditionalists: investors' rationality in decision-making process. Unfortunately, in real life, investors do not always make their decision rationally.

In recent years, behavioral finance issues have been widely studying ever. Under the light of behavioral finance, investors can be affected by psychological factors (emotional and cognitive factors) which are the so-called behavioral biases in their decision-making process. Behavioral biases are abstractly defined the same way as systematic errors in judgment (Pompian, 2006). In fact, many phenomenon and individual investor's behaviors in the Vietnamese stock market cannot be explained by standard finance, which based on the efficient market hypothesis. Through the studies, it has been found that there are a great number of psychological factors having a significant influence on the behavior of investors. Among them, four common psychological factors that exist in almost every human being are (1) overconfidence, (2) excessive optimism, (3) attitude towards risk and (4) herd behavior. Up to now, there have been numerous studies related to these above psychological forms of individual investors in the world.

In Vietnam, the studies in terms of behavioral finance have been conducted from many researchers, however they only focus on market views. This study will be based on qualitative method to examine the level of each financial behavior and then give methodologies to approach clients effectively in communication and investment strategy.

LITERATURE REVIEW

Behavioral finance is not a new topic in the research finance, it takes a part from psychology, sociology and anthropology theories, moreover different markets may affect directly and indirectly the investors' decision-making process. In this research, four prominent behavioral biases have been studied including Overconfidence, Excessive optimism, attitude towards risk and herd behavior.

Overconfidence

Empirical psychological studies in financial markets have shown that investors have overconfident manifestation (Barberis and Thaler, 2013). The survey was conducted in 2006 regarding 300 fund managers believed to work with their forecasted performance before the financial crisis occurred in two years later. Surprisingly, nearly 100% of the surveyed groups showed that their performance would be higher or better than the stock index. This means that

fund managers were extremely overconfident (Montier 2009). Odean (1998) studied that overconfident investors intend to believe that they were better than others to choose the best shares and the appropriate time to join or escape from the market. The author also realized that those investors may receive lower profitable rate than others. According to Wu, Johnson and Sung in 2008, they found that overconfidence came from the gender, particularly male. In fact, the men are more overconfident and trade more usually than women, because the men normally have strong trend and show power in working place and the society, therefore, they intend to get win and think to choose the best stock than other people, particularly this level may get higher in the early stages of his career. On the other hand, the female normally has meticulousness, hence they would choose to build diversified portfolios to mitigate risks.

Excessive Optimism

Overconfidence involves in setting up a too high proportion for private information and overconfident in personal skills. While, excessive optimism is a part of overconfidence and the participants think that the events will be happened positively with more beautiful results in the future, however the level would be lower than overconfidence. The studies are from Odean, Heaton and Gervais in 2002, they demonstrated that excessive optimism might cause some negative investments and lead the companies or investors to accept the opportunities to invest in the negative Net Present Value (NPV), whereas the investors could have more chances to seek the best one. Normally, the investors have this type from others or groups.

Attitude Towards Risk

The behavioral finance standpoint generally considers more subjective factors (qualitative). The risks can be observed both in emotional and cognitive aspects from human's thought. Two psychological states are afraid of risk and risk-seeking that exist in an individual under different conditions and circumstance. Risk seekers generally understand and trade-off between risk and return, hence, they are more interested in capital gains from speculative assets than capital preservation from lower risk assets (Tversky and Kahneman, 1974)

Herd Behavior

In investment as well as stock market, herd behavior means that investors intend to ignore the private information and they normally do not apply the interpretations to discover the

investment opportunities, however they intend to act on what others are doing, even they might act differently with their own information. It means that, a single investor thinks that has unreasonable behavior, this investor's trading may have a low impact on stock price in the stock market, even a large investor takes action separately, it also affects insignificantly. However, the irrational behavior is formed a group or systematic, it means a group of investors with same behavior and act in the same period, the stock price would be affected significantly (Banerjee, 1992). Moreover, herd mentality is not only expressed regarding the same action with the crowd, but also reflected in not acting against the crowd despite the information that they have (Barber, Odean and Zhu, 2009).

RESEARCH METHODS

The questions were sent to 50 Vietnamese experienced investors in Ho Chi Minh stock exchange (HOSE), however there are only 30 samples that were selected with full information. The criteria are to select investors as samples including experience, time, age and gender. Information on the sample characteristics is provided specially in Table 1.

Tab. 1: The samples characteristics

Characteristics	Frequency	% of Sample
Gender		
Male	19	63.3
Female	11	36.7
Age		
<25 years old	0	0
25-35 years old	16	53.3
36-50 years old	11	36.6
>50 years old	3	10
Time joining in stock investment (year)		
<1 year	0	0
1-3 years	3	10
3-5 years	10	33.3
>5 years	17	56.6

Frequency of security investment		
Daily	18	60
A few times per week	8	26.6
One time per week	2	6.6
2-5 times/month	2	6.6
2-5 times per year	0	0
Others	0	0

Source: own

The main goal of this study is to find out which psychological aspects of investors in Vietnam stock market have influenced the behavioral bias on their investment, the qualitative research approach is used. The in-dept interviewing technique was conducted with several individuals having good experience of stock investment in the Vietnam stock market. The interviews were emphasized on collecting interviewees' opinions with six questions. As a result, psychological factors of individual investors in the Vietnam stock market were identified, as follows:

Do investors need to take any courses before investing and How do the investors think about the present stock market of Vietnam?

How do the investors evaluate their portfolios compared with others?

What will the investors do when the stock market is going down?

What do the investors think when making their decisions toward their desired shares?

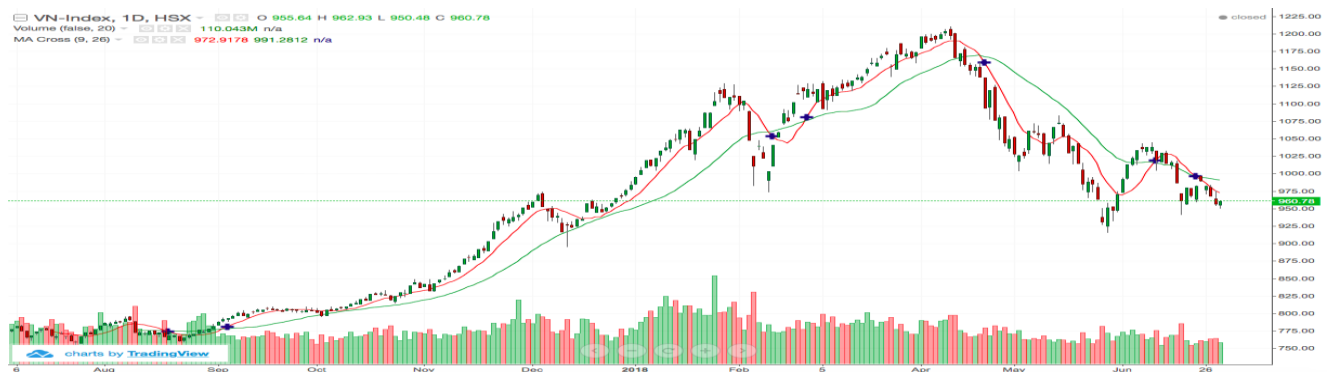
Would investors share their information to others in order to invest in the same stock?

How do the investors evaluate the Vietnam stock market in the next few years?

Thirty Vietnamese individual investors were involved in interviews, they not only have the knowledge in financial stock investment, but also have great deals of investment experience with over ten years in the Vietnam stock market. Those interviews were conducted from May to June, 2018.

In addition, the chart of VN-index from 2017 to Q2-2018 was used to support interviewees to consider to make market forecasting and answer the questions fully.

Fig.1: The chart of VN-Index



MEASUREMENT METHODS AND RESULTS

The general percentage of psychological factors:

From the interview results, the information was collected carefully and realized that four psychological factors, including (1) overconfidence, (2) excessive optimism, (3) attitude towards risk and (4) herd psychology are clearly shown in the judgment of Vietnamese individual investors.

Overconfidence

The results showed that overconfident sentiment was clearly seen in the judgment of investors themselves. 15 out of 30 investors (50%) said that the investment was unnecessary to participate in the training courses in financial investment before investing the shares. Over 45% of the interviewees said that they had better knowledge and ability to choose the best shares than others. Particularly, 90% of interviewees believed that their investment might be completely controlled by their competence.

Excessive Optimism

The interviews were carried out until the last day of Q2-2018, this period can be considered as the hard time for both individual investors and institute investors, even the whole market when the VN-Index achieved the best point over 1200, and then got a significant decline in recent two months. However, the results showed that investors still thought the market will get over and then increase to break the new point in the near future. Hence, 60 percent of interviewees said that they will continue to invest in the market, although it decreases. Over 55 percent of investors thought that they may consider to raise their capital for this market within a year.

Attitude Towards Risk

Nearly 60 percent of interviewees tend to hold the shares longer in order to wait for price to rise again, and the risk seekers are with over 70 percent said that they have considered to find good time to buy the lowest price in a day. Besides that, 90 percent of investors would choose familiar companies to invest, and it reflects a cautious attitude and fear of risk or familiarity of investors. Over 70 percent of investors select the companies with stable dividend paying to invest.

Herd Behavior

24 out of 30 investors (70%) often consult others when making decision in stock investment. Up to 28 investors, accounting for nearly 90% of investors, consider buying and selling situation, like price and volume, even foreign investors' act on the electronic price board to make investment decisions. Obviously, individual investors tend to observe the behavior of others when making investment decisions while they might have an ability to judge or evaluate the stocks. Moreover, 23 out of 30 investors (65%) will have the same decisions to buy or sell with the crowd if they do not have any information regarding stocks. Particularly, the interviewees also said that the Vietnam stock market has less information to support them, hence they normally consult many people to ask about investment strategy.

The Measurement Methods

To identify deeply in the statistics, the Cronbach's alpha and total correlations are two in among criteria considered in this analysis. Results for each construct are shown in Table 2 and 3. Five items are included such as Overconfidence, Herd Behaviour, Excessive Optimism, Psychology of Risk and Attitude. After that, the statistic goes to the structural model analysis with hypothesis.

Tab. 2: Results of the structural model analysis

Hypothesis	Standardized Estimate	t-value
Overconfidence -> Attitudes (H1)	0.134	2.351*
Excessive Optimism -> Attitudes (H2)	0.331	5.688***
Herd Behavior -> Attitudes (H3)	0.378	7.373***
Psychology of Risk -> Attitudes (H4)	(0.205)	(4.223)**
Attitudes -> Intention (H5)	0.533	6.494***

Note: Path significance: ***p<0.001; **p<0.01; *p<0.05

Source: own

The result hence reveals that the application of TPB by Ajzen (1991) is appropriate in studying the determinants of behavioural intention among Vietnamese investors. To be more specific, the behavioural intention of individual investors is influenced by attitude toward investment ($\beta = 0.533$), perceived behavioural control ($\beta = 0.151$) and subjective norm ($\beta = 0.112$), the three determinants are arranged in descending order regarding their levels of influence. This study finds that attitude toward investment to have the most significant impact on behavioural intention, which complies with the results from previous studies about applications of TPB (East 1993, Gopi and Ramayah 2007, Hung, and Lai et al, 2010). The result explains the fact that all investment activities of individual investors are self-determined and mostly guided by their attitude. Those investors take responsibility for their own behaviours. Therefore, if such attitude is positive, it is likely that they will perform the investment behaviour. Moreover, it is crucial that investors can control their behaviour when making investment decision. The longer investors participate in investment activities, the more experienced they become and they hence know when to make investment. It is understandable that experience and investment environment constitute the second most important determinant in this study since they allow investors to gain control over their behaviour. Finally, the result from the study indicates that the possibility to make investment behaviour increases when the investor believes that most people important to him/her want him/her to invest in the stock market.

Moreover, gender-based difference in investment motivation is also a factor to consider. (Hofstede 1998). It has been proved that there exists differences in perception (Carol 1982) and in communication (Tannen 1991) among male and female investors. Therefore, in this research, we also examine whether there is deviation between the two groups regarding the process of performing investing behaviour, especially in a society of “masculinity” like Vietnam. We use multiple group analysis method to analysis the influence of gender. The aspects to investigate are the impacts of psychological elements on investment attitude, as well as of attitude, subjective norm and perceived behavioural control on behavioural intention among individual investors. Comparison results between male and female investors are presented.

Tab. 3: Test of Moderating Effects of Gender

Paths	Standardized Coefficient		Subgroup Comparison (Unconstrained)	
	Male	Female	$\chi^2 = 1667.279$	
			Constrained ($\chi^2 = 1705.106$)	χ^2 difference
Attitudes – Behaviour Intention	0.378***	0.272***	1858.394	178.692***
Subjective Norms – Behaviour Intention	0.093	0.145ns	1833.798	166.519***
Perceived Behaviour Control – Behaviour Intention	0.072ns	0.240**	1920.323	253.044***
Subjective Norms – Attitudes	0.141*	0.169*	1780.740	113.461***
Overconfidence – Attitudes	0.120ns	0.188*	1809.480	142.201***
Excessive Optimism – Attitudes	0.337**	0.347***	1705.205	37.926***
Herd Behaviour - Attitudes	0.383***	0.367***	1717.147	49.868***
Psychology of Risk – Attitudes	(0.224)***	(0.176)*	1738.839	71.560***

Source: own

The result of Chi-square (χ^2) difference testing between constrained and unconstrained model with the p-value = 0.000 indicates the differences among the male and female groups regarding relationships between psychological elements and investment attitude, as well as between attitude – behavioural intention, subjective norm – behavioural intention and perceived behavioural control – behavioural intention. At the same time, this study also tested one by one relationship in the model (path) for finding out the difference of Chi square (χ^2). This result indicates highly statistical significance in all studied relationships (p-value = 0.000). This indicates the very significant gender-based differences pertaining the mentioned relationships among Vietnamese individual investors.

Among the three immediate determinants of behavioural intention as presented in Table 5, attitude toward investment is proved to have stronger impacts on male investors than on the female group. This means under the same effect of positive attitude toward investment, there is a clearer trend of performing the behaviour among men than in women. Additionally, between the two groups show deviations in the levels of influences that the psychological elements exert on investing attitude. It is shown that male attitude toward investing is more driven by herd behaviour than that of the women, while overconfidence and excessive

optimism play larger roles in forming female investing attitude than the other group. This indicates external environment usually alters the investing attitude among men more than among women. In the meantime, while being affected by overconfidence, and hence becoming excessively optimistic, the female investors' behaviour may therefore be less regulated by herd behaviour, which complies with findings from studies by Gervais, Heaton et al. (2002) and Johnsson, Lindblom et al. (2002).

Currently, this research does not find men to be more overconfident than women on HOSE. Especially, the research also reveals a part of female investors has tendency to be more precautionary in making investment decisions than the male group.

CONCLUSION

Although this is a broad topic to study, it also shows many investigations that have a potential of valued contributions to study on stock market and management. Hence, this research mainly aims to discover the relevant factors exerting influences on behavioural intention of individual investors. The research findings provide a deep understanding of elements which influence the general feelings of favouring or not. The studies proved that individual investment intention is come from four psychological elements, such as overconfidence, excessive optimism, psychology of risk and herd behaviour. Each element plays a key role in attitude toward behaviour.

Moreover, our study also constructs evidences supporting the proposition that gender-based differences among Vietnamese individual investors exist when examining the relationships between behavioral intention and its determinants, as well as between psychological elements and investment attitude. All these relationships exhibit highly statistical significance. Our findings prove that gender could create great deviation regarding the links between psychological elements.

In this research, the samples could be so small with only 30 investors on Ho Chi Minh stock exchange (HOSE), hence the scope of research is restricted in only one market, it need more times to conduct research within Hanoi, Danang and other provinces to take diversified samples. In addition, the questionnaires and answers were collected with a group of investors, it should take more time to make interviews with each participant to identify answers fully.

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BENFORD'S LAW - A TOOL TO DETECT FRAUD IN ACCOUNTING DATA: A STUDY IN VIETNAM

Hung Tang Tri - Phuong Thi Kim Tran – Thien Nguyen Huu

Abstract

This paper was conducted to investigate the knowledge of application in data mining by using Benford's Law technique to fraud detection in accounting-auditing area as well as summarize about content of Benford's Law to create a basic literature for future research in Vietnam. Hence, by using qualitative research methodology as a meta-analysis method comprising summarization, comparison and analysis of historical data as well as descriptive statistics tools of SPSS 22, the study revealed that the percentage of respondents who unknow about Benford's Law was 90.94%, which is higher tenfold than respondents who knew about it. Especially, the respondents revealed indefinitely knowledge about this law. Thus, our research showed that digital analysis according to Benford's law is effective for auditors, accountants and investorares who are identifying cautions, specifically its' advantages and how to apply it step by step by using excel. Further, the study also demonstrated data sets which can be expected to follow Benford's distribution, types of frauds that would be detected and not be detected by analysis of Benford's Law; and the potential problems that arise when an account contained a lot of observations as well as issues related to base rate of fraud.

Purpose: The research aims to generalize the knowledge of Benford's law and its' role in fraud detection to create basic reference in research about fraud risk in accounting-auditing data and motivate future researchs in Vietnam focusing on Benford's law.

Design/methodology/approach: A qualitative method was used as a meta-analysis method, a vote counting technique (Hedges & Olkin, 1980) in particular, comprising summarization, comparison and analysis of historical data.

Findings: The results revealed a huge of respondents definitely had no idea about Benford's law and the last goup had inadequate knowledge of this law. Furthermore, the basic content about Benford's law and how to apply it by using Excel tool are also illustrated.

Research/practical implications: The outcome would like to become a references in fraud risk analytic procedures in accounting-auditing data.

Originality/value: This study contributes to extensive researching about Benford's law in Viet Nam, financial data in accounting-auditing area particularly.

Keywords: Benford; Benford's Law; First-digit Law.

JEL Codes: M41, M42.

INTRODUCTION

Recently, on the world, a series of financial accounting scandals (e.g. Enron, WorldCom, Global Crossing, Tyco,...) have been increasing about fraud, erasing stock-holders' billions, and leading to loose the investors' confidence in financial market (Peterson and Buckhoff, 2004; Rezaee et al, 2004). According to the PriceWaterhouseCooper-PWC data (2003), the average estimated loss per economic crime organization was about \$2,199,930 over a two-year period on globe. The Association of Certified Fraud Examiners-ACFE (USA) showed that every year, 6% of firm revenues, equivalent to \$660 billion, lost because of career fraud (ACFE, 2004).

Whereas, in Viet Nam, the same phenomenon has been still happened. In 2016, the disclosed loss of some public enterprises increased more than double or even tripble after auditing such as Agribank Stock Company, from 164 billion VND to 424 billion VND, or Viet Nhat Sea Food Stock Company, from 6.5 billion VND to 19.6 billion VND, Song Da Infrastructure Stock Company, from 5.6 billion VND to 15 billion VND, etc. And in 2018, the reported profit of Mineral Stock General Corporation decreased by 9.65% and Lam Thao Supe Phosphate and Chemical Stock Company declined 8.6% after auditing. Or even, the published figure of An Giang Sea Food Import & Export Stock Company changed from 4 billion VND in profit to 187 billion VND in loss. As the result of these scandals, some of audit firms have been prohibited to sign auditing report as Thang Long -TDK Auditing & Valuation Company, International Auditing & Financial Consulting Company, Ha Noi Auditing & Accounting Company (CPA Hanoi).

And the fact that, although large businesses have more experience in economic fraud than small and medium enterprises, small enterprises cost more for fraud (Bierstaker et al., 2015; PWC, 2003). Usually, every small business weighed to \$98,000 for every fraud compared to \$105,000 of large enterprises (ACFE, 2004). Even more, fraud per staff in small enterprises was capable higher than that in large enterprises (Button et al, 2015; ACFE, 2004). Moreover, the result of fraud also affected to collateral assets; enterprises' external relationship; staffs' spirit; brand and reputation of business (PWC, 2003).

In addition, financial statements are basic documents of a business to reflect all financial situation in the stock market (Hasnan, 2017). And it is recommended that the outsiders, who use the information disclosed in financial statements should be careful to find out what is good or bad circumstance a business in. All of public enterprises have to release their financial statements quarterly and yearly. From it, stock-holders such as savers and investors could have good idea about enterprises' future and make decision about the price of enterprises' stock, or lenders could consider giving or not giving a loan.

From above issues, it could be seen clearly that discovery of errors or fraud in financial statements and intensifying the quality control of accounting data and auditing process were definitely critical for financial market. In which, Benford's Law were considered as an effective and efficient tool for auditors to identify frauds in financial statements (Collins, 2017; Shi et al, 2018). This law is based on an especial observation that a digit appears more regular than other digits in data range. For example, in a certain data, an observation showed that there were more 30% numbers starting with digit 1 (Collins, 2017; Shi et al, 2018). In the past half-century, more than 2,400 articles have been published about "Benford's law" (according to Googlescholar). And in the past 10 years, a series of these articles have promoted the use of this law to discover fraud in accounting numbers (Collins, 2017; Shi et al, 2018).

Hence, the purpose of this study is find out how much interesting in this law of people who learn and work in auditing-accounting area. Furthermore, we also want to summarize the knowledge about Benford's Law as well as introduce how to apply it in Excel to help auditors, investors and others who depending on related financial information make more accurate decisions and supply an effective tool of detecting fraud in accounting numbers.

LITERATURE REVIEW

In a random sequence of numbers drawn from a company's books, every digit from 1 to 9 almost have a one-in-nine chance of being the leading digit when using large numbers. However, according to a mathematical formula of over 60 years making its way into the field of accounting, certain numbers are actually more popular than others (Nigrini, 1999).

Benford's Law is founded on a theory that there are expected frequencies of digits in a list or data set (Nigrini & Mittermaier, 1997). The dramatic feature of Benford's Law, which was first applied by accountants in the late 1980s, is that these frequencies are clear only in naturally

occurring numbers, in other words, not in numbers that have been falsely invented (Bhattacharya et al, 2011).

From that, a series of researchers have tested data of different categories to detect fraud and irregularities, but Carslaw (1988) was the first to apply Benford's Law into accounting-auditing area. His result illustrated that earnings numbers of firms in New Zealand did not conform to the expected frequencies of certain second digits. According to Durtschi, Hillison and Pacini (2004), Nigrini seems to be the first researcher who have extensively applied Benford's Law to accounting-auditing data with the purpose of identifying frauds.

This law was named by Frank Benford, a physicist, born in 1883. He noticed that the pages of logarithms tables containing low numbers, such as one and two, were much more worn than those with higher numbers, eight and nine (Benford, 1938). Benford (1938) tested his theory by analysing 20,229 sets of numbers gathered from a variety of fields, for example, surface areas of rivers, baseball averages, numbers in magazine articles, and atomic weights. The data ranged from sources that include not only random numbers but also numbers following mathematical laws. The chance of a multidigit number beginning with 1 was higher than for the first digit to be. Hence, the individual digits have diverse probabilities of occurrence as the first digit; for this reason, the law is also referred as the "first digit law" (Bhattacharya et al, 2011).

Let's think about a savings account as an insightful rationalisation of Benford's Law that is increasing at 10% per year in interest. When the investment amount is A100, with the first digit as 1, the first digit will remain 1 until the account balance reaches A200. The 100% increase (from 100 to 200), at a growth rate of 10% per year compounded, would take approximately 7.3 years. At A500 the first digit will be 5. Growing at 10% per year, the total balance will rise from A500 to A600 in about 1.9 years, dramatically less time than it took the account balance to grow from A100 to A200. At A900, the first digit will be 9 until the account balance reaches A1,000, or about 1.1 years at 10%. Once the account balance reaches A1,000, the first digit will again be 1 until the account balance grows by another 100%. The persistence of a 1 as a first digit will occur with any phenomenon that has a constant or even a variable growth rate (Nigrini, 1999).

Within the framework of financial fraud detection, the more an observed set of accounting data differs from the pattern predicted by Benford's Law, the bigger the possibility that the data have been manipulated (Bhattacharya et al, 2011). Regarding to the practical application in

fraud investigations, in 1993, *State of Arizona v. Wayne James Nelson*, the accused was found guilty of attempting to defraud the state of almost \$2 million. Nelson, employed as a manager in the office of the Arizona State Treasurer, disputed that he had redirected money to a false vendor in order to reveal the lack of safeguards in a new computer system (Nigrini (1999)). Nigrini (1999) gives a brief explanation of how a Certified Public Accountant (CPA) familiar with Benford's Law could have, without a doubt, spotted that these amounts did not compare to the expected distributions and needed closer examination.

The digit distributions of the amount of the cheques are just about contrary to those expected by Benford's Law. More than 90% of the amounts begin with the number 7, 8 or 9. If each of the vendors had been tested against Benford's Law, this particular data set would have had a low conformity, indicating an irregularity. The numbers appear to have been chosen to give the manifestation of unpredictability. In this sense, Benford's Law is somewhat counterintuitive: people do not logically imagine that some numbers significantly occur more often than others. An initial observation is that there were no duplications of the cheque amounts; no round numbers; and all the amounts included cents. Nevertheless, some digits and digit combinations were repeated. The following first two digits were all used twice: 87, 88, 93 and 96. For the last two digits, 16, 67 and 83 were copied. They were leaning toward the higher-ranked numbers: note how the number 7 through the number 9 were the most repeated digits, contradicting to Benford's Law (Nigrini, 1999). And, Nigrini and Mittermaier (2009) provided an overview of digital tests to determine whether data sets conform to the expected frequencies of Benford's Law. The tests determine the comparative frequency of the following digit combinations: first digits; second digits; first two digits; first three digits; and last two digits. According to Bhattacharya et al. (2011), in context of practical application in financial fraud detection to date, Benford's original first digit law is by far the leading test used.

Even recently, a series of studies published in data mining, financial fraud risk management as particularly, also highly evaluated by using Benfor's Law in analytic procedure for internal auditor like Li et al. (2018); anti the behavior of earning management in small business like Hess and Cottrell (2016) and Lacina et al. (2018). Moreover, many reseachers agreed that applying this law in anlysing accounting data was one of the best way (Earley, 2015; Faraneh and Adam). Thus, using data mining technique like Benford's Law' application was useful in accounting-auditing data analyzing (Abdallah et al., 2016; Fay and Negangard, 2017).

In general, from above concerned dimension, we attempted to generalize the knowledge about the Benfor's Law and recommend for future researcher in Vietnam.

RESEARCH METHOD AND RESULT

Research method

To investigate the knowledge of respondents who are working, studying and teaching in accounting-auditing area, especially students and teachers majored in economic at general and accounting-auditing at specific about the Bendford's Law, a survey was designed with two separated parts, one was about respondent's information and the other was about "Bendford's Law" including eight questions consulted by some experts.

In addition, the number of survey was delivered directly to respondents of several colleges and universities here located in Ho Chi Minh City as well as accountants and auditors working here with 600 copies. The number of collected questionnaires was 541 accounting for 90.17% which reflected the reliability for the study. Then the data was processed and described by using SPSS's descriptive application.

Furthermore, to illustrate the knowledge about the Bendford's Law, we also used a meta-analysis method that was conducted to analyze findings of the reviewed studies and approach to synthesizing a literature stream by reading, summarizing and analyzing to demonstrate the knowledge about the concept, application in accounting-auditing area and how to conduct by excel tools. But, the form of meta-analysis was weak in this study limitation and this study needs to use another technique which was named as the vote counting technique (Hedges & Olkin, 1980) to enhance the creditbility of this research. And papers what we used belong to financial accounting journals and management accounting journal such as *Journal of Financial Crime*, *Journal of Accountancy*, *A Journal of Practice & Theory*, *Managerial Auditing Journal*, *International Journal of Accounting Information Systems*, *Journal of International Accounting*, *Auditing and Taxation*, *Business Horizons*, *Journal of Accounting Education*, *Journal of Network and Computer Applications*, and books about Benford's Law.

The result of survey

After collecting, the data was imput and analyzed by SPSS's descriptive application, the results was presented as following:

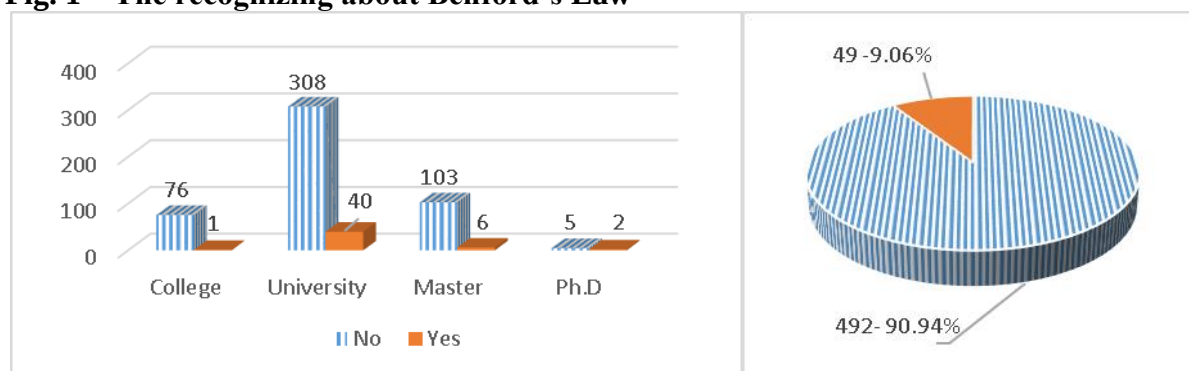
Tab.1 – Summary of information about respondents

Career	Gender		Level				Experience (Year)				Total
	Female	Male	College	University	Master	Ph.D	<=5	5 - 10	> 10	None	
Student	263	41	76	228	0	0	0	0	0	304	304
Lecturer	101	46	0	39	101	7	10	105	30	2	147
Accountant	54	12	1	64	1	0	20	16	5	25	66
Auditor	6	18	0	17	7	0	8	11	5	0	24
Total	424	117	77	348	109	7	38	132	40	331	541

Source: Own

The summarizing results showed that there were 424 females respondent higher triple than male ones with 117 respondents. In which, there were 304 college and university students accounting for 56.19% and 147 lecturers with 27.17%, whereas 90 respondents were accountants and auditors. Furthermore, the working experience of respondents who are lecturers, accountants, and auditors were fairly high with 72.57% above 5 years, equivalent to 172/237 respondents.

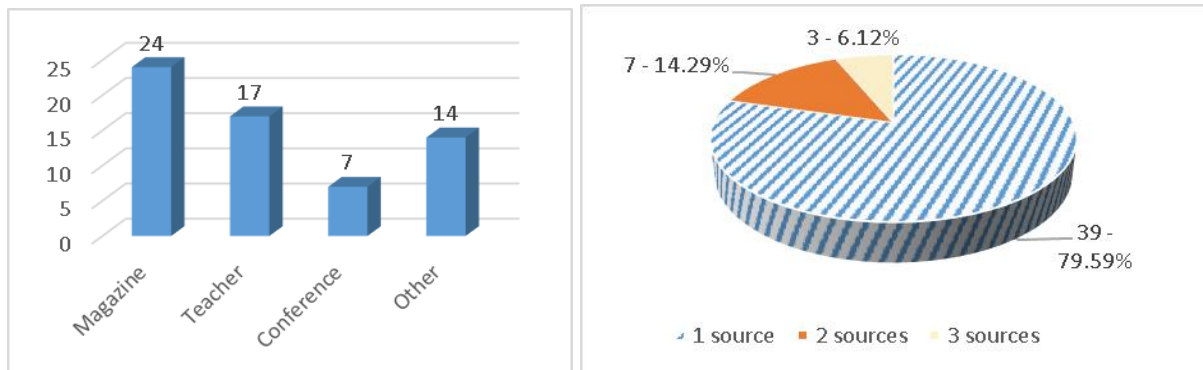
Fig. 1 – The recognizing about Benford's Law



Source: Own

About the Benford's Law, the above figures illustrated that there were few respondents knowing about it, with 492 people say "No" higher tenfold than people say "Yes". While the highest percentage of respondents say "Yes" belong to the Ph.D level with 40.00% (2/7 persons), the least percentage was college students with 1.32% (1/77 person). Even, the percentage of master respondents was only 5.83% (6/109 persons).

Fig. 2 – The sources of recognizing about Benford’s Law

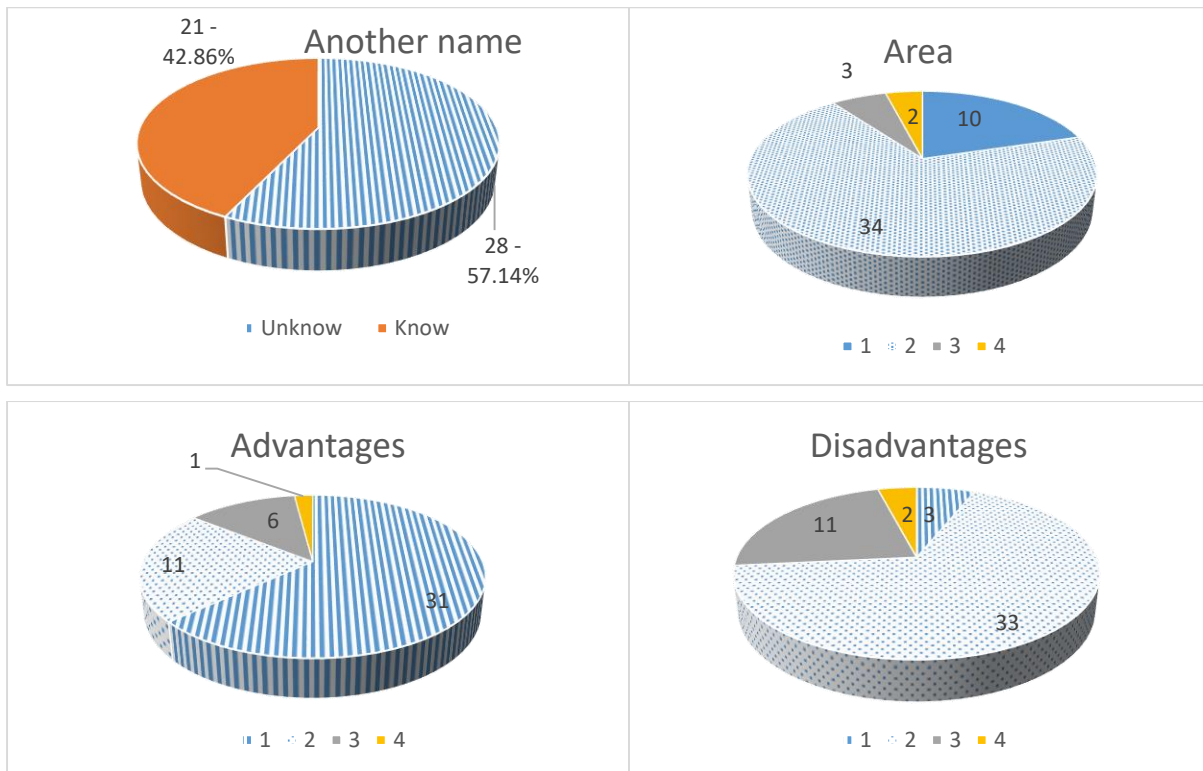


Source: Own

According to the fig. 2, furthermore, almost of respondents knew about Benford’s Law from magazines, teachers and conferences. There were only 14/49 persons recognizing about Benford’s Law from other sources. Moreover, the percentage of respondents recognized about Benford’s Law from 2 sources to 3 sources accounted for 20.41% (10/49 persons) lower than the others, recognizing from 1 source, nearly fourfold.

In addition, there were few respondents knew and understood about Benford’s Law. It was only 21/49 persons knowing that Benford’s Law has other name, weighted for nearly 43%. Even, almost people know about 1 and two areas where it is applied (44/49 persons) as well as its advantages (42/49 persons) and disadvantages (44/49 persons) (Fig. 3).

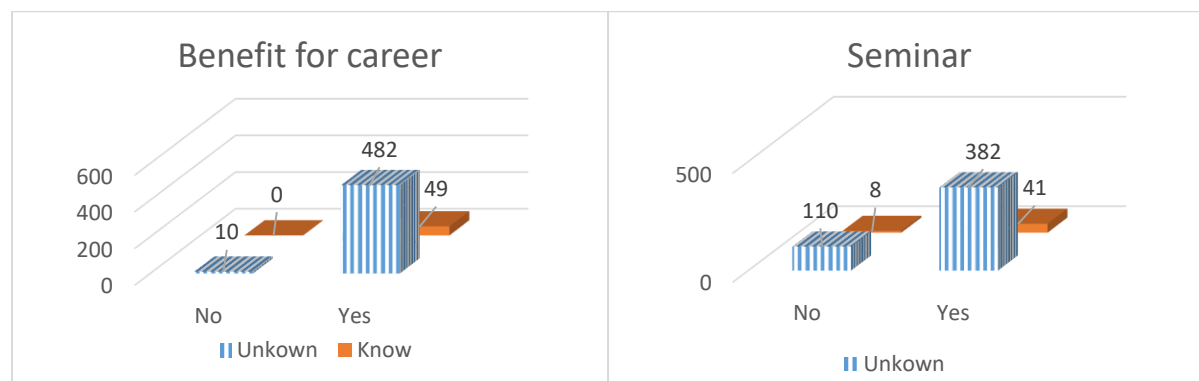
Fig. 3 – The knowledge about Benford’s Law



Source: Own

However, the figure from Fig. 4 demonstrated that both of knew and unknow about Benford's Law respondents were ready to find out more about it. And 100% person knew about this law considered that it will be benefit for their career, whereas 97.97% unknow person had the same viewpoint. Furthermore, the percentage of respondents who would like to participate in seminar was significantly high with 423/541 persons, equivalent to 78.19%.

Fig. 4 – The consciousness of respondents about Benford's Law



Source: Own

In general, the result of survey interpreted the fact that there were few respondents identifying about Benford's Law and could understand clearly about it. However, almost they acknowledged that this law will be benefit to their career and ready to know more about it.

The result of Benford's Law as a tool to detect fraud in accounting data

The following table illustrated characteristics of recent studies about Benford's Law

Tab. 2 – The overview of recent studies about Benford's Law

No.	Author	Year	Method	Result
1	Gray, G. L., & Debreceeny, R. S.	2014	Qualitative	The application of data mining to auditing is at an early stage of development and researchers take a scatter-shot approach, investigating patterns in financial statement disclosures, text in annual reports and Benford's Law is one of tool to detect fraud.
2	Earley, C. E.	2015	Qualitative	Explaining how data analytic applies to financial statement audits and why it could represent how audits are conducted and Benford's law is one of tool what auditors can use for audit process.
3	Abdallah, A., Maarof, M. A., & Zainal, A.	2016	Qualitative	Providing a systematic and comprehensive overview of these issues and challenges that obstruct the performance of fraud detection system in which Benford's Law
4	Hess, M. F., & Cottrell Jr, J. H.	2016	Qualitative	Benford's Law can use as tool to discover suspicious patterns in small businesses' report by fraud investigators
5	Mu, E., & Carroll, J.	2016	Qualitative	Benford's Law can use in fraud detection framework in earning management in manufacturing enterprises.
6	Amani, F. A., & Fadlalla, A. M.	2017	Qualitative	Benford's Law can use for application in accounting as data mining technique and as an component for framework of accounting data mining

7	Fay, R., & Negangard, E. M.	2017	Qualitative	Benford's Law can use as fraud detection functions of IDEA data analysis technique.
8	Lacina, M., Lee, B. B., & Kim, D. W.	2018	Quantitative	Using Benford distribution to examine the earnings management change following the Korean financial reforms
9	Li, H., Dai, J., Gershberg, T., & Vasarhelyi, M. A.	2018	Quantitative	Using the Technology-Organization-Environment (TOE) framework to identify and examine factors at the organizational level that influence post adoption usage of audit analytics. And Benford's Law is a digital analytical technique in TOE.
10	Shi, J., Ausloos, M., & Zhu, T.	2018	Qualitative	Discussing a common suspicion about reported financial data in 10 industrial sectors of the 6 so called "main developing countries" over the time interval 2000-2014 through Benford's Law.

Source: Own summary

According the summary of above studies, it revealed the result that Benford's Law was a fraud detection tool applying in accounting data analysis and audit process. In addition, by using it, the technology environment in organization would be enhanced (Li et al., 2018). Further, it could be applied to decrease earning management (Lacina et al., 2018) and verified the credibility of reported financial data in developing contries with Vietnam is one of them. Thus, the content about Benford's Law in this paper will contribute to spread this law to people working in accounting and auditing area. Furthermore, the basic knowledge of Benford's Law was demonstrated in following part.

The result of basic content in Benford's Law

The history and mathematic foundation of Benford's Law

Simon Newcomb is an astronomer and mathematician. In 1881, he published an article in the American Journal of Mathematics. And the content of it has become known as Benford's law. He observed that library copies of books of logarithms were considerably more worn in the beginning pages which dealt with low digits and progressively less worn on the pages dealing with higher digits. He inferred from this pattern that fellow scientists used those tables to look up numbers which started with the numeral one more often than those starting with two, three, and so on. The obvious idea was concluded that numbers which begin with the numeral one appeared more regular than with larger ones. Newcomb calculated that the probability that a number has any particular non-zero first digit is:

$$P(d) = \text{Log}10\left(1 + \frac{1}{d}\right) \quad (1)$$

Where: d is a number 1, 2 ...9, and

P is the probability

With this formula, it mean that the probability of the first digit of a number is one is about 30% while the probability the first digit a nine is only 4.6%. Table 3 shows the expected frequencies for all digits 0 through 9 in each of the first four places in any number.

Tab. 3 – The probability of digits as Benford’s Law

Digit	Position in number			
	First	Second	Third	Fourth
0	0	11.9680	10.1780	10.0180
1	30.1030	11.3890	10.1380	10.0140
2	17.6090	10.8820	10.0970	10.1000
3	12.4940	10.4330	10.0570	10.0070
4	6.6910	10.0310	10.0180	10.0021
5	7.9180	9.6680	9.9790	9.9880
6	6.6950	9.3370	9.9500	9.9941
7	5.7990	9.3510	9.9021	9.9910
8	5.1150	8.7571	9.8641	9.9861
9	4.5760	8.6000	9.8270	9.9821

Source: Nigrini, 1996

Formulas for expected digital frequencies:

For first digit of the number:

$$P(D_1 = d_1) = \log\left(1 + \frac{1}{d_1}\right); d_1 = (1, 2, 3, \dots, 9)$$

For second digit of the number:

$$P(D_2 = d_2) = \sum_{d_1=1}^9 \log\left(1 + \frac{1}{d_1 d_2}\right); d_2 = (1, 2, 3, \dots, 0)$$

For two digit combinations:

$$P(D_1 D_2 = d_1 d_2) = \log\left(1 + \frac{1}{d_1 d_2}\right)$$

$$P(D_2 = d_2 / D_1 = d_1) = \log\left(1 + \frac{1}{d_1 d_2}\right) / \log\left(1 + \frac{1}{d_1}\right)$$

Where D1 represents the first digit of a number;

D2 represents the second digit of a number, etc.

Because of no theoretical explanation for that phenomena, Newcomb’s article was unnoticed until almost 50 years later. Frank Benford, a physicist, had the same conclusion with Simon Newcomb when recognizing that the first few pages of his logarithm books were more worn than the last few. Unlike predecessor, however, he had attempted to test his hypothesis by collecting and analyzing data. Benford collected more than 20,000 observations from such diverse data sets as areas of rivers, atomic weights of elements, and numbers appearing in Reader’s Digest articles (Benford, 1938). As the result, Benford recognized that numbers consistently start with low digits occurring more frequently in the first position than larger

digits. Then, this mathematical tenet defining the frequency of digits became known as Benford's law.

From that time, mathematicians and statisticians supposed a series of various explanations for this phenomenon. However, until 1995, Hill - a mathematician – had given a proof for Benford's law that Benford's distribution was like the normal distribution as well as demonstrating how it applied to stock market data, census statistics, and certain accounting data. Furthermore, he also interpreted that the numbers according to the Benford distribution are second generation distributions which combined with other distributions. If distributions are selected at random and random samples are taken from each of these distributions, the dramatic digit frequencies of the combined sampling will converge to Benford's distribution, even though the individual distributions able not closely follow the law (Hill 1995).

Moreover, the data sets will be followed the Benford's law when the elements result from random variables taken from divergent sources that have been multiplied, divided, or raised to integer powers (Boyle, 1994). These explained why certain sets of accounting numbers often appear to closely follow Benford's distribution, because they was the result of a mathematical process. Take an account receivable as an example, it was a number of items sold (which comes from one distribution) multiplied by the price per item (coming from another distribution). Another example in capital market, the market value of a firm was \$1,000,000. It will be doubled in size before the first digit is a "2" when growing up to 100%. And for the first digit to be a "3" when growing up to 50% as well as to be a "4" when growing only up to 33%, etc. Hence, in many distributions of financial data from a purchase order to stock market returns, the first digit one is much further from two as well as smaller values of the first significant digits are much more likely than larger values.

Application of Benford's Law in accounting-auditing area

Until the late of 1980s, an article was conducted following the Benford distribution to investigate earning manipulation by Carslaw (1988) revealed that earnings numbers from New Zealand firms did not conform to the expected distribution. In 1995, Nigrini firstly applied Benford's law extensively to accounting data to find out fraud. He used digital analysis to identify tax evaders. And recently, many papers have been used digital analysis to illustrate how an auditor performs tests on sets of accounting data and uses digital analysis computer programs, as well as case studies for training students (Nigrini & Mittermaier 1997).

Currently, if an accountant or an auditor want of apply digital analysis, as Benford's Law in particular, to detect fraud, he or she should be focus on some issues. First, on which types of accounting data that Benford's analysis capable be expected to be effective. Because there were some accounting data sets which did not conform to Benford's distribution. Thus, they need to be confirm that an accounting data should be comply with this law before conducting digital analysis. Second, what test should be deployed because there were high costs associated with identifying a fraud when it unpresent as well as unidentify a fraud when it exist? Third, wether or not there were categories of fraud that incapable sign by using digital analysis? Finally, the contributed level of Benford's Law help to find out suspected accounts.

Choosing Appropriate Data Sets

Hill (1995) considered that almost accounting data conform to a Benford's Law. Because typical accounts consisted of transactions that result from combining numbers. Furthermore, it should be conducted with entire of account more than sampling to create more reliable. In addition, the result from Benford analysis will demonstrate various characteristics in an account. Thus, it did not mean all accounts considered as "non-complying" will be fraudulent. However, there were some populations of accounting data none comply the Benford's Law. For example, assigned numbers such as check numbers; purchase order numbers and numbers manipulated by human thoughts such as product; service prices; ATM withdrawals did not follow Benford's law (Nigrini and Mittermaier 1997). Assigned numbers should follow a uniform distribution rather than a Benford distribution. Prices are often set to fall below as \$1.99 to be perceived as much lower than \$2.00. ATM withdrawals, were often in pre-assigned, even amounts. And other numbers had a built-in maximum or minimum value like a list of assets that must obtain a certain materiality level before recording.

And, if the mean of a particular set of numbers is larger than the median as well as the skewness value is positive, the data set likely conform to Benford's Law (Wallace, 2002). Because the observations from Benford's distribution have a predominance of small values. Table 4 summarized how use Benford's analysis.

Tab. 4 – Cases of Application of Benford’s Law

Cases of employing	Cases of should not be employing
Data that result from mathematical combination (Example: number sold * price)	Data set is comprised of assigned numbers (Example: Check numbers, invoice numbers, zip codes)
Transaction-level data (Example: Disbursements, sales, expenses)	Numbers that are influenced by human thought (Example: Prices set at \$5.99)
On large data sets (Example: Full year's transactions)	Accounts with a large number of firm-specific numbers (Example: An account set up to record \$100 refunds)
When the mean of a set of numbers is greater than the median and the skewness is positive	Accounts with a built in min or max (Example: List of assets that must meet a threshold to be recorded)

Source: Own

Interpreting Results

Like many statistical tests, mathematical analysis compared the actual number of items observed to the expected as well as calculates the deviation. Taking Benford’s distribution as an example, the expected proportion of numbers with the digit one in the first position was 30.1030%. And the expected distribution of digit frequency was a logarithmic distribution that appears as a Chi-square distribution. Such a distribution deviates significantly from a normal or uniform distribution. The standard deviation for each digit’s expected proportion was:

$$s_i = [p_i * \frac{1 - p_i}{n}]^{1/2} \quad (2)$$

Where: s_i is the standard deviation of each digit, 1 through 9;

p_i is the expected proportion of a particular digit based on Benford’s law;

n is the number of observations in the data.

A z-statistic can be used to determine whether a particular digit’s proportion from a set of data is suspect. In contrast, does a digit appear more or less frequently in a particular position than a Benford distribution? The z-statistic’s formula was as follows (Nigrini, 1996):

$$z = (|p_0 - p_e| - \frac{1}{2n}) / s_i \quad (3)$$

Where: p_0 is the observed proportion in the data set;

p_e is the expected proportion based on Benford’s law;

s_i is the standard deviation for a particular digit;

n is the number of observations (the term $1/(2n)$ is a continuity correction factor and is used only when it is smaller than the absolute value term).

A z-statistic of 1.96 would indicate a p-value of 0.05 (95% of confidence) while a z-statistic of 1.64 would suggest a p-value of 0.10 (90% of confidence). For the proportion of observations to be significantly different from that expected, the deviation must be in the tail of the distribution. Thus, there were only a few fraudulent transactions, as the first, a significant

difference will not be triggered even if the total dollar amount was large. And the second, if the account being tested contained a large number of transactions, it would take a smaller proportion of inconsistent numbers to trigger a significant difference from expected than it would take if the account had fewer observations.

To extend, the Chi-square test was used to test each digit's expected frequency with actual frequency into one test statistic that indicates the probability of finding the result. If the Chi-square test rejects the hypothesis that the probability of all digits conform to Benford's distribution, then the entire account warranted further examination. Hence, the Chi-square test will be less discriminatory than the z-test but would show fewer false positives.

Limitations Based on the Type of Fraud

Benford's analysis to detect fraud transactions based on whether digits appear in certain places in numbers according to the expected proportion. Thus, a significant deviation occurred under two conditions: the person perpetrating the fraud had either added observations (1) or removed observations (2). Each behaviour would illustrate an observable deviation, provided the number relative to the sample was large enough for statistical detection. Hence, when a fraud were never recorded. And in the case of bribes, kickbacks or asset thefts, analysis according to Benford's Law could not detect the absence of transactions. Addition, the data sets under examination are not appropriate for digital analysis like application of Benford's Law. For instance, duplicate addresses or bank accounts as well as duplicate purchase orders or invoice numbers could not be discovered.

Base Rates and Conditional Probabilities

The value of using Benford's Law was that it helped to identify accounts involving fraud. Thus, it regularly was employed by auditor to evaluate the validity of firm's financial statements through the random sample selection process. And auditors/accountants had to face with two types of uncertainty when they used digital analysis to investigate fraud and made decision. First, they knew how much appropriation between digital analysis' result and real data. And the second, they could not identify the based probability of fraud in the real data. Thus, to enhance the accuracy of Benford's Law, it was critical to compare the empirical distribution between containing fraud accounts and free fraud accounts. However, that type of data were hard to collect because almost firms did not like to publish their particular data. Hence, we need to base on Bayes's the formula to boost the accuracy.

$$P(F|S) = \frac{P(S|F) * P(F)}{P(F) * P(S|F) + P(NF) * P(S|NF)} = \frac{P(S|F) * P(F)}{P(FS)} \quad (4)$$

Where: F is fraud present;

NF is no fraud present;

S is the signal of fraud;

P is the probability.

With the above formula, the probability of fraud existing with given the signal of fraud from Benford's law was a signal would be given if fraud exists multiplied by the probability of fraud (the base rate) divided by the probability of a signal of fraud. In which, the probability of a fraud signal - $P(S)$ - was the percent of times the test correctly identifies fraud plus the percent of times the test incorrectly signals fraud. Hence, the usefulness of Benford's law for fraud detection can be summarized as accurate fraud signals divided by total fraud signals.

In addition, the base rate of fraud - $P(F)$ was used to evaluate the usefulness of a Benford's analysis. However, in 1996, the report of the Association of Certified Fraud Examiners to the Nation on Occupational Fraud and Abuse showed that the base fraud rate not exist because a variety of reasons like firms rarely reported that they were victims (1); auditors and legal enforcement only knew frauds that have been detected and published (2); and no one knew about the level of undetected frauds.

More, the base rates of fraud in specific populations of transactions were often fairly small. For example, the base rate was assumed at 3 percent and Benford analysis correctly identifies accounts which contain fraud 75 percent of the time. In this case, the probability of finding a fraud would be calculated as follows:

$$P(F|S) = \frac{P(S|F) * P(F)}{P(F) * P(S|F) + P(NF) * P(S|NF)} = \frac{0.75 * 0.03}{(0.03 * 0.75) + (0.97 * 0.25)} = 0.085 \quad (5)$$

The conditional probability was 0.085 meaning that there would be a 8.5% chance of discovery. It should be focused that there had been no widespread testing of digital analysis as well as any way to assess its true success rate. Because, auditors seldom knew of the frauds that the analysis failed to detect. And, the above analysis, however, provided insights into how to evaluate the effectiveness of the procedure given certain assumptions.

Applying Benford's Law by using Excel application

To use Excel for calculating according to the Benford's Law, we should follow as:

First: Loading data into Excel

Second: Calculating first digit by using “left” function.

Third: Calculating the quantity of first digit and it’s percent by using “countif” function. Then, calculating log as Benford’s Law in numerical form by using formula $\log_{10}(1 + 1/d)$ (1).

Fourth: Drawing a bar chart with the value of percentage of real data and Benford’s Law. Then looking at the graph and identifying any records that not match Benford’s Law and suspicious patterns to help detect fraud.

CONCLUSIONS

According to the flow of time, Bendford’s Law was studied and applied in many fields, especially in accounting-auditing area as a tool to detect fraud. However, this law has not been populated Vietnam’s acedamic yet. Thus, study of this digital analysis was not only useful for any auditors and accountants but also beneficial to other parties who cared about financial statements of firms as well as financial data from stock market.

In this research, we had proved that the percentage of respondents who working in accounting-auditing area comprising students, lectures and staffs knowing about first-digit law was significantly low with 9.06%. However, more than 97% and 78% of them were acknowledged that this law would be beneficial to their career and ready to participate in seminar about Benford’s Law. Thus, we also summarized the content of this law with some main dimensions as history and mathematical foundation; the suitable data; interpretation of results; limits following types of fraud; as well as how to use Excel tool step by step to conduct application of Bendford’s Law for identify frauds.

Hence, from this paper, other researchers could investigate more about how to apply this law as a tool to detect fraud in accounting-auditing area to spread further understanding on this topic in the future. Moreover, we also proposed that auditing firms and universities in Viet Nam should organize a series of seminars about this issue to boost the capability of auditors, accountants, managers, investors, etc in detecting fraud of financial data.

Besides of outcomes, certain limitations are inevitable as the survey can not be carried with a larger scale to create more accurated identifying and understanding about Bendford’s Law from respondents. In addition, the application of this law in other fields such as medical, society, physic, crime, etc. was not mentioned in this paper And there were not any real case in Viet Nam as practical example. And this will be investigated on forthcoming researches.

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BRING INSTITUTIONS INTO FDI SPILLOVER RESEARCH: POLICY IMPLICATIONS IN VIETNAMESE PROVINCES.

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Abstract

Purpose - The purpose of this paper is to find out the affect extent of institutional policies, which supports inflows FDI on productivity - based on the database of Vietnamese provinces.

Design/methodology/approach - All data were collected from Statistical Handbook published by the General Statistics Office of Vietnam from 2009 to 2012 (four years) and the PCI data of the Vietnam Chamber of Commerce and Industry. The paper used data from 39 provinces across the country.

Originality/value - The Provincial Competitiveness Index (PCI) is seen as a policy tool, toward practical change. On those grounds, it can be said that PCI can affect productivity. Foreign companies rely on PCI to consider and decide whether to enter the market. On the side of the local government, through PCI, they can look back on the status of their own provinces, thereby offering solutions and policies to improve their institution in order to reach the developmental target. This is a new element and we want to test whether PCI really affects productivity and how it impacts.

Practical implications - The paper considers the factors that will affect the productivity of the provinces in Vietnam. From there, some suggestions will be made to help to promote technology transfer and increasing productivity in the provinces of Vietnam. Besides attracting FDI inflows, this study suggests that policymakers should consider potential policies to improve productivity via technology transfer.

Keywords: FDI, technology transfer, institutional policy

INTRODUCTION

After moving to the new mechanism, under the impact of the market forces and the competition, the Vietnamese company special state-owned enterprise saw the awareness of the role and the significance of productivity, which is motivation of the development for the business of a nation, is an important basis in making micro and macro module decision. The focus on increasing productivity nowadays is completing the life quality and making the better

social over the improved knowledge in order to get effective use of the available sources and technology. In the last two decades, the productivity of Vietnam had the average leap of 4.5% a year. Therefore, the gap between Vietnam and ASEAN countries was narrowed. However, although Vietnam had high economic growth rate, the productivity still stayed close to the bottom compared with ASEAN country and if keeping this speed of growth, Vietnam will only be equal to the Philippines in 2038, Thailand in 2069 and cost longer to catch up with others. General Statistics Office also warned about the higher disparity between Vietnam and the regional countries. And when having the statistical results for 2017, Vietnam was just equal 7.2% compared with Singapore, 18.4% with Malaysia, 37.4% with Thailand, 43.1% with Indonesia, 57.2% with the Philippines and up to 89.1% with Laos (Duong, 2017).

All the above number illustrates the ominous situation is that Vietnamese productivity growth had a sign of a slower than neighbor country. Following that, to upgrade the productivity performance, the source usage, the Government has been improving the banking system and the financial market with the trend of increasing scale, plainness and fair competition; innovating the allocation of investment capital as well as access to credit of small and medium in parallel with reforming the land policy, removing of constraints on term limits, etc. At the same time, paying attention to allocate and utilize resources effectively, transforming the economic structure, promoting innovation and applying science and technology. However, more practical solutions are needed to improve productivity.

In addition, many recent econometric analyzes have focused on understanding the causal relationship between dependent and independent variables. Some studies suggest that Foreign direct investment (FDI) can bring capital, advanced technology and management experience to the host country and that FDI has a significant positive effect on promoting productivity growth (Eskeland et al., 2003). It is also suspected that changes in higher education also show variation in economic activity across provinces (Fleisher and Chen, 1997). Zhang et al. (2016) conclude that coal intensity, environmental regulation and especially industrial structure have a significant negative impact on productivity growth, while real Gross Domestic Product (GDP), FDI has a strong positive impact on productivity growth. However, this study illustrates a negative effective of FDI on productivity when the policy-maker so focuses on attracting FDI inflow that ignores the exist of technological spillover. If the domestic workers can not receive any knowhow or benefits from foreign technology due to low education level, the positive

effect of FDI will not be find. This finding is consistent as same as the new empirical results in China (Xiao and Park, 2018).

In general, productivity plays a crucial role in the economic development of a country, so we decide to carry out this study in order to identify macroeconomic conditions having an impact on productivity, especially in provinces and cities in Vietnam, then making suggestions to contribute to the increase of the province's productivity in our country.

LITERATURE REVIEW

The Gross Domestic Product (GDP), labour force and productivity

Productivity is a component of the gross domestic product (GDP). Productivity index is calculated by dividing GDP by labour force. According to Leichenko et al. (2000) on export, employment and production: United States cause and effect analysis, the growth of state manufacturing employment (MEMP) equation indicates that productivity growth has a negative impact on the job. A study by Acikgoz et al. (2010) on the homogeneity of natural growth: An application for Turkey also shows the relationship between labor productivity, real GDP and labor force. If the main cause of the rate of growth is a natural increase in productivity, it means increasing demand for increased GDP will also leap labor productivity. The upward tendency in total productivity means that technological advances will go up, the enterprises will not require too much labor force, leading to the reduced labor force. In worker side, the untouchable technology substitutes their roles than increases the unemployment rate in the region. Thus, the labor income, welfare can be effect than increasing poverty and inequality in the economic. This study yeilds to policy-maker the two famous terms that are need to be solved as “widespread impoverishment” and “unprecedented improvement” (Deaton and Dreze, 2002).

The FDI and GDP

Foreign direct investment has attracted many researchers in the fields of economics, governance and related industries such as education. The impact of this source of foreign capital has been proved to be more advanced and advanced in science and technology to host countries, especially in European and American (Hamida, 2013; Borensztein et al., 1998, Fatima, 2016); and developing countries in Asia, Africa (Li et al, 2013). Nevertheless, many studies have explored the conditions that lead to the spread of FDI. Studies are concerned with the conditions of education, institutions, inflation. In particular, the education and educational

attainment of employees are most emphasized when it comes to the impact of FDI. Some studies have succeeded in demonstrating the synergy effect of FDI (or, in other words, the science and technology that FDI brings) and the level of labor (which can be understood as the level of education. The higher the learning capacity). However, there are studies that find contradictory results, FDI may reduce productivity in countries, or inhibit productivity gains in countries. For example, in the eastern provinces of China, Xiao & Park (2018) described the spillover effects of FDI that could be limited by the level of knowledge and ability of workers to acquire knowledge. The new technology leads to a decrease in overall productivity. Institutional arrangements for attracting FDI are therefore important, but policies and mechanisms to ensure the spread of technology to labor are extremely important. In addition, there are other thresholds for financial development, and startups also influence the level of FDI inflows (Alfaro et al., 2009), but this study focuses on education.

The Provincial Competitiveness Index (PCI) and productivity

The Provincial Competitiveness Index (PCI) on Vietnam's business environment conducts an annual business survey, assessment and ranking of the economic governance quality of provincial authorities in creating a favorable business environment for the development of the private sector. The PCI is being implemented by the Vietnam Chamber of Commerce and Industry (VCCI) with the support of the United States Agency for International Development (USAID) in Vietnam.

The overall PCI comprises ten sub-indices, reflecting economic governance areas that affect private sector development. A province that is considered to perform well on the PCI is the one that has: 1) low entry costs for business start-up; 2) easy access to land and security of business premises; 3) a transparent business environment and equitable business information; 4) minimal informal charges; 5) has limited time requirements for bureaucratic procedures and inspections; 6) limit crowding out of private activity from policy biases toward state, foreign, or connected firms; 7) proactive and creative provincial leadership in solving problems for enterprises; 8) developed and high-quality business support services; 9) sound labor training policies; and 10) fair and effective legal procedures for dispute resolution.

The PCI is constructed in a three-step sequence, referred to as "the 3 Cs": 1) collect business survey data and published data sources, 2) calculate nine sub-indices and standardize to a 10-point scale, and 3) calibrate the composite PCI as the weighted mean of nine sub-indices with a maximum score of 100 points.

Tab.1: Weight of sub-indices

Sub-indices	Weight (%)
1. Low entry costs for business start-up	5
2. Easy access to land and security of business premises	5
3. A transparent business environment and equitable business information	20
4. Has limited time requirements for bureaucratic procedures and inspections	5
5. Minimal informal charges	10
6. Limit crowding out of private activity from policy biases toward the state, foreign, or connected firms	5
7. Proactive and creative provincial leadership in solving problems for enterprises	5
8. Developed and high-quality business support services	20
9. Sound labor training policies	20
10. Fair and effective legal procedures for dispute resolution.	5

PCI is seen as a policy tool, driven by practical change. On those grounds, it can be said that PCI can affect labor productivity. Foreign companies rely on PCI to consider and decide whether to enter the market.

DATA DESCRIPTION

The paper uses descriptive statistics method, $\text{Productivity} = \text{Gross Regional Domestic Product (GRDP)} / \text{Labor Force}$. A panel data set of 39 provinces in Vietnam covering the period from 2009 – 2012 is applied. Information and data are collected from Statistical Handbook published by the General Statistics Office of Vietnam from 2009 to 2012 (four years) and the PCI data of the Vietnam Chamber of Commerce and Industry. Analyzing, comparing the level increasing and changing of productivity each year (First difference) and the change of macroeconomic factors in each province. EVIEW and STATA software is used.

Dividing into two parts to inspect: the direct effect of FDI (spillover effect) and the indirect effect on labor productivity. Based on the research model proposed which was synthesized from previous studies to provide and verify information on economic development. Therefore, it is more convenient to change slightly the symbols of the elements that correspond to symbols in Table 2 such as: labor productivity = PDT, foreign direct investment = FDI, total output province = GRDP, labor force = LBF, education = EDL, provincial competitiveness index = PCI, average income = MIC.

Tab.2: Data sources and variables in the model

Variable name	Description variable	Data sources
DLPDT _{it}	The change in the labor productivity of the province i in year t	General Statistics Office of Vietnam
DLGRDP _{it}	The change in the total output province of the province i in year t	General Statistics Office of Vietnam
DLLBF _{it}	The change in the labor force of the province i in year t	General Statistics Office of Vietnam
DLEDL _{it}	The change in the education of the province i in year t	General Statistics Office of Vietnam
DLFDI _{it}	The change in the foreign direct investment of the province i in year t	General Statistics Office of Vietnam
DLPCI _{it}	The change in the provincial competitiveness index of the province i in year t	VCCI
DLMIC _{it}	The change in the average income of the province i in year t	General Statistics Office of Vietnam

In order to facilitate the process of regression and the other steps in the research, we will use the data in the logarithm of all variables. First, the data will be collected in US dollars and then converted to a logarithmic form with the natural numbers. Besides, the basis is based on the results of unit tests (in Table 3). In addition, research will focus more on finding a causal relationship between the change of variables in each year (Difference level) than the numbers generated annually (Original level). Therefore, the official name of the variables in Table 1 corresponds to symbols after shown by the regression equation: the change of labor productivity = DLPDT, the change of total output province = DLGRDP, the changes of labor force = DLLBF, changes of education = DLEDL, changes of capital foreign direct investment = DLFDI, changes of provincial competitiveness index = DLPCI, the change of income = DLMIC.

Tab. 3: Units root test results

	Hardi test	PP test
LPDT	7.2401***	69.0104**
LFDI	6.923***	39.833**
LGRDP	9.437***	2.7035**
LEDL	7.644***	76.6687**
LLBF	9.5698***	7.635**
LMIC	10.4345***	3.124**
LPCI	8.1299***	116.123***

Note: Significant level ***: p<1%, **: p< 5, *: p<10%

Note: Null hypothesis of Hardi and PP test that data is nonstationary

Tab.4: Descriptive Statistics data from 2009 to 2012

	LEDL (People)	LFDI (USD)	LGRDP (USD)	LLBF (People)	LMIC (USD)	LPCI (Point)	LPDT (VNĐ/ person)
Mean	9.839851	18.27400	21.07196	13.55332	4.229064	4.076064	4.533328
Median	9.537351	18.25285	21.02186	13.44314	4.189002	4.074878	4.508637
Maximum	13.58135	22.15288	24.16791	15.22317	5.157636	4.304140	5.977791
Minimum	6.047372	12.20607	19.14245	12.51061	3.418258	3.809261	2.860612
Std. Dev.	1.353965	1.846919	0.920293	0.553432	0.329431	0.077969	0.545603
Sum	1535.017	2850.744	3287.226	2114.319	659.7340	635.8660	707.1992
Sum Sq. Dev.	284.1492	528.7218	131.2756	47.47452	16.82137	0.942259	46.14077
Observations	156	156	156	156	156	156	156

Table 4 shows the name, symbols, mean, maximum and minimum value of the logarithm variables of the 39 provinces with little change (using data Original), referring to education = LEDL (People), foreign direct investment = LFDI (USD), total output province = LGDP

(USD), labor force = LLBF (People), income = LMIC (USD), provincial competitiveness index = LPCI (Point), labor productivity = (VND/person), from 2009 to 2013.

RESULT ESTIMATION AND DISCUSSION

In Table 5, the empirical part is conducted via four model. First, we use Panel EGLS (Model 1) to estimate the sample, which implies better-robust results than ordinary least squares (OLS) equation. Generalize method excludes the co-variant of the variables and satisfies the homogenous of the least square method. However, The coefficient of determination is high in Model 1, which yields the ideas of non-robustness (high multi-collinearity). Model 2 (Robust Least Square) solve the high multicollinearity relationship between variables. The coefficient of determination is lower in Model 2 than Model 1 that expresses the need of the application on instrument variables for high robustness. Model 3 and Model 4 use DLGRDP and DLFDI as instrument variables to reduce the effect of multicollinearity. Thus, model 3 and 4 is the most robust model in this study, that can contribute the most reliability among others as based of policy makers for implications. Authors strongly recommend the results of Model 3 for implications.

The regression results show the affect extent of institutional policies, which supports inflows FDI on productivity - based on the database of Vietnamese provinces, such as: change in labor productivity (DLPDT), change in total output province (DLGRDP), change in labor force (DLLBF), change in education (DLEDL), change in capital foreign direct investment (DLFDI), change in provincial competitiveness index (DLPCI), change in income (DLMIC).

Tab. 5: Regression results

Variable	Model 1 (Panel EGLS)	Model 2 (Robusted Least Square)	Model 3 (Pooled IV: DLGRDP/2S EGLS)	Model 4 (Pooled IV: DLFDI/2S EGLS)
DLRGDP	0.969838*** (0.018067)	0.983832*** (0.016012)	0.964333*** (0.022483)	0.950190*** (0.024015)
DLLBF	-1.290287*** (0.157197)	-0.855960*** (0.115431)	-1.086897*** (0.250047)	-1.328595*** (0.167133)
DLIFT	0.030676*** (0.04085)	-0.008413** (0.003894)	0.035324*** (0.006417)	0.022154*** (0.005184)
DLFDI	-0.001608** (0.002301)	-0.000872* (0.001621)	-0.029515*** (0.003632)	-0.001196 (0.002483)
DLMIC	-0.277285*** (0.042884)	0.627864*** (0.069860)	-0.293298 (0.058601)	-0.242824*** (0.048235)
DLPCI	-0.104371** (0.051661)		-0.220654** (0.079518)	
DLFDI*DLEDL	0.015467** (0.016504)	0.016742* (0.009501)	0.056245*** (0.027267)	0.017385 (0.017113)
DLPCI*DLEDL	0.679804* (0.352855)		1.391567** (0.558811)	0.689838* (0.376806)
DLFDI*DLPCI		-0.012665* (0.023820)		0.037212 (0.035591)
R squared	0.966613	0.778338	0.923362	0.942496
Observations	156	156	156	156
Provinces	39	39	39	39

Note: ***: p<1%, **: p<5, *: p<10%

GRDP is statistically significant at 1%. When other factors remained unchanged, GRDP increased to 1%, the labor productivity increased to 0.964333%. GRDP impacts positive on labor productivity, re-articulates the results of Zhang's study (2016), which explains productivity growth-accounting for undesirable outputs and its influencing factors: the case of China. In Vietnam, according to National Statistical Indicator System, labor productivity is a criterion that reflects the efficiency of employees, measured in terms of GDP per worker in the reference period, usually one year. Labor productivity is calculated by the following formula:

Labor productivity = Gross domestic product (GDP) / Average number of employees. It can be seen that labor productivity is directly proportional to GDP. GDP increases, labor productivity will increase too.

Labor force is statistically significant at 1%. When other factors remained unchanged, the labor force increased to 1%, the labor productivity decreased to 1.086897%, we can see that labor productivity is inversely proportional to the labor force. The labor force has a negative effect on labor productivity, re-articulates the results of Leichenko et al (2000), study exports, employment, and production: A causal assessment of US states and regions. As productivity increases, the technology of machinery and equipment grow too, and enterprises will mitigate the use of employee that brings about alleviating in labor force.

Tab. 6: Covariance matrix robustness

	DLFDI	DLGRDP	DLIFT	DLLBF	DLMIC	DLPCI
DLFDI	0.000345	-4.55E-07	-9.75E-05	-0.003132	-3.82E-06	0.000786
DLGRDP		0.000424	-0.000107	-0.000998	0.000873	0.000110
DLIFT			0.000118	0.000960	0.000876	0.000290
DLLBF				0.031261	-0.005068	-0.008886
DLMIC					0.020561	0.009466
DLPCI						0.006374

The educational level is not statistically significant. However, this study does not find the direct effect of education on productivity, so education implies as another aspect of resonance with FDI or PCI to increase productivity (Tab 3).

FDI is statistically significant at 10%. When other factors remained unchanged, FDI increased to 1%, labor productivity decreased to 0.029515%. Low labor level in Vietnam is a major factor hindering the effective impact of FDI on labor productivity. Low labor skills will limit the ability to acquire and transfer technology. Thus, if there is a lack of qualified workers at a certain (Threshold), dissemination of new technology and diffusion of it to productivity will be difficult or impossible. From there, it can be seen that FDI has a negative effect on labor productivity. This result is consistently same as regional study in China (Xiao and Park, 2018). Wages is statistically significant at 1%. When other factors remain the same if wages increase to 1%, labor productivity increases to 0.442538%. Salaries are one of the most important economic tools in labor management, and people use this tool to stimulate an interest in labor, so wages are a powerful factor to increase productivity. In other words, for employees, wages

are the main income, in order to increase wages they must increase productivity. Thus, wages have a positive effect on labor productivity.

PCI is statistically significant at 1% and has a negative effect on labor productivity. When other factors remain unchanged, if PCI increases to 1%, the labor productivity decreases to 0.220654%. Indeed, PCI is the index for attracting foreign investment, and the institution is increasing that the provincial government is facilitating efforts to improve market access conditions for businesses through improvements, reduce licensing requirements, creative leadership, clear in the process of implementing the policy of the central, wake up all potential of the province, creating the equal competition business environment, provides policies that create conditions for foreign businesses to develop, making FDI more and more. But increasing FDI does not mean increased productivity. FDI firms find that the labor market in Vietnam is cheap so it attracts a large number of workers, leading to reduced labor productivity for local enterprises, which results in lower productivity. On the other hand, the limited knowledge trigger acquisition and technology transfer lower also reduced productivity.

The knowledge spillover effect of FDI is statistically significant at 10%. When other factors remained unchanged, the knowledge spillover effect of FDI increased to 1%, labor productivity increased to 0.056245%. It is clear that the transfer of knowledge and technology from FDI makes the education level more and more advanced in the process of training, learning the knowledge and skills from FDI enterprises and applying to the production process resulting in increased labor productivity (Alfaro et al, 2009). The knowledge spillover effect of FDI has a positive effect on labor productivity which re-articulates the results of Zhang's study (2016) on the knowledge spillover effects of FDI on the productivity and efficiency of research activities in China.

The knowledge spillover effect of PCI is statistically significant at 10%. When other factors remained unchanged, the knowledge spillover effect of PCI increased to 1%, the labor productivity increased to 1.391567%. In the index of components of the PCI has labor training index accounted for 20% of the weight. It is no coincidence that the highest weighted training quality indicator (20%) in the 2009 PCI calculation formula is because cheap labor, which is Vietnam's competitive advantage, is losing attractiveness. Without focusing on improving the quality of labor, the provinces in particular and Vietnam generally face risks such as reducing the attractiveness of investors; affecting economic growth; difficulties in business development

and investment. Thus, the knowledge spillover effect of PCI has a positive impact on labor productivity. In Tab 6, the covariant matrix shows that high colinearity is not exist in the empirical results of Pooled IV: DLGRDP/2S EGLS.

Research results show that: GDP, wages, the knowledge spillover effect of FDI, the knowledge spillover effect of PCI has a positive impact on labor productivity while labor force, foreign direct investment, provincial competitiveness index have a negative effect on labor productivity; the level of education is not statistically significant.

Regression: $DLPDT = -0.108595 + 0.964333DLGRGDP - 1.086897DLLBF - 0.004388DLEDL - 0.029515DLFDI + 0.442538DLMIC - 0.220654DLPCI + 0.056245DLFDI*DLEDL + 1.391567DLPCI*DLEDL$

CONCLUSION

This research aims to explore and identify the factors that will affect the productivity of 39 provinces in Vietnam, to develop and test a theoretical model of the relationship between the impact factors and the productivity of the provinces.

Based on theoretical foundations and productivity measurements conducted in a number of countries around the world, the topic offers a theoretical model and research concepts. The results show that gross regional domestic product, wages, spillover of FDI to education level, the spillover of the provincial competitiveness index to the level of education affected positively to productivity.

The research brings practical output to productivity in some provinces in Vietnam. This will help businesses and government agencies see the impact of each factor on productivity in the provinces and how these factors are measured. By that, businesses and government agencies have solutions and adjusted methods to increase productivity in the province in particular and the country in general. At the same time, the research also helps businesses identify factors that should be invested to contribute to the development of effective strategies of enterprises. Based on the research outcome, we made some suggestions for the provinces to complete the four economic factors to improve the productivity of the nationwide provinces.

The knowledge spillover effect of FDI and the knowledge spillover effect of PCI have a positive effect on labor productivity. Therefore, increasing the quality of labor is an essential issue. It is necessary to promote the implementation of vocational training policies for rural labor in order to ameliorate the skill level, improve the quality, productivity and

competitiveness of production, and contribute to the additional skilled worker's force. Besides, strengthening international cooperation, exchanging experiences on vocational training activities; apply vocational training programs and skill standards of advanced countries in the area and in the world. FDI can bring to business the technology and management expertise. However, to learn effectively, local businesses need to find ways to learn. Moreover, the degree of institutional incentives for foreign firms makes domestic companies face many challenges. Therefore, domestic enterprises need to be able to handle and build flexible strategies. In addition, policymakers need to consider policies for both FDI enterprises and domestic firms. Governments, especially local governments, should consider FDI policies and regional development, and encourage advanced FDI into less developed inland regions. Local governments need to be aware of the relevance of FDI to the locality as well as its impact on local businesses.

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CEO SELECTION DECISION IN VIETNAMESE FAMILY-OWNED BUSINESSES

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Abstract

Family firms are the most prevalent type of firm in the world and account for a large proportion of the economic activity and employment, especially in developing countries. The debates on having a family or non-family chief executive officer (CEO) to manage family-owned business has become one of the considerable topics in family business research but there is only little research that actually conducted in Vietnam. Hence, this paper examines the relationship between the selection of family and non-family CEO with company performance. The data sample is composed of 60 Vietnamese family companies in 10 industries from 2012-2017. The results indicate that there is a positive correlation between family CEO and company performance. Within the family company, the company value is maintained better by CEO founder than CEO successor. However, the young CEO may provide better management to family companies than founders because of their education, network across politics and businesses. Strong family cultures, high sense of family belongings and political benefits are the factors influence the choice of having family CEO rather non-family CEO within family companies. The research can contribute to CEO succession research and family-business research in emerging economies.

Keywords: CEO, family-owned company, Vietnam, family member, non-family member.

JEL Classification: M10.

INTRODUCTION

In emerging markets family firms play a very important role (Stijn et al, 2000; Mara & Larry, 2002). Hence, family business have become a very essential topic and received attention in economics, management and finance literature over the last decade. The outstanding characteristic of family companies is that family members of controlling families are very active in participating in operation and management of business (Belen & Raphael, 2006; Peng & Jiang, 2010). Hence, the ownership and control of family members in family-owned companies have significant impact on company performance and value. Although, family-

owned business model has proved their success around the world, their survival rate of still seems to be relatively low (Morris et al, 1997). And one possible factor is found that involve the CEO's leadership role and whether, in fact, he or she is also a family member (Thitima & Piruna, 2015).

In Vietnam, family business is one of the most popular types of business which accounts for 90% of total businesses in the world and 85% of total in Asia (Ky, 2016). Vietnam currently has 10,814 family businesses in 2017, increasing 15.2% compared to 2016 (Hoa, 2017). In 2017, Vietnam total GDP significantly increase up to 6.81% and family owned companies have huge contribution to the growth (Duong, 2017). A report from Vietnam General Statistic Office shows that one quarter of Vietnam total GDP is contributed by 100 largest family-owned businesses (Nam, 2017). This business model has gained some significant success in Vietnam and most of them are always in the top list of the most valuable companies on Vietnam stock market such as Vingroup, Vietjet, Doji, KiDo, Minh Long and FLC etc. The similarity observed from these family-owned businesses in Vietnam is that family members often hold top management positions and hold greater proportion of equity ownership. For example: Doji which is a typical family-owned business in Vietnam, where three generation had controlled and operated since 1994 in jewelry industry (Thanh, 2013). Another Vietnam long standing family-owned company established since 1970 is Minh Long ceramics, which is controlled and management over four generation. The stability and solidity of Vietnamese family-owned businesses might be perceived as one of the determining feature of the success of industrialization and modernization. The typical components often observed from these family-owned businesses are that family members always hold more than two chairs in the board of directors and have dominant managerial control power in the business. In recent years, corporate governance and management in family-owned business has become one of the considerable topics in family business research (Wright & Kellermanns, 2011). And in Vietnam, this is become much more essential because family-owned is not only the most popular business form but also has a core role in building Vietnam economy from the beginning. Thanh (2017) states that there are four stages that most of family-owned businesses face in corporate governance consist of awaking, cognizance, transformation and culture. However, Vietnamese family-owned companies are current at the first stage and only some of them start with cognizance stage. While in Thailand, majority of family-owned companies are

at the fourth stage where they are building their own administration culture for businesses (Thanh, 2017).

LITERATURE REVIEW

Family business is not only the most common type of business in developed countries but also developing countries (La Porta et al, 1999; Bertrand & Schoar, 2006). There are several definitions for family-owned business but two main principal components concern it, including family members hold a greater proportion of the firm's equity ownership and have dominant managerial control power on the business (Chin et al 2015). In this research, family-owned business is characterized as that more than two board director positions in the board held by family members so they are able to influence the CEO selection planning in the company. In addition, "insiders" and "outsiders" are the two terms need to be clarified before reviewing scholarly debates. The outsiders in this research are depicted as the experienced or professional experts who have no relative with family members in family-owned companies. While the insiders are defined as family members only, employees who work for family-owned companies will not be considered in this research. In this research, another term also used to describe outsider CEO is "non-family CEO".

Theories of CEO selection between family members and outsiders

There are many studies which examine and discuss on the choice between insider and outsider to manage the family-owned companies (Burkart et al, 2002; Lee, 2003; Chin et al, 2015). According to past studies, CEO selection decision would be substantially impacted by various factors such as board's independence, ownership structure, and company performance (David et al., 1997; Weisbach, 1995; Fitriya et al, 2012). And several studies also assert that family members are often chosen on CEO position because family-owned companies which are managed and operated by family members are believed to have better performance than those managed by experts (Daily & Dollinger, 1992; Anderson & Reeb, 2003). This is because family CEOs is presumed to have a better knowledge of their companies and employees than outsider CEO. In addition, the extensive kinship networks extend across politics and businesses are also considered as other advance in helping family CEOs in operating and managing their businesses effectively Chung et al, 1987; Arregle et al, 2007; Roberto, 2013). Besides that, companies have family-related CEOs face lower agency problems, so their performance is

higher (Anderson & Reeb, 2003). An empirical study conducted in the United States by Anderson and Reeb (2003) demonstrates that the family-owned companies in which family members were CEOs have higher ROA than and outperform those managed by outsider CEOs. Moreover, according to James et al (1997), employing family member on CEO position allows promoting reputation and loyalty for the business thereby resulting in better performance. The claim is also supported by Martina et al (2016) statement “the owning family’s involvement and control or its strong identification with the business, make creating and preserving a good reputation desirable”.

Beside company performance, the stability is another factor which is considered as family CEOs maintain better than outsider CEOs as family-owned businesses commit to the business for long period of time so they prefer maintaining long-term investment horizons to pursuing the myopic short-term benefit (Stein, 1989; Yuki, 2014). The claim is also justified by a study of comparing the performance of family-owned and non-family owned businesses conducted by Villalonga and Amit (2006). Their finding asserts that the family owned companies only create values when the CEOs were family members. The reason is indicated by Daily and Dollinger (1992) that outsider CEOs carry out more adventurous business strategies and familiar with large size of companies while most of family owned businesses are small and medium so they rarely adopt adventurous strategies. And that is the answer for the question why family-owned businesses directed by family members are better in term of stability. Additionally, “political” benefit is another factor influence the selection of family members on CEO position in family-owned businesses. Since, family CEO is preferred because they usually try to maintain their family’s interests and control power beside maximize profit for the business (Louis & Simon, 1994; Chin et al, 2015).

However, it is remarked by Jayaraman et al (2000), based on their financial analysis related with family-owned businesses, the size of companies and expansion process would reduce the effectiveness and performance of family CEOs. When managing and operating large size businesses, family CEOs start to struggle and show their poor knowledge and experiences reflected through company performance (DeAnne et al, 2016). Moreover, some experimental studies also expose that outsider CEO operated companies much more effective and better than family CEOs. Pérez-González (2006) indicates that companies appoint nonfamily-related CEOs perform better than the companies promote family CEOs. Furthermore, a study conducted by Lauterbach and Vaninsky (1999) proves that the businesses will become worse

when operating by family members. This due to the limit in professional skills and knowledge compared to outsider CEOs in managing capital flow and international management knowledge (Lin & Hu 2007). Additionally, outsider CEOs are also believed as the ideal solutions for solving company's difficulties and improving company performance as they are not restricted by former structures and the traditional value of the company (Donald & Warren, 1972). For the family-owned companies which require comprehensive change in the management of the company, outsider CEO is considered as the most effective remedy for them (Rita 1987; DeAnne et al 2016). According to Donald and Phyllis (1984) when the business perform poorly and require a "new causative agent of change" the outsiders are more likely to be better choice than family CEOs. Another benefit of employing outsiders is that, they may provide more neutral suggestions and deliver a positive image to enterprises compared to insiders (Fama and Jensen, 1983; Enya 2006). There are some experts may claim that family CEOs may hire professional advisors or receive the support from the board of director in managing their companies. However, in most of family-owned companies, family members also control or hold board seats, which means that they have the power in making decisions, so the advises from the board or professionals to family CEOs seems to be worthless (Shleifer & Vishny, 1986; Baek et al, 2014). There are still many debates between the effectiveness of family CEOs and outsider CEOs in term of enhance company performance so there are no absolute agreements on the selection of CEOs in family-owned business.

CEO selection features in Vietnamese family-owned companies

There are three basic features depict significantly Vietnamese family-owned companies. Firstly, in term of capital, the owners directly own money invested in the company. While in other countries, a company is considered as family company when its owner holds around 15-20% of capital. In Vietnam, owner's capital mostly comes from family members rather than external sources (e.g. bank, loan, partners etc.). Secondly, small and medium are the two most common sizes in Vietnam. Comparing to other countries, Vietnam family-owned companies seem to be smaller in term of value and operation. The final feature is that Vietnamese family-owned companies are controlled and managed based on experiences and emotional psychology rather administrative and professional rules (Khue 2017). Among these features, administration is the most essential factor directly influences the CEO selection decision in Vietnamese family companies and also the most complicated issue to discuss. In view of

culture, administration system in family-owned companies is governed by nepotism attitude related with trust, altruism and commitment between family members (Lee, 2006). And the concept is very typical in most of Asian countries where family connection is very strong and Confucianism impact people for thousand years from generation to generation (Bertrand & Schoar, 2006; Xin, 2014). Vietnamese family-owned businesses currently encounter many difficulties in maintaining their businesses from generation to generation. The issue faced by family-owned businesses appears when the second generation takes control or after the process of selecting of family member in CEO position (Khue, 2017). Although, family connection is perceived as the strength of the family-owned companies compared to other forms, it still contains weakness. Since after succession process, the conflict in interest would occur between family members because the ownership now has to be shared between successors in the spirit of “partner” relationship. And the conflicts will be exploded when they have to make strategic decision together on the approach of managing and controlling in term of common asset and capital (Stoilkovsaka et al, 2013). However, dues to the limitation in size and time constraint, this research only concentrate on examining the relation between company performance factor and selection of family CEO in family-owned businesses.

METHODOLOGY

Quantitative method

Regression analysis is conducted to demonstrate the correlation coefficient between CEO type and company performance. The first variable is the CEO type which include two types: family member and non-family member. Company performance is the second variable is calculated by the growth of company value via CARG (Compound Annual Growth Rate) approach. Additionally, there are some other variables acknowledged to have influence on company performance such as operating time, company size, company debt and other factors will be taken into consideration.

The regression model which is based on the model developed by Haniffa and Hudaib (2006) will be adopted to examine the impact of the choice of family and non-family CEO on company performance.

Hypothesis: The choice of CEO being a family member has positive influence on the company's business performance.

$$CARG = b_0 + b_1CEO\ type + b_2OP + b_3SIZE + b_4DEBT + b_5IP + b_6CP + b_7OTH$$

CARG: Company value measured by Compounded Annual Growth rate method (Ending value/ Beginning value)^{1/number of years} - 1

CEO type: This variable is reflected by dummy variable (0,1). If the CEO is a family member, its value is 1, otherwise is 0.

OP: Operating time defined as the number of years that a company has existed and operated in the market. It is a very important and decisive factor to identify the growth of a company value. In some case, new companies at some certain size have faster growth in value than old companies (Dunne & Hughes, 1994; Johnson, 2012). This explains for the slowdown in performance faced by old companies because over long period they would become inflexible and passive in process or transforming themselves to adapt with the market (Boeker, 1997). However, Evan (1987) and Aiginger (2013) state that an advance of the companies which have longer operating time is providing and improving management skills and knowledge for their managers significantly.

SIZE: Company size variable is indicated by the book value of total assets. As mentioned above, there is some connection between company size and CEO type (Jayaraman et al, 2000; DeAnne et al, 2016). The family owned company will lose their opportunities for expansion if they are not willing employ outside sources due to the fear of loss control power (Cloyd, 2014). And the fear of loss causes many difficulties for small sized companies in the training and succession process as well as acquire advices from outside experts. In contrast, in huge and old companies, the process of training and succession seems to run smoother and be guaranteed dues to their numerous qualification and experiences in business administration (Harveston et al, 1997; Pardo-del-Val, 2008)

DEBT: This variable reflects the book value of company long-term debt against total assets. In family firms, owner equity is preferred to borrow capital from outside by the founder or the first generation (Sonfield & Lussier, 2004). Therefore, family companies usually face difficulties in mobilizing outside capital (Chen, 2006)

IP: Industrial product

CP: Consumer product

OTH: Other factors

Data

Sample firms are not only listed family-owned companies on the stock exchange market but also unlisted Vietnamese family owned companies. The sample size is 60 family companies and time range will be from 2012-2017. The data is the financial data collected from secondary sources such as Bloomberg, Vietstock and company annual report published on their official website.

Tab. 1: Finding of companies

Variable	Frequency	%	Variable	Frequency	%
CEO selection			Operating time (years)		
Family member	52	86.7%	5-10	5	8.3%
Outsider	8	13.3%	10-15	17	28.3%
Total	60	100%	15-20	15	25%
			>20	23	38.3%
			Total	60	100%
Industry					
Agriculture	10	16.67%			
Textile & Garment	6	10%			
Hospitality	7	11.67%			
Aquaculture	8	13.33%			
Food & Beverage	4	7%			
Manufacturing	6	10%			
Construction & Real Estate	7	11.67%			
Banking	5	8%			
Other	7	12%			
Total	60	100%			

Source: Own computation based on data found

According to tab.1, most of family owned companies in Vietnam are operated and managed by family CEO (86.7%), and only few of them choose to employ outsider to manage their companies (13.3%). The huge difference can be explained by the fear of loss control power by family member in family owned companies, so they try to maintain the control by selecting family member over outsiders for CEO position. Besides that, the number of family companies operate in agricultural industry is the highest. This is because agriculture is still the main industry which contributes huge in Vietnam economy and agriculture has become part of Vietnamese people for thousand years.

RESULTS AND DISCUSSIONS

Tab.2: Pearson correlation coefficient

Variable	CARG	CEO	OP	SIZE	DEBT	IP	CP	OTH
CARG	1							
CEO	0.34***	1						
OP	-0.232**	-0.12	1					
SIZE	0.263***	-0.06**	0.18***	1				
DEBT	-0.072**	-0.022	0.11**	0.46	1			
IP	0.042**	0.026	0.021***	-0.13**	-0.07***	1		
CP	-0.081**	0.11**	-0.043**	-0.26**	-0.64**	-0.37	1	
OTH	0.16***	-0.016	0.112	0.18	0.03***	-0.23	-0.16**	1

Note: (*) significant level at $p < .0$, (**) significant level at $p < .05$, (***) significant at $p < 0.1$

Source: Own computation based on data found

According to table 2, there is a positive correlation between CARG and CEO type at the statistically significant rate 5%. It means that CEO family members have positive impact on the company performance. In contrast, there is a negative relationship between CARG and operating time, debt, consumer product.

Next, the results of regression model analyzed in two methods: random effect and fixed effect. By employing Hausman test to identify which regression analysis is more suitable between these two methods. The Chi-squared rate of Hausman test (Hausman, 1978) finds out that the fixed effect would be a more suitable model than the random effect for this paper.

Tab. 3: Results from two regression models

Variables	Random effect		Fix effect	
	Coefficient	p-value	Coefficients	p-value
Constant	0.646**	0.001	0.863**	0.001
Family CEO	0.011**	0.001	0.17**	0.001
OP	-0.067**	0.001	-0.203**	0.001
SIZE	-0.257**	0.001	-0.241**	0.001
DEBT	-0.116**	0.839	0.004**	0.839
IP	0.278**	0.001	0.090**	0.001
CP	0.402**	0.002	0.056**	0.002
OTH	-0.084**	0.001	0.124**	0.001
R2	14.12		12.84	
Adj. R2	13		12.37	

Hausman test Chi

squared = 5.32**

Note: (*) significant level at $p < 0.1$; (**) significant level at $p < .05$, (***); significant at $p < 0.1$

Source: Own computation based on data found

The result reflects that there is a positive correlation between family CEO and CARG value at 5% statistically significant rate. It means that the type of CEO selected in family owned companies has a positive impact on company performance. The positive correlation dues to the deep knowledge and understanding of family CEOs about their own company value and employees compared to outside CEOs. As a result, those decisions made by family CEOs are likely more optimal than outsiders (Anderson & Reeb, 2003). Therefore, the hypothesis H1 is accepted in this study. In contrast, the correlation between company size and CARG is negative at 0.241, which means that when the company size increase by 1 unit will lead to the decrease by 0.241 unit for CARG value. This is because when the company size is getting bigger, the company growth and revenue tends to slow down. In addition, it would be more challenge for managers to maintain the constant growth for company and its stable as a company gets bigger, each percentage of incremental revenue suddenly represents a fundamentally larger number (Trow, 1961; Askenas, 2014; Ward, 2016). Similarly, between operating time and CARG, there is a negative correlation at rate 0.203. It demonstrates that company performance or the value growth of the company will slow down over period. Hence, the old companies often have lower performance ratio than the young ones (Dunne & Hughes, 1994; Johnson, 2012). As the

founders of old companies prefer stable operation and strategy to risk taking innovative strategy, so that leads to the going down of company performance (Boeker, 1997).

In general, this research again confirms the claim that most of family owned companies prefer employing family member for CEO position to outsiders because the choice may help to improve their company performance and value. Besides that, the successors are believed to provide better value and performance than the founders. Since in term of business environment, modern education and business capital would provide young CEOs with value added to better manage family companies compared to the founders. Additionally, non-family companies can be reaged for future researches and other factors such as religion, culture, political issues and CEO gender can be taken into consideration for the more concrete conclusion. Finally, due to the limit of researches conducted in Vietnam, the scholarly debates and journals from the countries which have similar characteristics to Vietnam in term of culture are used, demographic and religions such as Thailand and China to support my claim.

RESEARCH IMPLICATION

There was a finding that business performance is one of a factor that positively impact the selection of family members for CEO position in Vietnamese family companies. It may be an answer for the question that why most of family companies in Vietnam prefer employing family member for CEO role to outsiders. Moreover, in family owned companies, the conflicts in administration between the founders and their successors are unavoidable due to the difference in knowledge and attitude. Hence, developing a significant roadmap for administration as well as succession plan is a very urgent and necessary preparation for family companies in Vietnam. Professional knowledge and experiences development are very important for the succession process so second generation needs to be invested from the very beginning for those things. Besides knowledge and skills, they should also be taught about responsibility for their family businesses and company value from the early days. This is because the current problem faced by most Vietnamese family owned businesses is the lack of motivation and responsibility of young generation for their family business. There are three concepts that families can teach their children beside knowledge and skills to prepare for a precise succession plan in the future:

- Sense of helping family business: The success, value and achievement of family business should be recognized by children. Since it will create passion for second generation in being part of their family business future. When the passion is created and developed, young generation will love to engage in their family business.
- Sense of earning money: The difference and conflict between the first and second generation in term of attitude toward money is unavoidable. Therefore, if the founders want their successors to understand their sense of money, they should teach and train successors about it from the beginning.
- Sense of preparation and development for family business: If young generations have opportunity to work when they are young, that would help them aware of the value of money very soon. Otherwise, higher education or internship for other companies after graduation will be an appropriate preparation and roadmap for returning their family company succession in the future.

Although this research demonstrates that family members should be a prior choice over outsiders, the harmony between family business and employees in the company should be concerned. As the operating of the whole system should not be revealed to be nepotism by employees so being open in considering outsiders would provide more space for talents to bring benefits and increase competitive advance for family owned companies. In addition, becoming open would also allow family to seek for advices and support from professionals and outside experts to help improving their administration process which is a main problem faced by most of family companies.

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COMPARISON OF SOCIAL HOUSING IN THE EU COUNTRIES AND IN SLOVAKIA

Ľubica Sipková – Viera Labudová – Juraj Sipko

Abstract

The right to housing is a basic human right. It has been established by a range of international human rights institutions and is regularly monitored by the United Nations and the European Commission. Ensuring affordable housing is one of the basic requirements for the development of opportunities and skills. Subsidized housing must, therefore, be accessible to broad levels of the population. At the beginning of the paper, we focus on social housing in the European Union member countries. Social housing in the European Union is characterized by the wide diversity of national housing concepts and policies across the member states. A variety of implemented approaches across the EU, in terms of tenures, providers, beneficiaries and funding arrangements are briefly described. Then we draw attention to the situation in regions of the Slovak Republic. In January 2011, the legal framework for social housing in Slovakia has come into force, which provides for the adequate and humanely decent housing of individuals who are unable to provide housing with their own efforts and conditions. Presented are results of the statistical analysis of social housing data in Slovakia's regions. Based on the graphical and quantitative analysis, the paper concludes that there are significant differences in structures of housing by the tenure status in the EU countries and the situation of social housing across the regions of Slovakia also varies significantly.

Purpose: The main objective of the paper is to compare social housing in the European Union countries as well as to conduct a spatial exploratory analysis of the social housing situation across Slovakia's regions.

Design/methodology/approach: The paper provides the final graphical and numerical results of statistical data analysis by a variety of descriptive statistical measures, and results of comparisons by measures of similarity of structures. We used data from the European Union Statistics on Income and Living Conditions (EU-SILC), which are available for all EU countries and provide a relatively high degree of comparability. The various dimensions of financial situation of social facilities and their structures in Slovakia were characterized as well. In this comparative and descriptive analysis, we have used the official data of the regular annual census survey (SOC 1-01) provided by the Statistical Office of the Slovak Republic.

Findings: The wide diversity of national housing concepts and policies across the EU countries are discussed. Particularly, the enormous differences in structures of housing in regard to the tenure status (e.g. owner, with mortgage or loan, no outstanding mortgage or housing loan, rent at market price and tenant, rent at a reduced price or for free) were quantified. Presented are the results of similarity of structures comparison by housing type in the EU countries' populations. It is stated, that there are dissimilar needs for social housing in the different regions of Slovakia, and uneven provision of social facilities invoke their urgent need evidently in the eastern part of the country.

Research/practical implications: In view of the need for the development of the social housing sector, it is necessary to analyze divergences in necessities and provisions of affordable social housing in the EU countries. The research results can be useful for the Slovak authorities and can contribute to better allocation of resources and an improvement in the financial management of the facilities of social services in Slovakia. However, only some important research conclusions could be stated in the paper. In the article we are not dealing with, but we strongly emphasize, other problems which highlight the importance of analyses regarding the subject of “social housing of poor people or members of socially vulnerable groups in EU”, that are substandard and inadequate housing, social housing for a diverse young population, housing as the highest expenditure for Europeans, finding adequate and affordable housing in places where job opportunities are, etc.

Originality/value: A brief summary of information sources and the availability of current data on a given topic, the results from a statistical descriptive analysis of the latest available EU-SILC¹⁶ and SOC 1-01 data, and conclusions about dissimilarities of structures of housing by the tenure status in the EU member countries are valuable, together with the description of the basic features of social facilities, their structures and the financial situation in Slovakia.

Keywords: Social Housing, Spatial Analysis, Social Facilities, EU SILC, European Union, Financial Situation

JEL Codes: R21, R31, I38, J14, C10

¹⁶ EU statistics on income and living conditions (EU-SILC) methodology – concepts and contents. Available at: <http://ec.europa.eu/eurostat/statistics-explained/pdfscache/35201.pdf>. [Accessed 14 June 18].

INTRODUCTION

According to fundamental international documents in the area of housing, such as Manifestos of the United Nations Organisation, Vancouver Declaration 1976, Global Housing Strategy 1988, Istanbul Habitat Agenda 1996, Ministerial Declaration on Social and Economic Challenges in Distressed Urban Areas (2006) of the United Nations Economic Commission for Europe, Strategy for Sustainable Housing and Land Management in the ECE region for the period 2014-2020, as well as strategic aims formulated at the level of the European Union (EU), housing is “one of the basic human needs which shall be satisfied at a level corresponding to the overall level of socio-economic development of society”.

The head of the European Commission Jean-Claude Juncker stated at his recent ‘State of the Union’ speech: “...this growth is leaving many behind and our societies are increasingly unequal. Similarly, the recent ‘recovery’ in housing markets is far from benefitting everyone and the state of housing in the European Union today remains critical. Growing needs of homeless and people in need for affordable housing...”.

Housing is not one of the areas harmonized by the EU legislation; however, regulations in different areas directly influence the formation of housing policy. A brief summary of different approaches in EU states on the topic can be found for example on the official website of the organization CECODHAS Housing Europe¹⁷. There is a growing need to unify the understanding of the concept of “social housing” in the EU countries and to seek a common approach to solve the problems regarding “decent housing, at an affordable price, in a safe environment as a fundamental need and right”, and “how far this need is met to alleviate poverty and social exclusion” in the EU countries.

Act no. 443/2010 Coll. on subsidies for housing development and on social housing¹⁸, valid since January 1st, 2011 in the Slovak Republic, defines social housing for the first time in Slovakia. Thereunder the Act, social housing is “housing acquired with use of public funds, addressed for adequate and humanly decent housing of individuals who are not able to ensure housing with their own effort and meet the conditions under this Act. Social housing is also

¹⁷ Housing Europe is the European Federation of Public, Cooperative & Social Housing established in 1988. It is a network of 45 national & regional federations. The country profile of „social housing“ on the official website Housing Europe provides an overview of facts about what is social housing, who provides social housing, how social housing is financed and who can access social housing. Available at: <http://www.housingeurope.eu/section-14/research?topic=&type=country-profile&order=datedesc>. [Accessed 21 June 2018].

¹⁸ An English version of the Act No. 443/2010 Coll. in the SR is available at: <https://www.employment.gov.sk/showdoc.do?docid=10250&forceBrowserDetector=blind>; [15 June 2018].

permanent housing in residential buildings or accommodation financed from public funds and provided within the care under specific regulations”.

Two types of housing stock can be considered as “social housing” in the SR. The first type is *new social flat* under the ownership of municipalities, that is constructed using a state subsidy (funded from the state budget and the State Housing Development Fund), as well as using soft loans based on long-term cost recovery. The new social flats are earmarked only for social needs.

The second type is *small part of former state-owned housing*, that have not been bought by their owner and who still benefit from a permanent right to use the dwellings for regulated rents which are usually extremely low, while no specific criteria apply.

According to the Act No. 443/2010 Coll., as amended by the Act No. 134/2013 Coll. the State Housing Policy Concept to 2020¹⁹ in the SR classified “disadvantaged groups in the housing market” as low-income groups of population, young families, large families, disabled persons, seniors, single-parent families, women threatened by violence and violence victims, individuals after termination of foster care or protective care foreigners and migrants, homeless people, members of marginalised Roma communities and other groups of persons who are disadvantaged for various reasons in a way that prevents them from satisfying their housing need by common means (e.g. long-term unemployment, drug addiction, etc.). For specified disadvantaged groups, the housing issue is resolved also by *facilities providing social services*, e.g. supported housing facilities, shelters, half-way houses, emergency housing facilities or facilities providing socio-legal protection of children and social care.

It can be understood, therefore, that the concept “social housing”, apart from *new social flats* and *small part of former state-owned housing* (as collectively: *municipal/social rented housing*), also includes *facilities providing social services and facilities for the implementation of social protection (social facilities)*.

In the article, the main characteristics of *social facilities* in their structures in the regions of the Slovak Republic in the year 2015 are described conferring official data of the SOC-1-01 annual census.

¹⁹ State Housing Policy Concept to 2020 of Ministry of Transport, Construction and Regional Development of the Slovak Republic (paragraph 3.3, p. 21). An English version is available at: <https://www.mindop.sk/ministerstvo-1/vystavba-5/bytova-politika/dokumenty/koncepcie>; [15 June 2018].

LITERATURE REVIEW

Key trends in the field of social housing at EU level are identified and analyzed in a variety of Eurofond publications and presented on the official EU webpages. The publication Quality of Life in the EU²⁰ according to the 2016 survey provides a number of interesting indicators on housing. Its electronic version allows for the production of maps visualizing data across Europe and some of the key indicators are presented through the use of interactive charts.

A valuable source of opinions, facts and summaries about resolutions and trends in the theme of “affordable housing for all” are publications, and documents from conferences (the latest in Tirana, Albania in September 2017), of the European Network for Housing Research (ENHR) and are presented on its official webpage. The European Social Housing Observatory²¹ is the research department of the international not-for-profit organisation CECODHAS Housing Europe, that brings data about the sector, information of national housing statistics and facts about market trends per country, research briefings and publications.

The findings of the report “2012 Housing Europe Review” by Pittini and Laino (2011) are summarized in the article by Pittini (2012) with exploration of the social housing sector from different perspectives: the diversity of definitions at the national level and common characteristics across Europe.

By an up-to-date international comparisons of social housing policy and practice in the CECODHAS Housing Europe publication “Social Housing in Europe” (Scanlon, Whitehead & Arrigoitia, 2014) are furthermore clarified the major trends in the way social housing is provided across European countries, with support of relevant statistics. There are as well European trends in the sector and opportunities for innovation and improvement presented in the publication.

Contribution to the understanding of social housing in two specific ways can be found in Poggio & Whitehead (2017). The first way is to investigate the role of social housing in European countries that are less represented in the international literature. The second way is to update the understanding of how social housing has fared across Europe since the global financial crisis (GFC) and the subsequent recession, which in some countries is still unresolved.

²⁰ Results of analysis of quality of life in the EU region based of the Survey 2016 are published by Eurofond in the brochure Quality of Life in the EU (December, 2017). [ONLINE] Available at: <https://www.eurofound.europa.eu/publications/report/2017/fourth-european-quality-of-life-survey-overview-report> or <https://www.eurofound.europa.eu/surveys/european-quality-of-life-surveys/european-quality-of-life-survey-2016>. [Accessed 10 June 18].

²¹ Available at: <http://www.housingeurope.eu/page-91/the-observatory>. [Accessed 10 June 18].

“The data at European level show that most residents live in their own homes, and that rental tends to be a secondary option; homeowners have medium or high salaries, whereas renters tend to be those with fewer resources. The 2007 financial crisis widened social inequalities. There is a clear delay in certain European states that have not known how to keep a significant part of housing out of the speculative market”, Tusell (2017) emphasized in his studies.

Particularly to the past two decades of post-transition social housing policy developments in Central and Eastern Europe is designated study of Lux (2013), Tsenkova (2017) or Balchin (2013). Svidroňová, Meričková, Nemec & Kuvíková (2017) described the legislation of the social housing system in Slovakia. The analysis of innovations in social housing provision provided by non-governmental organisations (NGOs), or the so-called third sector is the main contribution of the paper.

The individual EU countries differ in the distribution of population by tenure status. In most publications, this difference is only mentioned as a fact. We quantified these differences between selected EU countries using measures of similarity of structures. The situation in social care facilities in Slovakia has not yet been assessed according to the results of the regular annual census SOC-1-01 in the scientific literature. The statistical office has not yet processed the data and data was not provided for statistical analysis by other authorities or researchers. Since 2012, the census is largely harmonized for comparison in the European Union and it is a source of valuable information, therefore, we consider it applicable to evaluate and to compare the situation of social care facilities across regions of Slovakia, with a perspective of a follow-up comparison in EU countries.

METHODOLOGY AND DATA

For the quantitative comparison of distribution of population by tenure status, measures of similarity of structures can be used. To characterize the similarity of a pair of structures $\mathbf{p}_1 = (p_{11}, p_{12}, \dots, p_{1m})$ and $\mathbf{p}_2 = (p_{21}, p_{22}, \dots, p_{2m})$, we used coefficient constructed on the principle of measuring the distance of two vectors $\mathbf{p}_1$ and $\mathbf{p}_2$. Cosine coefficient of structure similarity is a cosine of an angle φ , $0 \leq \varphi \leq \frac{\pi}{2}$, which is formed by a pair of nonnegative vectors $\mathbf{p}_1$ and $\mathbf{p}_2$. Cosine of this angle is given by formula (Bartošová & Bína, 2010)

$$k(p_1, p_2) = \frac{\sum_{k=1}^m p_{1k} p_{2k}}{\sqrt{\sum_{k=1}^m p_{1k}^2 \sum_{k=1}^m p_{2k}^2}} \quad (1)$$

where p_{1k} is the proportion of k -th component on the total of the first structure, p_{2k} is the proportion of k -th component on the total of the second structure, m is the number of components of the structure. The values of cosine coefficient lay in interval $\langle 0,1 \rangle$. Its upper values signalize higher similarity of structures. When the structures are identical $k(p_1, p_2) = 1$ and in case of their complete difference $k(p_1, p_2) = 0$.

The data used in this article are primarily derived from microdata from EU-SILC 2007 – 2016. The reference population is all private households and their current members residing in the territory of an EU member state at the time of data collection. EU-SILC is the EU reference source for comparative statistics on income distribution, living conditions and social exclusion at European level, particularly in the context of the Open Method of Coordination (OMCs) on social inclusion, pensions and health care. The relative size of the social housing sector is calculated as a proportion of the population living in a dwelling with a reduced-price rent or occupying a dwelling free of charge.

We analysed variable Tenure status (TENSTA_2, online data code: ilc_lvho02). We used the following classification for the accommodation tenure status in EU-SILC datasets: Total (TOTAL), Owner, with mortgage or loan (OWN_L), Owner, no outstanding mortgage or housing loan (OWN_NL), Tenant, rent at market price (RENT_MKT), Tenant, rent at reduced price or free (RENT_FR).

The starting point of census SOC-1-01 data analysis was the multi-step sorting methodology in the procedures of nested PivotTables in Microsoft Excel. In particular, the “*interactive*” structural tables and graphs in the SAS JMP 12 program package of univariate and multivariate procedures were used, e.g. to evaluate the relationships of numerical variables with pairwise Pearson coefficients of correlation in the correlation matrix on the financial variables contained in the database (the original labels of variables and their categories according the census SOC 1-01 are reported in parentheses). Applied methods are explained for example in the textbook Pacáková, at all. (2009).

RESULTS AND DISCUSSIONS

We will deal with the results of our research and our part of the contribution in this area of research separately for social housing in 28 EU member countries, and for facilities providing social services in Slovakia, because of incomparable data from different databases.

Social Housing in the European Union

There is no common definition of the term social housing across Europe. Different definitions are related to a different level of public intervention in this sector. The common feature is the fact that the purpose of social housing is the general interest, the increase of affordable housing supply and that concrete social housing objectives are based on the socio-economic status and risk factors present. However, as for the state aid, the European Commission adheres to a restrictive definition of social housing, according to which this type of housing is reserved for disadvantaged groups of population²².

In many countries, there is also no definition for “social housing” (e.g. Estonia, Cyprus, Croatia, Germany,), no official definition (e.g. Austria, Netherlands, Poland, Czech Republic, Ireland, Hungary) or no definition that is unanimously accepted (e.g. France). There is no social housing in Cyprus and Greece (Braga & Palvarini, 2013).

In the countries where the legislation exists, definitions of social housing refer to different aspects of this tenure. Social housing provision in Belgium is meant to offer adequate housing, i.e. qualitatively suitable to ensure hygienic standards and sound living conditions, but still affordable and with a certain security of tenure for households on a low income. Social housing in Bulgaria consists of municipally-owned dwellings let to particularly needy people. In Finland, the right to housing is established by the Constitution, and the purpose of social housing is to facilitate the access to secure and high-quality housing for all. In Denmark, social housing or, more specifically, not-for-profit housing consists of housing for rent provided at cost prices by not-for-profit housing associations. Social housing in Latvia consists of ‘social houses’ and ‘social apartments’ rented by municipalities at affordable rents to vulnerable households. Municipal apartments let at a rent fixed by the state represent social housing in Lithuania. Social housing in Malta refers to the provision of housing and housing assistance

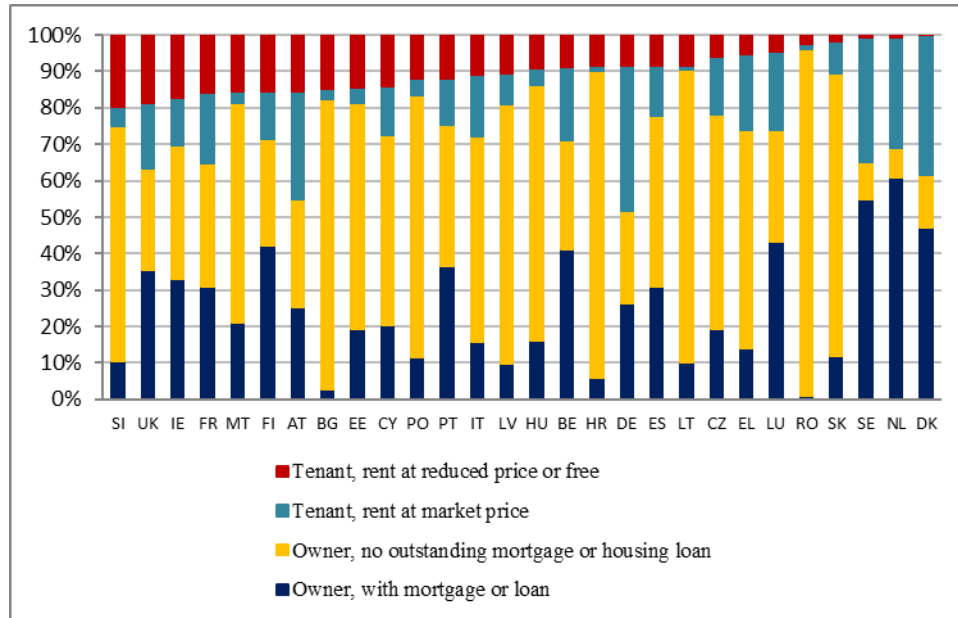
²² State Housing Policy Concept to 2020 of Ministry of Transport, Construction and Regional Development of the Slovak Republic (p. 3.3, p. 21). English version available at: <https://www.mindop.sk/ministerstvo-1/vystavba-5/bytova-politika/dokumenty/koncepcie>; [15 June 2018].

to households that are in particularly severe need, usually on a rental basis. In Portugal, legal concept based on 1983' legislation defined social housing as housing built and bought with the financial support of the State. In Romania, the term social housing (or “social houses”) is officially defined as “public dwellings with subsidized lease, allocated to individuals or families whose financial position would not otherwise allow them access to tenements leased on the market”. In Slovenia, social housing is officially defined as non-profit rented dwellings and it is addressed to people on low to middle income. Social housing in the UK is low-cost housing allocated on the basis of need. In Sweden, the term “social housing” is not used. The corresponding sector is called “allmännyttig”, which literally means “public utility” or “for the benefit of everybody”. Social housing in Italy consists mainly of dwellings rented on a permanent basis; also, to be considered as social housing are dwellings built or rehabilitated through public and private contribution or the use of public funding, rented for at least eight years and also sold at affordable prices, with the goal of achieving a social mix (Pittini & Laino, 2011).

On the basis of data from the European Union Statistics on Income and Living Conditions (EU-SILC) in 2016, as such, 7 out of every 10 (69.2%) persons in the EU-28 lived in owner-occupied dwellings, while 19.9% were tenants with a market price rent, and 10.9% were tenants in reduced-rent or free accommodation. The share of the population living in a dwelling with a reduced-price rent or occupying a dwelling free of charge was less than 20.0% in all of the EU member states.

The proportion of people living in a dwelling with a reduced-price rent or occupying a dwelling free of charge was highest, among the EU Member States, in Slovenia (19.6%), UK (18.6%) and Ireland (17.1%). The lowest proportion was registered in Sweden (0.8%), Netherlands (0.7%) and Denmark (0.1%) – see Figure 1.

Fig. 1: Distribution of population by tenure status (% of population), 2016

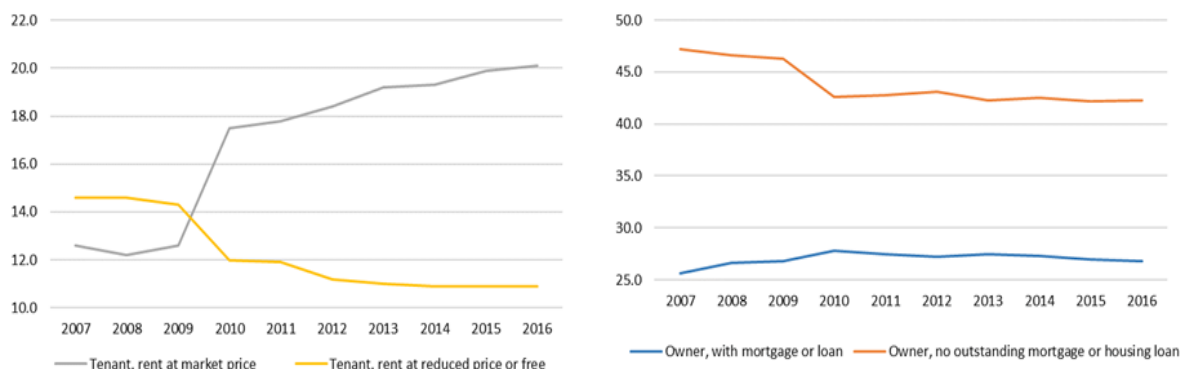


Source: Eurostat (online data code: ilc_lvho02), own processing

The most common tenure in Slovakia in 2016 was owner occupation, with 89.5% of the population living in owner-occupied housing against 10.5% tenants. The share of persons living in rented dwellings with a market price rent in 2016 was less than 9.0% and the share of the population living in a dwelling with a reduced price rent or occupying a dwelling free of charge was 1.6%.

Social housing in EU-28 has been decreasing over the last 10 years. The proportion of people living in a dwelling with a reduced-price rent or occupying a dwelling free of charge in the EU-28 has been decreasing from a peak of 14.6% in 2007 to 10.9% in the year 2016 ($\bar{k} = 0.968$). In contrast, the share of persons living in rented dwellings with a market price rent has increased ($\bar{k} = 1.053$) from around 7.5 pp. (Figure 2).

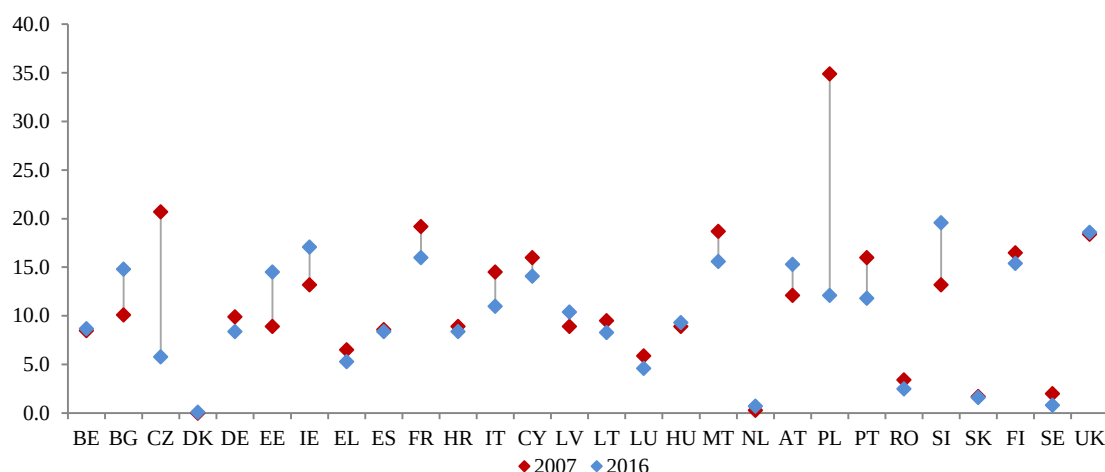
Fig. 2: Distribution of population by tenure status in EU-28²³, 2007-2016



Source: Eurostat (online data code: ilc_lvho02), own processing

Between 2007 and 2016, the share of people who lived in subsidized rental accommodation (Figure 3) remained more or less stable in many countries (BE, DK, ES, HR, HU, NL, SK, UK).

Fig. 3: Change in share of population living in a dwelling with a reduced-price rent or occupying a dwelling free of charge (2007 – 2016, % of population)



Source: Eurostat (online data code: ilc_lvho02), own processing

The share of people living in a dwelling with a reduced-price rent or occupying a dwelling free of charge fell in Poland (from 34.9% in 2007 to 12.1% in 2016), in the Czech Republic (from 20.7% to 5.8%), in Portugal (from 16.0% to 11.8%), in France (from 19.2% to 16.0%), in Malta (from 18.7% to 15.6%) and in Italy (from 14.5% to 11.0%). By contrast, in Estonia, Ireland, Austria and Slovenia the share of people who lived in subsidized rental accommodation has risen.

²³ In 2007 – 2009 before the accession of Croatia, in 2010 – 2016 current composition.

Differences between distribution of population by tenure status of the individual EU countries were quantified using a coefficient of similarity of structures. For requirements to find similarities we have quantified cosine coefficient of structures similarity based on the structure composed of four categories (Owner, with mortgage or loan, Owner, no outstanding mortgage or housing loan, Tenant, rent at market price, Tenant, rent at reduced price or free). We compared distribution of population by tenure status in the Slovak Republic with other EU countries. The cosine coefficient of similarity takes the values signaling high level of similarity of structure of population by tenure status of Slovakia and Latvia (0.9924), Lithuania (0.9917), Hungary (0.9898), Croatia (0.9892), Poland (0.9883), Romania (0.9854) and Bulgaria (0.9770) (see Table 1).

Tab. 1: Cosine coefficient of similarity in 2016 (Slovakia and other countries)

LV	LT	HU	HR	PO	RO	BG	CZ	EL
0.9924	0.9917	0.9898	0.9892	0.9883	0.9854	0.9770	0.9743	0.9729
EE	IT	SI	MT	CY	ES	PT	IE	FR
0.9678	0.9665	0.9632	0.9574	0.9455	0.8966	0.8041	0.7959	0.7717
AT	BE	LU	UK	FI	DE	DK	SE	NL
0.7140	0.6890	0.6799	0.6744	0.6706	0.6138	0.4065	0.3403	0.2971

Source: Own calculation

In the group of countries with the largest share of social housing (SI, UK, IE, FR, MT, FI, AT), the following countries had the most similar population structure by tenure status: Ireland and France (cosine coefficient of similarity in 2016 is 0.9916), United Kingdom and France (0.9884), United Kingdom and Finland (0.9876), Slovenia and Malta (0.9842). In the group of countries with the smallest share of social housing (CZ, EL, LU, RO, SK, SE, NL, DK), the most similar population structure by tenure status was had by the following countries: Sweden and Netherlands (0.9947), Czech Republic and Greece (0.9936), Sweden and Denmark (0.9907).

Social Facilities in the SR

Only some of the most important characteristics about *social facilities* in the regions of the SR are summarized (see also Tab. 2) and presented graphically in this article.

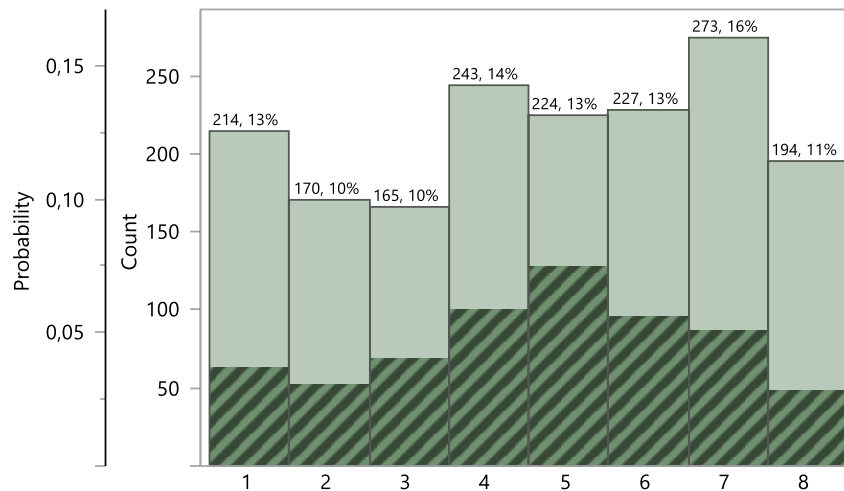
32% of all 1,710 social services facilities with an address in the SR reported by the *Legal form* (variable AR3088) as a Non-profit organization (official label 119), 41% as Budget organization (financed from the state budget, label 321) and 27% of social facilities as Other

form. The *Ownership status* (variable AR6632) did not indicate 71 facilities, while Ownership of local government (label 5) reported 51% (839 facilities), Ownership of associations, political parties and churches (label 6) 39% (632) and Other type of ownership (label “Other”) 10% (168) of 1,639 completed items of the *Ownership status* of social facilities.

In addition to the *Number of persons in care in the reference period* (variable AG4068) and the *Number of days the facility operates during the year* (AK5635), the *Ownership status* and the *Legal form* had a significant impact on the amount of *Total revenue* (AQ1683) and *Total expenditure* (AQ3901). All year round, thus 365 days were in operation 75% of the facilities, while only less than 5% were operating for less than 100 days of the year in 2015.

The numbers of social facilities in the regions of the SR (NUTS 3 Regions 1 to 8 in the Slovak Republic on the x-axis) in 2015 are in both absolute and relative terms (values above the columns according to the y-axis) are shown in Figure 4. The hatched part of the columns represents the number of social facilities with the *Legal form* 321-Budget Organization, financed from the state budget. The largest number of 273 social facilities was in the Prešov region (16%), compared to the Trnava, Trenčín and Košice regions with 10% to 11% share. The largest number of social services financed from the state budget was in the Žilina region.

Fig. 4: Regional comparison of the number of social facilities in the SR (2015)



Source: Data from Statistical Office of the Slovak Republic, SOC 1-01, own processing in SAS JMP12

In 2015, 1,710 facilities in Slovakia benefited more than 5,426 thousand persons, representing 11.42% of the population of the SR (last row in Tab. 2).

Total revenues and expenditures as well as their items in the social facilities of the SR have been re-calculated and compared in the regions in terms of per capita or per person in care in the reference period and per standard length of operation (24 ours, 30 days in standard month).

Tab. 2: Number of persons in care and total annual revenues of social facilities in the Slovak Republic in the year 2015

9EDIY	Persons in care in the reference period			Total annual revenues in €			Total annual revenues per person in care and per standard month of operation in €		
	Number of persons	Proport-ion of the SR in %	Per 1000 inhab. in area	Total amount	Proport-ion of the SR in %	Per person in care	Total in Region	Proport-ion of the SR in %	Average on facility
1 BA	9427	15.22	14.44	58001040	13.10	6153	215574	16.50	1007
2 TR	6249	10.09	9.87	52725486	11.91	8437	121460	9.30	719
3 TN	5777	9.33	7.25	49641176	11.21	8593	153704	11.76	932
4 NR	8064	13.02	11.81	59452775	13.43	7373	174064	13.32	716
5 ZA	7281	11.75	8.87	54054781	12.21	7424	156992	12.01	701
6 BB	9623	15.53	16.31	49769306	11.24	5172	143909	11.01	634
7 PO	8951	14.45	15.99	60756410	13.72	6788	201213	15.40	737
8 KE	6574	10.61	9.52	58319538	13.17	8871	139727	10.69	720
SR	5426252	100.00	11.42	442720512	100.00	7147	1306645	100.00	765

Source: Own calculation, SOC 1-01, 2015

We were interested in the revenue components, specifically what component most affected total revenues. The highest correlation coefficient with total revenue was 0.7371 for the charges from persons in care (care allowance, item AQ3000). Another lower correlation coefficient was 0.5888 for non-investment grants (AM3692), 0.5723 for revenue from the budget of the self-governing region (AQ6160), 0.2853 for municipal budget revenues (AR3917) and 0.1249 for subsidies for acquisition of fixed assets (AG4271).

Total annual expenditures under 15,000 EUR in 2015 had 10% of social services in the SR, a quarter of all did not exceed 45,000 EUR, and the median value was 135,000 EUR (average 260,622 EUR, standard deviation 314,746 EUR, i.e. coefficient of variation 121%).

We have again been interested in correlation between total annual expenditure and its individual items in all social facilities in the SR. The largest increase in total expenditures would result in an increase in wages and salaries of employees (correlation coefficient 0.99792), an increase in transfers to social insurance (0.9744) and current expenses (0.9339).

CONCLUSION

In the first part of this paper, we analysed the distribution of population by tenure status in EU member countries. We were mainly interested in the part of population living in a dwelling with a reduced-price rent or occupying a dwelling free of charge (social housing). Data from EU SILC (variable Tenure status) were used. The relative size of the social housing was calculated as a proportion of the population living in a dwelling with a reduced-price rent or occupying a dwelling free of charge. These differences in the volume of social housing between Slovakia and selected EU countries in 2016 were quantified using measures of similarity of structures. The cosine coefficient of similarity signalizes a high level of similarity of structure of population by tenure status of Slovakia and Latvia (0.9924), Lithuania (0.9917), Hungary (0.9898), Croatia (0.9892), Poland (0.9883) and Romania (0.9854).

New trends of multi-source financing, transformation and de-institutionalization of social systems are supported by the state, municipality or public territorial unit services in the EU countries. There is only a gradual movement to community work and domestic form of social services provision, although the trend participation of social entrepreneurship in the west part of Slovakia (Bratislava and Trenčín regions) is increasing. Social services in different types of social facilities are still the fundamental form of assistance for people in need in all regions of the SR, but growing problems are a lack of state and municipality funding and therefore, almost no investment in public buildings and their equipment. The challenge remains dealing with affordable housing for the most vulnerable groups of residents outside residential segregated sites.

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CONSUMER ATTITUDINAL DISPOSITIONS: AN EMPIRICAL STUDY OF ANTECEDENTS AND CONSEQUENCES AMONG YOUNG CONSUMERS IN VIETNAM

Ngoc Thai Pham

Abstract

Despite the widespread of globalization in 21st century, the significant difference among countries is still existing. The study investigates the impact of Patriotism, Worldminded-ness and materialism as the antecedents of: (1) consumer ethnocentrism, (2) consumer xenocentrism, and (3) consumer cosmopolitanism in the context of Vietnam. The study contributes to the understanding of social-psychological elements which act as antecedents of consumers' attitudinal dispositions, which are consistent predictor of consumer purchase intention toward products' origins. Managerial implications and recommendations will be proposed for global firms operating in emerging markets, especially in Vietnam.

Purpose: The purposes of this paper are to determine how social-psychological factors influence and interact with consumer ethnocentrism, consumer xenocentrism and consumer cosmopolitanism on purchase intention toward foreign products;

Design/methodology/approach: Data were collected from 400 Vietnamese students in Ho Chi Minh city. Data was conducted using Structural Equation Modelling from AMOS 20.

Findings: The empirical findings show that Patriotism, Worldminded-ness, and Materialism act as social-psychological antecedents of Consumer attitudinal dispositions. The author also estimates the strength of the relationship between consumers' attitude on their intention.

Research/practical implications: The result provides MNCs operating in Vietnam an understanding of social-psychological antecedents of consumer attitudes toward products' origin. In addition, the result also provides of the impact of consumer attitudes on intention. These findings can be used to set strategic marketing on student consumer market.

Originality/value: This paper confirms that consumer attitudinal dispositions are influenced by social-psychological factors. Furthermore, consumer's attitude is a consistent predictor of

intention. However, these social-psychological factors do not directly affect on intention but through the mediation of consumer attitude.

Keywords: patriotism, worldminded-ness, materialism, consumer attitudinal dispositions, purchase intention.

JEL Classification: P4.

INTRODUCTION

In the century of 21st, nationalism and globalization become the two most prominent forces in the field of international marketing. Given globalization is widely across, it does not necessarily follow that consumers worldwide are globalizing, and thus the consumer attitudinal dispositions concurrently influence their purchase intention toward a product whether it is foreign or domestic origin (Cleveland et al., 2009; Prince et al., 2016). Past researches have shown that consumers while experiencing products from other countries have displaced tendencies anchor from favoring domestic products (ethnocentric consumers) (Shankarmahesh, 2006), foreign products (xenocentric consumers) to both domestic and foreign ones (cosmopolitan consumers) (Cleveland et al., 2009; Zeugner-Roth et al., 2015).

Understanding what drives preference for global/local products is a major concern for international marketing researchers and practitioners. Since globalization has been continuously unabated across countries and industries, academic works have paid much attention to the antecedents of consumer ethnocentrism, consumer xenocentrism, and consumer cosmopolitanism. Previous studies have indicated the four broad categories antecedents of consumer attitudinal dispositions, included: (1) social-psychological; (2) economic; (3) political and (4) demographic (Balabanis et al., 2001; Shankarmahesh, 2006; Cleveland et al., 2009) but social-psychological factors have been received large amount of empirical testing. Since these attitudinal dispositions have the root from social identity theory (Prince et al., 2016), social-psychological factors will put significant and relevant impact. However, among various social-psychological factors have been identified, this research only considers patriotism, internationalism, and materialism as antecedents of three consumer attitudinal dispositions because they are identified as the most influential ones (Shankarmahesh, 2006). Despite many previous studies working on this branch, the three factors have not been rigorously investigated, which result in the gap in the stream of academics.

Since the 2000s, Viet Nam's economy has experienced high and stable growth, driven by global trade and foreign investment. This makes Vietnam now become an ideal destination for multinational companies (MNCs) to establish and expand their footholds in this region, given the fact that GDP growth rates average 6.4% p.a. (Tradingeconomics, 2018). Moreover, Viet Nam is recently forecasted to be among the Top 20 economies in terms of gross domestic products based on purchasing power parity by 2050 (PwC, 2017). Vietnam has a large population with more than 95 million (World population review, 2018) and over half that number below the age of 30, which represents a prime target market for both domestic and foreign firms. Despite numerous multinational companies (MNCs) are operating in Vietnam, academic researches focusing on non-tariff barriers among Vietnamese consumers are still very limited resulting in extremely vague application. This research aims at filling the gap by conducting an empirical study to identify the antecedents as well as consequences of consumer ethnocentrism, consumer xenocentrism, and consumer cosmopolitanism not only to gain a better understanding of attitudinal dispositions but also to propose marketing strategies recommendations for firms operating in Vietnam market.

LITERATURE REVIEW

For a thorough comprehension of consumer attitudinal dispositions, besides studies focusing on the conceptualization of these constructs, it is argued that one should look at sources behind that forming them. Multiple previous authors have confirmed that social culture to be main antecedents (Shankarmahesh, 2006; Balabanis et al., 2001; Alsughayir, 2013). In addition, despite numerous previous researches estimate the influence of patriotism, worldminded-ness, and materialism as major antecedents of consumer ethnocentrism, cosmopolitanism, and xenocentrism in other countries, empirical studies to consider those factors in Vietnam context is extremely limited, which lead to the difficulties in realities. In addition, previous studies on social-psychological factors have argued for their directly influences on purchase intention (De Mooij, 2004; Balabanis et al., 2001); hence this research also consider whether the three mentioned characteristics could lead to purchase intention in Vietnamese young consumers.

Patriotism: Sharma et al., (1995) has defined patriotism represents love and devotion to one's country. Balabanis et al., (2001) based on the definition of Sharma et al., (1995) has contributed one characteristic of patriotism as without corresponding hostility towards other nations. Because patriotic people do care about their country, they will act to favor their country's

products, and hence tend to reject foreign products, especially when their home countries also provide the substitute ones. Literature review has pointed out patriotism as a fundamental social-psychological antecedent of consumer attitudinal dispositions (Balabanis et al., 2001; Sharkamahesh, 2006).

Worldminded-ness: has been referred as a “world-view of the problems of humanity” (Shankarmahesh, 2006). The definition of concept “worldminded-ness” is totally distinctive from concept of “cultural openness” theoretically. More specifically, if cultural openness describes the chances that one gaining from exposure and interaction with other “out-group”, worldminded-ness a “state of mind” which “consumers use humankind as their fundamental reference group instead of their own nationalities” (Rawwas et al., 1996). In other means, one could exhibit worldminded-ness even he/she has not been in touch with foreigners or traveled abroad. Some of characteristics of people who have world-mindness, included: interested in international events, conferences, affairs, cared for global environments, health, etc. Literature review confirmed that worldminded-ness is among major antecedents of consumer attitudes constructs (Shankarmahesh, 2006; Riefler & Diamantopoulos, 2009).

Materialism: Chan & Prendergast (2007) have defined materialism as a set of attitudes, which regard possessions as symbols of success, where possessions occupy a central part of life. As a result, people who constitute materialism also mean holding the belief that more possessions lead to more happiness. Material values have been conceptualized as a personality trait composing of the three dimensions: (1) the centrality part of possessiveness in one’s life, (2) the belief that holding more possessions resulted in more happiness and satisfaction and (3) the use of possessions as way to infer the success of one toward others (Cleveland et al., 2009). In Bevan-Dye et al., (2012) study, it is found out that materialistic consumers in developing countries have higher preference for foreign products than those who have lower level of materialism or non-material consumers. Previous theories suggested materialism is another main social-psychological antecedent of consumer attitude toward specific product’s origin (Shankarmahesh, 2006; Bevan-Dye et al., 2012).

Consumer Ethnocentrism: Ethnocentrism is a natural syndrome of attitudes and behaviors (Axelrod & Hammond, 2006). Ethnocentrism is described as a tendency that a group of people differentiates their own group with those outside group and considers their own group superior. Consumer ethnocentrism is an attitudinal construct originated from the fundamental psycho-sociological term “ethnocentrism”, which refers to: “The phenomenon of consumer preference

for domestic products, or prejudice against imports, has been termed economic nationalism, cultural bias against imports, or consumer ethnocentrism”. All these terms find their origin in the general concept of ethnocentrism” (Sharma, 2015). By that, ethnocentric consumers would feel immoral, unethical, and inappropriate when purchasing imported products because it can hurt national economy, results in higher unemployment rate (Sharma, 2015) propose that consumer ethnocentrism as a focal construct varied upon demographic, social-psychological, economic, and political factors. In other means, consumer ethnocentrism will be different in various countries and it acts like a national factor that international marketers take into consideration.

Consumer Cosmopolitanism: Kent and Burnight (1951) first noted that individuals can be neither biased toward their own group nor biased toward another (foreign) group but evaluate all groups on their merits instead. According to Riefler, Diamantopoulos & Siguaw (2012), a cosmopolitan orientation is characterized by multiple (local and foreign) loyalties rather than just a single loyalty like ethnocentric orientation or xenocentric orientation. Consumer cosmopolitanism, as Riefler & Diamantopoulos (2009), is perceived one’s self as a global citizen rather than citizen of any specific nation. This attitude has also been described as: “a consciousness openness to the world and cultural differences” (Skrbis et al., 2004; Jin et al., 2015). From a consumer cosmopolitanism perspective, any product preference should be based on merit or related product factors (e.g.: price, quality, promotion, etc.,) rather than where this product is made from.

Consumer Xenocentrism: refers to the attitude that a person views his/her home culture as inferior, and then idealize other cultures instead (Batra et al., 2000; Belk 1982; Lawrence, 2012; Mueller, Broderick and Kipnis 2010; Wallach 2002; Prince et al., 2016). Kent and Burnight first defined consumer xenocentrism in direct contrast to consumer ethnocentrism. Prior studies posited that xenocentrism involved assuming the perspective of a group other than one’s own for making product judgments. With consumer xenocentrism, an outside group is perceived and evaluated with a positive bias, while the ingroup may or may not be disparaged or rejected (Perlmutter 1954; Prince et al., 2016).

Purchase Intention: Azjen (2008) defines intention is the willingness that stored in human memory and will lead to an action on perfect time. Intention is argued as motivation that positively affects behavior. In other means, this infers that higher intention will lead to higher behavior; however, the relationship will be moved down if there is a longer time between

intention and action. As a result, a vast amount of research in the field of consumer behavior has emphasized on the construct and determinant of intention to get higher chance of performing buying action from target consumers (Ajzen, 2008).

Hypothesis Development

Patriotic consumers have tendency to purchase domestic products rather than foreign ones to be consistent with their positive preference for country-land (Cleveland et al., 2009). Shankarmahesh (2006) has confirmed that patriotism is one of among major antecedents that form consumer ethnocentrism attitude. Thus, we propose: ***H1a: Patriotism positively influences Consumer Ethnocentrism.***

Furthermore, consumer xenocentrism refers to the attitude that is inverse with consumer ethnocentrism (but not totally inverse) (Lawrence, 2012). As a result, xenocentric consumers tend to support for purchasing local products. Thus, we propose: ***H1b: Patriotism negatively influences Consumer Xenocentrism.***

In addition, prior studies have confirmed patriotism as personality traits accounts for willingness to purchase: (1) even counterfeit/ fake (Furnham & Valgeirsson, 2007); (2) foreign fashion goods online (Park et al., 2007). Thus, we propose: ***H1c: Patriotism negatively influences Purchase Intention toward foreign products.***

Worldminded consumers will use mankind as reference rather their nationalities. They often evaluate product based on its merit instead of origin. Hence, in developing/ emerging countries, consumers here tend to favorably respond to products from developed nations. Worldmindedness is argued as other social-psychological antecedent of consumer ethnocentrism but has a negative relationship (Shankarmahesh, 2006). On contrary, worldmindedness is confirmed to have positively impact on consumer xenocentrism (Cleveland et al., 2009). Thus, we propose:

H2a: Worldmindedness negatively influences Consumer Ethnocentrism.

H2b: Worldmindedness positively influences Consumer Xenocentrism.

A great deal of research has confirmed that there is a positive relationship between worldmindedness and consumer cosmopolitanism (Cleveland et al., 2009; Riefler & Diamantopoulos, 2009). However, consumer attitude is varied upon situational factors, which are varied country-by-country and region-by-region. In the context of developing countries, consumers holding higher cosmopolitanism tend to be more favorable with foreign products because they attach foreign countries with superior quality and status (Rawwas et al., 1996;

Riefler & Diamantopoulos, 2009). Thus, we propose: ***H2c: Worldminded-ness positively influences Consumer Cosmopolitanism.***

Worldminded-ness has been long suggested as personality that positively impact on the willingness to buy foreign products (Crawford & Lamb, 1982). Later, Nijssen, & Douglas (2011) have posited there is a positive relationship between consumer worldminded-ness and attitude toward foreign products. Thus, we propose: ***H2d: Worldminded-ness positively influences Purchase Intention toward foreign products.***

Materialism is classified as social-psychological antecedents of Consumer Ethnocentrism (Shankarmahesh, 2006; Cleveland et al., 2009). Materialism is associated with possessions achievements as life's satisfaction and happiness, and thus this factor is solely depended on individual's belief about which possession is life's achievement. Thus, there is still a controversy among researchers about the sign of relationship between materialism and consumer attitudinal dispositions in different contexts. Shankarmahesh (2006) suggests materialism is positively influence consumer ethnocentrism, which is compatible with Clarke et al., (2000) studying on four developed countries, included: the U.S., Mexico, France, Australia. However, on the other hand, Alden, Steenkamp & Batra (2006) have linked global culture to materialism, in other means, suggested for the positive relationship between global culture and materialism in the context of developing countries. It is argued that the affect of materialism on consumer attitudinal dispositions depended on the developement of country. In developing countries, cosmopolitan and xenocentric consumers are less national and more global, and then would be more proactive to global or foreign products (Belk, 2000, Cleveland et al., 2009). In Vietnam context, we propose:

H3a: Materialism negatively influences Consumer Ethnocentrism./ H3b: Materialism positively influences Consumer Cosmopolitanism./ H3c: Materialism positively influences Consumer Xenocentrism.

Furthermore, materialism has been connected with global consumer positioning strategies and then material consumers have more likely in adopting products from other countries in general (Cleveland et al., 2009). Thus, we propose: ***H3d: Materialism positively influences Purchase Intention toward foreign products.***

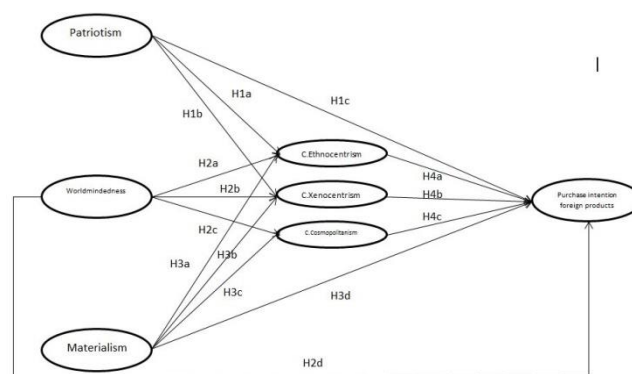
Ethnocentric consumers would feel immoral, unethical, and inappropriate when purchasing imported products because it can hurt national economy, results in higher unemployment rate (Balabanis & Diamantopoulos, 2004; Shankarmahesh, 2006). Consumer Ethnocentrism is

proposed as consistent determinant of local/ non-local product purchase intention. Thus, we propose: ***H4a: Consumer Ethnocentrism negatively influences Purchase Intention toward foreign products.***

Cosmopolitans evaluate products based on its merit rather than its origin. However, cosmopolitans perceived themselves as more global citizens rather than national citizens, and so they likely response more favorably to foreign products (Cleveland et al., 2009). Thus, in emerging markets like Vietnam, we propose: ***H4b: Consumer Cosmopolitanism positively influences Purchase Intention toward foreign products.***

Xenocentric consumer are those take out-group as their central reference in judging products. Therefore, they definitely react more favorably to foreign products rather than domestic ones (Lawrence, 2012). Thus, we propose: ***H4c: Consumer Xenocentrism positively influences Purchase Intention toward foreign products.***

Fig. 1: Research framework



METHODOLOGY

This research is approached by quantitative methodology. After hypotheses has been developed from literature review, questionnaire will be designed to collect data for analysis. Reflective measurement scales were adapted to conceptualize constructs in the research. Applied scales were selected and filtered to get the most appropriate ones for Vietnam context. The adapted scale for (1) Patriotism was from Kosterman & Feshbach (1989); (2) Worldminded-ness was from Rawwas et al., (1996); (3) Materialism from Cleveland et al., (2009); (4) Consumer

Ethnocentrism was from Shimp & Sharma (1987); (5) Consumer Cosmopolitanism was from Lawrence (2012); (6) Consumer Xenocentrism was from Lawrence (2012); (6) Purchase Intention toward foreign products (Klein et al., 1998). Each variable in all constructs was measured by Likert scale, anchor from 1 classified as strongly disagree to 5 classified as strongly agree. The questionnaire was originally in English, translated into Vietnamese, then back-translated into English by two native Vietnamese to ensure the validity between two versions (Sinaiko & Brislin, 1973). Other demographic questions also included in the survey. Pilot study was conducted to minimize any error or misunderstanding may occur before widely contributed.

Structural Equation Modeling (SEM) was performed followed two-stage process suggested by Hair et al., (2009) using AMOS 20 software. At first, the research model was assessed to ensure the reliability and validity test through EFA and CFA test. Then, model fit criteria recommended by Hu & Bentler (1999) were applied for both measurement and structural model in SEM test.

DATA

The research is conducted in Vietnam, where has been received much attention from FDIs and MNCs due to its increasing purchasing power. Young consumers will be chosen since they represent as an appropriate sample for this research objective, those living in the era of globalization so that xenocentric or cosmopolitan attitude could be expressed. Data was collected by quota convenience sampling, in which respondent must be satisfied three criteria, included: (1) students in colleges/universities; (2) having experience in buying foreign products; and (3) in Ho Chi Minh city. This group of consumers are living in globalization era and thus they more likely to select between domestic and foreign products than their previous generations. As a result, the study examining consumer attitudinal dispositions will less bias. The respondents are approached and asked to fully finish the paper survey. There were 700 surveys distributed, but the usable ones were only 400, achieved 57%.

RESULTS AND DISCUSSIONS

In total 400 usable cases, 100% were students and young (less than 30 age). Among 400 cases, 264 respondents were classified as female (66%) and 129 were classified as male (n=32.3%);

7 were classified as LGBT (n=1.8%). Almost are still single (n=380), highly educated (College/University=392), and with depended income (n=339).

Initially, Cronbach's Alpha was assessed to examine the internal consistency of items in scale. The recommended cut-off value is 0.7 but larger 0.6 is still accepted. However, even the scale's Cronbach's Alpha is already larger than 0.7, this research still applied the rule of item deleted if it would increase the total Cronbach's Alpha. The results were that one item of Worldmindedness, one item of Consumer Ethnocentrism, one item of Consumer Xenocentrism, and one item of Purchase Intention were deleted. The other three constructs met the research's applied rules. Given a large sample has been collected, it is possible to conduct both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Hair et al., 2009). The data set was split into two equal data files (n₁=200 and n₂=200) used for each test. An EFA was conducted to define the underlying structure among the variables in the analysis. The research result achieved accepted recommended criteria: (1) KMO = 0.795 (>0.5); (2) Total variance explained = 50.529 (>50); (3) Variables that cross-load and load less than 0.3 will be excluded. A CFA was conducted to examine measurement model with six constructs identified by the EFA. Two items from Worldmindedness and Consumer Cosmopolitanism have been excluded for unsatisfying standardized regression weight (Hair et al., 2009). The CFA result suggested the measurement model for Vietnamese students' respondents still received accepted fit: $\chi^2[413] = 785.568$ (p < .001), $\chi^2/df=1.902$ (good), CFI=0.872 (permissible), GFI=0.808, AGFI=0.77, RMSEA=0.067 (moderate) (Hair et al., 2009). All factor loadings were sufficient (>0.5) and significant (p<0.001). Average Variance Extracted (AVE) is higher than 0.5 but still accept less than 0.5 if Composite Reliability (CR) is higher than 0.6, the convergent validity of the construct is still adequate (Fornell & Larcker, 1981). Discriminate validity of the constructs was supported.

Tab. 1: Validity test for measurement constructs in the research model

	CR	AVE	MSV	MaxR(H)	XEN	PA	INT	MAT	CET	COS	PI
XEN	0.856	0.599	0.250	0.863	0.774						
PA	0.911	0.632	0.365	0.913	-0.242	0.795					
WOR	0.650*	0.400*	0.173	0.711	0.134	0.092	0.632				
MAT	0.759	0.354*	0.250	0.784	0.500	0.068	0.160	0.595			
CET	0.831	0.502	0.365	0.881	-0.202	0.604	0.240	0.094	0.709		
COS	0.756	0.513	0.173	0.788	0.248	0.203	0.416	0.239	0.316	0.717	
PI	0.889	0.669	0.176	0.912	0.419	-0.140	0.192	-0.028	-0.143	0.360	0.818

* Constructs that have AVE index less than 0.5 but still accepted since CR is higher than 0.6

These are latent variables and observed Indicators (Standardized Factor Loading) have been estimated below:

Patriotism ($\alpha=.903$, $CR=.911$, $AVE=.632$): I love my country (.782)/ I am proud to be my country citizen (.839)/ I feel a great pride in that land (.807)/ It is not that important for me to serve my country (.770)/ When I see my country's flag flying I feel great (.783)/ When I hear anthem singing I feel great (.786).

Worldminded-ness ($\alpha=.644$, $CR=.65$, $AVE=.4$): There should be replaced by one central government (.689)/ Should be global citizen than one (.762)/ Immigration should be controlled by an international organization (.379).

Materialism ($\alpha=.739$, $CR=.759$, $AVE=.354$): I like a lot of luxury in my life (.531)/ Buying things gives me lots of pleasure (.633)/ Life would be better if I owned certain things I don't have (.645)/ I admire people who own expensive possession (.639)/ I'd be happier if I could afford more things (.713)/ I like to impress people (.334).

Consumer Ethnocentrism ($\alpha=.813$, $CR=.831$, $AVE=.502$): Should buy Vietnamese products to promote local economy (.710)/ Should only import products that can not produce in Vietnam (.545)/ Buying local products contributes to maintain local employment (.636)/ Should place priority on buying Vietnamese products (.901)/ It is better to buy Vietnamese products (.702).

Consumer Cosmopolitanism ($\alpha=$, $CR=.756$, $AVE=.513$): I satisfy my curiosity by purchasing products from that culture (.815)/ I like to buy products that not typically available in Vietnam (.564)/ I enjoy getting a taste of other cultures by purchasing foreign (.747).

Consumer Xenocentrism ($\alpha=.726$, $CR=.856$, $AVE=.599$): I prefer to buy foreign made products (.783)/ All other things being equal, I prefer to buy foreign products (.686)/ I find that I enjoy using foreign made products more than local (.807)/ I get a better feeling from buying a foreign made product than local (.812).

Purchase Intention toward foreign products ($\alpha=.879$, $CR=.889$, $AVE=.669$): I would feel guilty if I bought a Vietnamese product (.660)/ I would never buy a Vietnamese product (.833)/ Whenever available, I would prefer to buy products made in Vietnam (.907)/ I do not like the idea of owning Vietnamese products (.851).

Followed CFA test, SEM was conducted to test research model and hypotheses. Patriotism, Worldminded-ness, Materialism, Consumer Ethnocentrism, Consumer Cosmopolitanism, and

Consumer Xenocentrism were all taken as the exogenous variables. Only Purchase Intention toward foreign products was taken as endogenous variable. The recommended fit indicated that the structural model was accepted as Hair et al., (2009): $\chi^2[420] = 904.691$ ($p < .001$), $\chi^2/df=2.154$ (good), CFI=0.907 (traditional), GFI=0.872, AGFI=0.849 (accepted), RMSEA=0.054 (moderate), SRMR=0.06 (accepted)

RESULTS AND DISCUSSIONS

The result of hypotheses testing is assessed by standardized regression weights with p-value<0.001 to be significant. Among hypotheses, there are supportive for H1a, H1b (Patriotism positively influences Consumer Ethnocentrism, but negatively influences Consumer Xenocentrism); H2c (Worldminded-ness positively influences Consumer Cosmopolitanism); H3c (Materialism positively influences Consumer Xenocentrism); H4b, H4c (Consumer Cosmopolitanism and Consumer Xenocentrism positively influences Purchase Intention toward foreign products).

Hypotheses	Relationship	Standardized Coefficient	p-value
H1a	Patriotism positively → CET	.55	***
H1b	Patriotism negatively → XEN	-.187	***
H2c	Worldminded-ness positively → COS	.277	***
H3c	Materialism positively → XEN	.46	***
H4b	COS positively → PI	.249	***
H4c	XEN positively PI	.423	***

The research has achieved stated objectives in: (1) determine which social-psychological factors are antecedent of consumer attitudinal dispositions; (2) estimate the influence level of consumer attitudinal dispositions on purchase intention toward foreign products. In more specific, Patriotism is supported as main driver of consumer ethnocentrism, which is in compatible with previous authors (Sharnkamahesh, 2006). Patriotic consumers put a great care for their nations and thus would be proud of being their citizens and likely take their country as main preferences in evaluating products. In addition, this research also finds out patriotism has negative impact on consumer xenocentrism, which is rarely mentioned in prior studies. However, since patriotism is social-psychological factor that varied upon contexts, it could only refer that Vietnamese students who express a higher consumer xenocentrism in judging products will have lower patriotism level. Thus, patriotism is a social-psychological antecedent

of Consumer Ethnocentrism and Consumer xenocentrism. This characteristic would determine the level of ethnocentrism and xenocentrism in consumption context. Domestic firms could base on these findings to support for strategies to increase the patriotism in young consumers or leverage events/ activities related patriotism to boost sale for local products.

Worldmind-ness in this research is positively impact on consumer cosmopolitanism. This result is confirmed across studies (Rawwas et al., 1996). This study has not found the relationship between worldminded-ness and consumer xenocentrism given the fact that xenocentric consumers tend to favor out-group and support for purchasing foreign products. However, taken back to the literature review, Shankarmahesh (2006) states that a person could be worldminded but does not necessarily interact with other cultures. Worldminded-ness is distinct from “cultural openness”, and thus a worldminded consumer often uses “mankind” to react with events but does not mean he/she takes foreign factor as reference. This research has supported for worldminded-ness as social-psychological antecedent of consumer cosmopolitanism and hence it is suggested that firms could leverage this characteristic to increase the tendency of cosmopolitanism in consumption. Managers should bear in mind that a young consumer does not need to interact with foreign countries but still express positive attitude toward non-local products and through the impact of worldminded-ness. This is a significant finding for MNCs operating or intending to operate in Vietnam that target toward young segments.

Materialism is defined as individual personality that attaches with possessions as personal happiness and success. This research has found out the positive relationship between materialism and consumer xenocentrism, but not for consumer ethnocentrism and consumer cosmopolitanism. This result appears to be supported with some authors and unsupported with the others. For example, materialism is confirmed to positively relate with consumer ethnocentrism (Shankarmahesh, 2006) but this research generated inverse result. However, materialism is argued to be different country-by-country because the development of country will attach with person's belief in success, status, and possession. In developing/ emerging countries like Vietnam, materialistic young consumers tend to have higher tendency to view their home culture as inferior, and to assess positive bias with foreign countries (Bevan-Dye, 2012). To them, foreign products will be evaluated with higher status and quality. Thus, this research's finding could be explained. Managerial implication could be made for MNCs or foreign firms operating in Vietnam because they are targeting on cosmopolitans and

xenocentric consumers (and more focusing on xenocentric ones) for sale volumes. Strategies aim at boosting materialism characteristic in young consumers will be beneficial for foreign firms.

Finally, this research has confirmed the positive relationship between consumer cosmopolitanism and consumer xenocentrism with purchase intention toward foreign products. The research generates the same finding with prior studies. Cosmopolitans are perceived to be more international and likely to attach with international values. Thus, cosmopolitans are favorably responsive with global consumer products and tend to have higher intention in purchasing foreign products. Moreover, consumers who constitute out-group reference like xenocentric ones will definitely show favorable feeling toward purchase non-local products. Nonetheless, this research has not found any significant effect of consumer ethnocentrism on purchase intention toward foreign products even negative magnitude. This implies the reality that ethnocentric consumer is a predictor for the acceptance of local product but not a predictor for the rejection of foreign ones. The findings provide fertile areas for later researches on the field of consumer behaviors. Once again, consumer attitude is confirmed as a consistent predictor of actual behavior.

However, this research has not found the direct relationship between patriotism, worldmindedness, and materialism on purchase intention toward foreign products but the influence is found through the mediation effect of consumer cosmopolitanism and consumer xenocentrism. Unlike other studies (Rawwas et al., 1996; Cleveland et al., 2009), worldmindedness and materialism are directly positively influenced on purchase intention toward foreign products. To Vietnamese young consumers in this context, social-psychological factors only play as antecedents of consumer attitudinal dispositions, which later consumer attitudes will be main determinants of product purchase intention; but not the characteristics of consumers that could lead them to purchase intention.

CONCLUSION

This research has provided managerial implications for marketers, especially those working on MNCs/ firms in Vietnam market since it takes consideration on purchase intention toward foreign products. It suggests social-psychological factors (e.g: patriotism, worldmindedness, and materialism) are prominent antecedents of consumer ethnocentrism, consumer cosmopolitanism, and consumer xenocentrism in young segments. These consumer attitudinal

dispositions are confirmed as predictive factors of actual behavior. This research helps managers/ practitioners have a thorough understanding about which characteristics of youth could lead to the consumer attitudes so that strategies could be leveraged to expand their target consumer segments. It is also noted that social-psychological factors have not impact directly on consumer's purchase intention. Therefore, based on research's findings, it is supportive for not only academics on (1) providing additional empirical results on this field, and (2) setting initial foot for research in emerging markets; but also managers/ practitioners operating in Vietnam market on building strategic planning for their products.

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CUSTOMER LOYALTY AND CHARACTERISTICS OF DIGITAL CHANNELS IN B2B INDUSTRIAL MARKETS

Elina Bakhtieva

Abstract

The paper attempts to investigate the effect of characteristics of digital tools on business-to-business (B2B) customer loyalty in the context of industrial industries. The paper is based on technology-based theories and investigates the effect of such characteristics of digital tools as ease of use, perceived usefulness, information quality and engagement on the level of customer loyalty.

The model is developed and empirically tested against data collected from respondents using digital tools for work purposes. The respondents were marketing professionals, product and technical product managers.

The structural equation modelling partial least squares analysis indicated that engagement influences customer loyalty in buyer-supplier relationships among B2B industrial companies. The results showed moderate influence of characteristics of digital tools on B2B customer loyalty. Engagement showed positive effect on customer loyalty. Contrarily to the findings of other researchers, ease of use showed no effect on perceived usefulness. According to the results, customer loyalty is mainly affected by engagement rather than other characteristics of digital channels.

The research advances theoretical understanding of the role of digital characteristics and suggests recommendations to win customer loyalty in B2B context. The chosen methodology, sample frame and sample size may limit generalisability.

Keywords: Customer loyalty, digital channels, B2B industrial markets.

JEL Classification: M31.

INTRODUCTION

Modern world could not be imagined without technologies. Today almost every company undergoes digital transformations. B2B industrial companies are due to their specifics (smaller amount of customers and longer lasting relationships) usually slower in adoption of new technologies. However, they have to respond to the latest trends.

Due to absence of physical contact and sometimes high geographical distance, digital channels represent sometimes the only source of information about a company and its products. Clear customer value transmitted through digital channels becomes critical for a B2B decision-making process. The latest changes raise a series of research questions. How digital channels can influence buyer-seller relationships and contribute to creation of B2B customer loyalty? What characteristics the digital channels are important for customer value? Is it sufficient to focus on digital channels to motivate customers continuing B2B business relationships? The aim of the research was to find out in what extend the characteristics of digital channels influences customer loyalty among B2B companies.

LITERATURE REVIEW

Technology Acceptance Model and Information System success models

The use of digital marketing channels is often seen in the light of intention based theories. Researchers explain adoption of digital channels based on theories and approaches addressing the adoption of new technologies. The most widely spread of them are Information System (IS) success model and Technology Acceptance Model (TAM).

The Information System Success Model (IS) was designed to evaluate components of a system (technology) success. Originally, the model has been focused on two system characteristics - system quality and information quality. After ten years the authors have updated the model by adding another characteristic - service quality.

TAM has been designed to explain IT usage behaviour. TAM proposes two attributes of a new technology adoption - perceived usefulness and ease of use. Perceived usefulness refers to a user's belief that a new technology helps to achieve the desired goal. Ease of use refers to a user's belief that a new technology is free of effort.

Lee and Park (2008) have analysed an adoption of mandatory IT technology. They have found that if a new technology seems easy to use for the users, the level of satisfaction increases and

they are motivated to contribute to a company performance. However, the authors suggest focusing on perceived usefulness than ease of use of a technology under mandatory adoption. Lacka and Chong (2016) combine TAM and the Model of the Attributes of System Acceptability. The authors determine a strong linkage between perceived usefulness of B2B social media sites and intention to use those sites. Moreover they have verified previous finding on the correlation between ease of use of social media sites and actual use of those sites.

Prior research based on these models have covered the topics of mobile (Lee & Park, 2008), web (Chen, Chen, & Capistrano, 2013) and social media adoption (Lacka & Chong, 2016; Siamagka, Christodoulides, Michaelidou, & Valvi, 2015). However, little research is been made on the combination of technology specific aspects referring to several digital channels and customer behaviour. Such holistic approach would help to understand what aspects are important for a technology as a whole and for every different digital channel as separate.

Information Quality

Information quality refers to a user's perception of relevancy, reliability and usefulness of information (DeLone & McLean, 1992; Hilligoss & Rieh, 2008).

Different digital channels contribute to information quality in terms of information sufficiency and currency. Social media sites allow customers receiving up-to-date information directly from a seller or consumers. Relevancy and sufficiency of information obtained from websites and corporate videos help users to take decisions and boost customer loyalty. This increases the level of trust, and, as a result, customer loyalty.

Chen et al. (2013) state that correct and competent information helps B2B users to complete their particular tasks (Chen et al., 2013). This increase the degree of perceived usefulness and motivates users to continue relationships with a partner (McKnight, Lankton, Nicolaou, & Price, 2014).

Ease of Use

Ease of use refers to the extent of believe that the use of a particular system (technology) is free of efforts (Lee & Park, 2008). It could be measured by functionality, accessibility of information, ease of navigation.

Users of digital media would like to be able to access information with minimum time and effort. Social media sites and websites allow to present information as text, picture or video. The advantage of video content is the ability to appeal to multiple senses, because it

incorporates audio and video elements. This all increases the ease of information consumption and the enjoyment/interaction (L.-C. Hsu, Wang, & Chih, 2011).

Several researchers observe positive relationship between ease of use and usefulness in digital context (Lacka & Chong, 2016; Lee & Park, 2008; Lin, 2008). However, the study by Siamagka et al. (2015) reveal that ease of use determines perceived usefulness but has low significance to the adoption of social media sites (Siamagka et al., 2015).

Perceived Usefulness

Usefulness refers to the extent of belief that the desired goal can be achieved while using particular technology (Lacka & Chong, 2016, p. 83).

B2B companies use different digital channels to increase perceived usefulness. Real-time communication in social media and the frequency of postings allow users getting first-hand and up-to-date information, and therefore increase its usefulness. Moreover, social media sites allow B2B consumers to communicate directly not only with a company, but also with other consumers. Website is one of the most frequently used channels in B2B area and is often used as a hub connecting different digital channels. Videos are often used by B2B companies to help customers to learn something new and make their life easier. The use of B2B digital channels help users achieving their goals and to increase the level of perceived usefulness (López-Miguens & Vázquez, 2017).

Prior studies empirically confirm the importance of perceived usefulness for adoption of a new technology and facilitation of customer loyalty (C. L. Hsu & Lin, 2008; Siamagka et al., 2015). Moreover, a low level of adoption of certain digital tools, e.g. social media sites, could be explained by lack of clear understanding of the usefulness of these channels (Siamagka et al., 2015).

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Customer loyalty

B2B customer loyalty could be observed in the light of three approaches: behavioural, cognitive (attitudinal) and composite (integrated). Behavioural approach defines customer loyalty as repeat purchase behaviour, and measures it in a number or a frequency of purchases. Cognitive (attitudinal) approach focuses on physiological components of loyalty, as likeliness, satisfaction or intend. Composite approach combines both approaches.

McKnight et al. (2014) analyse how information quality and other constructs of IS success model influence trusting and distrusting believes and the intentions to use a B2B system. Among other outcomes, the authors observe a positive effect of information quality on trusting beliefs and continuance intentions (McKnight et al., 2014).

Hänninen and Karajuluto (2017) examine how perceived customer value affects B2B customer loyalty by means of marketing communication (Hänninen & Karjaluo, 2017). The authors confirm a previously discovered link between perceived customer value and customer loyalty. Moreover, they assess the influence of perceived customer value on interaction and relationship quality.

CONCEPT MODEL AND HYPOTHESES

Based on theoretical findings, the following hypotheses have been developed:

H1: Information Quality has positive effect on Perceived Usefulness.

H2: Information Quality positively influences Customer Loyalty.

H3: Ease of Use is positively associated with Perceived Usefulness.

H4: Ease of Use has positive effect on Engagement.

H5: Ease of Use positively influences Customer Loyalty

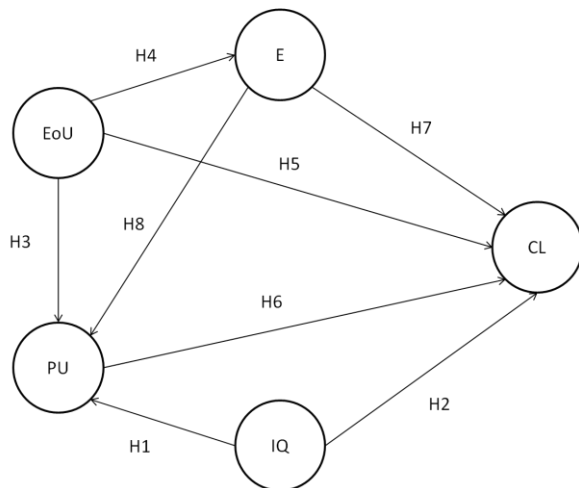
H6: Perceived Usefulness positively influences Customer Loyalty.

H7: Engagement positively influences Customer Loyalty.

H8: Engagement has positive influence on Perceived Usefulness.

Fig. 1 illustrates the concept model, which is adapted from TAM and IS success model and related literature.

Fig. 1: Concept model



Note: E = engagement/interaction; EoU = ease of use; PU = perceived usefulness; IQ = information quality; CL = customer loyalty

Source: own

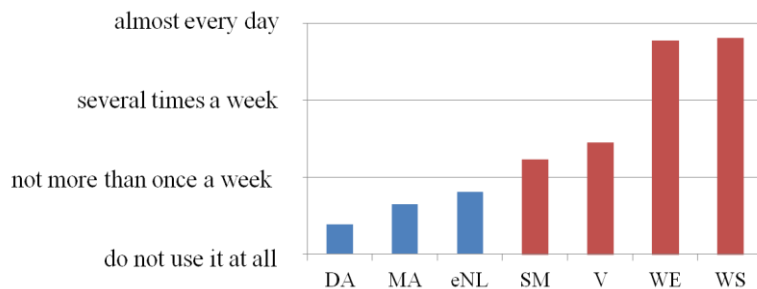
METHODOLOGY

The sample and data collection

The choice of the channels for the analysis within the current research was based on the findings from the latest research and outcomes of the conducted survey. A short survey related to the frequency of using different digital channels for work purposes among the core sample group has shown the results depicted on Fig. 2. The survey showed that the respondents use social media, videos and websites at least once a week, and websites and search engines with the frequency between several times a week and almost every day. Based on these results it was

decided to focus in the current study on those digital channels, which the sample group use the most (except search engine).

Fig. 2: Frequency of using digital channels



Note: DA = digital advertisement; MA = mobile application; eNL = e-newsletters; SM = social media sites; V = videos; WE = websites; WS = search engines

Source: own

To test the proposed model and the hypotheses, the current study focused on industrial B2B companies as the test bed. The analysis was conducted in the countries of Central Europe and in Russia. The target sample contained marketing managers, product and technical product managers, which use digital channels to get product information for their work purposes.

To test the survey, a pilot study with six surveys has been provided. The results showed little usage of several digital channels and the complexity of the some wordings. The marked questions were re-formulated or dropped out.

To collect the responses, a snowball method was used. In average, each respondent provided one or two other respondents. The respondents represented professionals working in a B2B companies producing products for industrial consumption. They had to be in a position able to take or influence purchase decisions. The respondents received a link for an online questionnaire published on an online survey platform. A cover letter explained the nature and the importance of the research. The questionnaire covered 12 questions and was divided into three sections: 1) questions about important digital channels' characteristics; 2) questions related to one particular supplier (not a client), with the most frequent online contact over the last six months; 3) general information about the respondents – age group, occupation and the industry they belong to. The data collection process lasted in February and March 2018. Finally, the current study obtained 30 out of 35 completed responses. Tab. 1 shows statistics about the respondents.

Tab. 1: Information about the respondents

Age	Age Code	Age_Freq	%
21-35	1	22	74%
36-45	2	7	23%
46-60	3	1	3%
Gender	G_Code	G_Freq	%
Male	1	21	70%
Female	2	9	30%
Field	Field Code	Field_Freq	%
IT/ Telecommunications	1	1	3%
Marketing/ PR/ Advertising/ Media	2	7	23%
Organisation/ Management/ Consulting	3	3	10%
Sales/ Trade (retail/ wholesale)/ Customer Services	4	3	10%
Technical Professions	5	16	54%
Industry	Ind Code	Ind_Freq	%
Advertising/ Marketing/ PR/ Agencies	1	3	10%
Building Construction and Civil Engineering	2	14	47%
Consulting Services	3	1	3%
Electrical Engineering/ Electronics	4	4	13%
Metal Production and Processing	5	5	17%
Non-Profit Organisations (associations, clubs)	6	3	10%
Country	Country Code	C_Freq	%
AT_Austria	1	12	40%
DE_Germany	2	8	27%
HU_Hungary	3	1	3%
RU_Russia	4	9	30%

Source: own

Measure

Scale measure was adapted from the existing literature. The scale items were measured on a 5-point Likert scale, ranging from 1 – “totally disagree” to 5 – “totally agree”. The questions assessing customer loyalty were measured on a 5-point Likert scale, ranging from 1 – “very unlikely” to 5 - “very likely”.

Engagement/interaction was measured by a three-item scale adapted from Hsu, Wang and Chih (2011) and Jung (2014). The items assess interactivity and simultaneity of communication, as well as the degree of direct communication. Ease of use was adapted from López-Miguens & Vázquez (2017) and measured the attitude of the respondents toward easiness of using the tool and clarity of information access. Three items – accessibility of information from websites, ease of use of social media sites and videos were used to assess this construct. Three items for information quality were adapted from Chen, Chen, & Capistrano (2013) and McKnight, Lankton, Nicolaou, & Price (2014). They measured the degree of sufficiency and the currency of information. Three items for perceived usefulness was borrowed from Siamagka, Christodoulides, Michaelidou, & Valvi (2015). They measured the usefulness of the information adopted from digital channels. Customer loyalty was represented by two items adapted from Hänninen & Karjaluo (2017) and measured re-purchase intention and word-of-mouth intention (Tab. 2).

Tab. 2: Sources of the main constructs

Construct	Statement	Item	Item code	Source
Engagement/interaction	it offers an interactive way to get useful information	interactivity	E1	adapted from Hsu, Wang, & Chih (2011)
	it helps to communicate with several people at once	simultaneity	E2	adapted from Jung (2014)
	it offers the ability to have a direct contact to a partner or a customer	direct contact	E3	adapted from Hsu, Wang, & Chih (2011)
Ease of use	it facilitates finding what I want	accessibility of information	EoU1	adapted from López-Miguens & Vázquez (2017)
	it is easy to use	easiness	EoU2	adapted from López-Miguens & Vázquez (2017)
Information quality	it provides sufficient information to enable me to do the tasks and take decisions	sufficiency	IQ1	adapted from Chen, Chen, & Capistrano (2013)
	it provides up-to-date information	currency	IQ2	adapted from McKnight, Lankton, Nicolaou, & Price (2014)
Perceived usefulness	it is useful for my tasks	usefulness	PU1	adapted from Siamagka, Christodoulides, Michaelidou, & Valvi (2015)
Customer loyalty	<i>How likely are you to... ...use X the next time you need similar products/ services/ information?</i>	re-purchase	CL1	adapted from Hänninen & Karjaluo (2017)
	<i>...recommend X to colleagues or other companies?</i>	WoM	CL2	adapted from Hänninen & Karjaluo (2017)

Source: own

DATA ANALYSIS AND RESULTS

Structural equation modelling (Fig.1) is assessed using PLS modelling (SmartPLS 3.0 software).

Measurement model

Construct reliability and validity were examined by a confirmatory factor analysis. Reliability was assessed by the evaluation of internal consistency, and construct validity by the examination of convergent and discriminant validity. Internal consistency was assessed using Cronbach's alpha (threshold: 0.70), composite reliability (CR, threshold: 0.70) and average variance extracted (AVE, threshold: 0.50). As displayed in Tab. 3, Cronbach's alpha varied from 0,683 to 0,799. In two out of five cases Cronbach's alpha was below 0,7, however, according to Krippendorff (2004), the level of alpha above 0,67 is acceptable to make tentative conclusions (Krippendorff, 2004). Some authors suggest to use Dillon-Goldstein's (or Joreskog's) rho instead of Cronbach's alpha, because "...it is based on the results from the model (i.e. the loadings) rather than the correlations observed between the manifest variables in the dataset" (Vinzi, Chin, Henseler, & Wang, 2010, p. 51). In the analyzed case, rho_A (threshold: 0.70) varies from 0,688 to 0,783. It was decided not to drop the items because of small number of indicators. As evidence of convergent validity, each item loaded significantly on its underlying factor (greater than 0.70 and statistically significant at the 0.05 level).

To test discriminant validity all PLS item-to-construct loadings were compared with the cross-loadings (see Tab. 4). The results showed that each item-to-construct loading was greater than that of any other constructs, what could be inferred that the indicators are not interchangeable. Following Fornell–Larcker criterion, AVE could help to test discriminant validity. The square root of the AVE was higher than the variable inter-correlations (see Tab. 5).

5.2. Structural model

Fig. 3 presents structural model results.

Tab. 3: Psychometric features of the measurement model factor

Factor	Item	Standard loading	t-value	CR	Cronbach's alpha	rho_A	AVE
Customer loyalty	CL			0,900	0,779	0,783	0,819
	CL1	0,914	28,718				
	CL2	0,896	18,534				

Engagement/interaction	E			0,824	0,683	0,719	0,612
	E1_V	0,798	8,831				
	E2_SM	0,665	3,626				
	E3_WS	0,869	18,017				
Ease of use	EoU			0,836	0,719	0,76	0,615
	EoU1_V	0,865	4,760				
	EoU2_SM	0,807	3,490				
	EoU2_WS	0,703	2,533				
Information quality	IQ			0,827	0,686	0,688	0,615
	IQ1_V	0,758	5,341				
	IQ2_SM	0,835	7,999				
	IQ1_WS	0,757	6,353				
Perceived usefulness	PU			0,850	0,735	0,739	0,653
	PU1_V	0,806	7,239				
	PU2_SM	0,794	7,100				
	PU1_WS	0,825	9,410				

Source: own

Tab. 4: PLS loadings and cross-loadings

	CL	E	EoU	IQ	PU
CL1	0,914	0,676	0,131	0,531	0,459
CL2	0,896	0,584	0,200	0,547	0,592
E1_V	0,578	0,798	0,458	0,537	0,564
E2_SM	0,395	0,665	0,201	0,596	0,450
E3_WS	0,632	0,869	0,376	0,521	0,672
EoU1_V	0,137	0,440	0,865	0,432	0,501
EoU2_SM	0,285	0,415	0,807	0,428	0,467
EoU2_WS	-0,104	0,144	0,703	0,323	0,375
IQ1_V	0,454	0,446	0,376	0,758	0,522
IQ2_SM	0,534	0,575	0,401	0,835	0,565
IQ1_WS	0,412	0,585	0,406	0,757	0,691
PU1_V	0,444	0,623	0,468	0,635	0,806
PU2_SM	0,431	0,435	0,525	0,575	0,794
PU1_WS	0,520	0,688	0,401	0,631	0,825

Note: CL = customer loyalty; E = engagement/interaction; EoU = ease of use; PU = perceived usefulness

Source: own

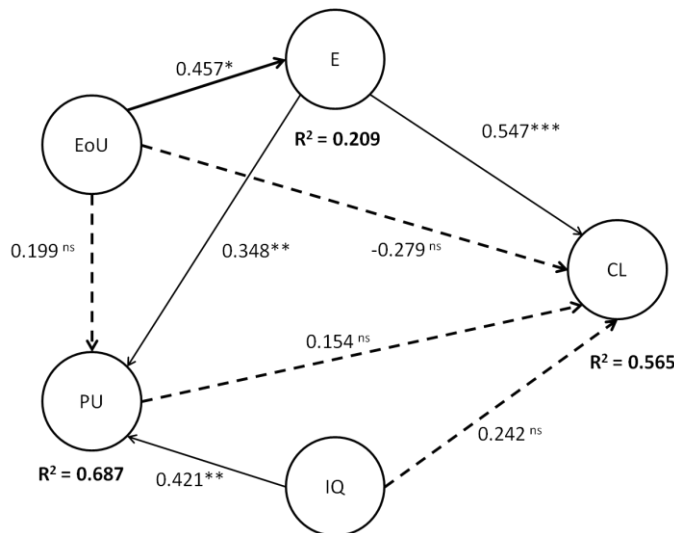
Tab. 5: Factor correlation coefficients and square roots of the AVE

	CL	E	EoU	IQ	PU
CL	0,905				
E	0,698	0,782			
EoU	0,181	0,457	0,795		
IQ	0,595	0,688	0,504	0,784	
PU	0,578	0,729	0,571	0,761	0,808

Note: The square root of the AVE is on the diagonal. These values should exceed the inter-construct correlations for adequate discriminant validity; CL = customer loyalty; E = engagement/interaction; EoU = ease of use; PU = perceived usefulness

Source: own

Fig.3: Test results of the research model



Notes: —→ significant *p < 0.1; **p < 0.05, ***p < 0.01, ****p < 0.001; - - - → not significant

Source: own

According to the significance of path coefficients, information quality has positive effect on perceived usefulness (0.421, $p < 0.05$). This, H1 has been supported. However, H2, which states that information quality positively influences customer loyalty, has not been supported because of low significance level of the relationships.

Ease of use has no significant effect on perceived usefulness, leading to rejecting of H3. However, ease of use shows moderate significant effect on engagement/interaction (0.457, $p < 0.1$), supporting H4. Hypotheses H5, which reflects the impact of ease of use on customer loyalty, has not been supported because of low significance level. Surprisingly, contrarily to

previous research, ease of use has shown negative (but not significant) impact on customer loyalty.

Regarding H6, which states the influence of perceived usefulness on customer loyalty, the significance level of the coefficients was low ($t = 0.650$). Hence, the hypothesis has not been supported.

Interestingly, the research has shown importance of engagement/interaction for work purposes. According to the significance of path coefficients, customer loyalty is mainly depends on engagement/interaction ($0.547, p < 0.01$). Hence, H7 has been supported. Besides, engagement/interaction has showed significant positive effect for perceived usefulness ($0.348, p < 0.05$); leading to support of H8.

According to the significance of path coefficients, customer loyalty mainly depends on engagement/interaction. The other relationships to customer loyalty were not significant.

Tab. 6: Summary of the investigated hypotheses and results

Item	Hypotheses	Fulfilment of hypotheses
H1	Information Quality has positive effect on Perceived Usefulness.	supported
H2	Information Quality positively influences Customer Loyalty.	not supported
H3	Ease of Use is positively associated with Perceived Usefulness.	not supported
H4	Ease of Use has positive effect on Engagement.	supported
H5	Ease of Use positively influences Customer Loyalty.	not supported
H6	Perceived Usefulness positively influences Customer Loyalty.	not supported
H7	Engagement positively influences Customer Loyalty.	supported
H8	Engagement has positive influence on Perceived Usefulness.	supported

Source: own

Examining of R^2 indicates the variance of the dependent variable associated with all of the independent variables considered together. The results showed that 56.5% of customer loyalty could be explained by the influence of engagement, ease of use, perceived usefulness and information quality, whereas the significance level of the last three independent variables is not significant. Perceived usefulness could be explained to 68.7% by the influence of ease of use, engagement and information quality. Finally, 20.9% of variation on engagement could be explained by ease of use.

CONCLUSION

Discussions and limitations

The aim of the current paper was to examine the role of characteristics of digital channels in B2B customer loyalty. Specifically, the research model included the antecedents of customer loyalty adapted from TAM and IS success model. The suggested model connects the characteristics of digital channels (videos, social media sites and websites) with customer loyalty. The empirical tests were conducted on B2B industrial data set. The results showed moderate explanatory power of the suggested model. Four out of eight research hypotheses were supported. According to the findings, engagement has a positive and significant effect on perceived usefulness and customer loyalty. Ease of use has no effect on perceived usefulness, what is contradictory to prior research showing positive relationships between these two constructs, especially, within TAM.

The results show moderate explanatory power of the proposed model for B2B industrial sector, which explains about 57% of variation in customer loyalty and nearly 69% in perceived usefulness. The model also indicates about 21% of variation in engagement. The results show that customer loyalty is mainly affected by engagement, rather than other constructs.

This study has certain limitations. First, the sample size and the number of variables are small, and may raise some concerns about the generalisation of the findings. Second, the data set represents industrial companies from Central Europe and Russia, which may limit the generalisability of the results in respect to other B2B industries in those countries and to similar industries in other countries. Third, a bias could exist because of the selection of the sample method. From methodological perspective, a snowball method could create concerns about possible relationships and biases among respondents. Fourth, a sample distribution is rather unequal. The high distribution of male respondents of a certain age group could create a bias in the results. Further, cultural characteristics might influence a scale performance. The grading system in Hungary and Russia differs from those in Austria and Germany. All four countries use a 5-grade system, but in Hungary and Russia 1 is the best mark and 5 is the worst, whereas in Austria and Germany 5 is the best mark and 1 is the worst. Finally, the study does not differentiate the size and the form of the companies; which the respondents represented.

Future research can extend the number of endogenous variables. It is recommended to increase a sample size and extend the study into other industries and/or other countries. Because the suggested sample distribution is unequal, it is recommended to extend the sample group to all

age groups. Only part of the measurements of ease of use, perceived usefulness, engagement/interaction and information quality was used to explain B2B customer loyalty. While only half of the proposed hypotheses were supported, other endogenous variables like information reliability, competence, reliability may provide additional explanatory power. Moreover, it is recommended to add other antecedents of customer loyalty. For example, variables reflecting relationship quality, trust, satisfaction could be evaluated. It is also suggested to add some moderating variables like relationship duration, the maturity level of digital marketing, etc.

Managerial implications

The results of the study have important implications for both theory and practice. The current technology acceptance research stream has been extended by combining two models: TAM and IS. The combination of these two models developed a new research framework, which highlight the importance of content quality from the usability perspective.

The findings of the research have certain managerial implications. The research highlights the importance of entertaining component and easy structure of the channels for establishing high levels of customer loyalty. Despite a common thought that B2B purchase decisions are based rather on values and logical factors than emotional appeal, the results show the importance of engagement and interaction for customer loyalty. The line between the use of digital channels for private and work purposes is being blurred. Users are habituated to certain content and wish to be entertained and interested also at workplace. Moderate power of the suggested model suggests industrial companies not to focus exclusively on digital presence. This could be not enough to build strong and trusted relationship with customers.

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DEFINING RELEVANT MARKET IN ECONOMIC CONCENTRATION: TWO CASE STUDIES IN VIETNAM

Danh Thanh Lam

Abstract

This study examines the identification of relevant markets in economic concentration cases in Vietnam. Specifically, this study examines the economic and legal basis for defining relevant market and application of relevant market legislation in the case of economic concentration in Vietnam, which focus on analyzing substitute products or services in terms of characteristics, use purpose and price, and barriers in order to determine the relevant market boundary when calculating market share of businesses. Our survey results, including product and service users in two cases, show that Vietnam's relevant market defining method need to improve. The study of provisions of Vietnamese law on relevant markets in relation to economic concentration control is very necessary, meaningful to improve the effectiveness of competition law enforcement in Vietnam. These findings are informative for the Competition Authority in using analytical methods, level of deployment and development of economic instruments in defining relevant markets. This study focuses on analyzing and defining relevant markets in two cases of actual economic concentration in Vietnam by analyzing the characteristics of products and services, interchangeability of product and services and market barriers as well as limitations in defining relevant market and then makes proposal on these issues.

Keywords: Relevant market, relevant product market, relevant geographic market; economic concentration; Vietnam.

JEL Classification: A1.

INTRODUCTION

Effective handling of practices in restraint of competition poses a requirement to identify relevant market. This is a fundamental and significant requirement, not only from the perspective of legal science but also from the perspective of law enforcement. Current Vietnamese law on relevant market is regulated by Competition Law No. 27/2004/QH11 and Government's Decree No. 116/2005ND-CP dated September 15, 2005 providing details for implementation of Competition Law. As Clause 1 of Article No. 3 of Competition Law 2004:

“1. The relevant market includes the relevant product market and the relevant geographic market. The relevant product market is the market for products or services that can replace one another in terms of characteristics, use purpose and price. The relevant geographical market is a specific geographical area in which products and services can be interchanged with similar competitive conditions and there are significant differences with neighboring areas”. Under Vietnam’s Competition Law, defining relevant market is one of the bases for determining market share of each enterprise and combined market share of parties in an economic concentration case²⁴. Definition of relevant market is specified as: (1) relevant product markets; and (2) relevant geographic market. The relevant product market is determined on basis of product characteristics (physical, chemical, technical, etc.), use purposes and prices of interchangeable products while the relevant geographical market is based on the interchangeability of products or services with similar competitive conditions and significant differences with neighboring regions (transport cost, barriers to entry). Kauper (1996) stated many countries actually use market share as the first basis for control this economic concentration. Combined market share is a basis and the only criterion for the Competition Authority to decide whether or not to ban an economic concentration. Market share of an economic concentration case is based on the identification of relevant markets of participating firms based on three factors: (i) competitive products; (ii) competing enterprises, and (iii) geographical areas where competition takes place and firms actually competes or may compete with products or services supplied by other firms. In general, the bases for defining relevant market are described as abstract and descriptive in form of economic principles. Based on that context, the purpose of this paper is to investigate definition of relevant markets in economic concentrations having a Vietnam dimension. This study examines two concentration cases in Vietnam, one is merging case of beer firms and the other is retail services. The present study contributes to existing literature in three aspects. First, it consolidates earlier studies over the world and Vietnam to ascertain the specific factors that shape relevant market identification for effectiveness. Second, its findings can help Competition Authority in pinpointing the precise factors that impact their assessments in handling concentrations as well as the level of deployment of tools in their market definition. Lastly, this research offers a reference to facilitate the effective of market definition in Vietnam.

²⁴ Article No. 18, 20 of Vietnam Competition Law 2004

LITERATURE REVIEW

In enforcement of competition law, market definition is often the first step of competitive analysis in assessing market power (UK Office for Fair Trading, 2004). Relevant market is a new issue in terms of legal and practical application of competition law in Vietnam. Defining relevant market is the first step in the formal investigation conducted by the Competition Authority for an economic concentration case²⁵ in order to determine market share – a basis for identifying participating enterprises in an economic concentration whether prohibited or required to notify to the Competition Authority before proceeding²⁶. Under EU Competition laws, relevant market is regulated in Commission's Notice²⁷ and the general conditions for applying the Regulation on Economic Concentration are dominant or market power. Assessment of market power requires Competition Authority to identify relevant market, and therefore market definition is essential to any analysis of economic concentration. According to the Regulation on Economic Concentration, "*economic concentration causes significant impediment to effective competition on all or a substantial part of that common market, particularly the consequences of creating out or consolidate the dominant position, will be declared incompatible with the common market*" (EC No 139/2004). In the United States, relevant market regulations can be found in the US (Horizontal Merger Guidelines, 2010). Besides, relevant market definition can be seen in law enforcement through the Court's judgment such as in *Continental Can vs. Commission* or Decisions made by Competition Authorities in EU and US. Vietnamese Competition law does not provide a definition of relevant market but merely defines its constituent parts as relevant product market and relevant geographic market. It is unclear and could be understood that: (i) Relevant market consists of two parts which are relevant product market and relevant geographic market; (ii) When defining relevant market, Competition Authority shall determine two factors in two steps, step one is identifying relevant product market, and step two is identifying geographic market. These may affect the outcomes of relevant market definition.

For Vietnam Competition law, relevant product market is indirectly determined by defining the interchangeability of "characteristic", "use purpose" and "price" of products or services.

²⁵ Article No. 89 of Vietnamese Competition Law 2004.

²⁶ Article No. 9, 11, 18, and 19 of Vietnamese Competition Law 2004.

²⁷ European Commission, *Commission's Notice on the definition of relevant market for the purposes of Community Competition Law*, Official Journal C 372, 09/12/1997, pp. 8.

The general formula for determining characteristics, price and intended use of a product or a service is commonly used in handling practices in restraint of competition in Vietnam (VINAPCO v. Competition Authority, 2009; Tan Hiep Phat v. Competition Authority, 2010). This is similar to EU regulations (Commission's Notice, 1997) and the US (Horizontal Merger Guidelines, 2010). Therefore, identification of substitute products or services in characteristics is work of collection, analysis, synthesis to find similarities related to physical properties, chemical, technical features, side effects...under consumers' demands or use purpose of products or services. There are a number of theoretical and practical issues in application of law when defining characteristics of products or services. For material products, identification of attributes may not too complicated and could be relatively easy to implement under support of science and technology, while identification of services' characteristics is rather hard and it will be difficult to find characteristics of a service because the nature of service is acts of one person doing for another. This has been proven by reality for some competition cases in recent years (VINAPCO v. Competition Authority, 2009; Tan Hiep Phat v. Competition Authority, 2010).

For geographic market, determination of geographic boundary is very important. Bases for defining relevant geographical areas including geographical areas where having firm's business establishments involved in supplying relevant products are located, and business establishments of other firms located in neighboring areas closed enough to that geographical areas to participate in distribution of relevant products in such geographical areas, expenses for transportation in geographical areas, time for transporting products or providing services in geographical areas, barriers to entry market.

METHODOLOGY

Methods of defining relevant market is guided from Article No. 4 to Article No. 8 of Government's Decree No. 116/2005/ND-CP dated September 15, 2005²⁸. Actual work of definition of relevant market is applied in the following two cases of economic concentration.

Economic concentration case: Company X and Company Y²⁹.

In year 2016, Company X has completed acquisition of a brewery of Company Y in Vung Tau. Both firms have business of producing bottled and canned beers with famous labels for

²⁸ Article No. 4, 5, 6, 7 Decree No. 116/2005/ND-CP dated September 15, 2005

²⁹ For reasons of confidentiality, we do not name specific companies participating in the economic concentration.

consumers in the Vietnam market. From the perspective of competition law, this is an economic concentration that needs to be in line with the rules of economic concentration control. These two firms participating in this economic concentration are those operating in the same market. Therefore, in the economic concentration control procedures, there must be a combined market share report. Calculating market share of the case based on definition of relevant market of Company X and Company Y on three factors: (i) competitive products; (ii) competing enterprises and (iii) geographical areas in which two companies are competing.

Relevant product market

Article No. 4 to Article No. 8 of Government's Decree No. 116/2005/ND-CP regulates: "Relevant product market is market for interchangeable products and services in terms of characteristics, use purpose and price". Method of determining relevant product market applied in this case is based on the interchangeability between beer's characteristics, use purposes and prices. Specifically, definition of relevant product markets is based on the followings:

(1) The products which Company X and Company Y are producing and trading. Through market surveys, list of products made by Company X includes canned beer, bottled beer and draught beer with brands such as Heineken, Tiger, Larue while the list of beer produced by Company Y is canned beer, bottled beer and draught beer of various brands such as Hanoi Beer, Carlsberg, Halida, Huda. Although two companies produce various brands of beer, the competing beers are canned and bottled ones with a variety of brands.

(2) Intended use of beer. Beer can be used for drinking, cooking, cleaning for babies, etc. despite different branded, produced and traded by different firms. However, beer has only one basic purpose: Beer is a low-alcoholic fermented beverage as having a lot of foam and a pleasant bitter taste, nutritional value and high energy, a high biological value and rapidly reducing the thirst of drinkers. As result, beer is a popular drink in the world as beer has primarily use for beverage and is classified in beverage category.

(3) Characteristics of beer. Application of Clause 2, Article No. 4 of Government's Decree No. 116/2005/ND-CP which "*characteristics of products or services shall be determined according to one or more of the following grounds: a. physical properties; b. chemical properties; c. technical features; d. Side effects to users; e. Absorption capacity*", characteristics of beer is defined through analysis of (i) ingredients, (ii) materials and (iii) production of beer, which is as follows: (a) *Water and water use in brewing technology*: Water is used directly in brewing

technology, main raw material for brewing. Water is required to meet specific requirements on composition and content; (b) *Barley*: Main raw material for brewing is germinated barley, consisting of two major constituents of glucid and protein, which are balanced and meet certain requirements: sensibility, biology, chemical composition; (c) *Malt*: Malt imported from abroad is produced by a process and quality requirements of malt are the same among brewing companies; (d) *Hop*: Hop is an irreplaceable material in brewing industry. Hop makes beer bitter, aromatic, creating and retaining froth and stabilize biological composition of beer. Hop is only used for brewing, not for other beverage such as soft drinks, alcohols; (e) *Brewer's yeast*: Brewer's yeast is an indispensable ingredient in brewing process which uses group of brewed yeasts and submersible yeasts with its distinct characteristics. Brewer's yeast is only used in brewing industry; (f) *Additives*: Raw materials and chemicals contained in composition of beer are strictly controlled, used in varying contents. Generally, brewing companies have same ingredients, raw materials and brewing processes despite of bottled beers, canned beers or fresh beers with different brands.

(4) Price interchangeability of beer. Interchangeability is the most important factor of defining relevant product market (Vietnam Competition Authority, 2009). To consider price interchangeability of beer, we conducted a survey of 1,000 random consumers who choose to change their purchase needs when price of product increases by 10% and change to which firms and products. Method of survey is based on: (i) Surveyed population is arranged in four selected geographic areas: Hanoi, Da Nang, Ho Chi Minh City and Vung Tau, where there are a large number of beer consumers and high demand for beer; (ii) Sample size: 1,000 consumers, (iii) Sampling method is random choice, (iv) Survey content includes a survey of consumers' responses when beer prices of Company X and Company Y increases by 10 percent and consumers' choice to change beer; and (v) Thresholds identity of beer can substitute for beer made by other firms on price: over 50% of consumers asked to switch to buy or intend to buy other products when the surveyed product(s) increasing over 10%.

Relevant geographic market

Upon Article No. 7 of Government's Decree No. 116/2005/ND-CP, method of defining relevant geographic market will be defined on the following based: a) Geographical areas where business establishments of an enterprise participate in distributing relevant products; b) Business establishments of other enterprises located in neighboring geographical areas close

enough to geographical areas defined to participate in distribution of relevant products in such geographical areas; c/ Expenses for transportation in geographical areas defined; d/ Time for transporting goods or providing services in geographical areas defined; e) Barriers to entry into market. Actual work of defining relevant geographic market was applied on the following bases:

(1) Geographic area where there are business establishments of firms participating in distribution of relevant products, which is considered in two circumstances: (i) Geographical area has production facilities of firms participating in economic concentration. At the time of economic concentration, Company X has production facilities in Ho Chi Minh City, Da Nang and Quang Nam; Company Y only has production facilities in Ba Ria - Vung Tau; (ii) Geographic area where beer of firms are distributed in all provinces and cities across the country.

(2) Geographic area where beer of other firms are distributed. Canned beer and bottled beer of Company X, Y and other competitors are distributed throughout the country. Thus, the geographical market of beer is Vietnam nationwide.

(3) Analysis of barriers to entry. Barriers to entry are one of the important elements in defining relevant geographic market. From a theoretical and practical perspective of beer industry, barriers to entry include natural barriers, decisions of Authority, regulations on business conditions and use of products or services and consumers' custom: (i) Natural barriers: There is no natural barrier to entry for Vietnam beer industry; (ii) Intellectual property barriers: In beer industry, intellectual property hold by enterprises is mainly yeast used for production and formulas using raw materials in the production process, but this does not create barriers to entry and does not also create market segmentation for beer; (iii) Financial and investment barriers. Beer industry does not have any mandatory requirements on scale of investment, high or modern technical standards and the law does not have any regulations on conditions for facilities of producing and trading beer; (iv) Legal and policy barriers. The most important legal barriers in the field of beer production and trading are regulations on food safety issued by Ministry of Industry and Trade, which business condition is *Certificate of eligibility* for food business. This is not a big barrier for investment in beer industry. However, tax rates for beer, including special consumption and import/export taxes, is considered as a legal barrier to entry; (v) Barriers to withdraw from market. Beer industry does not have any barrier to withdraw

from market as Government is not binding on firms to withdraw from market. Withdrawal of a firm from market does not affect consumers and business environment in beer industry.

Economic concentration: Company A (Thailand) and Company C in Vietnam³⁰.

In year 2016, Group A (hereinafter referred to as Company A) acquired an overseas business which is parent company of investors of Group C in Vietnam (hereinafter referred to as Company C). Both businesses have groups of subsidiary companies providing retail services in supermarkets and trade centers in provinces and cities of Vietnam. By comparing list of business registration certificates, investment licenses or investment certificates of each firm, it shows that both Company A and Company C have subsidiary companies doing business in retail services. Therefore, we only selected group of subsidiary companies providing retail services under Company A and Company C to analyze relevant market and combined market share. As such, the main business to make economic concentration's report is retail business sector in supermarkets and trade centers due to overlapping among these two companies. According to Vietnamese regulations, and from the perspective of actual situation, the core businesses of two firms participating in this economic concentration are retail services in supermarkets and trade centers. These parties are required to submit a combined market share report on relevant market.

Relevant product market.

Clause 2, Article No. 4 of Government's Decree No. 116/2005/ND-CP providing guidelines for definition of relevant product market do not distinguish products or services, so this rule will be also applied in definition of relevant product market for services:

(1) Classification of services of distributing products. According to Legal Review on Distribution Services in Vietnam and Recommendations on the appropriateness of sector specific regulations with the WTO Commitments issued by Vietnam - EU Multilateral Trade Assistance Project (MUTRAP III), the distribution sector consists of four main types of services, including wholesale and retail services following UN's Central Product Classification (CPC). Vietnamese law does not have any distinction between two types of wholesale and retail services.

³⁰ For reasons of confidentiality, we do not name specific companies in this economic concentration.

Wholesale and retail services, as being two types of distribution of products, have nature of services. Upon CPC and the WTO list of services, retail service is a stand-alone service and is classified as a distribution services; retailers sell products for personal consumption or household consumption. Wholesale service is the sale to retailers, to industrial consumers, merchants, organizations and other business entities and to other wholesalers. In that sense, wholesalers function as "middlemen" as wholesalers buy products from manufacturers or other wholesalers and then sell them to retailers. Wholesale can be defined as a function of connecting differences in location, time, quantity and price in the distribution chain. The most basis difference between wholesale and retail is wholesale supplying of products to retail and retailers bring products to consumers. This difference makes wholesale and retail impossibly substitute each other and cannot be the same relevant market.

(2) Concept and nature of retail services. Vietnamese law does not regulate retail services. From a research perspective, retail services are understood in different ways: (i) Retailing is sale of products to consumers or consumers from a fixed location (shop, kiosk) or another location (direct sale) and related services; (ii) Retailing includes all activities related to sale of products or services directly to end consumers for their personal, non-commercial use.

(3) Characteristics of retail services. Although there are many different meanings about retail, the retail service has the following basic characteristics: (i) It is activities of bringing products to the end consumers (may be consumers in productions or individuals or families); (ii) Final stage of the circulation process for products to reach consumers; (iii) Retailing is carried out at a fixed location called a retail outlet (in type of retail or retail businesses, including trade centers, supermarkets), department store, shops, grocery stores, markets, distribution centers, consumption centers of manufacturers ...). With that property, retail service is a particular type of service and does not have any service close substitutes for.

(4) Types and methods of organizing retail service. Each retail service type has its own characteristics and organization and has its own customers. Retail in supermarkets and trade centers is a mode of products distribution in which: (1) Modern technology solutions and means are used to manage and organize business activities; (2) Buyers themselves carry out whole selection and purchase process without assistance form sellers. With this feature, retail service in supermarket and commercial center is completely different from other retail modes such as selling at traditional markets, grocery stores. For consumers, when purchasing a wide range of products (especially FMCG), they will use retail services in supermarkets or trade centers.

Essentially, supermarkets and trade centers meet customers' demands to select multiple categories of products that can be substitutes for each other.

Relevant geographic market.

Upon Article No. 7 of Government's Decree No. 116/2005/ND-CP, relevant geographic market for retail services in supermarkets and trade centers of the merger can be defined as follows:

(1) Geographic area operates through supermarkets and trade centers of Company A and Company C in Vietnam: (i) Subsidiary companies in Company A and Company C in Vietnam have supermarkets and/or trade centers operating in certain provinces and cities in Vietnam nationwide; (ii) Each supermarket managed by Company C operates within province or city where supermarket is located; (iii) Transportation costs, transportation time: in each province and city where Company C has supermarkets, trade centers have warehouses, costs and time of transportation is not different; (iv) Barriers to entry: Businesses must meet a number of conditions, especially, retail licensing procedures will be applied for foreign invested enterprises, as they have to get permission at the provincial Authority.

(2) Analysis of barriers to market entry. From the theoretical and practical aspects, barriers to market entry include natural barriers, administration decisions of Authority, regulations on business conditions and use of products and services and consumer behavior: (i) Natural barriers: In retail sector, natural barriers include barriers to investment (financial barriers), infrastructure, science and technology, and human resources; (ii) Financial barriers: Investment costs are one of the most common barriers for entry into retail market in supermarkets and trade centers. Modern supermarkets and trade centers are relatively large in scale, so the investment costs will be high including construction, management and operation which require investment costs on construction of fixed assets, warehousing, etc.; (iii) Technical and technological barriers. In fact, investing and entering retail market requires quality management (high-level personnel with good management skills, capable of building effective business strategies); (iv) Legal and policy barriers. There are a number of legal documents that are quite strict for supermarket retailers and trade centers such as regulations on land areas, retail licensing procedures for foreign companies are quite complicated, foreign investors in Vietnam for the first time, investing in goods trading and direct selling activities shall have to complete procedures for issuance of investment certificates or if they want to open the second retail outlet

they should pass the Economic Needs Test. As such, there are legal and policy barriers to entry and development of business scale of foreign-invested enterprises in retail sector; (v) Barriers to withdraw from market: Government is not binding on firms to withdraw from the market and withdrawal from market of a retail business in supermarket or trade centers does not affect consumers and business environment.

DATA

(1) For the economic concentration of Company X and Company Y. Survey results show that:

(1.1) When beer's price of Company X increases 10%, the rate of consumers switches to other products as follows:

Tab. 1: Consumers' choices when beer price of Company X increases 10%

No	Brands	Rate of consumers not switching to other products	Rate of consumers switching to other products
1	Heineken	44,58%	55,42%
2	Tiger Crystal	42,49%	57,51%
3	Larue	39,52%	60,48%

Source: Data collected from the survey

(1.2) When beer's price of Company Y increases 10%, the rate of consumers switches to other products as follows:

Tab. 2: Consumers' choices when beer price of Company Y increases 10%

No	Brands	Rate of consumers not switching to other products	Rate of consumers switching to other products
1	Tuborg	38.64%	61.36%
2	Carlsberg	30.61%	69.39%
3	Halida	35.25%	64.75%
4	Huda	39.29%	60.71%

Source: Data collected from the survey

From the survey results: (1) Switching rates of two companies' surveyed products accounts for over 50%; (2) Percentage of consumers who choose substitutive products for a product surveyed shows that: Only the beer with brand *SG Special* can be a substitute for products of Company M³¹ as it has more than 50% of consumers' choice, while the remaining products accounted for less than 50% of consumers' choice. Thus, survey results are not sufficient for conclusion of substitution of beer. Therefore, the "*time of use of products*" needs to be considered to determine price substitutability of beer. Draught beer is usually used within three

³¹ For reasons of confidentiality, we do not name the specific companies.

days while fresh beer is longer; bottled and canned beer is usually used from six months to one year. When comparing to canned beer and bottled beer of other companies, time of use of beer products are the same despite of different beer brands. By analyzing time of use of beer shows that: (a) There is different time of use of canned beer, bottled beer and draught beer; fresh beer; (b) Bottled beer and canned beer of different companies has the same time of use.

(2) For the economic concentration of Company A (Thailand) and Company C in Vietnam.

Survey results show that: Combined market share is total market share of supermarkets of Company C and LC supermarkets under Company A operating in the defined geographical areas.

Tab. 3: Combined market share of relevant markets in year 2014

No	Province/city	Market share of Company C's supermarkets	Market share of LC supermarkets	Total market share (combined market share)
1	Ha noi	24.44%	11.48%	35.92%
2	Vinh Phuc	45.3%	0%	45.3%

Source: Data collected from the survey

Tab. 4: Combined market share of relevant markets in year 2015

No	Province/city	Market share of Company C's supermarkets	Market share of LC supermarkets	Total market share (combined market share)
1	Ha noi	23.17%	10.25%	33.42%
2	Vinh Phuc	44.44%	0%	44.44%

Source: Data collected from the survey

By analysis, we identified twenty relevant markets of main business of Company C and A including Ho Chi Minh City, Dong Nai, Binh Duong, Hai Duong, Quang Ninh, Bac Giang, Phu Tho, Lam Dong, Ninh Binh, Nam Dinh, Thanh Hoa, Da Nang, Hai Phong, Can Tho, Thua Thien – Hue, Khanh Hoa, Binh Dinh, Nghe An, Vinh Phuc and Ha Noi. Among those, there are two relevant markets with presence of both companies in retail sector in supermarkets and trade centers: (i) Retail market in supermarkets, trade centers in Vinh Phuc; (ii) Retail market in supermarkets, trade centers in Hanoi. Data on combined market share of company C and company A of retail market in supermarkets and trade centers reaches more than 30% in 2014 and 2015.

RESULTS & DISCUSSIONS

(1) For the first case of economic concentration, based on data collected, relevant product market involved in this case consists of two groups: (1) Group of draught beer, fresh beer; (2)

Group of canned beer, bottled beer. When collecting market share for draught beer and fresh beer of these two brewers, it was found that market share of these two brewers in market was very small which is as follows:

Tab. 5: Total sales of draught beer and fresh beer in year 2014

Type of beer	Total production (thousand liter)	Total consumption (thousand liter)	Value (million VND)
Draught beer + fresh beer	380,075.3	380,815.8	2,180,092.1

Source: General Statistics Office of Vietnam

Table 6: Total sales of draught beer and fresh beer in 2015

Type of beer	Total production (thousand liter)	Total consumption (thousand liter)	Value (million VND)
Draught beer + fresh beer	377,934	368,884.1	2,462,273.6

Source: General Statistics Office of Vietnam

Table 7: Total sales of brewing market in year 2014 and 2015

Years	Number of firms	Total sales (million VND)
2014	117	66,980,739.7
2015	117	66,040,088.0

Source: General Statistics Office of Vietnam

Table 8: Market share of draught beer and fresh beer in year 2014

No	Company	Market share by value
1	Company X	2,54%
2	Company Y	n/a

Source: General Statistics Office of Vietnam

Table 9: Market share of draught beer and fresh beer in year 2015

No	Company	Market share by value
1	Company X	0,04%
2	Company Y	0,16%

Source: General Statistics Office of Vietnam

Data collected show that: Due to market shares of draught beer and fresh beer of Company X and Y very small, so these products are not main products of the undertakings involved in this economic concentration. So the relevant product market in this case is group of canned beer and bottled beer which are close substitutes for one another. From the above analysis, it can be

concluded that the economic concentration has relevant market of bottled beer and canned beer in nationwide market that is overlapping market of Company X and Y. On the basis of defined relevant market, the next step is to calculate combined market share of canned beer and bottled beer. Calculation results show that, in year 2015 (the year before economic concentration), combined market share of Company X and Y is 27.04%, which does not reach the notice threshold at Article No. 20 of Competition Law³², so that this case is not subject to notify to Competition Authority.

Tab. 10: Market share of bottled and canned beer in year 2014

No	Beer company	Market share		
		By production volume	By consumption volume	By consumption value
1	Company X	22.69%	22.46%	34.12%
2	Company Y	1.32%	1.36%	0.12%
Combined market share		24.01%	23.82%	34.24%

Source: General Statistics Office of Vietnam

Tab. 11: Market share of bottled and canned beer in year 2015

No	Beer company	Market share		
		By production volume	By consumption volume	By consumption value
1	Company X	23.37%	23.19%	25.98%
2	Company Y	0.73%	0.73%	1.06%
Combined market share		24.10%	23.92%	27.04%

Source: General Statistics Office of Vietnam

(2) For the second case of economic concentration, from results of statistics and calculations from reliable data sources, it is concluded that: Combined market share based on the mentioned relevant markets does not reach the threshold of market share prohibited as regulated by the Article No. 18 of Competition Law³³. Enterprises participating in economic concentration notified the report to the Competition Authority and have been approved for non-restricted economic concentration.

³² For undertakings involved in the economic concentration have combined market share of from 30% to 50% in the relevant market, legal representatives of those enterprises must notify Competition Authority before conducting the economic concentration.

³³ Economic concentration is prohibited if the combined market share of enterprises participating in economic concentration accounts for more than 50% in the relevant market, except as provided for in Article 19 of this Law or in the case where an enterprise after economic concentration is still small and medium enterprises according to the law.

CONCLUSION

From the study of definition method of relevant market regulated in Vietnam Competition law and its application in actual economic concentration cases, we have comments on limitations in defining relevant market and then makes proposal on these issues:

First, the purpose of defining relevant market in an economic concentration is to assess the substitutability of products or services on a certain geographic area. Clause 1 of Article No. 3 of Vietnam Competition Law regulates that “the relevant market includes relevant products and relevant geographic markets” and Clause 2, Article No. 4 of Government’s Decree No. 116/2005/ND-CP providing guidelines for definition of relevant product market does not distinguish products or services. As a fact, this rule will be also applied in definition of relevant product market for services. However, it is not suitable for defining relevant services, especially when analyzing the substitutability in terms of characteristics, purpose of use and price to identify relevant market of services. For products, determination of characteristics is not too complicated under support from modern technology, but for services, definition of characteristics of services is difficult because the nature of services is the action of a person doing for others. In the economic concentration case related to merging of brewing enterprises, as beer is a product, analysis of beer characteristics is relatively easy to identify, although it is not uncomplicated and it requires time, ability and expertise, survey opinions from consumers, competitors, consultation, data collection and analysis of Government offices, etc. However, in the merger involving two retail companies, work of defining relevant market is very difficult as retail service cannot be specific but indirectly through characteristics of products. It is recommended that the Competition Authority should promulgate a guidelines on defining relevant markets in which many flexible and feasible methods of definition of relevant markets can be used and selected when identifying relevant market without analyzing characteristics of services. By that reason, Vietnam law should be amended to allow analyses necessary and flexible enough to defining relevant products or services markets by taking all circumstances into account.

Second, as Vietnamese Competition law, due to only use market share criteria, the control of economic concentration in Vietnam can be risky once the analysis and identification of relevant market is inaccurate. It is recommended the law should be amended on more methods to define relevant market due to the fact that many difficulties arise for the authority (Nguyen Ngoc Son, 2008) as well as critics argue that market definition is often arbitrary and should be avoided

(Willem, 2013). Besides, more criteria could be considered such as HHI Index, UPP, etc. together when assessing the economic concentration's effect.

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DEVELOPMENT OF BUSINESS MODELS

Karel Slinták

Abstract

The article deals with the development of business models. Its aim is to summarize current knowledge of business models (BMs), describe the ontology of BMs and clarify some contradictions that arose after BMs began to be used as important tools for describing business. Since this is a qualitative study, the basis of the analysis was the scientific articles and monographs, which were searched using selected scientific databases. The literary research has shown that the role of selected management theory (such as Drucker's business theory or the Balanced Scorecard concept by Kaplan and Norton) has played an important role in the development of BMs, as well as practical examples of successful business models (such as BM Gillette and a model called razors / blades). Current theory distinguishes pipe and platform models. In case of pipes, firms create goods and services, push them out and sell them to customers (value is created by producer). Platforms are based on the principle of co-creation, which perceives the customer as a creator and consumer of value. Several concepts have also emerged in literature to illustrate the essence of business models using building elements (individual parts of the model). The most used concept in theory and practice has become BM Canvas, which is made up of nine building elements. The core of this model is value proposition which turns the attention of researchers and practitioners from profit to value creation.

Purpose: The aim of this article is to summarize the current knowledge of BMs, describe the ontology of the BMs, and clarify some of the confusion that emerged after BMs began to be used as an important tool for describing and creating businesses.

Design/methodology/approach: This article is a qualitative study. The aim of this study is to summarize current knowledge of BMs, describe BMs ontology and explore the relationship between BMs and business plans, BMs and strategies, and BMs and innovations. To achieve this goal it was necessary to use the scientific databases, search for relevant scientific publications and analyse them. Google Scholar, Web of Science and Scopus have been used to search for articles and monographs.

Findings: This study revealed that the concept of a business model became more widespread at the beginning of the new millennium with the emergence of information technology, even

though the first mention of business models emerged as early as 1957. It was also found that there is no unified definition of BMS. There are two views in literature. The first describes BMs as profitable models. The second one describes BMs as tools for creating and delivering value. We pointed out that the business models are not synonymous with organizational models.

Research/practical implications: The outputs of the article can be used in quantitative research that focuses on the representation of selected models in practice (such as Canvas, Lean Canvas, etc.), mapping and updating of the list of business model patterns, and last but not least, to explore the relationship between business model innovation and business performance.

Originality/value: The benefits of this article and its core value is that it maps the most important theoretical resources on business models and their development over the past twenty years.

Keywords: business model framework, business model pattern, business plan, canvas, strategy.

JEL Classification: L26, M10.

INTRODUCTION

This article discusses the development of business models (BMs). Its aim is to summarize the current knowledge of BMs, describe the ontology of the BMs, and clarify some of the confusion that emerged after BMs began to be used as an important tool for describing and creating businesses.

The main part of this article will therefore focus on the description of business model frames, ontology of business models and the relationship between business models and current management theory. Discussion should bring deeper understanding of BM as a tool that changes the view of businesses and their core functions.

In the literary research, we point out that BMs are relatively new concepts, but their content is related to the fundamentals of management and the essence of business. As Magretta (2002) claimed, BM is a story that answers Drucker's age-old questions: (1) who is our customer, (2) what our customer wants, (3) where is our customer, and (4) how we transform customer's needs into a profitable opportunity. We also define the BMs from the point of view of various authors and we will describe the development of this concept at different levels of abstraction (definitions, concepts, patterns, examples).

In the discussion, we examine the links between selected BMs concepts, outlining the two developmental trends that have influenced their development. We will introduce theories that influenced their creation and verify compatibility between BMs and established management theories.

LITERATURE REVIEW

The birth of business models

Interest in business model issues grew at the start of the new millennium. This is evidenced by the analysis of book publications using Google Ngram Viewer. A two hundred-year analysis (1800-2008) has shown that literary sources of business models began to come about in 2000. A more thorough analysis of literary sources in relation to business models published in scientific journals was prepared by Osterwalder et al. (2005). They mapped the publications between 1990-2003. The results are shown in the following figure.

Fig. 1 - Term “Business Model” in Scholarly Reviewed Journals.

Year	In Title	In Abstract	In Keywords	in Full Text
2003	30	159	10	667
2002	22	109	2	617
2001	11	100	7	609
2000	16	67	1	491
1999	3	42	1	262
1998	1	19	0	128
1997	1	14	0	66
1996	0	14	0	57
1995	0	4	0	36
1994	0	2	0	18
1993	0	5	0	18
1992	0	2	0	15
1991	0	1	0	10
1990	0	4	0	7

Source: Osterwalder et al. (2005).

Osterwalder’s analysis shows that the popularity of the term "business model" is a relatively young phenomenon. It appeared for the first time in an academic article in 1957 (Bellman et al., 1957) and in the title and abstract of a paper in 1960 (Jones,1960), it rose to prominence only towards the end of the 1990s.

General interest in the concept of BMs have begun to grow enormously after 2000, attracting the attention of scholars and practitioners. Zott et al. (2011) found the use of the term business

model in management articles a dramatic increase in the incidence of the term in the fifteen-year period (since 1995 to 2010, there have been at least 1,177 papers published in peer reviewed academic journals in which the notion of a business model is addressed), in parallel with the popularization and broad diffusion of the Internet. The Internet and information and communication technologies acted as catalyst for BM experimentation, opening up new opportunities for organizing business activities (Massa and Tucci, 2013).

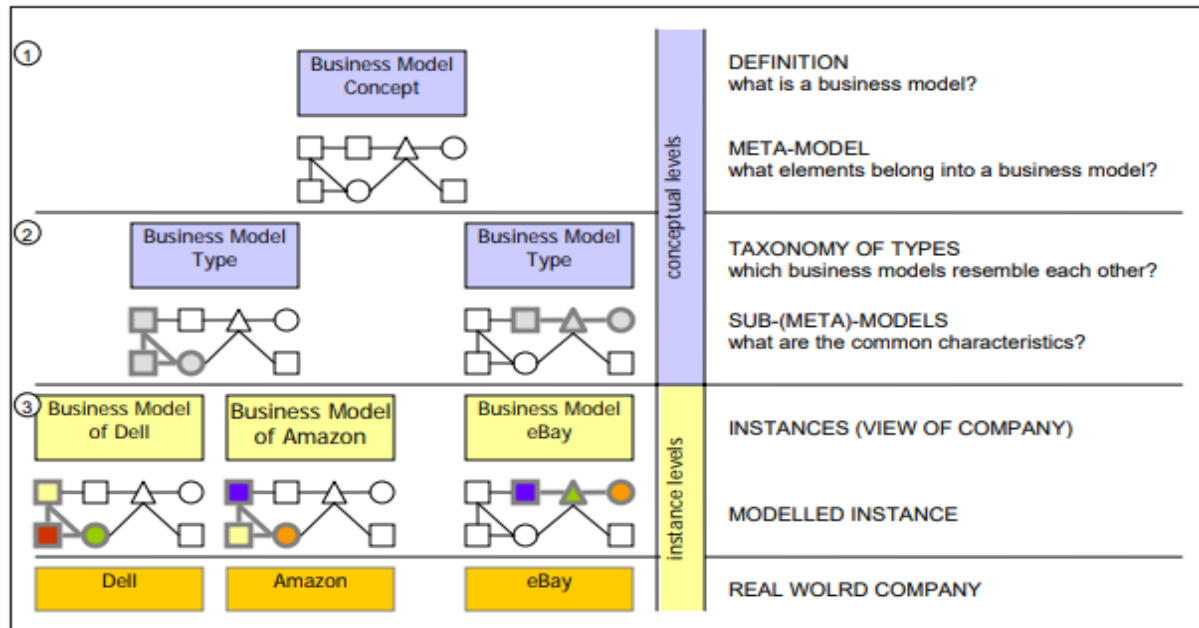
Thinking, however, that companies had no business models before, or that BMs were only created with a massive Internet extension, would be misleading. Scholars and practitioners have always looked at business models, except that they used different terminology and focused their view on other areas of business. BMs build on organizational models. Various organizational models have emerged cross-sectional throughout the twentieth century (Slinták, 2017). A brief analysis of these models is provided by Slinták (2017). The most significant models include bureaucracy (Weber, 1947), organic model (Burnes and Stalker, 2000), model of learning organization (Senge, 1990) and chaordian model (Hock, 2000). All these models describe the management system applied within organizations.

Definition of BMs

In the literature there are different definitions of BMs (see Slavik and Bednár, 2014). Teece (2010) states that a business model is a conceptual, rather than financial, model of a business. In essence, a business model embodies nothing less than the organizational and financial architecture of a business. At the same time he draws attention that the concept has no established theoretical grounding in economics or in business studies.

Osterwalder et al. (2005) believe that the authors writing about business models can be classified in three different categories that can hierarchically linked to one another (see following figure): (1) BMs as an abstract overarching concept (describe all real businesses), (2) BMs as a number of different abstract types of business models (i.e. a classification scheme), each one describing a set of businesses with common characteristics, (3) BMs as a description (example) of a particular real business (such as business model Dell, Amazon).

Fig. 2 – Hierarchy of business model concept.



Source: Osterwalder et al. (2005).

All three categories can vary in their modelling rigour, ranging from simple definitions, over the listing of elements to a set of related, defined and conceptualized elements.

Al-Debei et al. (2008) Analysed different definitions of BMs. Their analysis showed that there is no uniform definition of BMs. The authors therefore introduced an BMs classification that includes various definitions of BMs. This classification outlines the ten basic characteristics of BMs, including a brief definition and reference to authors whose definitions fit into one of the ten characteristics: (1) Value creation model, (2) Revenue model, (3) Abstraction model, (4) Architecture model 5) Logic model, (6) Collaborative model, (7) Alignment model, (8) Strategy model, (9) Conceptual model and (10) Organizational model.

The analysis of literary sources has offered a number of specific definitions of BMs. George and Bock (2011) examined the managers' view of the BMs. Managers understand BMs as the design of organizational structures to enact and commercial opportunity Osterwalder and Pigneur (2010) in their book defines BM as a concept that expresses how entrepreneurs create and add value. From this point of view, the concept of BM becomes an instrument combining the needs of customers with the competencies of companies. Other authors define business models through a profitable level, which are subordinated to all other levels of business (Afuah, 2003). In these definitions, the business model becomes a tool for making money. However, most authors, whose articles we investigated, do not identify with this view and offer a wider

view of this issue. In one, the business model is described as a combination of the profit model and the operating system leading to the creation of the learning system (Itami and Nishino, 2010). In the case of these authors, BM is linked to the organizational model that historically preceded the BM. Chesbrough (2006) understands BMs as a tool for applying new technologies. In a sense, therefore, it is a concept for creating and applying innovations. It is a useful working framework that combines ideas and technology into economic outputs.

Elements of BMs

As described in the previous chapter, there is no single definition of BMS. Therefore, many authors try to explain business models using elements that render their properties. These elements create a wider concept that approaches the different approaches to achieving corporate goals and generally different approaches to business.

According to John Mullins and Randy Komisar (2009) successful business model stands on five pillars which predetermine the economic viability of the business. In this economic model, the following elements are included: revenue pillar, gross margin pillar, operating pillar, working capital pillar and investment pillar. The successful formula of business is in the harmony of all five models what helps to be more effective and this harmony creates value for customers and profit for the company.

The concept of Alan Afuah (2003) divides model into 4 components. He designates them as determinants of profitability which influence all the activities in company. This model includes industry factor, costs, resources and position. Combination of these components creates a successful business model and their uniqueness is a source of competitive advantage.

Johnson et al. (2008) claim that an effective BM consists of four interlocking elements that, taken together, create and deliver value. Their model contains customer value proposition (CVP), profit formula, key resources and key activities. Successful company creates value for customers and generates profit. A necessary condition for the success is having the resources (people, technologies, tangible and intangible asset, brand) and doing the right activities (trainings, development, production, budgeting, planning and selling). The concept comprehensively describes all the essential components of business. According to these authors, these four elements form the building blocks of any business.

Currently, business models canvas and lean canvas are among the most commonly used work frameworks. Both tools are made up of nine building elements. While the canvas, which was

created by Osterwalder and Pigneur (2010), is used to describe successful companies, lean canvas designed by Maurya (2012) is suitable for describing startups. In the case of the canvas, we work with the following elements: customer segments, customer relations, distribution channels, value proposition, key resources, key activities, partners, cost structure and revenue streams.

Lean canvas differs from the original canvas in four building blocks. It replaces partners, resources, activities and customer relationships. Instead of these elements, it uses these building blocks: problems, solutions, key metrics, unfair advantage. These elements better reflect the needs of start-ups. In the case of lean canvas, it should be noted that it fits into the wider theoretical concept of lean startup created by Ries (2011) and the customer development model described by Blank (2013). Maurya (2012) understands business models as part of innovation management which is a cyclic process consisting of the following phases: (1) Design business, (2) Identify bottlenecks, (3) Continue to improve the business model. Current business models therefore have to be dynamic and iterative, which Maurya (2012) describes as a learning cycle in the sense: 1. Create (product), 2. Evaluate (data), 3. Learn (ideas).

Business model patterns

The most authors dealing with on business model patterns comprise list of patterns. However, when they attempt to use these collections in their current form, they face three issues: incompleteness, overlap, and inconsistent structure (Remane et al., 2017): (1) No single collection of patterns is even close to exhaustive (some authors publish 20 patterns, other authors describe 55 patterns, and some even more than 100 patterns), (2) existing list of patterns have a significant amount of overlap (typical example is pattern freemium and multi-sided platform), (3) the patterns are not structured in a consistent manner (Eisenmann (2001) presents the patterns without an underlying structure, other authors, such as Timmers (1998) explores patterns in context of two dimensions).

Individual authors, therefore, publish different types of BMs. Osterwalder and Pigneur (2010) described five patterns, including unbundling business model, free business model, open business model, multi-side and long tail. Johnson (2010) has compiled twenty basic types of business model. This list, referred to as Business Model Analogy, describes patterns in three categories, namely BM type (such as subscription), business example (Netflix) and description BM (Consumer price and subscription price to gain access to product or service).

For business model patterns, it is typical that they represent a basic business formula that can be applied in different business areas. For this reason, Johnson (2010) used the word analogy to describe his model sheet to emphasize the possibility of transferring the pattern to other business disciplines. In business model definitions, this is often highlighted. According to Amshoff et al. (2015), BM pattern means reusing solutions that are documented generally and abstractly in order to make them accessible and applicable to others. Other definitions state that BM patterns are configurations revealing the dimension of successful business (Gassman et al., 2014). In general, business model patterns generalize specific business successes. As Timmers (2008) claimed patterns are generalizations of specific business models.

Thus, business model patterns can shape our ideas of BM and their applications in individual economic sectors.

METHODOLOGY

This work is a qualitative study. The aim of this study is to summarize current knowledge of BMs, describe BMs ontology and explore the relationship between BMs and business plans, BMs and strategies, and BMs and innovations.

To achieve this goal, it was necessary to use the scientific databases, search for relevant scientific publications and analyse them. Google Scholar, Web of Science and Scopus have been used to search for articles and monographs. We searched for articles based on seven keywords, and it was essential to look for articles that had a business model or other related keyword in the title or abstract. We searched for scientific articles and books that were published between 1800-2008 using Google Ngram viewer. Articles and books related to BM research have been used to evaluate the current state of knowledge (literary research), to clarify the framework of BMs, and to explore BMs ontology. Part of the research was also to find out whether BMs as a relatively new theoretical concept are in line with recognized management theory or not.

DATA

As mentioned above, this paper is based on an analysis of current theoretical knowledge about business models. Therefore, the basis of this study is the collection of scientific articles and monographs that deal with business models and topics related to BMs. In this context, the

search was expanded by keywords, including business theory, strategy and competitive advantage, innovation, business plans.

The article includes a total of 34 articles published in journals such as Harvard Business Review, Sloan Management Review, Leadership Excellence, Journal of Interactive Marketing and others. The article is also based on an analysis of 14 monographs. Therefore, this work is based on forty-eight literary sources. Their study led to an assessment of the current state of knowledge, historical analysis, and a comparison of different opinion positions.

RESULTS AND DISCUSSIONS

Business model frameworks

In a relatively short history of the theoretical concept of the BMs, we can observe two developmental tendencies that have influenced this area. The first was related to the inclusion of this concept into management theory as a tool for facilitating business descriptions. Different definitions of BMs have entered into theory. These definitions were often very heterogeneous, which related to one of the traditional contradictions of management, i.e. whether the purpose of the business is to make a profit or to create a value (not only financial value). The theory of BMs consists of profitable models (see Mullins and Kommisar, 2009; Afuah, 2003), as well as models aimed at value creation (Osterwalder et al., 2005; Johnson et al., 2008; Maurya, 2012). Various BMs have emerged from various definitions of BMs and their frameworks, which have concretized these definitions using building elements (such as canvas). Eventually they began to appear examples of BMs, which represented an iconic business models selected companies (such as BM Gillette etc.). These examples supplemented theory (definitions and concepts) with specific business features (modelling in reality) and offered a successful business model (such as razors / blades) that could be described in one way (for example, using canvas). It is therefore clear that stories (business studies) and patterns (archetypes) make the essence of business easier to understand than corporate processes or organizational models of a company. The second aspect affecting the BMs framework is related to the concept of BMs as linear or dynamic concepts. In this context, two basic approaches to the formation of BMs have been described. Choudary (2013) distinguishes between pipes (linear model) and platforms (dynamic model). In the case of pipes, firms create goods and services, push them out and sell them to customers (value is created by producer). Value is produced upstream and consumed downstream. There is a linear flow, much like water flowing through a pipe. Unlike pipes,

platforms do not just create and push stuff out (value is created by both the producer and the customer). They allow users to create and consume value. This approach is co-creation model (see Prahalad and Ramaswamy, 2004). Currently, one of the most popular types of BM is a multi-sided platform that facilitates interaction between different users. This pattern is used by a number of companies, including Google, Amazon, Apple, etc. In connection with platforms, Chen (2009) stated that the business model must be based on the capabilities of Web 2.0, such as collective intelligence, network effects or self-improving systems. This author also emphasized that BM 2.0 has to take into account not just the technology effect of Web 2.0 but also the networking effect. He gave the example of the success story of Amazon in making huge revenues each year by developing an open platform that supports a community of companies that re-use Amazon's on-demand commerce services.

A general overview of the BMs frameworks is provided in the following table. It summarizes the knowledge that came from the analysis of literary sources. We describe these concepts in relation to whether they are more profitable models, models that look for match between the inner and outer environments, or models that create value for the company (profit) and customers (value proposition). The table also contains the essential elements of these models for their mutual comparison.

Tab. 1: Comparative analysis of business model frameworks.

Profit model		Alignment model	Profit + value creation model		
Mullins and Komissar's model	Afuah's model	ESSO model	Johnson's model	Canvas	Lean canvas
Revenue pillar	Positions	Environment	Activities	Partners	Problems
				Activities	Solutions
Gross margin pillar	Resources	Strategy	Resources	Resources	Key metrics
Operational pillar	Industrial factors	Structure	Customer value proposition	Value proposition	Value proposition
				Channels	Channels
Cash flow pillar				Relations	Unfair advantages
		Operations		Customers	Customers
Investment pillar	Costs		Profit formula	Costs	Costs
				Revenues	Revenues

Source: own processing.

In theory and practice, the BM canvas is the most widely used, combining a profitable and value model, and can be viewed as a comprehensive model that captures key business points in relation to customers. The centrepiece of this model is the value proposition. Analysis indicates considerable similarity between the model canvas, canvas lean and Johnson's model. Other models did not gain a wider awareness because of a strict focus on only one business dimension (Mullin's and Afuah's model) or because of abstraction of individual model dimensions (ESSO model).

The business model ontology

The frames of BMs, which in theory and practice most often represent canvas models (Osterwalder and Pigneur, 2010) and lean canvas (Maurya, 2012), have influenced many of the theories that shaped their present form. Since lean canvas is derived from the canvas model, we will focus on describing the theories that were at the origin of the canvas model.

Influenced by the Balanced Scorecard (BSC) approach (Kaplan and Norton, 1996) and more generally business management literature (Markides, 1999) and theoretical concepts of selected authors (Drucker, 1994; Hamel and Ruben, 2000; Prahalad and Hamel, 2000), Osterwalder (2004) suggested adopting a framework which emphasizes on the following four areas (BM ontology) that a business model has to address: (1) Product (this pillar was derived from BSC perspective known as innovation and learning perspective); (2) Customer targets (it was derived from BSC perspective known as customer perspective); (3) Management infrastructure (it was derived from BSC perspective known as internal business process); (4) These perspectives then respond to key management issues as defined by Drucker (2008) or also Markides (1999): (1) What (Product); (2) Who (Customer targets); (3) How (Infrastructure management). Some building elements of the canvas are derived from theoretical concepts of management. These include, in particular, the theory of core competences (management infrastructure, key activity and key resources), the theory of the business (value proposition and customer target) and theory of innovation (value proposition, key partners). The financial aspect of the model was influenced by work focusing on strategy. As mentioned above, the BM concept gradually evolved from definitions to BM types and finally to specific examples (models of selected companies). These examples are often presented in literature as some types of strategy. A typical example is the BM patterns razors / blades, which was marketed by

Drucker (2014) as one of the examples of business strategy. The relationship between the BM and the strategy will be analysed in the next chapters.

BM's versus current theory

Business plan and business Model

In practice, business plans are more prevalent than business models. The same applies to the area of theory (see Teece, 2010). In the past, it was assumed that it is possible to plan and anticipate the development of future events. The business plans were static, reflecting the assumptions on which they could be implemented. The development of BM's reflected the shortcomings of business plans, especially regarding of value creation for customers, increasing environmental dynamics and interdependence related to individual aspects of business (processes, price model, partners, relationships and channels, etc.). These dependencies can be better taken into account by the model than the business plan. On the other hand, the plans take into account both internal and external business conditions (including SWOT analysis, PEST analysis, financial and marketing plan, etc.). This aspect is neglected in the case of the most commonly used BM (canvas). It is therefore useful to use business models and plans in practice with the need to develop the business idea in a concrete way (business model explaining value creation) and then to develop a business plan that confers the model with external conditions (competition, technology, legislation) and the economic reality of business. For this reason, BM's fill a gap in the theory related to the creation of new business entities.

Strategy and business model

There is some published research on the alignment between business model and organizational strategies of technology companies (Pateli and Giaglis, 2004; Osterwalder et al., 2005). Historically, both terms are part of strategic management. Authors, however, have begun to engage much earlier in strategy than business models. Interest in strategy began in the 1970s, while BM's became a subject of genuine interest with the advent of the new millennium. However, an example of the BM razors / blades model mentioned in the previous chapter suggests that strategy and BM are very similar from the point of view of content (Magretta, 2002). This is evidenced by the list of BM's published by Johnson (2010). This list contains many types of BM, which can be considered as examples of strategies selected companies (e.g.

Auction and e-Bay, disintermediation and Dell, etc.). It can therefore be argued that BMs (especially BMs models) perform the same function as individual types of strategies. It is a tool describing the way companies achieve their goals. Compared strategy, which is often very abstract (this is similar to plans built on the analysis) models are able to specify the business idea and show individual parts of companies and their impact on the realization of this idea. In other words, the business model extends central ideas in business strategy and its associated theoretical traditions and they also become a source of competitive advantage that is distinct from the firm's product-market position (Christensen, 2001).

Innovation and business model

When we hear about innovation, we often mean new products or technologies. However, according to Hamel and Breen (2007), innovation has a much wider meaning, and the most important of these do not have a technological form. A long-term competitive advantage brings innovation to the strategy (Kim and Mauborgne, 2004) and management innovation (Hamel, 2007). This is followed by a number of studies that have been developed mostly by private companies (such as study of IBM). These studies indicate the growing interest of management in the innovation of BMs. According to Amit and Zott (2012), compared to product innovation, business model innovations are often harder to replicate and can therefore be a very strong competitive advantage. At the same time, however, business model innovations of competitors from within and outside the industry can be a major threat to firms who fail to advance their business model in accordance with external changes (Amit and Zott, 2012). For instance, the new business model of no-frills airlines such as Ryanair has changed the rules of competition for the whole airline industry. The development of BMs has therefore expanded the scope of innovations to other non-product categories (excluding technological innovation), workflows (process innovation) and management innovation. The essence of business models is so close to the idea of innovation that in theory the concepts of innovation and business models merge into a steady connection of business model innovation. It can be said that BMs innovations represent a complex approach to innovation that can induce changes in products (value supply), processes (activities), organizational form (partners, resources, activities), organizational method (channels, relationships) or price model costs, revenues). In all these cases, it is a business model of innovation.

CONCLUSIONS

This study revealed that the concept of a business model became more widespread at the beginning of the new millennium with the emergence of information technology, even though the first mention of business models emerged as early as 1957. It was also found that there is no unified definition of BMS. There are two views in literature. The first describes BMs as profitable models. The second one describes BMs as tools for creating and delivering value. We pointed out that the business models are not synonymous with organizational models. They differ from them by not only operating (systems, processes, activity, links), but also economic aspects of business (revenues, costs, profit). Business models are often characterized by elements. For this reason, Al-Debei et al. (2008) introduced ten categories that look for intersections between the various characteristics of BMs and facilitate the implementation of BMs into the basic theory of management. Increasingly, there are specific examples of companies that have achieved business success instead of BMs definitions. In this approach, the BMs take on clear forms by telling specific stories that illustrate the company's business features (BM Dell, BM Amazon, etc.).

After nearly fifteen years of intensive research, one of the theoretical models began to be used intensively also in practice. It is a canvas model made up of nine building elements. This model is a combination of a profit and value model. The author of this model has been strongly inspired by the Balanced Scorecard concept and the modern management that Drucker has laid down. For this reason, the model is divided into four perspectives: management infrastructure, product, customer target and financial aspect.

As part of our research, we found that there are no significant differences between business models and current management theory. It has turned out that BMs often fill the white spots of the current theory. This is particularly evident in business plans that do not fully reflect the needs of the real world and are unable to match the essence of business in relation to value creation. Practitioners linking these two tools can more easily implement ideas into concrete actions in the life-cycle of the birth and growth of a business. The models are also not excluded with the concept of strategy and strategic management. As experience shows from practice, BMs have become an instrument that transforms strategy into action. Finally, the creation of BMs has become a special discipline that has embraced innovation theory as it represents an entirely new category of innovation that we call the business model innovation. In this

category, not only product, but also process innovations, strategy innovation and management are emerging.

This study has highlighted the importance of BMs as a tool that influences a number of managerial disciplines. Therefore, further research should focus on exploring the widespread of individual concepts of BMs in practice, a list of BMs patterns (successful business formulas), and BM innovation in relation to corporate performance.

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E-COMMERCE ADOPTION IN DEVELOPING COUNTRIES: PRELIMINARY ANALYTICAL FRAMEWORK AND SAMPLING

Hong Thi Nguyen – Duc Nha Le

Abstract

In the age of digitalization, economic activities occur increasingly on the Internet-based platforms. This allows buyers, sellers and other third parties to conduct business transactions more rapidly and conveniently. Thus, the strategic choice of adopting e-commerce has been ranked among top priorities in enhancing corporate competitive advantages. Previous studies have applied various models to testing valid determinants of e-commerce adoption of business institutions. Among which, the POER (Perceived Organizational eReadiness) and PEER (Perceived External eReadiness) models are effective tools which reflect the perception of staff at higher levels of management of both controllable and uncontrollable factors determining the extent to which businesses adopt and employ e-commerce. Nevertheless, most of studies have disproportionately focused on the cases of developed economies which are characterized by well-structured organizations managed by innovative leaders and favorable macro-motivations conducive to disseminating e-commerce initiatives thus expanding subsequent adoption. This research exploits the benefits of the two models for empirical analysis conducted in an economy in transition, especially Vietnam, to examine the performance of these perceived factors in a different environment. The statistical analysis method conducted is factor analysis, multiple regression analysis method with SPSS 20.0 software. Results indicate that Organization's Awareness and Business Resources are key influencers of business-to-business eCommerce adoption in Vietnam. Findings would contribute further managerial implications for e-commerce adoption strategies.

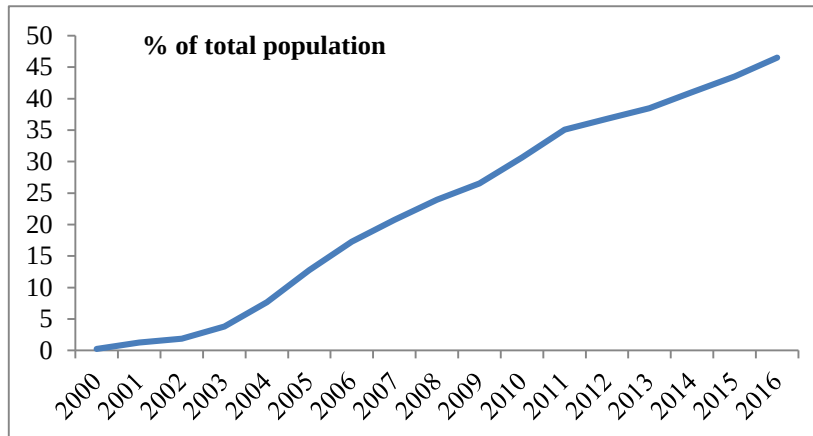
Keywords: E-commerce adoption, PEER model, POER model.

JEL Classification: L81.

INTRODUCTION

It is now statistically proven that ecommerce has been progressively becoming more beneficial to developing countries (Molla & Licker, 2005(s); Kshetri, 2007; UNCTAD, 2015). One of the most critical factors deciding whether a country could take advantages brought about by ecommerce is the enterprises' readiness of implementing it in business practice (Molla & Licker, 2005(s)) or in other words whether ecommerce adoption is placed in the long-term vision of enterprises (Chaparro-Peláez et al., 2016; Tan et al., 2015). A variety of previous studies have suggested that the enterprises' strategy is significantly affected by their top management members (López-Muñoz & Escribá-Esteve, 2017; Schmitt et al., 2018; Steinbach et al., 2017). Therefore, the evaluation of these strategic level members about facilitators and inhibitors determining the scale of ecommerce implementation is central to the adoption of ecommerce (Awa et al., 2015; Molla & Licker, 2005(s); Kshetri, 2007; Valmohammadi & Dashti, 2016). Despite all of those facts, there have been still a restricted number of studies focusing on the situations of developing countries over the past decades since the beginning of the 21st century (Ahmad et al., 2015; Hilty & Aebischer, 2015; Jennex et al., 2004; Rahayu & Day, 2015; Turban et al., 2017). A majority of these few above-mentioned studies are conducted in the context of China and some more dynamic economies of Asia (Gervasi, 2016; Tan et al., 2007; Tan & Ludwig, 2016). Only few of them are placed in the context of less dynamic ASEAN ones (Ahmad et al., 2015; Kurnia et al., 2015; Rahayu & Day, 2015). In Vietnam, almost no research has focused on the adoption of e-commerce and its antecedents from the perspectives of POER and PEER models (Huy & Filiatrault, 2006). This approach will contribute to the contemporary literature an empirical confirmation of the two models which emphasizes the role of top-level managers in building business strategies in general and e-commerce adoption in particular. Also, Vietnam has a great potential for business transactions conducted in the online platforms which could be seen from both demand-side and supply-side aspects.

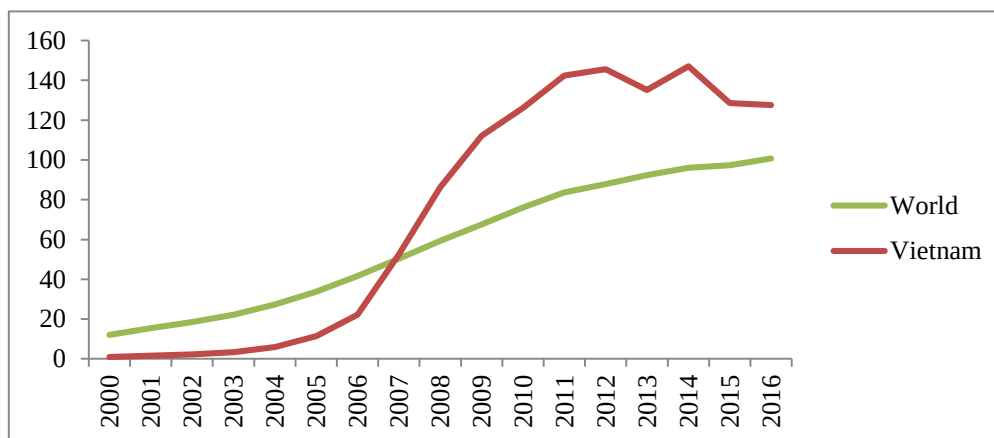
Fig. 1: Individuals using the Internet of Vietnam, 2000 – 2016



Source: World Bank Statistics

Figure 1 shows that the number of Internet citizens has been upsurging since early 2000s. This trend appears to be steeply monotonic which reveals the increasing preparedness of Vietnamese consumers for online shopping and digital payment. As much research has posited the association between online shopping propensity, Internet using and mobile technology (Kuoppamäki et al., 2017; Wagner et al., 2017; Zhai et al., 2017). Also, the number of mobile cellular subscriptions has skyrocketed in the period of 2006 – 2012 coinciding with Vietnam’s accession to World Trade Organization (WTO) and kept almost stable in the remaining stage (see Figure 2).

Fig. 2: Mobile cellular subscriptions (per 100 people), 2000-2016

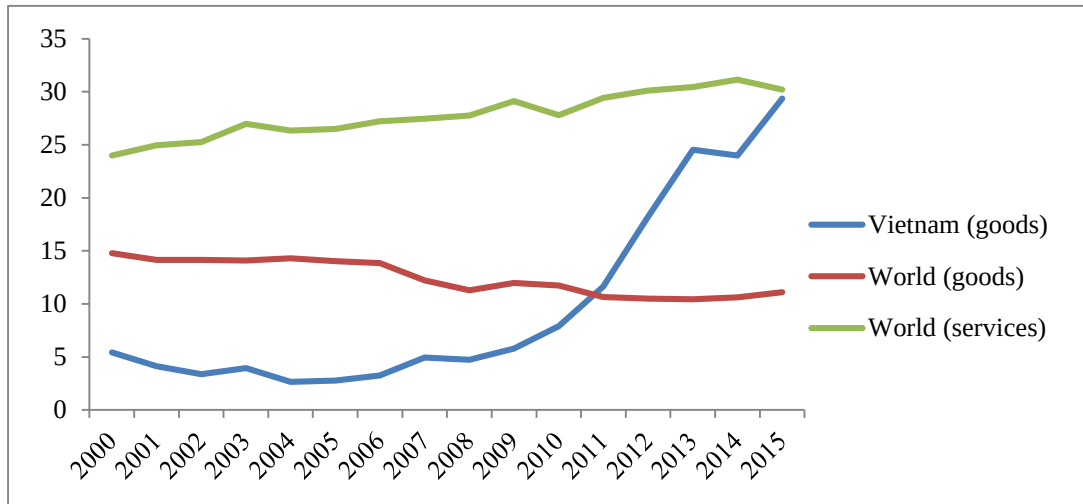


Source: World Bank Statistics

In the meantime, from the supply-side perspective, the readiness of ICT (Information and Communication Technology) industry has been enhanced as the export volume of ICT goods and services has been accelerating since 2010 (see Figure 3). This implies that the domestic

ICT industries are sufficient enough to provide businesses with necessary technological infrastructure to establish e-commerce platforms with affordable costs (Choshin & Ghaffari, 2017; Kabanda & Brown, 2017; Xing, 2017).

Fig. 3: ICT goods and services exports (% of total exports), 2000-2015



Source: UNCTAD, 2017

Nevertheless, facing e-commerce adoption are many impediments which restraint businesses in developing economies from capitalizing on its benefits (Kshetri, 2007; Molla & Licker, 2005(s); Rahayu & Day, 2015; Tan & Ludwig, 2016). Among those are economic, legal, political, cultural, cognitive and physical barriers (Ahmad et al., 2015; Awa et al., 2015; Chaparro-Peláez et al., 2016; Choshin & Ghaffari, 2017; Kabanda & Brown, 2017; Rahayu & Day, 2015; Tan et al., 2007; Tan & Ludwig, 2016). Economic barriers are inadequate ICT infrastructure, ICT availability and accessibility, unreliable and costly power supply, limited use of credit cards, and lack of purchasing power and underdeveloped financial system (Kshetri, 2007; Molla & Heeks, 2007). Legal and political barriers are deficient legal and regulatory frameworks (Molla & Licker, 2005(s); Oxley & Yeung, 2001). Cultural determinants are preferences for face-to-face interaction rather than impersonal one and reliance on cash (Datta, 2011; Tan et al., 2007). Cognitive obstacles include low level of ICT literacy, inadequate awareness and knowledge related to ecommerce among both consumers and enterprises (Molla & Heeks, 2007; Molla & Licker, 2005(s)). However, in most cases, the proactive role of business managers is central to the adoption of e-commerce and their perception of internal and external conditions underlies their strategic decisions on e-commerce deployment (Grandon & Pearson, 2004; Molla & Heeks, 2007; Molla & Licker, 2005(s); Tan & Ludwig, 2016).

LITERATURE REVIEW

The role of top-level managers in shaping business strategies of which adopting e-commerce is a component has been confirmed by various studies (Grandon & Pearson, 2004; Molla & Heeks, 2007; Molla & Licker, 2005(s); Tan & Ludwig, 2016). Primarily, this approach is grounded on the two theories, specifically top management team (TMT) (Hambrick et al., 2015; Hambrick & Mason, 1984; Mihalache et al., 2014; Nielsen, 2010) and upper echelons theories (Carpenter et al., 2004). These theories posit that businesses' strategies reflect certain aspects and characteristics of their managers at decision-making levels (Hambrick & Mason, 1984; Nielsen, 2010) thus suggesting the new approach to the e-commerce adoption analysis. The perception of decision-making level managers is significantly associated with their actions and decisions which could be measured by actual performance of certain business activities (Grandon & Pearson, 2004; Molla & Licker, 2005(s); Tan et al., 2007; Tan & Ludwig, 2016).

In terms of e-commerce adoption, the two models have been applied in many economies and successfully explained the e-commerce enhancements of businesses, namely the POER (Perceived Organizational eReadiness) and PEER (Perceived External eReadiness) models (Aboelmaged, 2014; El Rassi & Harfouche, 2016; Kabanda & Brown, 2015; Grandon & Pearson, 2004; Molla & Licker, 2005(s); Tan et al., 2007; Tan & Ludwig, 2016). Table 1 indicates each factor of the two models.

Tab. 1: Components of POER and PEER models

Components	Interpretations
Profile	
Sectors	Services provisioning/Manufacturing
Number of employees	SMEs identification (if 1 or 2)
Total capital (current)	SMEs identification (if 1 or 2)
Total revenue (previous year)	SMEs identification (if 1 or 2)
Education of employees	High school/Undergraduate/Graduate
Perceived Organizational eReadiness	
Awareness	Insights of top-level managers into meanings, concepts, importance, necessity, impacts of e-commerce adoption and their businesses and their competitors.
Commitment	Vision, support, assistance and strategic plans of e-commerce adoption from all levels within the business especially the top-level

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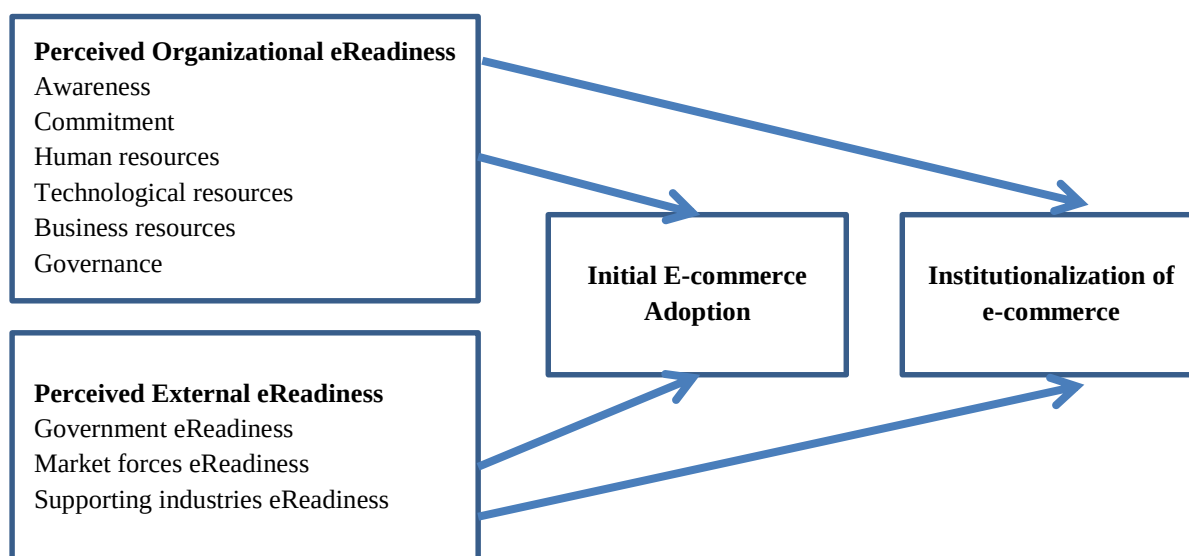
Human resources	Computer and Internet literacy, authorization and accessibility of all staff, exposure to digital sources
Technological resources	Internal or organizational ICT capacity and sufficiency for e-commerce adoption; Flexibility and adaptability of information system; Operating experience in Internet-connected networks
Business resources	Organizational trust; Information exchange among departments and divisions in the business; Information-sharing culture of the business; Innovation-encouraging policy; Change management towards fluctuations and mistakes during the operation
Governance	Clear and specific responsibility and assignment on e-commerce adoption initiatives; Thorough and meticulous analysis of possible changes of each business projects employing e-commerce; Clear and systematic process of dealing with changes; Precise measurement of impacts of e-commerce adoption on business performance; Consistent support of all staff.
Perceived External eReadiness	
Government eReadiness	Perception of readiness of legal mechanism of governments regarding private information confidentiality, anti-cybercrime, favorable business environment, government commitments to boost e-commerce by policies and public spending
Market forces eReadiness	Perception of readiness of individual and organizational customers and partners for Internet-enabled transactions and e-commerce platforms
Supporting industries eReadiness	Perception of readiness, presence, development and competitiveness of telecommunication, financial services, IT, and security industries whose activities and provisioning affect the e-commerce adoption of business
Outcome – E-commerce adoption (EAD)	
Initial EAD	Level 1: Not connected to the Internet, no e-mail Level 2: Connected to the Internet with e-mail but no web site Level 3: Static Web, that is publishing basic company information on the web without any interactivity
Institutionalization of e-commerce	Level 4: Interactive web presence, that is accepting queries, e-mail; and form entry from users

	Level 5: Trans-active web, that is online selling and purchasing of products and services including customer service Level 6: Integrated web, that is the web site is integrated with suppliers, customers and other back office systems allowing most of the business transactions to be conducted electronically

Source: Adapted and extended from Molla & Licker, 2005(s) & Tan et al. (2007)

Based on those determinants, this study exploits the two models to test their validity in the case of Vietnam's SMEs (see Figure 4).

Fig. 4: Proposed Research Model



Source: Source: Adapted and extended from Molla & Licker, 2005(s) & Tan et al. (2007)

DATA SAMPLING

A large, quantitative, cross-sectional survey was used in this research, which was adapted and extended from Molla and Licker's [53,54] Perceived eReadiness Model. Molla and Licker [53,54] used multiple discriminant function analysis and principal component analysis [9,71]. This research uses a different approach, as outlined below. A five-point Likert-type scale ranging from strongly agree (1) to strongly disagree (5) was used in the questionnaire [53,54] (see attached questionnaire Appendix A). Questionnaires were sent via e-mail and directly survey with a covering letter explaining the purpose of the research and how to fill out the questionnaire. The data analysis was structured in two steps. First, we tested the validity of the

items in our dataset, to determine whether any of the items were problematic in the Chinese context. Second, we tested the predictive power of the items in determining whether eCommerce was adopted by a business, and, if adopted, to what extent this was the case.

RESULTS AND DISCUSSIONS

Descriptive Statistics

Data Collection

The research analysis is conducted based on the collected data of valid 265 respondents with different characteristics as mentioned in the Tab. 4.1. The data is collected directly survey with the 300 respondents coming from Ton Duc Thang University in which 35 samples are invalid due insufficient answers or answers with the same scale of all variables.

Characteristics of Sample Respondents

Tab. 4.1: Characteristics of Sample Respondents

Demographic Variables		Frequency (n=265)	Valid Percent
Type of company	Service	128	48.7
	Manufacturing and trading	136	51.3
Company size	Less than 50	111	41.9
	From 50 to 200	78	29.4
	More than 200	76	28.7
Education	High school	50	18.9
	Intermediate Professional education/ College	42	15.8
	Bachelor degree	160	60.4
	Master degree and PhD degree	13	4.9

Reliability analysis

	Mean if Deleted	Variance if Deleted	Item-Total Correlation	<i>p</i>	Alpha if Deleted
Organizational eReadiness					
A1	160.81	501.027	.552	0.000	.958
A2	160.82	502.209	.516	0.000	.959
A3	160.74	502.578	.534	0.000	.959
A4	160.91	497.799	.609	0.000	.958
A5	160.76	501.121	.558	0.000	.958
A6	160.95	499.517	.556	0.000	.958
A7	160.96	498.324	.594	0.000	.958
HR1	160.66	506.598	.401	0.000	.959
HR2	161.08	506.956	.267	0.000	.961
BR1	160.83	505.270	.480	0.000	.959
BR2	160.84	504.770	.475	0.000	.959
BR3	160.89	501.557	.551	0.000	.958
BR4	161.17	496.482	.603	0.000	.958
BR5	160.85	503.477	.576	0.000	.958
BR6	160.93	499.586	.626	0.000	.958
TR1	161.03	500.116	.592	0.000	.958
TR2	161.00	499.314	.603	0.000	.958
TR3	160.85	502.116	.497	0.000	.959
TR4	160.98	497.087	.591	0.000	.958
TR5	161.06	497.303	.623	0.000	.958

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TR6	161.18	493.149	.708	0.000	.958
C1	160.93	496.957	.672	0.000	.958
C2	161.19	493.987	.661	0.000	.958
C3	161.04	497.158	.637	0.000	.958
C4	161.09	498.852	.609	0.000	.958
C5	161.04	496.896	.667	0.000	.958
G1	161.08	496.646	.668	0.000	.958
G2	161.01	496.841	.665	0.000	.958
G3	161.14	495.946	.657	0.000	.958
G4	161.15	496.252	.660	0.000	.958
G5	161.17	497.874	.666	0.000	.958
G6	161.28	493.982	.656	0.000	.958
G7	161.16	493.720	.684	0.000	.958
External eReadiness					
MFeR1	161.09	496.965	.661	0.000	.958
MFeR2	161.01	496.227	.657	0.000	.958
GVerR1	161.27	501.773	.515	0.000	.959
GVerR2	161.28	498.376	.576	0.000	.958
GVerR3	161.14	498.704	.583	0.000	.958
GVerR4	161.10	498.592	.626	0.000	.958
SIeR1	161.15	502.548	.554	0.000	.958
SIeR2	161.07	501.521	.570	0.000	.958
SIeR3	161.11	502.133	.542	0.000	.959
SIeR4	161.17	501.230	.537	0.000	.959

The questionnaire was designed originally for use in South Africa. We performed a full reliability analysis to validate it within the Vietnamese context. To test reliability of each question (item), we computed coefficient alphas and item-scale correlations (see Table 4.2)

Tab. 4.2: Item analysis: corrected item-total correlation

	Mean	Variance	Valid N	Cronbach alpha	Standardised alpha
Summaries for scales					
Organisational	160.99	499.14	265	0.95	0.95
External	16.11	49.9	265	0.84	0.84

Overall, most items performed very well in the Vietnamese context, with all Cronbach alphas well over 0.8 (the accepted cut-off for reliability). Following the criterion used in the original paper of discarding items with a corrected item total correlation of less than 0.4, the following items we found deficient: Human Resources: Question 2, unrestricted access to computers. This showed that the category Human Resources was problematic in the Vietnamese context. The only category that fell short of this standard (Human Resources) was the one which included problematic questions in the Vietnamese context.

We used linear discriminant analysis to test the predictive power of the model. Highly correlated predictors can be problematic within the discriminant analysis framework. For predicting adoption, the most important variable was Government eReadiness (GVer), followed by Business Resources (BR) and Human Resources (HR). Businesses with high values in Technological Resources (TR) and Governance (G), on the other hand, were not likely to have adopted eCommerce. For predicting the level of adoption, Government eReadiness was again important, together with Commitment (C) Supporting industries eReadiness (SleR) and Human Resources.

Tab. 4.3: Instrument reliability

	Cronbach's alpha
A	.898
BR	.827
C	.874
G	.902
GVeR	.851
HR	.429
MFeR	.814
SIeR	.842
TR	.869

DISCUSSION AND CONCLUSIONS

The analysis indicates a suitable framework for collecting data which subsequently serves further steps of the research conducted in Vietnam. Most noticeably, the dependent variable *E-commerce Adoption (EAD)* is not measured by a certain number of scales and items as traditional research has employed, it is only measured by a single six-level scale of adoption ranging from the most basic informational capacity to the most advanced Internet-driven platforms for E-commerce transactions. One of the components Human Resources (HR) is not statistically reliable as the questions of the relevant items are not convergent and not reflective of the common phenomenon.

Our research aims at preliminarily establishing the analytical framework for further research basing on the PEER and POER models in the case of Vietnam's small and medium-sized enterprises as depicted in the profile by the scale of employment, revenue and assets. Collected data has been primarily refined and examined to test whether it is statistically reliable. The results indicate the inappropriateness of the scale questions of the HR component, which implies that we have to revise the questionnaire for subsequent surveys. In the following research, the collected data will be then analyzed using the fsQCA statistical technique to test

the causality between environmental and organizational components and the e-commerce adoption outcomes.

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ENVIRONMENTAL MANAGEMENT TOOLS USED BY MUNICIPALITIES AND THEIR ECO-CONTROLLING ASPECTS, WITH AN IMPLEMENTATION EXAMPLE IN THE CZECH REPUBLIC

Karel Kolman - Eliška Kozubíková

Abstract

The goal of this article is to compare and evaluate possible usage of environmental management tools. The area of Czech Republic was selected for implementation. The article deals with three tools which are generally most frequently used or directly designated for public administration, both in the Czech Republic and the world - EMAS, ISO 14 001, ecoBudget. By analysing the basic characteristics of the tools, it is verified whether each of the methods corresponds with the complex approach towards environmental management called “eco-controlling.” The results are supplemented by a questionnaire survey of the sample of localities in a selected region in the Czech Republic. The outcome of the article is also a proposal of an eco-controlling model for a selected locality of the Czech Republic using the features of the tools analysed above.

Keywords: Eco-controlling, environmental management, EMAS, ISO 14 001, ecoBudget, municipality, Czech Republic.

JEL Codes: H83, Q56.

INTRODUCTION

The inseparable part of management activities of municipalities is the maintenance of the environment in the area in which they administrate. The greatest share of important interventions to both built-up and open landscapes complies with statutory instruments and municipalities can, from their autonomous position and their position of devolved authority, more or less influence the behaviour of entities in the relationship towards the environment in their area. However, the perfect situation is when the representatives of the municipality set a

good example for the citizens and organize the activities in such a way that the municipality's negative impact on the environment is minimal. Just as in the field of the municipality management, it is necessary to make use of controlling mechanisms, which is more than appropriate in the question of actual ecological impact. The tools that make controlling of their impact on the environment possible (both positive and negative), taken together with monitoring of financial aspects, can be summed up by the term eco-controlling. This term was used by Naana and Horst (2011), Henri and Journeault (2010), Buritt and Hahn (2002), Schaltegger and Sturm (1992), etc. Sturm a Müller (2000) defined the term eco-controlling as a control tool for management of the organization in its approach towards environment in the private sphere. However, controlling in the field of environment can be implemented in public sector organizations as well. For that, other tools for decision making and monitoring of the productivity rate in the field of environment that already exist are suitable to be used.

METHODOLOGY

The strict managing and controlling mechanisms in the management of the municipality's approach towards the environment certainly pay off. Besides a positive model role in relation to the entities in the area of the municipality who will put in practice at least some of eco-controlling tools, there are financial benefits as well. The act of lowering the ecological impact is based on saving energy and materials, which is definitely a positive effect on the municipality's management.

The aim of the article is to compare and evaluate managerial approaches usable for municipalities (and other public administration institutions as well) to manage their impact on the environment from the view of eco-controlling, i.e. to analyse whether the selected approaches correspond with the complex approach of environmental management called "eco-controlling" and include all its phases. The tools EMAS, ISO 14001 and ecoBudget are analyses with addition of an example of eco-controlling proposal for a municipality in the Czech Republic.

In the text, a method of analysis and synthesis of the data was used in which it is investigated whether each of the methods of activities management in the field of environment is in accordance with the concept of eco-controlling. The authors complete the text with supporting research in the form of a questionnaire survey focused on the approach of the municipality's

management towards the environment; on the basis of previous findings, they build a model for eco-controlling in a specific municipality in the Czech Republic.

LITERATURE REVIEW

The issue of environmental management is quite broad. The question of applicability of environmental management in the management of the organization is engaged in a number of authors. About the draft of Integrated environmental management refers Margerum (1999). A frequent problem of application of this approach is the focus on a short time horizon in planning, which reduces the efficiency of the environmental management (Dahlmann, Brammer et al. 2008). Besides the effects of this concept on the environment, impacts on financial management and the performance of organizations are also much discussed. (Green, Zelbst et al. 2012, Liping Su 2009, Prawirasasra 2015) As mentioned, environmental management is large area, consisting of a series of concepts and tools. One of the most used is the ISO 14 001 - in different time modifications (Bran, Ioan et al. 2010). Another extension is the EMAS (Environmental Management and Audit Scheme). This is a European platform, which introduces additional requirements for environmental performance beyond the European Union legislation. This concept is widely used by companies and public administration organizations. (Bracke, Verbeke et al. 2008, Daddi, Iraldo 2016, Iraldo, Testa et al. 2009).

All these concepts of environmental management are implemented initially in the corporate environment. Modifying some concepts for use in public administration allows the implementation of these tools also into municipal level (Marazza, Bandini et al. 2010). EMAS concept is also frequently used in medical institutions (Saad 2003, Dettenkofer, Kuemmerer et al. 2000). The EcoBudget issue is not often described in a scientific environment (Setthasakko 2012). On the other hand, a number of experts focuses on environmental accounting (for example Nistor, Deaconu (2015) et al. or Vardon, Burnett et al. (2016). An increase of Company Social Responsibility (CSR) after implementation of these tools is described by Moisescu and Iorga (2016).

EMAS (Eco-Management and Audit Scheme)

The EU Eco-Management and Audit Scheme (EMAS) is a managerial tool developed by the European Commission for business organizations and other organizations (with public

administration included), via which it is possible to evaluate, communicate and improve environmental productivity. The EMAS Regulation 1836/93 was declared in 1993 as an environmental management tool which is meant to be used to contribute to sustainability. After two inspections, the tool is working in the form of so-called EMAS III which came into force in 2010 (European Commission 2017a).

The managerial tool EMAS III is based on 10 steps and 4 key principles “Plan-Do-Check-Act!” (European Commission 2017b).

The first step is the identification of the relevant authority in the organization. Then, the authority will carry out a re-examination of the original position of the organization in a so-called environmental review. This activity is followed by building of environmental policy and programs. The main step of the whole implementation is the implementation of the environmental management system which is supposed to contribute to the improvement of the environmental position and productivity of the organization. After the realization of the implementation phase, it is necessary to carry out an internal environmental audit, whose goal is to control the efficiency of the system. If the controlling mechanisms do not identify direct and indirect causes of mistakes, the continual improvement of environmental productivity takes place. The seventh step is creating the so-called environmental report, whose aim is success in the reaching of set goals, the state of ecological strains and future goals of the organization in this field. The last three phases are under the direction of external entities. These are report verification, registration and using the label EMAS in order to demonstrate the environmental commitment in relation with other entities.

The European commission states that as of recently there are 400 organizations of public administration involved in the EMAS programme (European Commission 2017c). Of these, there are only three organizations of public administration from the Czech Republic with a valid registration, i.e. two municipalities and one region (CENIA, Česká informační agentura životního prostředí 2017).

ISO 14001

The international standard ISO 14001:2004 was released by the International Organization for Standardization and is one of the best-known and most wide-spread standards. ISO 14001

determines requirements for environmental managerial systems and it is primarily used by organizations in the private sector. It is, however, designated for the public sector as well, with public administration institutions included. It includes the specification of the most important requirements for identification control and monitoring of environmental aspects of activities of a given institution. Similarly, EMAS, the system of environmental management, is based on four key principles: “Plan-Do-Check-Act.” The goal of the standard is to achieve the balance between ensuring the profit and the reduction of the environmental impact of the organization. The implementation of environmental management according to ISO 14001 is based on the following steps (European Commission 2011, International Organization for Standardization 2017):

1. Obtain management support: the first crucial phase is convincing the organization’s front office about the undeniable suitability of this tool and its possible benefits.
2. Identify legal requirements: the following step is an analysis of national legal requirements and other commitments (for example, accordance with environmental politics of the organization).
3. Define EMS scope: the next phase is to specify the scope of EMS. Such scope is derived from the given environmental politics and it determines in which field the activities have impact on the environment and how extensive their impact is.
4. Define EMS procedures and processes: at each implementation, it is necessary to set individual stages, methods for ensuring the defined results.
5. Implement EMS procedures and processes: the next step is to introduce these processes and methods and the subsequent documentation of the development. For this objective, there is a so-called checklist of mandatory documentation required.
6. Perform training and awareness: to spread awareness of the entities involved, it is suitable to make regular schoolings in order to increase awareness of all the processes and their outcomes.
7. Choose a certification body: in order to perform the previous steps, the organization has to decide for a suitable certification authority, i.e. an organization which will evaluate the fulfilment of given environmental metrics.
8. Operate the EMS, measure and keep records: for the requirements of the environmental audit, it is necessary to map the whole process and record its development.
9. Perform internal audits: before certification authority control, it is necessary to verify individual processes via internal audit.
10. Perform management review: re-examination of the research aims at providing information whether the implementation was efficient. There are eight examined fields, such as communication from external parties, environmental performance, etc.

11. Implement corrective actions: on the basis of any identified shortcomings of the system, correction measures should be implemented. Again, this process is also divided into sub-processes (with the use of, for example, fishbone diagrams). The outcome is also a proposal of preventive measures.
12. Certification audit: the final audit is divided into two phases. In the first phase, the certification authority evaluates the documentation. Subsequently, the actual verification of implementation records and development of individual processes takes place. The outcome of this phase is the verification of accordance of EMS and ISO 140001 requirements.

Since 2001, it has been possible to acknowledge ISO 14001 as a part of the EMAS system. For the organizations already certified in accordance with ISO, it is possible to “continue” and obtain the EMAS certificate. These approaches do not compete with one other, however. Since 1996 (after the European Commission approval), the ISO standard has been a compatible stepping stone for EMAS implementation because the EMAS system goes beyond the requirements given by the norm. The selected differences are presented in the following table (European Commission 2011).

Tab. 1: Comparison of EMAS and ISO 14 001

Elements	EMAS	ISO 14001
General aspects		
Legal status	- European Regulation (EC) No 1221/2009	- International, commercial standard under private law
Participation	- Voluntary	- Voluntary
Geographical Outreach	- Globally applicable	- Globally applicable
Focus and objective	- Focus on continual improvement of environmental performance of the organisation	- Focus on continual improvement of the Environmental Management System
Planning		
Environmental aspects	- Comprehensive initial environmental review of the current status of activities, products and services	- Requires only a procedure to identify environmental aspects - Initial review is recommended, but not required
Legal compliance	- Proof of full legal compliance is required	- Only commitment to comply with applicable legal requirements - No compliance audit
Employees involvement	- Active involvement of employees and their representatives	- Not required (ISO 14001 and EMAS both foresee training for employees)
Suppliers and contractors	- Influence over suppliers and contractors is required	- Relevant procedures are communicated to suppliers and contractors
External Communication	- Open dialogue with external stakeholders is required - External reporting is required on the basis of a regularly published environmental statement	- Dialogue with external stakeholders not required - External reporting is not required
Checking		
Internal environmental auditing	- Environmental Management System audit - Performance audit to evaluate environmental performance - Environmental compliance audit	- Includes only the Environmental Management System audit of the requirements of the standard
Verifier/Auditor	- Environmental verifiers are accredited/licensed and supervised by governmental bodies - Independence of the environmental verifier is required	- Certification bodies are accredited through a national Accreditation body - Independence of the auditor is recommended
Audits	- Inspection of documents and site visits to be carried out according to Regulation - Check for improvement of environmental performance - Data from environmental statement needs to be validated	- No certification rules in standard (other standards for auditing and certification) - Check of Environmental Management System performance, but no frequency specified or required
Derogations for SMEs	- Extension of verification intervals from three to four years - Updated environmental statement needs to be validated only every two years (instead of every year) - Environmental verifier takes into account special characteristics of SMEs	- No derogations foreseen
Official registration by authorities	- Publicly accessible register records each organisation - Each registered organisation receives a registration number	- No official register
Logo	- Yes	- No

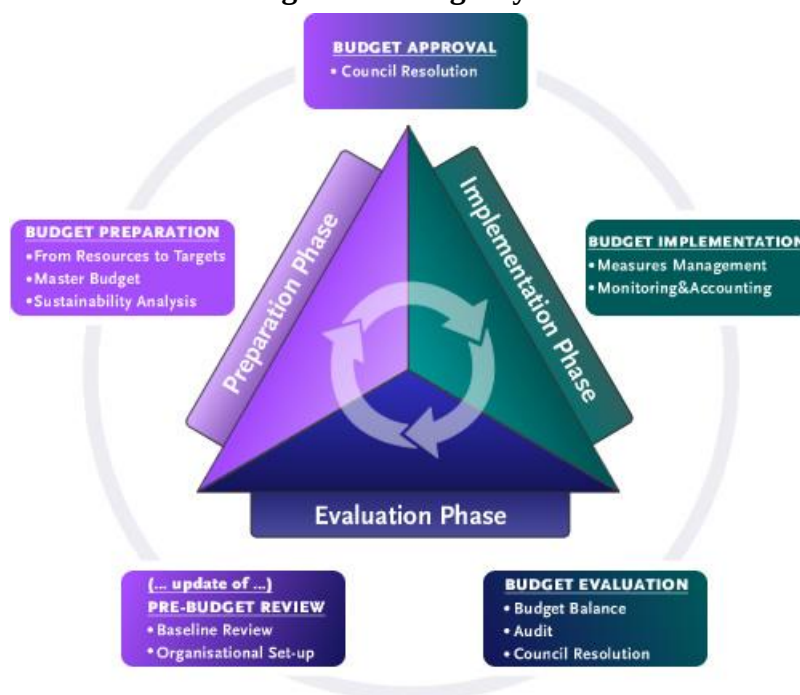
Source: European Commission, 2011

ecoBudget

ecoBudget is a tool with which the organization (mainly, in public sector) manages its environmental productivity via the basic financial tool: the budget. Environmental goals are arranged according to an annual budgetary basis and are subject to the approval of the respective authority. The main feature is the so-called master budget in which the main

dimensions are defined (for example water, climate, raw material management, etc.) in actual ratios. There are always referential values and set short- and long-term goals. For eco-budget management, environmental expenses are compared with accessible natural resources. Then, the evaluation shows the extent of fulfilment and potential causes of differences. The annual cycle of the eco-budget is illustrated in the following scheme (ICLEI 2017).

Fig. 1: ecoBudget cycle



Source: ICLEI, 2017.

Individual steps of the eco-budget are based on the traditional financial budgeting: preparation, expenditure and balance. In the scope of the first phase, the budget is prepared and confirmed. In the scope of the preparation, it is necessary to identify natural resources needed for creating the budget and setting goals in the field of the environment. The budget build as such is then submitted for approval of the relevant authority. The second step is, based on the approval, to perform activities in accordance with this eco-budget. The final step is, after the budgetary period, the preparation of concluding environmental statements and calculation of budgetary balance (ICLEI 2017).

Eco-controlling

As Henri a Journeault (2010) stated, eco-control is „the application of financial and strategic control methods to environmental management.“ Eco-controlling is a tool for efficient and effective environmental protection. This tool provides the orientation of controlling the needs of environmental management. Its development is linked to the German-speaking countries such as Austria, Germany and Switzerland. Eco-controlling was originally designed for large manufacturing companies, but currently is used by small and medium-sized enterprises, services and public administration. (Hyršlová, Brožková 2003)

Successful development of eco-controlling depends on the organizational, technical and technological conditions and success factors. Eco-controlling is a cross-cutting theme across departments and hierarchical levels of companies. These features make it suitable for all employees and requires their involvement as an important success factor. (Neuhaus 2008)

Eco-controlling in the managerial approach is based on the fundamental processes of financial controlling. This approach requires a strategic approach to environmental issues and proposes a systematic approach to the various management steps that start from strategy formulation, decision support, management, implementation to communication and control. This concept is based on linking environmental strategy with the strategic and financial objectives of the top management. Emphasis is placed on increasing eco-efficiency, which is defined as the ratio between the impact on the environment (Environmental Impact added) and added value. In practice it is used eg. in calculation of the contribution ratio (potential) on global warming in relation to unit sales, in relation to the return on net assets. (Sturm, Müller 2000). Eco-controlling also has a strategic dimension. (Naana, Horst 2011).

The content of the concept of environmental management accounting, presented by authors Sturm and Müller, is not particularly specified. Only the general theoretical level is described, consisting of five basic modules (Sturm, Müller 2000):

1. Goal and policy formulation
2. Information management
3. System for decision-making support
4. Piloting and implementation
5. Internal and external communication

Because this concept is not precisely defined, it provides the opportunity to connect to other existing methods of environmental management and compile them into the five presented modules.

One of the basic pillars of the concept is environmental accounting. This type of management (sometimes rather cost) accounting is used to express the environmental costs and benefits arising from the activities forming an environmental impact. Even in terms of environmental accounting, specific instructions at the level of companies and organizations do not exist. This is due to the fact that the very concept of environmental accounting expects each organization to take an original approach to elaborating environmental costs and schedules. Most publications are based on the work of the authors Sturm and Müller (2000) or Schaltegger (2002).

ENVIRONMENTAL MANAGERIAL TOOLS AND THEIR ECO-CONTROLLING ASPECTS

The three managerial environmental tools mentioned above (EMAS, ISO 14001 and ecoBudget) represent complex tools intended for realization of the goals in the environmental field. EMAS and ISO 14001 can be used in the organizations of both the private and public sector, while ecoBudget is the tool primary designated for institutions of public administration.

Eco-controlling in the form as it was designed by Sturm and Müller (2000) represents the universal instructions for organizations of the private and public sector on how to successfully implement the tools of the environmental management and control their efficiency. The following table illustrates the comparison of individual environmental management tools which can be used by organizations in the public sector, and their division into modules of eco-controlling.

Tab. 2: Comparison of particular steps of EMAS , ISO 14 001 and ecoBudget towards the implementation of eco-controlling. Source: own processing.

	Steps of managerial environmental tools towards the implementation of eco-controlling		
Eco-controlling	EMAS	ISO 14001	ecoBudget
Goal and policy formulation	<i>Environmental policy</i>	<i>Obtaining management support Identification of legal requirements</i>	<i>Budget preparation</i>
Information management	<i>Environmental review</i>	<i>Definition of EMS scope</i>	<i>Pre-budget review</i>
System for decision-making support	<i>Environmental Management System</i>	<i>Definition of EMS procedures and processes</i>	<i>Budget approval</i>
Piloting and implementation	<i>Environmental program Internal environmental audit</i>	<i>Implementation of EMS procedures and processes Training and awareness Operation of EMS - measure and record Internal audits Management review Implementation of corrective actions</i>	<i>Budget implementation</i>
Internal and external communication	<i>Environmental policy Environmental report</i>	<i>Selection of a certification body Certification audit</i>	<i>Budget evaluation</i>

Source: own processing based on European Commission (2017), International Organization for Standardization (2017) and ICLEI (2017)

Eco-controlling is the process which makes it possible for managers to reach optimal and efficient utilization of both economical and ecological resources with a link to the organization's goals (Anthony, 1965 in Henri, Journeault 2010). Individual managerial systems which can be implemented by organizations in order to reach agreement between economical and ecological goals differ quite a lot in their complexity. **The system which is the closest to the complex concept of eco-controlling is definitely EMAS.**

One of the crucial parts of eco-controlling is the environmental accountancy. It is not required in any system, not in EMAS, ISO 14001 or ecoBudget.

THE IMPLEMENTATION OF ECO-CONTROLLING ON THE MUNICIPAL LEVEL IN THE CZECH REPUBLIC

Environmental managerial systems are not spread too much on the level of public administration in the Czech Republic. For example, the EMAS system is implemented in three institutions of public administration in the Czech Republic: Chrudim, Jilemnice and the regional authority of the Moravian-Silesian Region. Even though ecoBudget is created directly for public administration, according to the information of the authors, there is no Czech public administration institution which implemented it.

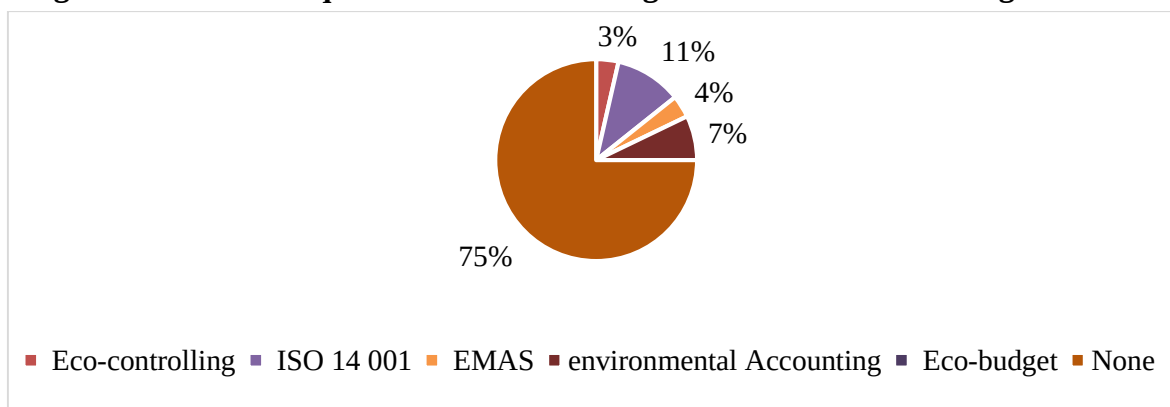
The authors of the article tried to find out from the sample of the localities what the situation is like when it comes to knowledge and awareness of public administration in the Czech Republic in the issue of possibilities of implementation and of environmental managerial systems – or at least their features. In order to do that, they distributed questionnaires in municipalities in the Zlín district in the Czech Republic and surveyed the current information base and the needs of municipalities in the environmental field.

It was carried out a questionnaire survey to determine the practical knowledge and skills in the field of environmental management. The questionnaire was intended for all municipalities in the district Zlín. This brief questionnaire was sent to all 89 municipalities via electronic mail and was created in the system of GOOGLE Disk. The questions were related to budgeting, knowledge of environmental instruments and the implementation of environmental measures.

Returned the questionnaire was 28%, representing 25 respondents. From the collected data raises the following conclusions: most of the respondents were between the villages of and 1 000 inhabitants (80%). This result was expectable due to the higher proportion of the municipalities in the district. Furthermore, 92% of respondents said they adequately take into account aspects of environmental impact in their budgets. Furthermore, 17 municipalities said they had received a grant relating to the environment.

Unfortunately, in terms of knowledge of environmental management tools are no positive results already. 75 % municipalities do not know any of the available tools. The following chart describes the layout.

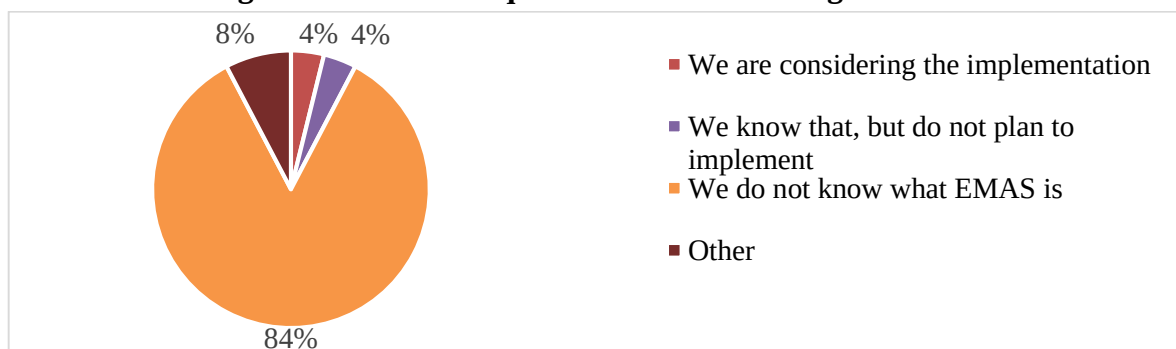
Fig. 2: Results of the questionnaire - knowledge of environmental management tools



Source: own processing

The results of the EMAS concept are also worried because 84 % municipalities do not know EMAS and only 4 % knows it and is considering the introduction.

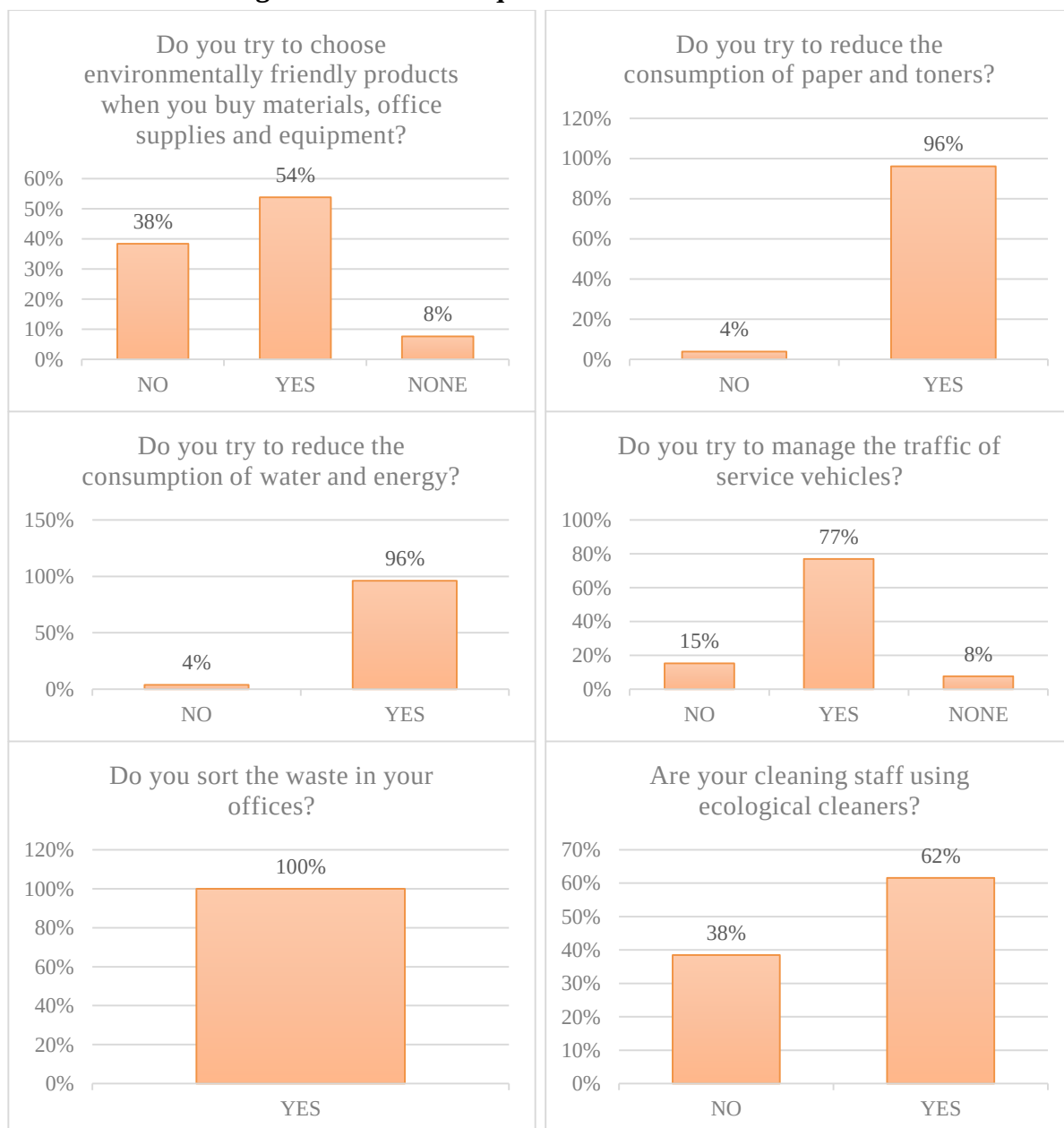
Fig. 3: Results of the questionnaire - knowledge of EMAS



Source: own processing

The majority of municipalities does not cooperate with any organization dedicated to the protection of the environment. The most supported field is waste management. Only 12% of respondents have no employees or department that would deal with the environment.

Fig. 4: Results of the questionnaire - selected areas



Source: own processing

Altogether, it can be summed up that, according to the survey, municipalities do not have enough information and knowledge in the field of environmental management. They focus primarily on waste management, recycling and public vegetation cultivation. However, in the scope of the functioning of the office, municipalities try to behave responsibly and in accordance with both economical and ecological efficiency: they try to lower the usage of energies, water and propellants, and to sort the waste. These aspects are in agreement with both the concept of eco-controlling and all three mentioned environmental managerial systems.

On the basis of the mentioned findings, the authors decided to select one municipality in the Czech Republic (in the Zlín district), and create a system of eco-controlling for it and implement it into operation. As was mentioned above, according to Sturm and Müller (2000) and others, the environmental accountancy is an inseparable part of eco-controlling. However, it is not a part of any of the complex environmental managerial systems. Therefore, the eco-controlling modules for the selected municipality in the Czech Republic were built in compliance with the concept of eco-controlling, but at the most are utilizing already existing managerial systems and features.

Modules of eco-controlling defined by Sturm and Müller (2000) can be defined as follows for the needs of Czech municipalities. These modules are presented in a practical example of a municipality. The municipality Spytihněv was selected as the model municipality. This municipality of the Zlin district has 1,720 inhabitants. Spytihněv has not yet implemented environmental management techniques; on the other hand, it declares its interest in protecting the environment at least through the consumption of materials and energy. These modules are described in Kolman, Pastuszkova (2015) in more detail.

Modules of eco-controlling for the model municipality Spytihnev (Kolman, Pastuszkova 2015):

MODULE 1 – Goal and policy formulation - Determining an environmental policy and calculation of the environmental footprint of the municipality (municipal authority). Environmental politics of a municipality is based on the declaration with the basic goals in the field of environmental protection. These goals have to be based on the medium-term strategy of a municipality and to be supported by the actual financial budget.

MODULE 2 - Information management - Quantifying environmental costs and revenues, including an environmental accounting report. In the scope of the report, the environmental costs and regulations were divided into four basic categories: climate, waste, sewage water and others. These categories were selected from the report of environmental costs as significant. With these groups, it is possible to ensure the relevant accounting information needed for creation of environmental managerial accountancy considered to be an important part of the environmental management in the concept of eco-controlling.

MODULE 3 – System for decision-making support - Description of a simplified EMAS system in combination with elements of Green Procurement, subsidy policy options. As the questionnaire survey showed, the municipalities do not have enough awareness of EMAS. Because of those reasons, the concept of green paperwork was selected, which is less demanding for the municipalities; however, its reputation is lower than that of the European system EMAS.

MODULE 4 – Implementation - Practical implementation of a Green Procurement model, evaluation of municipal investment projects in relation to the environment. In the scope of implementation, the 10 areas of priority were chosen where space for improvement was detected. That is, for example, buying of stationery, water management, lighting regulation, vehicle fleet management, etc. For these fields, the preliminary state was described and the measures with quantification of savings was designed.

MODULE 5 – Internal and external communications - Establishing rules and obligations for employees and information for external entities (simplified environmental statement). The key question is to convince the employees to change their behaviour and habits in order to reach the set environmental goals. It is advisable to present the results in an ordinary conversation with external entities, such as suppliers of goods and services. It is also significant to make the citizens of a given municipality familiar with the environmental results (in, for example, local newspaper or via various information channels).

DISCUSSION

In the sample of a smaller municipality, we can see that the implementation of the complex eco-controlling does not have to be terribly difficult for a public administration institution. The municipality does not have to undertake a certification of their system and it can monitor the advantages of the balance between environmental and economical perspectives of its activities according to its own metrics and at the same time comply with criteria. Due to the fact that the concept of eco-controlling is not strictly and specifically set, the organizations can see an advantage: they are not subjected to certification and they can set individual modules according to their needs. A disadvantage can be, on the other hand, the non-existence of supervision. It is up to the inner motivation of a municipality's representatives how they will approach the fulfilment of set goals. The meaning of eco-controlling is to manage both environmental and

economical impacts of the organization's activities in the most efficient way, which should be the fundamental goal of every organization in the public administration field. Because of that, each organization of public administration should implement an eco-controlling system.

The barrier in the implementation of eco-controlling, and of environmental managerial systems in general, is definitely the low rate of municipality willingness to implement new methods – particularly by its representatives and clerks, who tend to have very low awareness of the methods.

CONCLUSION

In the last decades, managers have been monitoring non-financial results as well as financial ones. The often-discussed field is the impact of the activities of individuals and entities on the environment. The application of eco-controlling can be considered a good tool. This concept is beneficial because it provides for evaluation of environmental goals and environmental productivity of a given economical unity. The advantage can be seen in the flexibility of implementation and the contents for individual modules. The eco-controlling tool can be built by the entities by using already existing concepts and approaches, such as ISO 14001, eco-budget, EMAS and others. It is possibly to state that in the frame of these already existing systems of environmental management, the EMAS system fits the best to particular modules of eco-controlling. The EMAS components almost exactly express the essence of particular steps of eco-controlling. Even though eco-controlling was developed for industrial companies, it is currently employable to the entities of public administration. Besides the organizations directly subordinate to the state, it has great possibilities of employment for municipalities as well. Municipalities can independently set environmental goals and politics beyond the scope of legislation. They dispose of enough financial and non-financial information necessary for creating environmental managerial accountancy. One of the advantages is also the close link to individual citizens. In the article, the application of this tool is demonstrated on the example of small municipality; the already mentioned system can not only manage environmental impacts of their activities but also it can remarkably influence the economical part, and thus to lower financial expenses.

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EUROPE 4.0 VS ASIA 4.0?

Zuzana Džbánková - Pavel Sirůček

Abstract

While it remains very problematic whether we live in a crucial breakthrough period of civilization now, the German apparently marketing product Industrie 4.0 undoubtedly attracts wide global attention also. Especially in Europe, we are facing an unprecedented flood of trendy terms as 4.0. There is no more precise definition or deeper theoretical generalization of the processes of the so-called Fourth Industrial Revolution. Many of the terms overlap in different contexts. The so-called the fourth industrial revolution is not, in fact, a miraculous revolution. Also, the usually quoted number four in order can be questioned. Of course, it does not mean that the development of technologies does not have a significant impact on Europe, America or Asia. Different continents and countries have to respond adequately to new conditions of development, taking into account their specifics, advantages and limitations. Indicating some of the theoretical bases for exploring and predicting developments in Europe and Asia - precisely in the context of the "hype 4.0" - is the primary objective of this critical contribution. That is conceived non-standard, using instrumental outside the mainstream of contemporary economic science. It applies the concept of megatrends of development and instruments of the innovation theory long K-waves with using secondary data from specialist literature sources and results of available research on the topic.

Keywords: Fourth Industrial Revolution, Industry 4.0, Megatrends, Long K-waves.

JEL Classification: B59, N15, O39, P10.

INTRODUCTION

Notably, in Europe, we sometimes face unreasonable and hysterical inflation of terms 4.0, often leading to their emptying. So far there is no precise delineation or deeper theoretical generalization and reflections on 4.0 processes. The official conception of the so-called Fourth Industrial Revolution (4IR), exactly strategies and initiatives supporting it, usually overlook the fact that processes and technology 4.0 will have not only winners but including many losers. Especially the developed Western countries would be successful to the detriment of the BRICs and other Asian countries. It remains highly debatable whether the 4IR is genuinely the fourth

in order, the crucial breakthrough at all. This, of course, does not mean that processes 4.0 are not significant. It does not mean that economies or whole societies in Central Europe (for example the Czech Republic or Slovakia) or Southeast Asian countries would not have to face today's significant challenges and respond adequately.

The paper is an overview essay (original scientific review), which is not based on original research. It tries through a prism of political economy to indicate some theoretical points of reference for further exploration and forecasting of developments in Europe and Asia in the context of "hype 4.0". It uses the concept of megatrends of development and instruments of the innovation theory long K-waves. In order to achieve this, the methods of description, comparison and qualitative analysis have been employed, making use of secondary data from specialist literature sources and results of available research on the topic.

BUBBLE 4.0 VS THE IMPORTANCE OF INDUSTRY 4.0

All the time overused words which most people do not understand, such as today's 4IR or industry 4.0, can be called buzzwords 4.0. These are media abbreviations - inflated evergreens that the media love. Fantasizing of a digital revolution and complete digitization, robotization, automation, smart, 3D printing, Big Data, Cloud Computing, IoT and Artificial Intelligence (AI) - and fantastic transformations of economies and entire societies, today are the most fashionable. It also includes the displacement of human labor or the wonder of shared platforms. The concept of 4.0 has ingrained not only in Europe and the US but also in Asia. For example, according to (ASEAN, 2017), 4IR refers to a set of highly discontinuous technologies (such as AI, robotics, the blockchain, 3D printing) that fundamentally transform social, economic and political systems and put pressure on politicians and leaders to react.

Not only the press and world bestsellers (E. Brynjolfsson and A. McAfee or M. Ford), but also official documents and platforms are full of slogans and phrases about "new philosophy," "new paradigms" and "new thinking." More sober voices, however, hint us that the whole "hype 4IR" reminds of the bubble of the so-called new economy (and the so-called new economy) of the 1990s. In 2000 the bubble dot.com quickly ended and the naive illusion of the so-called new economy (the so-called new economics) of the 1990s. Now we are waiting for another technology bubble to terminate. The digital media as a substitute for real human interaction and computers as a substitute for human thinking should move us into the fantastic future through fairy tales 4.0. Human work is supposed to end with automation by robots. It is

expected we will happily and enthusiastically share everything in our Internet communities, under the amazing supervision of AI (Sirůček, 2017, 2018a, b).

The so-called 4IR is not a unique epoch-making change in the history of industry or humanity, but rather the contemporary stage of digital global and local transformation. It would be more accurate to talk about the next phase of an informational, digital or scientific and technical revolution. Sirůček (2017, 2018b) recaps the 4IR placement into a sequence of industrial revolutions or technological ages with the primary criterion in the form of innovations of the highest order. The attractive slogan 4.0, however, has taken root, has entered into consciousness (even the subconscious) and lives in its own life. It includes plenty of "mythology 4.0" with many repetitive fairy tales and delusions, including, for example, the replacement of all human work by robots (Sirůček, 2018a). Most considerations about new technologies also overlook or deliberately underestimate severe risks and threats. In the spirit of techno-optimism, he outlines only the fantastic positives and supposedly amazing prospects from the view of the whole world and all the people on the planet. Attention is focused on the risks if the 4IR trends are not quickly captured (e.g. Mařík et al., 2016). Until now, it silent about the fact that technology deepens inequality among people, social groups, countries and continents.

Medially and marketing-fully praised fashion tide of IoT, or unreasonable fantasy about AI creates the impression that some ground-breaking change is actually going on. Macroeconomic data, e.g. the development of productivity, however, speak about something else. Similarly, the threat of secular stagnation in the form of a long-term slowdown in growth is the ever more visible phantom of the West (Janáček & Janáčková, 2018). Neither did the cycle disappear. For several years warnings growing against further economic and financial crisis. More precisely, the new wave of unresolved Great Recession is still pending and today reminds ominously dormant volcano.

Sirůček (2017, 2018b) maps the history of the 4IR concept and relating platforms and initiatives with (Kagermann, Wahlster, Helbig, 2013) or (Mařík et al., 2016). Let's reiterate that technology 4.0 is related to the current stages of digitization and robotization in the sense of another revolutionary technological revolution, with supposedly unimaginable consequences for labour markets, the whole economy, society, and the whole of humanity. 4IR is supposed to be supported by Industry 4.0 (i4.0), supported by Industrie 4.0 (in Germany), Průmysl 4.0 (in the Czech Republic) and many others.

Enough was written about 4IR. But only some of the texts inspire theoretical economists. The search of the foreign and domestic literature (Sirůček, 2017, 2018a, b) shows that the overwhelming majority of 4IR, resp. texts about i4.0 technologies are popular, non-critical propaganda or naive utopian. In the case of more severe titles, documents are highly industrially and technically oriented, focusing on technological and ITC aspects and neglecting managerial, organizational, economic or social issues. Also, initiatives such as Industrie 4.0 or Industry 4.0 are focused on technical aspects, and other matters of social or management type are usually neglected. There is neither a more generally accepted definition of processes 4.0 nor deeper theoretical descriptions of their essence. The texts of the 4IR accentuate the breakthroughs and impacts, especially outside the industry, though the 4IR focus usually just on that. And the repeated emphasis of official documents and materials that the 4IR is not just about mass digitization or accelerated automation (Mařík et al., 2016) seems suspicious. The propaganda purposes for requiring are much more.

Is it really a breakthrough today? Albeit, the development of digital communication, automation or robotization has been going on for a long time and rather continuously? Previously, however, there was no project (a striking, comprehensible, easy-to-remember password-slogan) summarizing the possibilities of new technologies, directions for their further development, and more broadly embodying the optimistic vision of the West. Therefore, the Industrie 4.0 initiative and the entire 4IR concept have emerged. It is necessary to show that Western Europe is not a "tired empire" and that it is not committing a self-killing. After the frustrations of the Great Recession is becoming essential restoring confidence in the global capitalist system. Project 4.0 is mainly psychological and propagandistic, and it is intended primarily for the media, politicians and the public. Originally, the German marketing product is (very) successful in attracting the attention of the media, politicians, the public and the academic and research spheres. The media have something to dream about and write, and politicians have an optimistic vision. It is easier to gain grants for academics. The expression of strategic modernity, however, it is a media and academic bubble 4.0. It targets exaggeration of the impact of the next phase of mass digitization and robotization and particularly industrial production. The entire 4IR concept is professionally crafted with buoyant statements about the revolution of technology 4.0 and uses notoriously well-known conceptions of a society of information, knowledge, digital, network, etc. That is perceived as the current form of the theory of the transformation of capitalism, now supposedly post-capitalism.

Indeed, the core objective of Industrie 4.0 and Industry 4.0 is to support the rapid transformation of domestic companies into the implementation of digitalisation and automation technologies into production and logistics chains creating a difficult to imitate competitive advantage. National Initiative Průmysl 4.0 can be viewed as a set of measures - mostly in general terms - how to respond to the German project and not to lose competitiveness. But we need to stop fantasizing about the "epoch-making time" or the fantastic "revolution in thinking". With the sober contemplation, we can recommend the Czech Republic should already start a strategic focusing on the Industry 5.0 and technology associated with it today. It means not only to capture the current trends of 4.0 in the position of a "cooperating partner" who is capable of absorbing and developing new technology (Mařík et al., 2016). Impulses and inspirations we can also find in Asia.

EUROPE AND ASIA THROUGH THE PRISM OF 4.0 MEGATRENDS

At the end of the 20th century, the supporter of megatrend concepts J. Naisbitt who comments: "My message for the twenty-first century is one word: "Asia". Also, other insights into the megatrends of development for the early 21st century do not neglect the growing influence of the BRICS countries, with the ever-increasing role of China. They operate with the gradual downturn of European integration and other failures of Europe and, on the other hand, with the continuous, yet inevitable as well as the continuing increases in the importance of the Asian region including China. It should take into account the continuing successful new revival of Russia (Sirůček, 2016).

Discussing the rate of fulfilment - both for European and Asian realities - can also be found in various formulations of megatrends from the second decade of the 21st century. These work, for example, with the five megatrends: 1) shifts in the global economic power, 2) demographic shifts, 3) acceleration of urbanization, 4) improving in technology, 5) climate change and lack of resources. Consider the following also: 1) population dynamics, 2) opportunities and inequalities in the growth 3) megacities, 4) growth of interconnection and reduction of privacy, 5) healthier and sicker, 6) increasing individual choice and disruption of mass markets, 7) increasing individualism and reducing social cohesion, 8) cultural convergence and growth of extremism 9) always on the network, 10) the emergence of public opinion as a revolutionary force. To current (mega) trends, key not only to the business sphere, but there must also be pressure to capture the onset of technology, industry 4.0 (digitization, IoT, AI, Big Data) and

digital economy. It should be usual in Europe, Asia or America. Four technological areas shape global economic, social and military development and global environmental action by 2030: 1) IT enters the Big Data era. 2) New production and automation (like 3D printing or robotics) have the potential to change models of work in a developed and developing the world. 3) Security of the necessary resources will be needed to meet the world's needs for food, water and energy. 4) New health technologies will continue to increase the average age of people worldwide, improve debilitating physical and psychological parameters, and improve living comfort (Sirůček, 2018b).

Not only the Industrie 4.0 strategy but also the "Renaissance of production" in the context of the re-industrialization of developed countries, aimed at the gradual withdrawal of mass production from low-cost countries mainly from work (Asian or Eastern European countries) can be ranked as significant trends (perhaps even megatrends). Especially in the US, there is the talk of reshoring, and this is financially supported at a federal level. This, on the one hand, poses a problem and a threat to Asia, but on the other hand, the challenge, the incentive and the opportunity. We cannot also forget the different developments in Europe and Asia after the Great Recession. While stagnation, debt crisis, ageing population or lack of experts etc. lead to serious structural and other problems in Europe and discourage investors from more significant investment, Asian developing countries have often recovered more quickly. This can be documented by their demand for new technologies, incorporating, for example, fast-growing PLCs (Programmable Logic Controllers) that are essential components of automation systems for managing a variety of devices and processes. Thanks to China, Asia is the most important selling area.

EUROPE AND ASIA, 4.0 IN LIGHT OF INNOVATIVE LONG K-WAVES

Considerations of "4.0" can also be framed by the instrumentation of the innovative approach to the long K-waves of the Kondratieff-Schumpeter's type. Cyclical development is associated with an uneven distribution of innovations of the highest innovation orders (also radical, primary, basic), their tendency to appear in clusters. These impulses of dynamic are linked to the IR sequence, respectively on their stages. The principal authors include N. D. Kondratieff, J. A. Schumpeter and F. Valenta (Sirůček, 2016). The turning points of economic long K-waves are variously associated with backgrounds of wars, revolutions, etc. For individual K-waves, we can identify the main areas of technological change (so-called motors) and the

corresponding centres. The sequence of long K-waves is usually differently dated - also in the sense of a broader concept of long waves - when the disunity is mainly related to the course in the second half of the 20th century, respectively 21st century, including possible modifications (Sirůček, 2016, 2018b).

For industrial history, an innovative approach (Sirůček, 2016) leads to this chronology: Modern industrial society begins with the 1IR expansion in England. It becomes the material base of the (I). K-wave (1780/90-1844/51), consisting of a long expansion phase (1780/90-1810/17 (upper turn point)) and long depression (1810/17-1844/51). (II). K-wave is dated 1844/51-1880/96, while the long expansion of 1844/51-1870/75-76 (the upper turning point) relies on the development of railways, metallurgy and engineering. (III). K-wave takes the years 1880/96-1939/45. The long expansion of 1880/96-1914 (with the turn of 1914-17) uses new forms of past depression and is based on the development of 2IR. (IV). K-wave enters in the storm of WWII and is carried by 3IR. Her dating is not uniform 1939/45-originally around 2000 (but also earlier). Long expansion lasted from 1939/45 to 1965/70. By 1965/70 (the upper point of turnover) begins a long depression IV. K-wave.

What next? The predicted V. long K-wave, with the considered initially 2020/30 turnover point, remains highly controversial. There are doubts about ending IV. K-wave, resp. (not) beginning of V. K-wave. In the light of the delay of high-tech adventures (when the fall of the Eastern Block helped to the West for some time), adequate cleaning of a "historic terrain" for massive application of the financially demanding high-tech, cumulation of crisis, new secular stagnation or modifications in the post-industrial era (including sub-phases and overlays). There is the hypothesis that also possible the divergence of the socio-economic and political cycles with economic ones (including the influence of globalization, financialization, etc.).

The situation is complicated by the fact that different parts of the world may be in different phases of the long-term technological, economic and socio-economic cycle (or cycles). IV. K-wave begins after WWII, with a break in the 1970s for the West. These countries had a technological lead compared to the BRIC(s), but they are at the end of the fourth K-wave "stuck" (Švihlíková, 2010). This is compounded by the Great Recession of the end of the first decade of the 21st century and the subsequent development. Solutions and hopes for the West are 4IR concepts and supporting platforms, especially at the expense of Asia. However, Asian countries have already been able to catch up with the West and perhaps even overcome it in many ways. Challenges 4.0 are so much more hope for Asia than for Western Europe.

A popular hypothesis is but also shortening cycles in recent decades. The eventual coincidence of economic cycles (and not only economic) of different lengths can also play its role. J-Wave, W-Wave and K-Wave at the end of the first decade of the 21st century in the sense of a "Perfect Storm" are the examples. Last but not least, the new technology may bring changes that are so vital that the current global system will become unsustainable. For the full development of techniques of V. and other K-waves they could need diverse conditions, other global limits and other "game rules".

However, some authors have already operated with V. and other K-waves. The "magic" 5. Kondratieff is usually more popularly associated with ICT, respectively concepts of the information society, starting with, e.g. in the 1980s. L.A. Nefiodow introduces the following K-cycles: 1. (1780 to 1830-50, steam engine, textile industry, textile industry), 2. (1830-50 to 1870-90, railways, steel, mass transportation), 3. (1870-90 až 1920-35, electrical technologies, chemistry, mass consumption), 4.(1920-35 to 1950-80, automobiles, petrochemistry, individual mobility), 5. (1950-80 to 2000-05, ICT), 6. (from 2000-05, biotechnology, psychosocial health, holistic health). The 5th K-cycle should be supposed to put an end by the 2000-03 crises and was to begin a new cycle. The health in a holistic sense, including aspects of physical, mental, social, ecological, and spiritual, should be the main activating factor of the 5th K-wave. The basic innovations are psychosocial health and biotechnologies (Nefiodow & Nefiodow; 2015). L. E. Grinin and A. L. Grinin date the sixth K-wave between 2020-30 and 2050-60 and link it with MBNRIC (med-bio-nano-robo-info-cognitive) technologies. They emphasize health care services and wholly scientific cybernetics. For the 5th K-wave (1980-2020) are key microelectronics, personal computers, highly qualified services, and the beginnings of scientific cybernetics (Grinin, Grinin, 2014). Cybernetic revolution of the sixth K-wave could partly correspond with technologies 4.0. The theory of innovative long K-waves to clear conclusions, even with respect to "Era 4.0," does not yet lead and remains associated with a number of open problems. However, at least the space for critical reflection opens and provides.

Last but not least, it is possible to formulate the hypothesis that the V. long K-wave was already started by events of the Great Recession, from which many Asian countries recovered much better than the West. This begs the question: Is not the "magical" V. (or other) Kondratieff wave eventually Chinese, respectively Asian? More specifically, does it mean with centers

mainly in Asia? The whole concept of the 4 IR - as a European issue in particular - represents an attempt to reverse unfavorable trends and prevent further falls in Western Europe.

THE REALITY AND MYTHS OF CHINA 4.0 (OR 5.0)

In the context of "Trends 4.0," we can formulate a series of lessons from development in Asia, especially China, significantly inspiring Europe as well. It is often pointed out the uniqueness of China, and even within the BRIC(s), including its rapid pace of development, in macro and technological aspects, it is perhaps almost incredible. Does it really violate all steady templates and stereotypes (meaning postulates and dogmas of standard economics, economic policy and western political science)? Or does it make good use of the advantages and specifics, but for the most part, for example, into Europe, not transferable? China had not adopted the schema of Western liberal democracy and did not even give up the socialist visions. At the turn of the 1980s and 1990s, the Central and Eastern European countries abandoned socialism completely - hence the "historical movement" in the sense of "aligning socialism with the market" is now practised mainly in China. China has been processed much more cleverly than the USSR (or Russia) for decades. The disaster and devastation of Russia, thanks to Gorbachev and Yeltsin anti-national politics, outweighed the damage caused by WWII. But this fits the West and therefore, so they hate hysterically V. V. Putin, who acts otherwise.

Wei (2017) recaps two breakthroughs concerning China's historical transformation; those are combining with the application of Marxist theory (from the view of the European are specifically modified). The first historical breakthrough (since 1949) was to change the "semi-feudal, semi-colonial, and yet emerging capitalist society into a certain form of socialism" (Wei, 2017, p. 9). During the turn of the second (since 1978) the introduction of the market economy and the emergence of multiple forms of ownership have brought to the surface problems that are more of capitalism. From the perspective of an inside essence, Wei considers the second historical breakthrough "as a period that coped with the problems of the socialist economy of a completely new type" (Wei, 2017, p. 11). If we focus on the external nature of this process she considers "something that has been induced by economic globalization" (Wei, 2017, p. 11). In recent years, China has performed as a key supporter and ideologist of globalization, which it regards as an "irreversible historical trend" (at the 47th World Economic Forum in January 2017 or in November 2017 at the APEC Summit).

In 1978, China entered the era of economic reforms and its gradual opening to the world. The process of transforming the centrally planned economy, which includes liberalization of prices, changes in ownership relations, and creating a space for foreign investors, is underway. The reforms are firstly launched in agriculture, later expanding into other sectors. China follows a similar path as other neighbouring East Asian economies have done, e.g. Japan, Taiwan, Korea. This path of growth is based on a higher level of investment funded by savings made through a higher rate of savings and in the promotion of industrial production, trade and the transfer of labor from the agricultural sector to the services sector (Huang, Farrell, 2015).

China's development took place in accordance with the theory of "flying geese". This is the concept of sequential economic development in Southeast Asia. The theory is named according to the shape of the formation of flying geese in the letter "V". Members here follow the leadership in the exact formation and move forward. Likewise, developing economies act to follow which one the most developed in the region. Once the most developed economy in the group reaches a certain degree of economic development, it loses a comparative advantage in the production of a particular type of output and moves into production more sophisticated, with higher added value. Its old place will attract economies of a lower grade, and this cycle is continuously repeated (Kasahara 2004).

Within the transformation of the economy X. Wei distinguishes in more detail stages three. The first begins in rural China in 1978 by handing over state land to peasants. The rural area is changing, and many peasants go to the cities. In the 1980s, opportunities for foreign investment were opened through Chinese and international joint ventures. In 1990, the stock exchange was opened. The second phase of the economic transformation dates back to 1992-2001 when the synthesis of planning and market, including the operation of public and private ownership, is reflected in the growth of living standards, especially in the rural. In nearly 40 years China has managed to bring out nearly a billion people out of poverty, which is unprecedented in history. The third stage is still running. China joined the WHO in 2001. The economy is expanding, the country retains a unique economic model and does not adapt to the capitalist West. In doing so, it trades and operates in global dimensions. The enormous economic changes also affect the social, political or value structure of society. In assessing the transformation, it is necessary to take into account the population, lifestyle and culture as well as the regional distribution. At the heart of the reforms is the combination of planning and the market, the combination of public and private property with the dominance of the public but not necessarily the state sector.

In the process of transformation, strategic planning and strategic enterprises are pursuing strategic intentions, not a detailed organization of everything.

The 19th Congress of the Chinese Communist Party outlined the process of the new global giant. China's rise continues, when its massive science-based base should become the key to meeting two goals. By 2020, science and research must guarantee 60% economic growth, and in 2045 China should become a global innovation leader. The recipe to prevent economic stagnation is domestic growth driven by technological advances, with an emphasis on the balance of the economy combined with the global economic expansion of the country. China does not underestimate "trends 4.0" regarding robotics or AI, nor does the green technologies sphere. China definitely does not want to be among the losers. (Mařík et al., 2016) lists about thirty projects in 14 European countries, including national, regional and European initiatives responding to "4.0 challenges". Elements 4IR, resp. i4.0 is already being used by Asian countries to boost their competitive advantages. China, South Korea and Japan are doing their programs to increase competitiveness. China itself is running a national strategy leading to i4.0 Internet + or Made in China 2025 projects (including a strategic vision Chinese government that by 2030 China should become a leader in AI), etc.

The results arising from market-based and pro-export-oriented reforms have already created from China a significant economic power and an outstanding regional and global player. According to statistics, China is now the second largest economy, measured by total nominal GDP, the largest exporter and the second largest importer of goods. It is the country with the highest value of foreign exchange reserves and one of the primary beneficiaries as well as external direct investment providers. Nevertheless, China's unquestionable achievements are often "a thorn in their side" for the West, and the Western media is persistently spreading and maintaining misconceptions and myths about China. These also concern sphere of "4.0".

The mistaken notion is that China's entire prosperity has been a result of foreign technology, capital and production in recent years, and is based on the principle of outsourcing. China is presented in the sense of a global factory for the world. Everything that happens in China is allegedly dependent on the volition and permission of the US, Japan and Europe. However, even today's neoliberal globalists find out that the idea of moving of all production from the mother country to some other place was not perhaps the very best idea, respectively the permanent solution (Sirůček, 2018a). The necessary interconnection of technological

innovation, infrastructure or budgets for research and development is considering by (Phelps, 2013).

The mental prejudice about flat-rate distrust of "Chinese quality" is firmly rooted. Currently, China is already controlling a significant part of high-tech industries, and somewhere it is beginning to dominate. Many warn that China will soon determine technological trends for the coming decades. It should be taken into account that China today and, for example, just five years ago differ considerably from one another. That also applies to intellectual property rights issues. Most of the stereotypes about China (and the whole of Asia) had responded to the reality of the 1990s or the Millennium Revolution when we too were flooded with primitive Chinese counterfeits. Another misconception is that the Chinese economy is entirely export-oriented. However, protectionist measures by Europe or the USA will not collapse China, as it actively develops the domestic market. The share of foreign companies in China has fallen in recent years, while the state-run economy is massively investing and setting up businesses in many other countries. China is pursuing a policy of active substitution of imports by creating industrial complexes of the complete production cycle. China is practically independent of foreign technology today. It can produce anything at home if needed. It rejects the policy of attracting foreign capital, abolished the dependence on Western technology and the production of plagiarism, invested heavily in science and technology, and plans to develop its high-tech production base.

It turns out that the Chinese socialist market economy is competitive and the Chinese government model based on the leading role of the Communist Party remains a competitive one. Critical voices like to remind us that everything in today's China base on the continuation of its prosperity, which can quickly change in a sharp fall. Although growth rates in China are slowing down from 2014, we need to recognize what about the volume of economic output. It is necessary to process and find new criteria for assessing and determining adequacy. China's overwhelming and unsustainable development cannot be overlooked or denied, including qualitative changes in the economy, politics, and society as a whole. There is a warning that China will soon "have the world at its feet". Especially if the West does not quickly wake up from its multicultural and correct obsession, and will not stop to cling to economic-political and ideological liberal practices that are not only false, misleading and harmful but also highly destructive. Not only in the sense of Schumpeter's vision of creative destruction (Sirůček, 2016), but also with the intention of suicide and the end of civilization.

UNIVERSALISM OR NATIONAL PATHWAYS TO SOCIETY 4.0, RESP. 5.0?

(Staněk, Ivanová, 2016) emphasize the current interconnection of the trends of geopolitical development, technological revolution, changes in the natural environment and the "globalization" of the planet. The above-mentioned development lines have been underway for at least 30 years, with some (led by a technological revolution) accelerating over the last 15 years. Under the 4IR specification, the control over neither longer remains in the human sphere, but it is transmitted to the AI. Therefore, nor the ruling elites even need an intermediate article between the results of the society's control.

(Staněk, Ivanová, 2016) repeatedly point out that most reflections on the future appear to be as if the societies were completely homogeneous. And it usually does not take into account the specifics of individual civilizational as well as national models. That in many cases also applies to "4.0 considerations". The appointed authors don't regard the 4IR processes as good or bad. They point out that the extent of the use of potential positives depends on the parameters of the society and the historical characteristics of individual civilization circuits. In this context, it is possible to discuss the advantages and limitations of the Euro-American models in comparison with the Asian ones. Including possible inspirations, but also non-transferability of, for example, Chinese experience into a European environment which is different. In addition to commemorating China, ASEAN is also responding to the challenges of 4.0. And new approaches to regional economic integration policies and regulations are being discussed. It summarizes the document (ASEAN, 2017), including an emphasis on country specifics, regions and continents. It should never be neglected in the context of transferring experience from Asian countries to Europe and, of course, vice versa. The current form of liberal democracy in advanced Western countries is far from meeting the requirements of the era and painfully hampers developments in these countries themselves.

Many specificities are also reflected in the development of Japan. Germany is considered to be the world leader in Industrie 4.0 technology, but Japan is moving further in its vision. Its problems (such as the ageing of the population) are to be addressed by the society 5.0 - the next digitalization stage and the massive deployment of AI. A concept that uses cutting-edge technology (IoT, AI, CPS, Big Data, etc.) is supposed to be a way to a super-smart society. Society 5.0 here represents the fifth stage of civilization development (after hunters, agricultural, industrial and information).

About civilization turning points and society 5.0 also deal with (Staněk, Ivanová, 2016). In a narrower sense, there are different visions of the next stages of industry development, where the industry 4.0 is assumed to be primarily digitization and robotization (work should remain the same, but people and machines should change roles). In the context of Industry 5.0, 5IR is predicted (e.g. in the form of new material engineering) and this should be based on nanomaterials. At the science fiction level, industry considerations 6.0 (using quantum physics) and 7.0 (for example, in the sense of "biologizing" industry) take place. Let us recall that the term industry 5.0, respectively society 5.0 is not clearly defined again. It is used in various contexts and occasionally overlaps with 4.0 society concepts. Usually, it is meant in the sense of another logical phase of the development of the information society, sometimes also in the spirit of the post-information society (Sirůček, 2018b).

CONCLUSIONS

I4.0 technology is not epochally revolutionary and will indeed not fulfil a naive prediction that thanks to the so-called 4IR will soon be nothing like before. Innovations or technologies are not miraculous and omnipotent, becoming more and more important is a subjective element of development. However, the importance of technological change cannot be underestimated, of course - even also in relation to the increasing trends of deglobalization, localization, disintegration, etc. These tendencies new technologies not only allow, but also strengthen significantly. In this context, we can talk about the emergence of a new era of globalization (Sirůček, 2016, 2017). This brings new challenges, challenges, and serious issues and risks. Is Europe or Asia better prepared for them? What is most harmful and is it preventing the West from, today mainly Western Europe, responding adequately to the new conditions? The answer is simple, although politically incorrect and unpleasant for many. Liberalism, more precisely, it means a degenerate version of so-called liberal democracy, which became a propaganda slogan and a tool of so-called prophets of progress. However, this scheme is neither democratic nor real liberals for real liberals (Klaus et al., 2018).

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IMPACT OF AGGREGATION METHODS ON COUNTRIES' RESULTS IN COMPOSITE INDEX OF NATIONAL COMPETITIVENESS – VIETNAM, KOREA, AND JAPAN'S EXAMPLE

Marta Nečadová

Abstract

The Global Competitiveness Index (GCI), the composite indicator of national competitiveness discussed in this paper, is widely accepted by policymakers and other authorities for its ability to integrate a significant amount of relevant information about competitive advantages and disadvantages of countries on a different level of development. The explanatory power of this international ranking depends strongly on the choices made during the process of construction of the composite index (CI). The CI building is comprised of several necessary steps: development of the theoretical framework, identification and development of suitable variables, standardisation of variables, weighting variables individually and in groups (two-step approach to weighting is typical), and, finally, conducting sensitivity tests on the robustness of aggregated variables. This paper is primarily focused on discussing one necessary part of this process – the aggregation method. Using the different aggregation methods influences the results of countries in the composite indicator and changes countries' ranking. This paper describes the differences caused by abovementioned methodological changes. Our analysis is concentrated on the position of three Asian countries – Vietnam, Korea, and Japan.

Purpose: Our first aim is to show and analyse the differences in the countries' ranking caused by the application of different aggregation methods. Our second aim is to analyse the new WEF's approach to the evaluation of national competitiveness, the GCI 4.0, and compare our results (results according to our "adjusted" GCI: AGCI12, GAGCI12, AGCI3, GAGCI3) with WEF's results (the GCI and the GCI 4.0).

Design/methodology/approach: Being inspired by the new proposed WEF's attitude (the methodology of the GCI 4.0 based on the same weights for the pillars) we used the arithmetic and the geometric mean on different levels of aggregation - on the level of the twelve pillars and on the level of the three sub-indices (basic requirements, efficiency enhancers, innovation and sophisticated factors). This attitude reduces the methodological problem of compensability among the pillars and sub-indices.

Findings: The original WEF's weighting scheme has a positive impact on the evaluation of the big countries; this weighting scheme rewards good results of the developed countries in the third sub-index. Due to the low weight of the third sub-index, the WEF's methodology does not penalise the developing countries' gaps in this sub-index.

Research/practical implications: If the linear aggregation is used, the positive country's evaluation in the pillars with high importance for the CI (the pillars with a high weight according to the original WEF's methodology) would enable the compensation of the negative results assigned in the pillars with smaller weights.

Originality/value: The original WEF's methodology rewards big developed countries, which are leaders in innovative behaviour, and WEF's aggregation scheme is positive for the developing countries, which achieve the improvements in the sub-indices of Basic requirements and the Efficiency enhancers. Korea's example shows that the new WEF's methodology (the GC.4.0) means a better evaluation of the countries with more balanced results across all pillars.

Keywords: Global Competitiveness Index, Global Competitiveness Report, national competitiveness, a composite indicator.

JEL Classification: E60, F40, F60.

INTRODUCTION

The aim of the GCI - a well-known composite indicator of national competitiveness - is to provide a comprehensive view on the national competitiveness, a phenomenon, which cannot be captured by one single indicator without any doubts. The explanatory power of a composite indicator is influenced by the methodology of its construction. The building of a composite indicator is based on several necessary steps: development of theoretical framework, identification and development of suitable variables, standardisation of variables, weighting variables individually and in groups, and finally conducting sensitivity tests on the robustness of aggregated variables. From the two latest GCR editions (the Global Competitiveness Report published by World Economic Forum) it is clear that the changes of international economic relations after world financial crisis and modifications of economic relations among countries connected with globalisation were taken into account as well. The group of WEF's authors comes with some significant modifications to the present methodology and offers a refurbished attitude to the evaluation of the international competitiveness. The key change resides in the

different attitude to the final aggregation. While the present methodology is based on the differentiation of countries according to the stage of development, the new methodology propounds the same weighting system for all countries. This modified WEF's approach inspired us to use the freely accessible WEF data.

LITERATURE REVIEW

As Freudenberg (2003) and others remark, composite indices (the CI) have a lot of methodological difficulties which “must be confronted... and the CI can be easily manipulated to produce desired outcomes.” (Freudenberg, 2003, p.5) The methodological manual of the European Commission (OECD, 2008) deals with the main pros and cons of using composite indicators and gives a detailed description of all steps necessary for construction of the CI. Saisana et al. (2005) turn attention to the following three types of uncertainties in building composite indicators: a) alternative normalization methods for values of the indicators, b) alternative weighting approaches, and c) uncertainty in the weights of the subindicators. These authors propose to use the uncertainty and sensitivity analysis to gain useful insights during the process of building composite indicators. Cho and Moon (2013), Ochel and Röhn (2006), Berger and Bristow (2009), and others argue that the most famous competitiveness reports (the Global Competitiveness Report published by the WEF and the World Competitiveness Yearbook released by the IMD) do not have any strong theoretical background. According to critics of WEF's and IMD's attitude, the lack of a rigorous theory is the main reason for the frequent changes in the methodology of the above mentioned international rankings.

WEF's methodology for measurement of national competitiveness is influenced by M. Porter's attitude to this phenomenon, by the Diamond model (Porter, 1990). According to Porter, a fundamental assumption for the national competitiveness of a country is satisfactory productivity of firms. In these conditions, national competitiveness can be created by a combination of strategic choices along the four determinants of the Diamond model. Many analyses of firm competitiveness prefer using the firm performance indicators not only for the evaluation of the recent firm competitiveness but also for the prediction of the future firm competitiveness. For example, the analysis of Scholleova, Camska (2015), applying ROC curves and AuROC measures, tried to test whether the commonly used financial indicators have an impact on the competitiveness of firms in terms of economic value added (EVA). E.g. Klecka, Camska (2016) work with productivity indicators (on the industry level) based on the

concept of economic costs and economic profit as in the case of the indicator EVA. Their paper points out the importance of a detailed view of firm productivity, i.e. the analysis of partial productivities (not only total value productivity) is crucial for identification of firm competitive advantage.

METHODOLOGY

Our methodological attitude to WEF's data processing was inspired by the proposal of the new WEF's methodology (the GCI 4.0). The key methodological change (the same weighting scheme for all countries) reflects the latest thinking that many paths to growth are possible. (WEF, 2017b) This methodology is, therefore, less prescriptive about the path of development and does not distinguish among the stages of development. According to WEF (WEF, 2017b), their new attitude to the CI construction enables a better reflection of the aspirations of low-income and commodity-exporting countries. With the aim to eliminate the impact of different weighting systems on the overall ranking, we constructed two forms of "adjusted GCI." The AGCI12 is calculated as a linear aggregation of 12 pillars; the AGCI3 is the linear aggregation of 3 sub-indices (arithmetic mean used as an aggregation method). A disadvantage of linear aggregation method is the substitutability (compensability) among the pillars (the lower value of one pillar can be compensated by the higher value in the other pillars). Our the AGCI3, due to the same weights for the sub-indices, is fairer compared to the original WEF's methodology because the innovative pillars (the subindex C named Innovative factors) are reckoned as the key pillars for a sustainable competitive advantage. The AGCI12 eliminates the differences among weights and reduces the compensability among the pillars from the subindex A (Basic requirements) on the one hand, and the pillars from subindices B and C on the other hand. This type of substitution is typical for the developing countries. Due to the original WEF's weighting scheme, the developing countries gain an advantage – the better final value of the GCI. The GAGCI12 and the GAGCI3 are computed as the geometric mean of pillars (sub-indices) and therefore can decrease a methodological problem with substitutability (compensability) among the pillars (sub-indices). The lower difference between AGCI and GAGCI indicates more balanced values across pillars (sub-indices). Geometric mean rewards the countries with more balanced competitiveness indicators on the level of pillars (GAGCI12) and the level of sub-indices (GAGCI3).

The first aim of our analysis is to explain the changes in countries' competitiveness during the period which is given by time series in WEF's dataset (2007-2017) and compare our results with the GCI. Due to the changes in the number of evaluated countries during this period, we adjusted the WEF's data. We eliminated all countries which were not evaluated in the first year in the WEF's Dataset (2007), therefore there are 112 countries in our sample. Due to this fact, a recalculation of countries' ranks was necessary. Our recalculation has a positive effect, however - the explanatory power of our ranking is greater since we eliminate the impact of different countries' sample in individual years. The second aim is to compare the countries' results in the last edition of the GCR (2017-18) where current and new methodology were applied. The third aim is to describe the strengths and weaknesses of the competitiveness of Japan, Korea, and Vietnam. For all the above-mentioned types of our analysis, methods of comparison and evaluation will be applied. As our methodology is based on the alternative usage of the WEF's data and our aim is to show and discuss the differences among our adjusted indices and the WEF's GCI, a short critical description of the present and the new WEF's methodology is presented in this part of our paper.

DATA

The present WEF's methodology – the pillars of competitiveness and the stages of development

The Global Competitiveness Report (GCR) is published annually by the World Economic Forum (WEF). This annual report is based mostly on soft data. This attitude allows the GCR's publishers to follow and evaluate a bigger number of countries on different level of development than the World Competitiveness Yearbook (published by the IMD) the second most famous international competitiveness ranking. In the current issue of the report, 137 countries are evaluated using 114 qualitative and quantitative indicators describing the macroeconomic and microeconomic factors of competitive advantage. Indicators derived from the Survey are always expressed as scores on a 1-7 scale, with 7 being the most desirable outcome. To make aggregation possible, the hard variables are converted to a 1-to-7 scale to align them with the Survey results. The WEF use the min-max transformation (distance from the best and worst performers). The weighting approach of the WEF proceeds in two stages. Firstly, the underlying indicators are organized into thematic sub-groups. The same weights are assigned to the variables within the same sub-groups (the WEF use the arithmetic mean to

aggregate individual indicators within a category); different weights for the sub-groups should indicate the different importance for the vital pillar. Secondly, the pillars within the sub-index have the same weight. Thirdly, the sub-indices are weighted to build a composite indicator. The weight put on each of the three sub-indices (basic requirements, efficiency enhancers, and innovation and sophistication factors) depends on the stage of development of each country. For countries in transition between stages, the weighting applied to each sub-index changes according to the country's results.

The Global Competitiveness Index (GCI) of a country is computed in the following way, where i denotes the corresponding index of the country and j indicates the stage of this economy's development:

$$GCI_{ij} = wj1 \cdot BASIC_i + wj2 \cdot EFFICIENCY_i + (1 - wj1 - wj2) \cdot INNOVATION_i$$

Since our primary goal is to show the differences in countries' ranking caused by the different methods of aggregation, a more detailed view of WEF's weighting system is necessary. As Hudrlikova (2013) points out, deconstructing the CI is very useful for the correct understanding and interpretation of the CI results.

Table 1 shows the different weights for pillars and variables depending on the stage of development. Due to our choice of countries and their different stages of development (Japan and Korea are in the 3rd stage, Vietnam is between the 1st and the 2nd stage), it is necessary to provide the following view on the WEF's weighting scheme for better understanding the changes in country ranking, when we are going to use the different weighting scheme.

Tab.1: The present WEF's weighting scheme (the GCI)

WEF subindices	WEF pillars (hard data/soft data) weights of subindices and pillars	Stage 3 (20:50:30)	Stage 2 (40:50:10)	Stage 1 (60:35:5)
Basic requirements (16/37)	1. Institutions (0/21)*	5	10	15
	2. Infrastructure (3/6)*	5	10	15
	3. Macroeconomic environment (5/0)	5	10	15
	4. Health and primary education(6/4)	5	10	15
Efficiency enhancers (13/36)	5. Higher education and training(2/6)	8.5	8.5	5.95
	6. Goods market efficiency (5/11)	8.5	8.5	5.95
	7. Labor market efficiency (2/8)*	8.5	8.5	5.95
	8. Fin. market development (0/8)	8.5	8.5	5.95
	9. Technological readiness (4/3)*	8.5	8.5	5.95
	10. Market size (2/0)	8.5	8.5	5.95
Innov.and soph. Factors (1/17)	11. Business sophistication (0/10)*	15	5	2.5
	12. Innovation (1/7)*	15	5	2.5

Source: WEF (2017b), own processing, pillars signed “*” content the indicators which enter into the GCI in two different pillars. Avoiding double counting is assured by a half-weight to this variable.

The current methodology admits the differences in the weights by pillar and country, from 5 to 15 per cent, according to (1) the sub-index to which the pillar belongs and (2) the country's stage of development. In the current methodology, the basic requirements (i.e., institutions, infrastructure, macroeconomic environment, and health and primary education) account for 65 percent of the overall GCI score in the case of low-income countries (i.e., those with GDP per capita of less than US\$2,000) and commodity-dependent economies (i.e., those whose share of minerals in exports exceeds 70 percent), while innovation and sophistication factors obtain a weight of 5 percent. Our detailed view on the WEF's methodology allows us to identify the most influential pillars for Japan and Korea (11th pillar: Business sophistication and the 12th pillar: Innovation), and for Vietnam (the pillars of Basic Requirements). From our point of view, the above-described weighting system can explain the better position of the developing countries in the WEF ranking compared to the results of our GCI modifications, which are described in the analytical part of this paper.

A proposal for the new WEF's methodology – the GCI 4.0

Permanent changes in economic reality, challenges connected with the Fourth Industrial Revolution (4IR), new empirical evidence, and new data were the basic reasons for the WEF's consideration about the changes in the methodology of international ranking. The goal is to ensure that the index remains a relevant source of information for multi-stakeholder dialogue and policymakers in the years to come. (WEF, 2017) The new methodology (working title: the GCI 4.0) builds on the current methodology and places more emphasis on the future orientation, adaptability, and agility (all the essential features in the context of the 4IR). This methodology is less prescriptive about the path of development. (WEF, 2017) According to the WEF's experts, the GCI 4.0 is the result of the natural evolution of its predecessor. The overall structure of 12 pillars remains relevant, yet some reshuffling, regrouping and relabelling at the pillar level result in a more streamlined framework (see Table 2). The pillars are organized into four components: Enabling environment, Human capital, Markets, and Innovation Ecosystem. These four components are used only for presentation and analysis purposes; they do not affect the calculation of the index. The 12 pillar scores are averaged to produce the overall GCI score, with each pillar weighted equally (8.33 per cent). The GCI 4.0 comprises 105 indicators (compared with 114 in the current methodology). The extent of the changes is significant compared to the present methodology: 67 per cent of the indicators are new. The number of

indicators derived from the Executive Opinion Survey (EOS) was reduced from 80 to 45 and their combined weight accounts for 30 per cent of the overall score, down from between 69 per cent (for advanced economies) and 57 per cent (for least-developed economies) in the present GCI. Table 2 shows the pillars and sub-indices of the suggested new composite index - the GCI 4.0.

Tab.2: The proposed WEF's weighting scheme (the GCI 4.0)

subindices	pillars (hard data/soft data)	subindices	WEF pillars (hard data/soft data)
Enabling Environment	1. Institutions (5/17)	Markets	7. Product market efficiency (2/7)
	2. Infrastructure (7/5)		8. Labor market functioning (3/9)
	3. Techn. readiness (5/0)		9. Fin. market development (7/4)
	4. Macroec. context (3/0)		10. Market size (2/0)
Human Capital	5. Health (1/0)	Innovation	11. Business dynamism (4/4)
	6. Education and skills (3/6)	Ecosystem	12. Innovation capacity (7/4)

Source: WEF (2017b), own processing

The comparison of Table 1 and Table 2 shows that the discontinuation of stages of development significantly alters the weighting scheme used to compute the overall GCI score. The 12 pillars in the GCI 4.0 are weighted equally, each contributing 8.33 per cent. The new scheme will, therefore, benefit those low-income and commodity-dependent countries that perform better in the innovation ecosystem; but it will penalise countries which have been neglecting some key enablers of competitiveness (WEF, 2017b). This change reflects the latest thinking that many paths to growth are possible and better reflects the aspirations of low-income and commodity-exporting countries. Within each pillar, changes in the form of addition, deletion, modification, and reshuffling of concepts and individual indicators can have a significant impact on the performance of a country (a concept is a well-defined driver of competitiveness that is assessed through one or more individual indicators). The direction and magnitude of this impact depends on (1) the country's performance in the concept/indicator that has been added/deleted/modified and (2) the change in the implicit weight of the various components of the pillar (WEF, 2017). In the new methodology, recent empirical evidence has led to the introduction of new concepts; other concepts have been dropped, mainly to eliminate conceptual overlaps or because their link to productivity is not so strong. For example, the Institutions pillar now features two new concepts - checks and balances and social capital - both assessed through new indicators and

existing ones that were moved to these categories. In another example, the education and skills pillars, which in the current methodology look only at the education of the future workforce, now includes an assessment of the skills and educational attainment of the current workforce. This concept is composed of new indicators exclusively.(WEF, 2017)

As the creators of the GCI 4.0 observe, each of the changes to the current methodology has an impact - positive or negative - on how a country is thriving in a concept, pillar, or the overall GCI. However, the overall impact is difficult to isolate and therefore to quantify due to the many overlapping and interconnected changes. (WEF, 2017) Despite this fact, a comparison of countries' results allows us to identify what methodology is more convenient for our country sample.

The following table constitutes the necessary step for analysing our resulting data. Table 3 specifies our approach and shows the weights of pillars according to our methodology, which uses the linear aggregation of pillars and the linear aggregation of sub-indices.

Tab. 3: Comparison of our weighting scheme and the WEF's scheme

Sub-indices (number of pillars)	weights of pillars (in %)			
	AGCI3	AGCI12	GCI (Stage 3)	GCI (Vietnam)
Basic requirement (4)	8.33	8.33	5	14.1
Efficiency enhancers (6)	5.56	8.33	8.5	6.26
Innovation and sophistication factors (2)	16.67	8.33	15	2.95

Source: Own computation based on WEF's methodology, WEF (2017a)

We can summarise that the AGCI3 can improve country's ranking if the competitive advantage leans on innovation pillars. When a competitive disadvantage of the developed country is found in sub-index of Basic requirement, both adjusted indices - the AGCI3 and the AGCI12 - have a negative effect on country's evaluation compared to the GCI.

RESULTS AND DISCUSSIONS

Japanese competitiveness

According to the GCR, Japan is a big developed economy with excellent results in the innovation and sophistication factors. However, macroeconomic environment continues to undermine Japan's competitiveness performance, although the situation has improved over the past years (up 17 places in the GCR 2016-17 compared to the previous year) thanks to a lower,

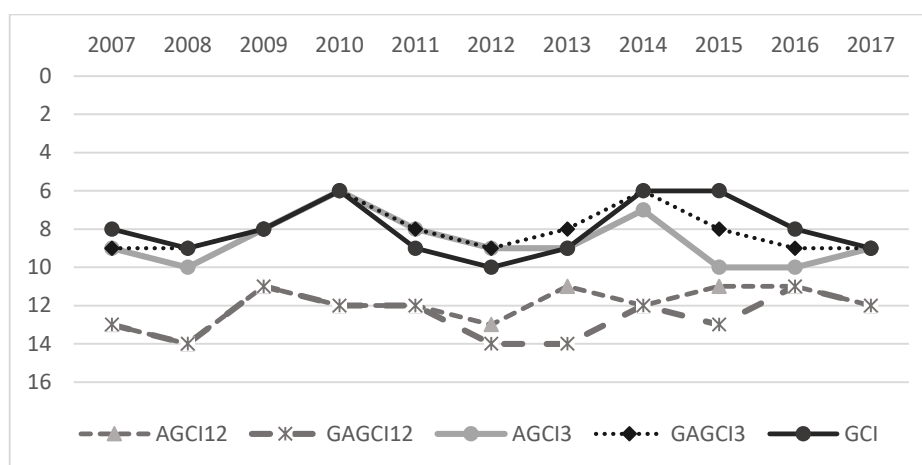
yet still very large, the budget deficit. This improvement is a result of better government budget balance and higher gross national savings. Japan is also beset by the rigidities and lack of dynamic of its labour market. The domestic market is relatively uncompetitive and closed, with high barriers to entry and business creation. The country's overall performance is primarily driven by high-quality physical and digital infrastructure (4th in the GCR 2017-18), healthy and educated workforce, and productive innovation ecosystem. Japanese firms are highly sophisticated (they employ unique products and production processes and have significant control over international distribution). High-quality research institutions, company spending on R&D, and excellent availability of scientists and engineers contribute to the country's overall highly innovative environment. Overall, Japanese innovation process has a positive influence on Japanese ranking, despite the small decrease in ranking (consistently ranked in the top 5 between 2007 and 2015, Japan lost three positions in the GCR 2016-17, the present position is the 6th place).

Tab. 4: Strengths and weaknesses of Japan's competitiveness (2017)

GCI (rank/value)		GCI 4.0 (value)	
strengths			
11. Business sophistication	3. (5.7)	2. Infrastructure	98.2
2. Infrastructure	4. (6.3)	5. Health	100
10. Market size	4. (6.1)	3. Technological readiness	96.3
weaknesses			
3. Macro environment	93.(4.3)	4. Macro context	48.6
5. Higher education and training	23. (5.4)	7. Product market efficiency	64.4
7. Labor market efficiency	22. (4.8)	6. Education and skills	73.5

Source: Own processing based on WEF's methodology, WEF (2017b)

Fig. 1: Changes in the national competitiveness of Japan according to the GCI



Source: <http://reports.weforum.org/global-competitiveness-report-2017-2018/>, online 31.3.2018, own processing

All methods used – i.e., comparison of the weighting schemes (see Table 3), the identification of strengths and weaknesses (see Table 4), and the graphical presentation of changes in national competitiveness (see Fig. 1) – can help to explain the differences among our results. Due to the WEF's weighting scheme, Japan's competitive advantages can compensate the negative influence of worse outcomes in the 3rd, 5th, and 7th pillar (due to their weights, these pillars have lower importance for the CI). Therefore, the weighting schemes which allow the compensability among the pillars (e.g. the weighting schemes based on the arithmetic mean – the GCI, the AGCI3, the AGCI12) have a positive influence on Japanese position in the ranking. Table 7 (below) shows a more detailed view of countries' results.

Korea's competitiveness

According to the GCR, Korea's overall position in ranking is stable in last five years. Compared to other developed economies, the country still presents large disparities between pillars. Its performance is largely driven by its remarkable infrastructure (8th place in the GCR 2017-18) and a highly favourable macroeconomic environment (2nd place in the last GCR edition). After several years of decline, the GCR 2016-17 indicates improvement in the financial development pillar (80th, up seven), gains are apparent in all indicators within the pillar except one. Although credit access conditions and low confidence in the banking system remain of concern, this encouraging development suggests that the financial reforms initiated by the government have positive effects. Areas in which Korea consistently underperforms are institutions, labour market efficiency (the 73rd place due to the evaluation of labour market flexibility - - Korea's

position is caused notably by the conflictual labour-employer relations and high redundancy costs), credit access conditions (the 92nd place), and low confidence in the banking system (the 102nd place). The GCR official commentary focuses on the trend over the last decade. Looking back at Korea's performance, it is one of the few advanced economies to have experienced a general decline in performance for a majority of its pillars of competitiveness. However, the last GCR edition indicates positive signals.

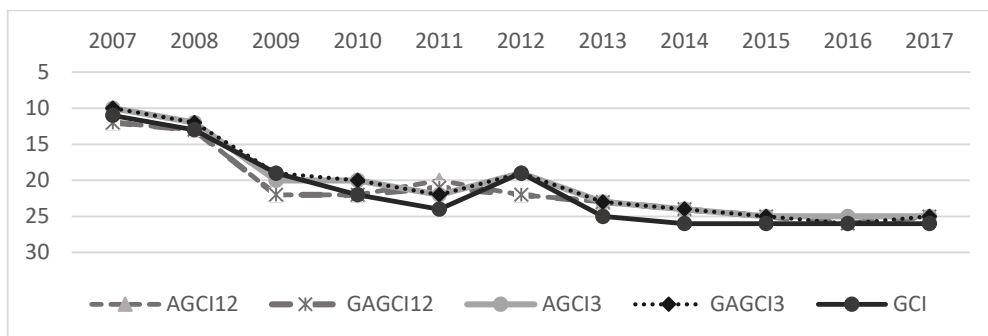
Tab. 5: Strengths and weaknesses of Korea's competitiveness (2017)

GCI (rank/value)		GCI 4.0 (value)	
strengths			
3. Macro environment	2. (6.6)	3. Technological readiness	100
2. Infrastructure	8. (6.1)	5. Health	99.2
10. Market size	13. (5.5)	4. Macro context	93.2
weaknesses			
8. Fin. market development	74. (3.9)	7. Product market efficiency	50.2
7. Labour market efficiency	73. (4.2)	8. Labour market functioning	53.0
1. Institutions	58. (4.0)	1. Institutions	62.3

Source: Own processing based on WEF's methodology, WEF (2017b)

Taking into account the WEF's weighting scheme, the competitive advantages and disadvantages, and Fig. 2, we can summarise that the WEF's methodology worsens Korea's results compared to other aggregation methods. The AGCI3 brings the highest average value of the CI during the period 2007-2017. Application of the same weights for all pillars (the AGCI 12) results in the lowest variability in the aforementioned period. The comparison of weights assigned to the pillars in which Korea's competitive advantages and disadvantages were identified shows smaller rate of compensability than Japan has.

Fig. 2: Changes in the national competitiveness of Korea according to the GCI



Source: <http://reports.weforum.org/global-competitiveness-report-2017-2018/>, online 31.3.2018, own processing

The stabilisation and the probable slightly positive trend in Korea's competitiveness in the last four years is evident from all composite indices in Figure 2.

Vietnamese competitiveness

Vietnamese competitiveness is significantly driven by its market size (the 31st place in the GCR 2017-18). The country's growth is projected to remain robust from strong exports. Significant improvements are necessary across all pillars, notably among the basic requirement factors (the 75th place in the WEF's ranking) and higher education (the 84th place), as firms perceive that the lack of educated workforce constitutes a significant barrier for doing business. Vietnam could also boost its competitiveness by closing gaps in innovation and sophistication factors with countries at a similar stage of development. In order to further improve its competitiveness, Vietnam must also continue to strengthen its institutional environment. The strength of auditing and reporting standards (115th) and the efficacy of corporate boards (130th) are perceived as burdensome and count among the worst evaluated indicators. The country's position in the 5th pillar (Higher education training) is negatively influenced by the perceived low quality of business schools (120th) and local (un)availability of specialised training services (108th). Availability of latest technologies for Vietnamese firms is limited (112th) and deteriorates the country's rank in the 9th pillar (technological readiness). Due to the low local supplier quality and quantity (116th, 105th respectively), value chain breadth (106th), and extent of marketing (105th), the pillar of business sophistication is the worst pillar for Vietnamese economy. Innovative performance is negatively influenced by the quality of scientific research institutions (90th) and the low number of PCT patents (91st). The improvement in technological readiness (up 13 places, compared to the GCR 2015-16) is pulled by fixed –broadband internet subscriptions (72nd) and internet bandwidth (47th).

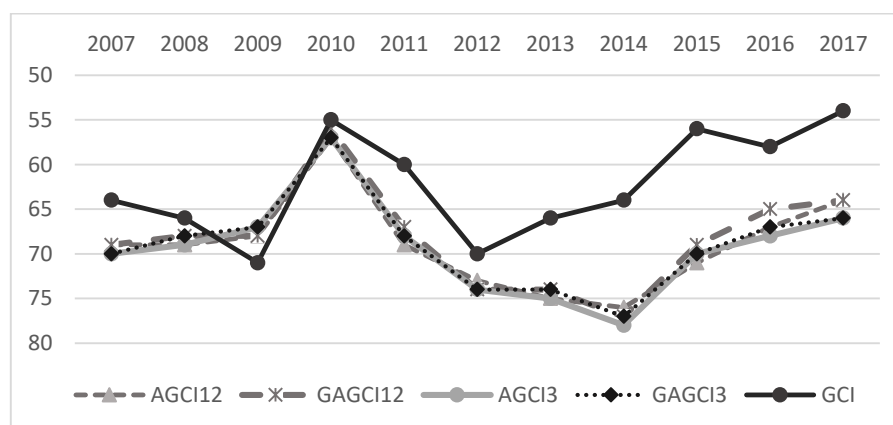
Tab. 6: Strengths and weaknesses of Vietnamese competitiveness (2017)

GCI (rank/value)		GCI 4.0 (value)	
strengths			
10. Market size	31. (4.9)	4. Macroeconomic context	84.0
7. Labor market efficiency	57. (4.3)	5. Health	83.1
4. Health and primary education	67. (5.8)	10. Market size	63.6
weaknesses			
11. Business sophistication	100. (3.7)	12. Innovation capacity	10.9
6. Goods market efficiency	91. (4.1)	8. Labor market functioning	31.2
5. Higher education and training	84. (4.1)	9. Fin. market development	43.1

Source: Own processing based on WEF's methodology, WEF (2017b)

The achieved results for Vietnam (see Table 6 and Figure 3) show that using the WEF's weighting scheme is the best choice for this country. Taking into account the differences among the weights for the pillars with the competitive advantages and disadvantages, it is clear that the importance of positive results has the sufficient compensating power (the pillars with Vietnamese competitive disadvantages have a relatively low influence on the GCI value - e.g. the nominal weight of 11th pillar is only 2.95 % in the GCI, but 16.67 % in the AGCI3, and 8.33 % in the AGCI12). As Table 7 shows, the GCI is the CI with the highest average value in the period 2007-17, the lowest variability in this period was identified for the GAGCI3 (this CI, due to its aggregation method, assigned the same nominal importance to three sub-indices and decreases the compensability among sub-indices compared to the AGCI3).

Fig. 3: Changes in the national competitiveness of Vietnam according to the GCI



Source: <http://reports.weforum.org/global-competitiveness-report-2017-2018/>, online 31.3.2018, own processing

Figure 3 shows that using different weighting scheme can change the countries' ranking entirely and we can remark the opposite trend in the GCI contrary to the rest of the composite indicators. It is clear that these differences are connected with the composition of the whole group of countries and with their competitive advantages and disadvantages.

Table 7 summarizes the results of our analysis from these points of view: a) the comparison of country's ranks according to the different CIs in 2017; b) the comparison of the WEF's results according to the original (the GCI) and the new methodology (the GCI4.0) in 2017; c) seeking the composite indicator with the best average value for the country (see the column value*); d) seeking the composite indicator with the lowest variability in the period 2007-17 (see the column st.d.A**); e) the comparison of our three countries according to variability among the CIs.

Tab. 7: Countries' results in the different composite indicators (2017)

country/ CI	2017						2007-17		
	AGCI12	GAGCI12	AGCI3	GAGCI3	GCI	GCI4.0	value*	st.d.A**	st.d.B**
Vietnam	4.21	4.16	4.08	4.05	4.36	51.2	4.19	0.075	0.091
	64	64	66	66	54	69	GCI	GAGCI3	
Japan	5.51	5.47	5.53	5.53	5.49	80.5	5.45	0.045	0.04
	12	12	9	9	9	14	AGCI3	GCI	
Korea	5.19	5.12	5.18	5.16	5.07	78.4	5.16	0.119	0.036
	25	25	25	25	26	16	AGCI3	AGCI12	

Table 1Source: Own computation based on WEF's methodology, WEF (2017a)

Note: *the composite indicator with the highest average value in period 2007-17, st.d.A**the composite indicator with the smallest standard deviation in period 2007-17, st.d.B**the standard deviation among the composite indicators in period 2007-17 (the average of st.d. in individual years).

CONCLUSION

Being inspired by a proposal of the new WEF's methodology (the GCI 4.0), we have used adjusted weighting schemes (the AGCI3, AGCI12, GAGCI3, GAGCI12) with the aim to offer the relevant alternative for the weighting scheme applied by WEF (different weights of the sub-indices and pillars for the different group of countries, depending on the stage of development). Our main results are the following: the original WEF's weighting scheme has a positive impact on the evaluation of the big countries (the results in the 10th pillar were identified as the

competitive advantage for all our countries), this weighting scheme rewards good results of the developed countries in the third sub-index (Innovation and sophisticated factors), but does not penalise the developing countries' gaps in this sub-index so much (see above, e.g. the nominal weight of 11th pillar for Vietnam).

If the country is positively evaluated in the pillars with high importance for the CI (the pillars with a high weight according to the original WEF's methodology), the linear aggregation will enable the compensation of the negative results assigned in the pillars with smaller weights. The reason for the differences among the GCI and the modified composite indices in the case of Japan is as follows: Japanese weaknesses (see Tab. 4 and our commentary above) are grounded in the pillars with relatively low impact on the overall competitiveness, Japanese strengths consists in the sub-index of the innovation factors, which has the highest weight for countries in the innovation-driven stage of development.

Korea's strengths (see Tab. 5) are grounded in the pillars and sub-indices with lower impact on the overall competitiveness. Korea's weaknesses (the 7th and 8th pillars) lean on the sub-index of Efficiency enhancers with the highest weight for countries in the innovation-driven stage of development - therefore, these factors have a more negative impact on the overall competitiveness (compared to Vietnam). Our comparison indicates that the new WEF's methodology appreciates the countries with more balanced values across all pillars of competitiveness (Korea in our comparison). Vietnamese weaknesses lie in these sub-indices: Efficiency enhancers and Innovation and sophistication factors. The influence of bad evaluation of the innovation factors is relativised by the weight of this sub-index in the "original GCI". Comparison of the GCI and modified composite indicators for Vietnam shows smaller difference among modified indices. This ascertainment indicates that the WEF methodology is favourable to bigger developing countries.

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IMPACT OF INDUSTRIAL REVOLUTION 4.0 (INDUSTRY 4.0) TO THE ACCOUNTING PROFESSION IN VIETNAM

Lam Tran Khanh

Abstract

Industrial Revolution 4.0 (Industry 4.0) has created tremendously important milestones for the global economy and society. However, the concern and understanding of the impact of the industrial revolution in Vietnam in general, as well as the accounting profession in particular, has not been neglected and need to be motivated urgently. By means of qualitative research (statistics describing the number of participants in the survey), the study provided basic knowledge of the Industry 4.0 as well as a low level of interest; lack of understanding of the impact, opportunities, challenges and implementation of this issue in Vietnam for respondents operating in the field of accounting and audit. Moreover, this study also aimed to identify the solutions to be implemented and recommendations for state agencies, the Vietnam Association of Certified Public Accountants and universities.

Purpose: The research focused on the role of 4.0 industrial revolution's impact to the accounting professional in Viet Nam and finding out how accountants and auditors noticing about this issue.

Design/methodology/approach: A qualitative method was used like summarization, comparison and analysis of historical data as well as descriptive statistic.

Findings: The results revealed a huge of respondents neglecting the impact, opportunities, challenges of Industry 4.0 in their career. Furthermore, the knowledge about this was tremendously deficient.

Research/practical implications: The outcome would illustrated a clearer picture and knowledge about the influence of Industry 4.0 to accounting professional in Viet Nam.

Originality/value: This study would motivate accountants; auditors and career associations take care about this issue and yield new future researchs in this field.

Keywords: Industrial Revolution 4.0, IoT; Auditing and Industry 4.0

JEL Codes: M41, M42.

INTRODUCTION

There were huge comments and opinions in magazines and social media on information, communication, digital technology and benefits for enterprises that are clients of accountants, auditors, financial experts or their employers (Lam, 2017; Deloitte; 2016).

Accountants, auditors, financial experts need to be aware of Industry 4.0 or exactly IoT at this time (Islam, 2017; Rae, 2017). Currently, Industry 4.0 was in preliminary stage but it certainly change the way that we (practicing accountants, auditors, financial experts) and the enterprises, organizations operate in future (Deloitte, 2016; Islam, 2017; Rae, 2017).

In principle, basing on current technological development, Industry 4.0 can influence to all countries, organizations, enterprises in the world in near future (Acemoglu, 2002; Von, 2003; Islam, 2017; Rae, 2017). And it (for accounting, audit, finance professions) creates challenges and at the same time, opportunities for those who were willing to bolster it (Islam, 2017; Rae, 2017; Fernandez & Aman, 2018). For example, in Vietnam, Uber, Grab currently affect traditional taxi service. Vietnamese big taxi companies that were not willing to and even worse “against” Industry 4.0 must receive huge negative consequence (Lam, 2017).

Only some recent year ago, when the cloud technology emerged, we didn’t think about what cloud technology was and how it would affect our accounting, audit, finance professions (Deloitte, 2016; Islam, 2017; Rae, 2017). But nowadays, cloud becomes popular and standard (Rae, 2017; Fernandez & Aman, 2018). At this time, new concepts as artificial intelligence (AI) and machine learning will have rapid and strong influence to us soon (Weyer, 2015; Pereira & Romero, 2017; Fernandez & Aman, 2018). Further, artificial intelligence and machine learning gradually become the technologies hugely influence our daily life and accounting, auditing as well as accounting and audit firms currently implement and apply them to their technical infrastructure (Islam, 2017; Rae, 2017; Pereira & Romero, 2017; Fernandez & Aman, 2018).

Currently, everywhere, anytime, people frequently and continuously mention about Industry 4.0 as warning (Deloitte, 2016, Lam, 2017). In which, accounting, audit firms, accountants, auditors were the first group who receive these warnings that they would be fail if they kept their mindset and service supply method like currently (Deloitte, 2016; Pereira & Romero, 2017; Fernandez & Aman, 2018).

Thence, Industry 4.0 is going to and will deeply affect accounting, audit, finance professions. And studying about this issue should be conducted to benefit for accounting professional in

Viet Nam. In addition, in order to suitably implement supporting activities for their members, auditors and audit firms, in June 2018, the Vietnam Association of Certified Public Accountants (VACPA) carried a survey on impact of Industry 4.0 to accounting, audit, and finance professions and especially to auditors and audit firms.

LITERATURE REVIEW

The First Industrial Revolution used hydro and steam power to mechanize production; the Second one used electricity for mass production and the Third one used electronics and information technology for production automation (Acemoglu, 2002; Von, 2003). Currently, the Fourth Industrial Revolution originates from the Third one, includes three main biological, digital and physical spheres has changed significantly the global industrial landscape due to success of technological development and innovations in manufacturing processes (Pereira & Romero, 2017).

Further, in biological technology, Industry 4.0 focus in research in order to create the breakthroughs in agriculture, aquaculture, medicine, food production, environmental protection, regenerative energy, chemistry and materials. In physical sphere: there were new generation of robot, 3D printing, driverless vehicles, new materials and Nano technology (Weyer, 2015; Pereira & Romero, 2017).

Beside of that, in digital sphere, Industry 4.0 focuses on: Artificial Intelligence (AI), Internet of Things (IoT) and Big Data. Industry 4.0 currently happens in developed countries such as USA, European countries and part of Asia. In addition to new opportunities, Industry 4.0 brings many challenges (Alles , 2015; Thai & Anh, 2017; Mohamed, 2018).

Especially, in accounting professional, Industry 4.0 has been creating many facilitators like supporting for analytical procedures of auditor; financial statements analysis of accountants and investors as well as external parties (Alles , 2015). However, the obstacles that career associations has been facing was competition for trained personnel (Alles , 2015), and adoption depended on human resource quality; macro environment changes; technology capabilities (Thai & Anh, 2017). Thus, every accountant and auditor should prepared for what to keep abreast of technology to maintain a competitive ag, and develop their digital skills was definitely essential for accounting professional development (Mohamed, 2018).

Hence, this paper was conducted to reflect how the accountants; auditors; and accounting professional associations in Viet Nam approach with this industrial revolution. From that, some recommendations

were supposed to focus colleagues on the importance, the impacts, challenges and opportunities in their career.

According to some people, in current conditions of industrializing our economy, Vietnam should focus to fulfill the spheres of Industry 2.0 until there were sufficient physical requisites for Industry 4.0 (Lam, 2017). Moreover, that approach looks like feasible, but not reasonable in current situation, our country integrate deeply to the world economy with many great achievements, economical – social changes, with our desire to catch up with civilized and modern development progress. Vietnam is carrying Industry 2.0, building technical and social infrastructure and Industry 3.0 with IT, automation, Internet development nationwide; simultaneously actively carry Industry 4.0, in order to take advantage of new opportunities and shorten developing gaps between us and region as well as the world (Lam, 2017).

On June 5, 2017, in the Directive of the Prime Minister on “Enhance capabilities to approach Industry 4.0”, with the suggested solutions such as develop, create true breakthroughs in infrastructures, applications and human resources in IT – communication; improve business environment, build digital strategies and intelligent governance, develop national core products, strategically competitive products, establish innovative startup environment; financial mechanism should promote scientific researches and technology developments of enterprises, changes in educational and vocational contents and methods in order to create capable human resources to catch up with new production technologies.

METHODOLOGY

The paper uses a qualitative research method that combines descriptive statistics from the survey results. Some of these methods were practiced as specific comprising: (1) Compiling and analyzing reports, writings, and previous works of local authors and also abroad authors, which were posted on official websites of Vietnamese State agencies, professional associations and prestigious magazines; (2) interviewing, descriptive statistic, analyzing, synthesizing, comparing and contrasting data to reflect the current status of the impact of Industry 4.0 in accounting and auditing in Vietnam; and (3) Questionnaire related objects was used for the survey.

Designing and constructing survey questionnaires was build as following illustration:

- The questionnaire was developed based on the exchange of opinions of local and abroad experts and also based on group discussions of members the Vietnam Association of Certified Public Accountants (VACPA) and the ACCA of more than 3,000 students, more than 100 graduate students and more than 50 lecturers from the accounting, auditing, finance and banking faculties of 15 universities nationwide from October 2017 to June 2018. The official surveys were then sent directly to the survey participants.
- The questionnaire was measured by the 5 point Likert scale to collect the opinions of the respondents, including:
 - + The level of interest will be divided into five levels: (1) not interested; (2) less interest; (3) normal; (4) high interest; (5) special interest.
 - + Regarding level of opportunities was divided into five levels: (1) no impact; (2) less impact; (3) normal; (4) great opportunity; (5) deep and strong.
- The questionnaires were sent directly to VACPA's 1,800 individual members via e-mail and sent directly to VACPA's CPD courses.

DATA

- *Scope of the survey:* All members of VACPA who were practicing at auditing firms, accountants and other organizations and enterprises all over the territory of Vietnam up to 31/5/2018.
- *Subjects of the survey:* Being Vietnamese citizens who have been granted auditor's certificates by the Minister of Finance, have professional ethics and were members of VACPA. At least 5 years working experience.
- *Sample survey:* Selecting survey samples is very important to ensure that the data collected is reliable. The article surveyed a total of 1,800 respondents who were able to understand clearly and answer survey questions.

RESULTS AND DISCUSSIONS

The total number of questionnaires received was 280. Once the data was cleaned, the number of valid surveys to perform the analysis was 206. Results from the survey were described in the following table:

Tab.1 – Characteristics of participants in the survey

Hanoi		Danang		Hochiminh		Total	
Number	%	Number	%	Number	%	Number	%
135	65.53	2	0.97	69	33.50	206	100.00

Source: Own summary from collected questionnaires

Of the total of 206 respondents who participated directly, Table 1 showed that the total number of respondents in Hanoi was 135, accounting 65.53% and were higher than nearly double counterparts from Ho Chi Minh City with 69 weighting for 33.50% as well as the last ones belong to Da Nang with only 2 respondents.

Table 2 – Respondent's Comments on the 4.0 Industry Revolution for the Auditing Industry

N.	Question	Level									
		(1)		(2)		(3)		(4)		(5)	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Interested in the Industry 4.0?	2	0.97%	9	4.37%	68	33.01%	106	51.46%	21	10.19%
2	What is the impact of Industry on the professional?	0	0.00%	6	2.91%	21	24.76%	139	67.48%	10	4.85%
3	Regarding Opportunities										
	<i>A way to improve the quality of work, services.</i>	0	0.00%	7	3.40%	57	27.67%	134	65.05%	8	3.88%
	<i>Data mining opportunities (optimize data usage)</i>	0	0.00%	6	2.91%	37	17.96%	152	73.79%	11	5.34%
	<i>Expand the means and tools to improve the efficiency and quality of work.</i>	0	0.00%	1	0.49%	51	24.76%	137	66.50%	17	8.25%
	<i>Expand the types of services that can be provided to clients</i>	0	0.00%	6	2.91%	63	30.58%	125	60.68%	12	5.83%
	<i>Expand the market to provide services to other countries</i>	0	0.00%	18	8.74%	63	30.58%	105	50.97%	20	9.71%
	<i>Automation in all stages, helping auditors to easily gather information according to reality time.</i>	0	0.00%	13	6.31%	53	25.73%	124	60.19%	16	7.77%
	<i>Facilitate the exploitation and extract data</i>	0	0.00%	7	3.40%	50	24.27%	124	60.19%	25	12.14%

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	<i>Improve the quality of data (more precisely and in more detail)</i>	0	0.00%	4	1.94%	40	19.42%	145	70.39%	17	8.25%
	<i>Improved data transmission for planning and management</i>	0	0.00%	4	1.94%	57	27.67%	133	64.56%	12	5.83%
	<i>Enhance the reliability and relevance of reporting</i>	0	0.00%	14	6.80%	54	26.21%	127	61.65%	11	5.34%
4	Regarding Challenges										
	<i>New technology causes many traditional techniques and methods to deteriorate or disappear.</i>	3	1.46%	17	8.25%	83	40.29%	86	41.75%	17	8.25%
	<i>Issues of professional ethics will change</i>	33	16.02%	30	14.56%	88	42.72%	45	21.84%	10	4.85%
	<i>Demands on knowledge workers, updated information technology</i>	2	0.97%	4	1.94%	50	24.27%	128	62.14%	22	10.68%
	<i>Demand for investment in high-tech systems to synthesize and analyze data</i>	0	0.00%	3	1.46%	57	27.67%	122	59.22%	24	11.65%
	<i>Significant competition, reduced market share</i>	0	0.00%	8	3.88%	65	31.55%	99	48.06%	34	16.50%
5	Regarding level of Deployment	28	13.59%	136	66.02%	25	12.14%	11	5.34%	6	2.91%
6	Regarding Solutions										
	<i>Develop and implement support tools</i>	0	0.00%	17	8.25%	168	81.55%	19	9.22%	2	0.97%
	<i>Set up the technology application environment</i>	0	0.00%	11	5.34%	145	70.39%	44	21.36%	6	2.91%
	<i>Extend services beyond the assurance services</i>	0	0.00%	33	16.02%	137	66.50%	29	14.08%	7	3.40%
	<i>Orientation in the preparation of resources and policies</i>	0	0.00%	23	11.17%	154	74.76%	22	10.68%	7	3.40%
	<i>Strengthening training of information technology application for employees</i>	2	0.97%	14	6.80%	134	65.05%	50	24.27%	6	2.91%
	<i>Would have to drastically cut their employees numbers</i>	61	29.61%	43	20.87%	94	45.63%	5	2.43%	3	1.46%
7	Desired professional associations, the Ministry of Finance support										
	<i>Supporting technical applications for audit</i>	2	0.97%	5	2.43%	63	30.58%	103	50.00%	33	16.02%

	<i>Training qualified human resources in information technology</i>	1	0.49%	8	3.88%	72	34.95%	97	47.09%	28	13.59%
8	Desired universities										
	<i>Training in accounting and auditing with the application of information technology.</i>	0	0.00%	3	1.46%	57	27.80%	106	51.71%	39	19.02%
	<i>Intensive Training in Information Technology</i>	2	0.98%	9	4.39%	85	41.46%	83	40.49%	26	12.68%

Source: Own summary from collected questionnaires

From Table 2, some issues were discussed as follows:

Regarding attention level

Regardless there was a lot of information in social media, only of the survey participants had noticed dramatically and only more than 10% of auditors pay special attention to Industry 4.0. The most worried thing was 5% of participants don't or pay only a little attention to what was Industry 4.0. At the same time, one third of auditors consider Industry 4.0 as normal issue. Audit firms, accountants, auditors were so busy that unable to manage their routine work efficiently. Therefore, they was lack of focusing on Industry 4.0's impact which they thought that it would impact to Vietnam in future time.

When investigate more deeply on the reason why audit firms, accountant, auditors did not or have not focus on this issue, survey results show that most of them (more than 72% of respondent) do not see the impact or a little impact from Industry 4.0 or receive it as "neutral" respond. In addition, more than 70% of respondents neglected to Industry 4.0 because they do not clearly understand what is and how Industry 4.0 will impact to accounting, audit, and finance professions.

Thus, there were only 51% of audit firms, accountant, and auditors noticed seriously about Industry 4.0. Meanwhile, the rest 49% neglected or had "neutral" attitude regarding this issue.

Regarding impact level

Basically, audit firms, auditors think that Industry 4.0 was going to and will greatly impact to accounting, audit professions (67%) and few of survey participants (5%) were aware that Industry 4.0 will impact and significantly and comprehensively change the professions in near future. In contrast, we need to care about the fact that 25% of audit firms, auditors consider impact of Industry 4.0 as normal as other factors that currently influence their job (such as pricing competition, traditional accounting – auditing techniques, standards and policies,

compliance, etc.) and 3% of participants think that Industry 4.0 rarely affect their job and the services they supply to clients.

Regarding opportunities

Basing on survey results, most of auditors, audit firms evaluate that Industry 4.0 create “big opportunities” for auditors and audit firms. In detail, the biggest opportunity is data exploitation that they collect during supplying accounting – audit services to clients (74%) and enhance the details, accuracy and high quality data.

Other opportunities as follows:

A tool for them to enhance their work, service quality (65%);

Widen the means and tools that audit firms can use to enhance their efficiency and service quality (67%);

Widen service range that they can supply to clients (non-assurance services) through data exploitation that they collect during supplying accounting – audit services to clients (61%);

Widen market of supply services to other countries thanks to technical infrastructure and internet that can help them to reach and work with current and potential clients without travel (51%);

Automation in all stages and functions in service supply, operations of clients leads to sufficient and structured, classified information collection and compiling, that help auditors, audit firms easily to collect the information that they could not previously basing on type of information, where and when they arise (60%);

Support the extract, exploit data from high volumes of database as basis for economic decisions (60%);

Improve the data transfer that support better for planning of auditors and audit firms (65%);

Enhance the reliability and reasonability of report preparation through self- control, bespoke accounting and audit automation system (62%).

Therefore, major part of survey participants (about 2/3) of auditors, audit firms agrees that Industry 4.0 brings great opportunity to change and develop their profession. Meanwhile, about 1/3 of auditors, audit firms were not the same viewpoint, even 1%-9% of the participants think that Industry 4.0 brings only a little, even no opportunity at all for accounting, audit, finance professions. We should specifically notice that some of them were management team of small and medium audit firms in Vietnam.

Regarding challenges

Basing on survey results, in addition to “big opportunities”, auditors, audit firms evaluate that Industry 4.0 creates “big challenges” for them. Some traditional jobs will disappear, their profession loses its importance; or some experts doubt that some accounting and audit service do not need human labor anymore due to digital application.

The biggest challenge that most of them agree was: the need of knowledge labor, update in IT because clients apply technologies in their operations more (62%).

Other big challenges were as follows:

New technologies make many traditional techniques, methods that auditors, accountant, and financial experts used diminish or disappear in near future (42%);

The need for high and expensive investment in human resources, systems, IT and technical infrastructure for big data compiling and analyzing (59%);

There will be stronger competition, reduce market share of small and medium auditors, audit firms because the ones with high technological resources will attract more of the former’s clients as long as more competition from auditors, audit firms that supply services from overseas (48%).

Besides, auditors and audit firms were aware that they lack control over accounting data comparing to previous time. At the same time, for bookkeeping, journal entries will be replaced by machine, journal automation, self-integrated and synchronized systems will reduce works; for auditing: complication of Industry 4.0 can change auditors into IT engineers. Therefore, Industry 4.0 requires auditors to have strong IT knowledge in order to understand complicated transactions (e.g. Block chain), special skills, software set up for data storage, skills to discover the manipulation, changes of data in automation systems, etc.

VACPA’s survey results were similar to ACCA’s report in 2016 “Drivers of change and future skills” (Lam, 2017). In this report, digital popularity and impact to enterprises will change accounting, finance professions and required capabilities of accountants, financial experts. More than half (55%) of survey participants estimate that in coming 3 to 10 years, development of intelligent automation accounting system will have biggest impact while 41% highlight the impact of cloud. Intelligent software and systems will replace for manual jobs (like accounting books), automation of complicated and comprehensive processes (such as completion of financial agreements) and bolster the outsourcing of some services and combining internal functions for other services.

Especially, 27% of auditors, audit firms (27%) deeply worry that Industry 4.0 will create challenge to re-consider some changes relating to in code of ethics. They were how to use and analyze big data collected in supplying of consultancy, accounting, financial, audit services to clients; monopoly of big audit firms; digital labor. There will be new challenge to government authorities that audit firms and their clients develop fast in technology while the authorities lack of resources to catch up with them. At the same time, big audit firms' (such as Big 4) current focus on developing technologies with big resources will create obstacles for small and medium audit firms due to more control of market share by Big 4 (maybe monopoly) if they achieve rapid technological advance.

In conclusion, major part (more than half) of auditors, audit firms agree that Industry 4.0 brings big challenges in future in the types of services, approaches, service supply methods, completion. Inwhich, nearly 50% auditors, audit firms considered that it was a normal issue, and even 1%-15% of survey participants thought that Industry 4.0 brings only a little, even none of challenges to accounting, audit, and finance professions.

Regarding adapting level

Regardless that auditors, audit firms recognize the opportunities and challenges from Industry 4.0 to their profession, adapting to Industry 4.0 only at "research to understand" (66%), some of them "already had plan to adapt" (12%), few of audit firms "was preparing" (5%), very few of audit firms "prepared and partly apply" (3%), and the rest 14% "do nothing" to confront with development of Industry 4.0.

Thence, I could conclude that auditors and audit firms in Vietnam currently should start to research, apply of artificial intelligence, cloud, big data, machine learning, block chain into their profession.

Regarding solutions

In order to adapt with Industry 4.0, auditors and audit firms was "paying attention to" some solutions, in which the biggest one was building and applying supporting tools, especially data analytical tools (82%), and applying IT in operations (79%). Each solution may receive many pros and cons opinions on them during discussion; however, auditors and audit firms currently focus on other solutions as follows:

Widen service range in addition to audit service, through data collected during supplying of accounting, audit services to clients because big data was precious resource in this era with

many analytical tools (67%); Currently, big data was used at preliminary stage for predictive analysis and selling market developing.

Planning resources, policies setting up and re-planning recruitment strategies because most of manual jobs (like data entries, journal entries, transactions, contract analysis, securities and financial index analysis) of their clients will be automated. Audit firms also need to change their recruitment criteria. Eventhough, they could eliminate all accounting and auditing skills of their employees, they would need more experts in technology and data analyzing or accountants, auditors who have IT knowledge (67%);

Strengthen IT training for their staffs (66%); basing on recent statistical results, most of financial institutions, enterprises that supply consultancy, financial services prefer to recruit IT, mathematics engineers than economics graduates.

Strongly reduce number of employees. Audit firms will not need huge number of entry level accounting-audit-financial employees anymore, but skillful programmers instead (46%).

Basically, auditors, audit firms have “big, strong and deep desire” to receive supports from VACPA and Ministry of Finance, in details:

Financial and technical supports in developing accounting, audit applications such as: sampling software in audit, audit software, etc. (97%);

Support in training IT skills for their human resources (96%); and

Support in professional, systematic and long term training courses for auditors.

Professional associations (such as VACPA, ACCA) and their CPD programs must have training contents about Industry 4.0 and its impact to their members.

Accounting, audit, finance activities in an interweaving world between IoT and future physical world of Industry 4.0 surely will happen in Vietnam and the region. Some traditional jobs will disappear, their profession loses its importance; or some experts doubt that some accounting and audit service do not need human labor anymore due to digital application. In reality, there are many unknown opportunities for those who understand about new network-physical systems.

Currently social requirements put pressure in changing education program into more practical (Islam, 2017; Thai & Anh, 2017). Simultaneously, with the changes and impact of Industry 4.0, there was more pressure in education program and methods (Eleanor, 2016; Mohamed, 2018). In details, with accounting and auditing in universities, auditors and audit firms desire that there will be changes as follows:

Training for accounting and auditing with IT application: there must be big change with 52% of survey participants and 19% of them request comprehensive training program.

Deep training in IT: 42% of survey participants state that the universities need to train partly on necessary IT knowledge, other 41% believe that the universities need to give wide training on IT knowledge, and especially 13% of auditors, audit firms believe that the universities need to give systematic and deep training on that for accounting, auditing students so that they can catch up with working conditions and environment of Industry 4.0 after graduating.

For new graduates (who work for enterprises or accounting, audit, financial service companies), professional associations (like VACPA, ACCA) can support for training on Industry 4.0 by putting pressure to educational institutions, universities to add this to help incoming graduates can have knowledge and skills in digital technology.

The universities can invest in technology for their students' practice to get practical experience with Industry 4.0, get knowledge on inherent social impacts of automation and intelligent systems and solutions to deal with them.

Professional associations (like VACPA, ACCA) can coordinate with the companies and educational institutions to organize appropriate courses including coding, information management in shared platforms such as cloud and evaluate accounting needs basing on real timeframe of different subjects such as enterprise governance, shareholders, employees, non-governmental organizations, government authorities and other stakeholders.

CONCLUSIONS

To sum up, by conducting qualitative method, author illustrated a significant picture about impact of 4.0 industrial revolution to accounting professional in Viet Nam. The result revealed that there were few accountant, auditor as well as career association and leaders of accounting and auditing organizations focus on changing to adopt the Industry 4.0 in their career. Furthermore, most of respondents had deficient knowledge about opportunities and challenges what they should to catch to create their professional competency advantage.

Hence, in order to catch up with opportunities from Industry 4.0, auditors and audit firms should be aware of Industry 4.0 and willing to look for opportunities from it. Simultaneously, accountants, auditors, financial experts should be aware that with Industry 4.0, they will lack of control over accounting data comparing to previous time. Accountants, auditors, and financial experts become consultancy experts in interweaving aspects. E.g. environmental

accounting was greatly affected by physical and detail information that the engineers hold. With faster IoT, accounting information will not be data of accountants, auditors and financial experts only.

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INCOME INEQUALITY: SOCIAL AND REAL CONVERGENCE IN THE EU MEMBER COUNTRIES

Juraj Sipko – Ľubica Sipková

Abstract

The main goal of the paper is to analyse the real convergence process within the EU member countries, mainly in terms of income levels and productivity. The global financial crisis, deep recession, and debt crisis led to unprecedented implications in individual eurozone member countries. Low investment, low productivity and increasing internal and external imbalances caused significant changes in income inequality. The former caused growing income disparity not only between EU countries, but also in the countries themselves so remarkably that it has undermined the equal opportunity of individual citizens to attain good health and proper education, leading to social exclusion. Based on data analysis, the paper has come to the conclusion that in order to bring the economies of all member countries of the European Union, but in particular, the eurozone member countries, on a sustainable path, to foster real convergence, vigilant structural reforms are needed. In this regard, collective actions of all member countries are essential and the structural reforms should be implemented in a timely manner.

Purpose: The main purpose for writing this paper is to analyse the main factors that have contributed to the present stage of development from the point of income inequality, low productivity level, a decrease in the process of convergence within the EU member countries, but in particular, in eurozone countries. The main aim of the research is to point out factors that significantly contributed to the present unfavourable development in the EU countries. Based on the findings, suggested are some proposals related to maintaining sustainable development in the single currency area.

Design/methodology/approach: Based on the data analysis, using various statistical methods, the main objective of the paper has been reached. In the paper, have been used both basic statistical methods such as descriptive statistics, time series analysis, correlation and regression as well as methods of comparison. In the analysis, have been used the official data from the Eurostat, the International Monetary Fund, OECD, including data from the World Economic Forum.

The indicators in terms of productivity growth, current account balance, real effective exchange rate, net international investment position, public debt, including poverty risk and social exclusion have been analysed to verify the assumptions and obtain credible conclusions. As the basis for quantitative analysis, a theoretical approach and its implication for the real development in different countries of the European Union.

Findings: Using the empirical analysis, the paper came to the conclusion that there is a process of divergence within the EU member countries, mainly after the outbreak of the global financial crisis. The loss of competitiveness and growing public debt in some specific countries caused income inequality and an increase in poverty risk, including social exclusion.

The growing income inequality could lead to the undermining of future opportunities of some citizens with the lowest incomes due to decreased access to education, medical care and potential social exclusion. If this trend continues, this could be a source of possible social unrest. In addition, in line with the upcoming 4th industrial revolution, digitalisation, robotisation, including artificial intelligence pronouncing income inequality could negatively contribute to this development. Based on the presented results, this is a call for the decision-making bodies to adopt and implement all necessary measures in order to stabilize social economic development in the EU member countries.

Research/practical implications: Based on the analysis and the indicators performance there is an urgent need to adopt all necessary measures related to the productivity growth, including all components of the GDP growth that does not create a solid base for the long-term sustainability and oriented on the real convergence process. In line with this, the comprehensive structural reforms in labour and product markets are needed.

The main recommendations based on the results are related to both public and private investment, including venture capital into research and development in the single currency areas. In addition, a more comprehensive package of all necessary measures needs to be adopted in terms of structural reforms. In order to create better conditions for long-term sustainability, further comprehensive research should be adopted in line with Agenda 2030.

Originality/value: The main contribution might be found in the comparison between different levels of productivity growth, mainly based on the composition of three factors such as labour, capital and total productivity factor. In addition, a significant correlation was found between the growing level of public debt and poverty risk and social exclusion.

Keywords: Real Convergence, Competitiveness, Income Inequality.

JEL Codes: M41, Q01, Q56.

INTRODUCTION

Last year the member countries of the European Union celebrated the 60th anniversary of the signing of the Roma Treaty (1957). During the last more than sixty years, member countries of the European Union have achieved very impressive results in the process of integration as well as in increasing the standard of living on the old continent. Leadership, including the rational approach of policymakers have been very active in fulfilling the main ambition to establish the single currency union.

On the way to the introduction of the single currency, the European Monetary System (1979) has been established. Furthermore, the member states of the European Union implemented the Single Market Programme (1985) for the free movement of goods, services, people and capital. The former created one of the most critical conditions for adopting the euro as a common currency.

Despite the fact that the whole process of European integration since the beginning of the signing of the Roma Treaty was relatively very successful, the outbreak of the global financial crisis, the deep recession and the debt crisis have significantly undermined the process of real convergence within the eurozone countries. The main legacy of the above-mentioned crisis led to instability in the financial sector, mainly in the banking industry, increasing not only public sector debt, but also the debt of households, corporates, as well as financial sectors. These unfavourable trends have caused a low level of investment and significantly different levels of productivity growth within the eurozone countries that has brought about the reduction of household income, growing the income inequality. Income inequality reduces aggregate demand for goods and services. In addition, some economies of the eurozone, in particular those countries that have experienced a loss of competitiveness have very high levels of public debt.

Consequently, based on the past and present development, there is an urgent call to the responsible officials in the European Commission to strongly commit to adopting and implementing all necessary measures in a timely manner, in order to bring the eurozone on a sustainable path in the medium and long-term.

Therefore, for a better understanding of the present less-encouraging performance in some eurozone countries, the paper analysed some critical indicators that are contributing to the quality of economic growth, such as productivity growth, external and internal imbalances with the European countries.

LITERATURE REVIEW

Currently, after more than 60 years since the signing of the Roma Treaty, an intensive discussion about the future of the European Union has commenced. There has been important literature related to the past, present, and future of economic and social development and its future in the old continent.

In line with the Maastricht Treaty³⁴, there was an expectation that the creation of the single currency will lead to the continuation of not only nominal convergence, but also real income convergence. Currently, there are many articles, research papers and studies dealing with the process of divergence, loss of competitiveness, a low level of productivity, and growing income disparity in the EU member countries.

It is a generally accepted agreement that the main contributor to economic growth is technological progress. Robert Solow (1957) emphasized that the main contribution to the quality of economic growth is technological progress and presented the structural component of the economic growth, i.e., total factor productivity.

There is evidence of a strong link between technological growth and productivity growth. In this regard, productivity growth has led to an increase in income inequality since the beginning of the 1980s. In addition, there is a significant evidence than a change in technology has led to higher economic growth, driven by productivity growth. There are some economists such as van Treeck (2012), van Treeck and Storn (2012) that noted that economic inequality contributed greatly to the latest Great Recession, i.e., the crisis has been caused, at least partially, by the high level of economic inequality.

One of the main factors that contribute to the lack of real income convergence in EU member countries was loss of competitiveness in some countries. Persistent competitiveness gaps between EU member countries strongly contributed to external imbalances. In line with this negative trend, Lane. & Milesi-Ferretti (2014) pointed out that competitiveness gaps between EU member countries are one of the main obstacles to external adjustment.

In order to measure competitiveness, it is necessary to gauge how the real effective exchange rate is related to the external position, but in particular, to current account and trade balance. There is number of literatures that deal with issues analysing the causal relationship between the real effective exchange rate and current account balance. Some authors such as Sanchez,

³⁴ The wording of the Maastricht Treaty is available at: https://europa.eu/european-union/sites/europaeu/files/docs/body/treaty_on_european_union_en.pdf . [Accessed 14 June 2018].

Luis, Varoudakis & Aristomene (2013) argue that domestic demand shocks have been the most important drivers of current accounts in Europe, although they also find that cost competitiveness has mattered. On the other hand, authors such as Zemanek, Belke & Schnabl (2010) concluded that structural reforms can have a large impact on current accounts, suggesting that policy-driven productivity changes can improve competitiveness and reduce current account deficits.

Income inequality is a new phenomenon at the beginning of the 21st century. Income inequality was growing gradually in at various paces in different EU member countries. Based on empirical studies since the outbreak of the global financial meltdown, it is generally accepted that higher income inequality retards economic growth. Some authors (Berg and Ostry, 2011; Milanovic, 2016; Atkinson, 2015) noted that higher inequality could impair growth if low-income households are persistently less productive because of slower human capital accumulation and greater financial exclusion. Furthermore, the potential growing of income inequality could lead also to rising populism, societal stress and demands for protection (Alesina et al., 2017).

METHODOLOGY AND DATA

In this paper, two analytical methods are used – the analysis of literature and statistical data. The first of the methods is an analysis of accessible scientific literature and internet resources related to the topic, followed by a synthesis, which leads to a summarisation of the findings, a discussion of the topic and conclusions to it. In addition, the paper makes use of analytical quantitative methods of statistical data and selected Macroeconomic Imbalance Procedure indicators (MIP indicators) obtained from the official Eurostat webpage³⁵.

Data are represented using scatter plots with equations of regression lines and coefficients of determination. The coefficient of determination gives us an indication of the contribution of the factor being studied in the regression analysis to the linear relationship with some MIP indicator.

Results of fitting a simple linear regression model with its parameter estimation by the method of least squares to describe the relationship between selected MIP indicators are used.

³⁵ European Commission - Eurostat - Macroeconomic Imbalance Procedure – Data - Main tables, Available at: <http://ec.europa.eu/eurostat/web/macroeconomic-imbances-procedure/data/main-tables>.

The resulting F statistics with corresponding p-values of Fischer test of the linear regression model statistical significance are presented in the main text in parentheses. The calculated values of the most common statistical measures of degree of linear correlation dependence – coefficient of correlation, are interpreted in relation to the topic.

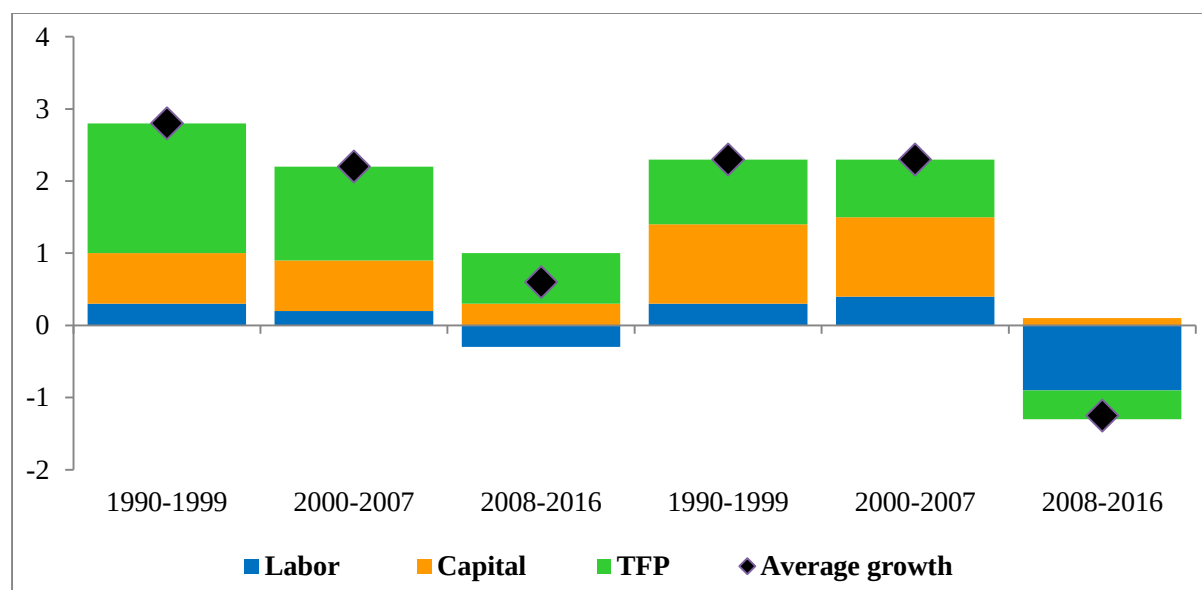
The MIP indicators involved in the analyses concern mainly the current account balance, net international investment position, real effective exchange rate, unit labour cost, public debt and poverty risk and social exclusion.

RESULTS AND DISCUSSIONS

Decomposition of economic growth

One of the main goals before the creation of the European Monetary Union was to foster economic growth and to maintain financial stability and income convergence. The performance related to the real convergence is less encouraging. Before the outbreak of the global financial crisis, the new member countries were promisingly in the process of catching up in line with the expectations. However, after the outbreak of the global financial turbulence, the real convergence process was stalled.

Figure 1: Components of economic growth in the EU area



Source: Eurostat (online data), own processing

These ambitious goals are related to the ability of a group of countries to adopt and implement policies that could contribute to the high quality of economic growth based on the high level of productivity. One of the main factors that significantly contributed to the present unfavourable level of real income convergence was a lack of productivity.

Currently, the global economy, as well as the economies of the EU member countries, but in particular, the eurozone countries are gaining momentum. Figure 1 describes the composition of economic growth since 1990, including three main components such as labour force, capital and total factor productivity.

In this analysis, the Cobb-Douglass production function that is one of the main determinants for measuring the economic growth has been taken into consideration. Here, in particular, the analysis focuses on Total factor productivity (TFP) that is one of the main components of economic growth. Historically, the structural component of the GDP (e.g. TFP) was the first presented by Robert Solow, Nobel Prize winner for Economy in 1957.

There are some countries in the European Union that have reached a relatively high level of economic growth with a high level of TFP, e.g. Austria, Belgium, Germany, Finland, France, Ireland and the Netherlands. On the other hand, there are countries that have a relatively high level of public debt such as Italy, Greece, Italy, Portugal and Spain. At the same time, those countries are losing competitiveness in the international markets and have reached a relatively very low productivity of growth.

In the graph (Figure 1), there are two groups of countries presented. The group of countries with high productivity represents the first three columns and the group with a low level of productivity represents the three columns on the right.

The graph clearly demonstrates that Total factor productivity (TFP) has significantly contributed to economic growth within the eurozone countries. The TFP was the main component to economic growth between 1990 and 1999, e.g. to the beginning of the creation of the single currency. Even in the period between 2000 and 2007, there was a trend of relatively strong contribution of the TFP to economic growth.

After the outbreak of the global financial crisis and after the crisis in the period between 2008 and 2016, the graph clearly shows that there has been a significant reduction in all components of economic growth within the group of countries with the high productivity growth. Paradoxically, there is one component in a negative territory, i.e. labour. In comparison to the group of countries that have reached a relatively very low level of economic growth, which is

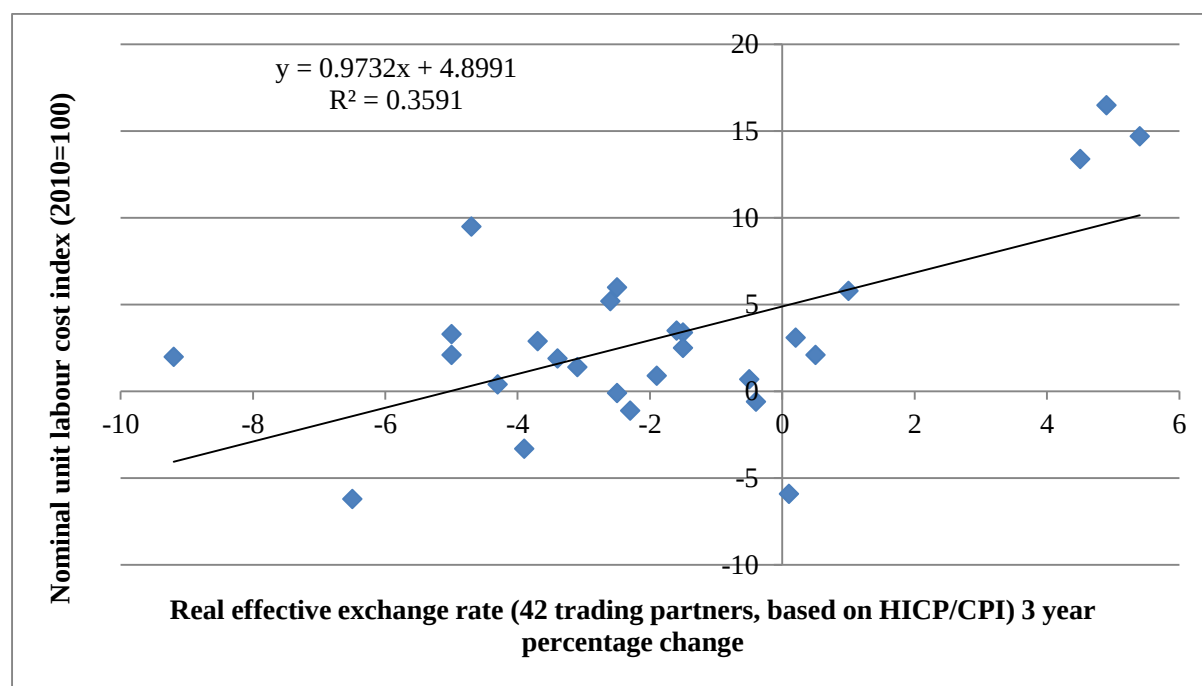
located in the negative territory in the following period, there is an unprecedented development because both labour and TFP are located in this negative territory.

In theory, but also in real practice, it is well-known that in order to accelerate the structure reforms into a real convergence process, in particular, product and labour market reforms are imperative in line with income convergence.

Competitiveness in EU member countries

In order to foster a real income convergence process in the EU area, competitiveness is critical. Since the beginning of the global financial crisis in some countries, e.g. Germany, real wages were below productivity growth. However, some countries, especially the highly-indebted countries, have reached higher real wages than productivity growth. This led to a loss in productivity and an increase in the current account deficit.

Figure 2: Real effective exchange rate and nominal labour cost



Source: Eurostat (online data), own processing

Although, this so-called „competitiveness gap“ between EU member countries has been reduced since the outbreak of the global financial crisis, it remains a key concern. Persistent loss of competitiveness based on a comparison between the labour cost and productivity differential are considered the main factor in relation to external imbalances in this region. Since the adoption of the single currency, there have been changes in unit labour cost. These

changes of ULCs historically have been growing, in particular, in those countries that have persistent current account deficits, while in some countries the ULCs were relatively stable for a certain period of time.

In addition, in order to measure price competitiveness, the impact of the real effective exchange rate and nominal labour costs on competitiveness needs to be analysed.

The results of fitting a linear regression model with the method of least squares to describe the positive linear relationship between the Real effective exchange rate and the Nominal unit labour cost are displayed in the scatter plot (Figure 2).

Fischer test of the linear regression model confirmed statistical significance of this linear dependency (F statistic = 14.01; p-value = 0.00096, calculated in the ANOVA table). The point estimate of the correlation coefficient 0.5992 indicates a relatively strong positive linear relationship between both indicators: Nominal unit labour cost index (2010 = 100, 3 years up to 2016 % change) and Real effective exchange rate (42 trading partners, based on HICP/CPI; 3-year percentage change), among the EU member countries (excluding Ireland).

External imbalances

Reducing both internal and external imbalances in EU member countries is essential for future sustainable development in this region. Currently, policymakers are facing challenges in relation to the following key areas: restarting the process of real income convergence, reducing both internal and external imbalances and addressing potential vulnerabilities, mainly in the financial sector, in particular, in the banking industry.

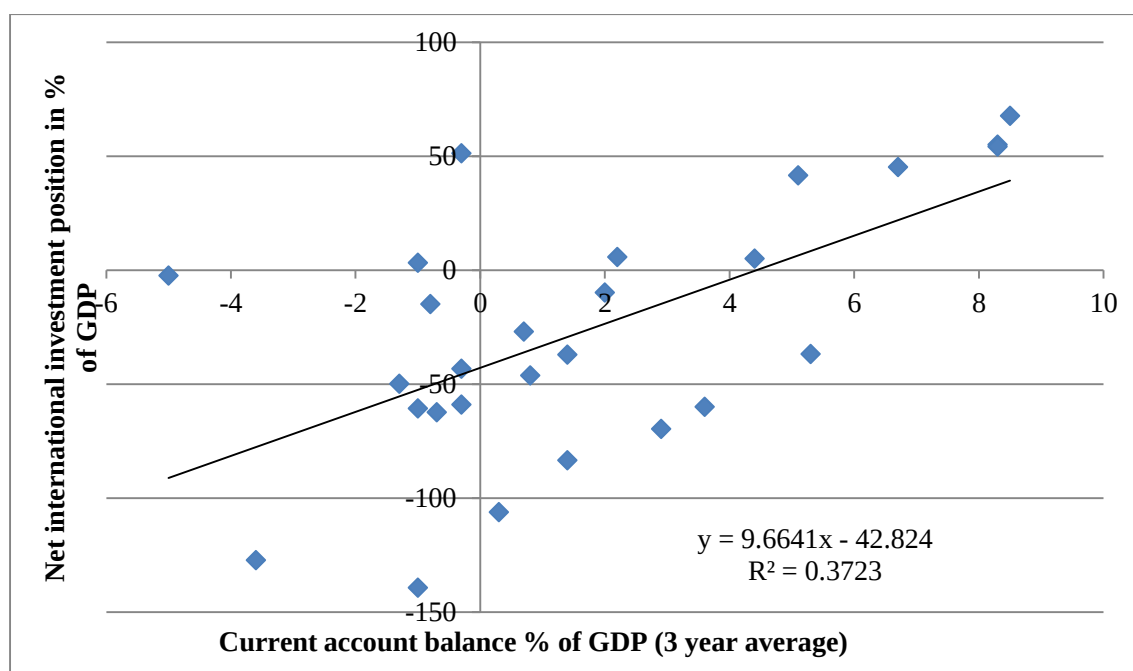
Therefore, the loss of competitiveness in some EU member countries has led to the unfavourable development of external imbalances. The external position of the EU member countries was influenced by the level of competitiveness in these countries. In order to evaluate the external position as a whole within the countries, the current account as well as net international investment position has been used. Figure 3 demonstrates that a loss of competitiveness in some countries has caused the current account deficit and a loss in net investment position.

The corresponding correlation coefficient equals 0.6102 (p-value = 0.0269; F statistic = 14.8294) and indicates a statistically significant positive linear relationship – net international investment position in % of GDP versus current account balance in % of GDP (3-

year average up to 2016). In reality, it means that the higher is the current account balance, the higher is the net international investment position among the EU member countries (excluding Ireland).

Figure 3 also demonstrates differences within the EU area countries in terms of external imbalances measures according to the current account balance and the net international investment position. Those countries that have reached current account surpluses also received high levels of net international investment positions in comparison with the countries that suffered with external imbalances and low levels of net international investment positions³⁶.

Figure 3: Current account and net international investment position



Source: Eurostat (online data), own processing

Income inequality

The global financial crisis, the deep recession and the debt crisis led to a deepening of the income inequality³⁷ within the EU member countries, in particular, in the eurozone countries. Income inequality has increased in several euro area countries over the last few decades.

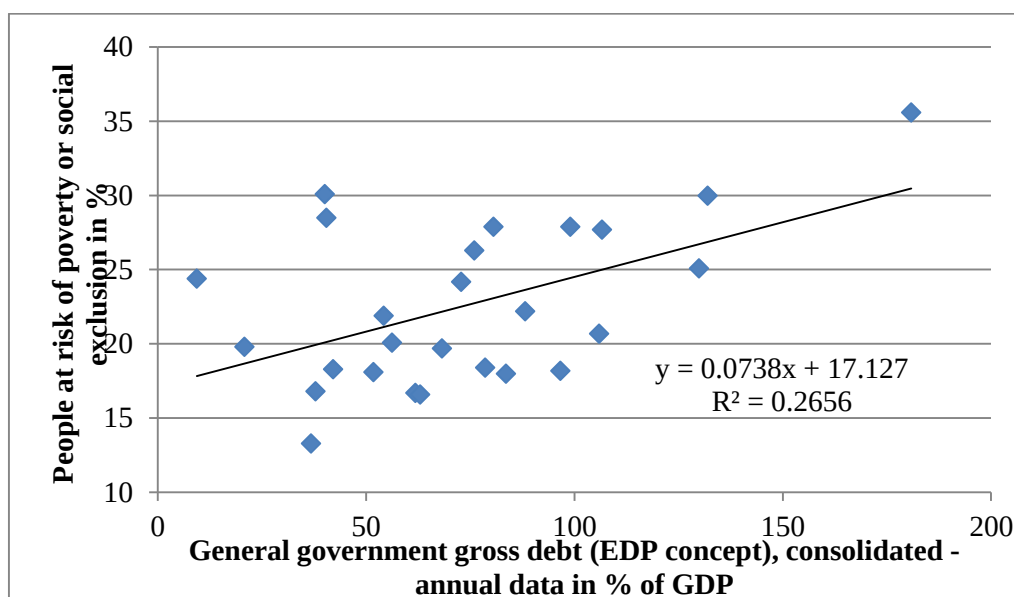
³⁶ Countries with persistent current account surpluses and positive net international investment positions such as Austria, Denmark, Germany, Luxembourg, Malta, Netherlands and Sweden. On the other hand, other countries had a current account deficit and a negative net international investment position, e.g. Cyprus, Greece, France and the UK.

³⁷ The Gini coefficient is mostly used to measure the income inequality. For the purpose of this paper, the relationship according to the fiscal side is used, e.g., public debt is linked with the indicator that describes the risk of poverty and social exclusion instead of the Gini coefficient.

There is empirical evidence that income inequality has an impact on economic growth. Adopting and implementing policies for the reduction of income inequality can support economic growth. In order to mitigate the income inequality, there is space for fiscal policies to be implemented³⁸. However, the higher the public debt, the less opportunity there is for additional expenditure from the budget to be oriented towards combatting poverty.

The results of the regression and correlation analysis are included in the scatter plot. People at risk of poverty or social exclusion versus general government gross debt (Figure 4) with equation of the regression line (statistic of Fischer test $F = 8.6776$; $p\text{-value} = 0.0071$) and corresponding coefficient of determination $R^2 = 0.2656$ give an indication of the significance of the contribution of the increase in general government gross debt to the growth of poverty and social exclusion.

Figure 4: General government debt and poverty risk or social exclusion



Source: Eurostat (online data), own processing

Even though income inequality and social exclusion are broadly recognized as unfavourable and undesirable, they still remain the main challenges for the near and long-term future.

³⁸ Currently, research, academia and decision-making bodies discuss the possibility of reducing inequality using fiscal policy as a supportive tool for lowering income inequality for the most vulnerable groups of people by offering them a certain allowance and by creating conditions for equal opportunity in terms of equal access to education and medical care and by socially including these most vulnerable groups.

CONCLUSION

Although the European integration from the beginning was a very successful project, since the beginning of the global financial crisis, some of the EU member countries are facing a competitiveness gap, losing momentum in the real income convergence process and experiencing a low level of productivity growth and growing income inequality.

The persistent lack of productivity growth, but in particular, the declining level of total factor productivity has led to the unprecedented growth of large external imbalances in EU area.

Based on the data analysis, using the real effective exchange rate (REER) and labour cost (UCL), has had an impact on price competitiveness. Within the EU member countries, there are big differentials in relation to the component of ULC. Those countries that have higher real wages than productivity growth, have been less competitive in comparison to those countries that have higher productivity than real wages growth. Even though some, mainly highly-indebted countries, are adopting policies for the reduction of ULC to enhance competitiveness and to lower external imbalances, this should however be strongly supported by growing total factor productivity.

Despite the fact that critical measures have been adopted and implemented on the way towards reducing external and internal imbalances, a lot of work remains to be done. To increase competitiveness, comprehensive structural reforms should be implemented, both on the product market and in the labour market. However, the critical players here are national authorities.

Since the problem of income inequality spreads globally, a more thorough and comprehensive approach to this topic is critical. In the presented paper, relations between income inequality and economic growth depending on equal opportunity have not been presented. The former is related to the current levels of inequality of opportunity in relation to intergenerational mobility. Further research should be called to answer the many open questions, including how to create equal access to higher quality education, how to remove labour market obstacles and how research, development and innovation could positively influence the quality of opportunity.

Furthermore, currently the civilization is entering a critical stage of development. The fourth industrial revolution, digitalization, robotization, including artificial intelligence will have unpredictable impacts on the future development of income inequality. In this regard, there is big space for further research in relation to technological evolution and its impact on the real

income convergence process, on productivity growth and finally on income inequality and equal opportunities for all in the future.

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INDUSTRY 4.0 – EMPLOYEES INTEGRATION INTO DIGITIZED PRODUCTION PROCESSES

Felicita Chromjakova

Abstract

Industry 4.0 concept enables radical improve the productivity and efficiency of complexly production value chains, enable to focus on the creative and strategic oriented business activities. Positive effects we can see by workers – this concept enable to organize flexible work in production processes and contributes to higher satisfaction of employees at all enterprises levels through the better work-life balance.

Purpose: Formulation the definition of digital literacy as follows: digital literacy which is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.

Design/methodology/approach: Testing and verifying of given scientific hypothesis connected with the production digitization concept and production labour.

Findings: Important result is the verification of given hypothesis, contribution of optimal given balance between selected production process parameters and attributes of digitized production according to the labour.

Research/practical implications: Computer-driven digital management processes monitor physical transaction processes, creating the original computer copy of the 3D virtual reality process, which is the basis for designing and managing production systems. Physical objects thus become digital objects transformed in the form of digital data into horizontal and vertical information networks and in the form of virtually shared data that serve as a basis for real-time added value creation. The result is more flexible processes, optimal real-time production schedule, effective multivariate production.

Originality/value: It is an original paper based on latest research activities during 2016-2018

Keywords: process, digitization, hypothesis, employee, production, technology.

JEL Codes: L60, L 35.

INTRODUCTION

Modern production concepts dispose with a strong potential to change the way factories work. It may be too much to say that it is another industrial revolution. Traditional production concepts were oriented on high productivity, low cost and acceptable customer time. Most of new digital technologies have been brewing for some time. A lot of manufacturing companies have great potential for improvement in the area of “human-machine interfaces” and in man-man interfaces according effective digital technologies utilization. We surveyed more than 300 manufacturing companies during 2015-2016; only 25% of manufacturers consider themselves ready for Industry 4.0. The coming of steam power and the rise of robotics resulted in the outright replacement of 60 to 75 percent of industrial equipment. All industrial companies have a lot of experiences with various models of people management in traditional production processes, but in strong connection with e-technologies we should find new concepts, based on the right compatibility of e- technologies and people (Chromjakova, 2016). Of particular importance, there is the understanding of new type of process communication: e-technology cooperates with staff, staff should understand on right way the abilities and potentials of new technology.

Crucial point of today’s industrial company automation and digitization is given through the employee’s ability right to understand the important pillars of INDUSTRY 4.0 connected technologies. Mutual compatibility between man and digitized technology, effective cooperation according to the ability of employees to be prepare communicate with newest digitized production technologies. Skills and abilities of employees influence radical the productivity, performance, value added of production flows.

Companies can be successful in any industry, but only if they use their intellectual capital to find sources of competitive advantage. Process innovation in production and administration processes must be reflected in human performance systems, processes and completely production technology. Implementation of INDUSTRY 4.0 concept strong depends from the right understanding of people, integrated in this new change processes in 4th industrial revolution. Business Performance can be defined as an effective combination of managerial, technical and information factors, of which mutual combination leads to the real possibility of flexible and optimal realized production flows oriented on the customer order satisfaction in real time (Atan, 2017). Core goal of Business Performance there is to fulfil the operative goals, concentrated in the production flow and their value added. Our key aim there is the adequate

performance management, concentrated on the technical site (input data structure and quality), organizational site (structure and organization of production processes), information site (e-processes, structure and level of automation and digitized technologies) (Casalino, 2018).

LITERATURE REVIEW

Industry 4.0 concept enables radical improve the productivity and efficiency of complexly production value chains, enable to focus on the creative and strategic oriented business activities (Ozdemir, 2018). Positive effects we can see by workers – this concept enable to organize flexible work in production processes and contributes to higher satisfaction of employees at all enterprises levels through the better work-life balance. Generated potential savings for companies are radical, special in according to the investment and return of investment in the IT technologies, customer relationships, production process planning and scheduling and flexible production outputs effects (Hecklau, 2016). An important role play here the phenomena of “collaborative factory” enables to realize the jobs and process operations in virtual reality with use of mobile workplaces (Pakdamanian, 2016). Each master, supervisor, team leader or shop floor employee can use in their work the assistance of multimodal, user-friendly interfaces through the complexly oriented computerized and digitized technologies, used in Industry 4.0. An important role play here the phenomena of “collaborative factory” enables to realize the jobs and process operations in virtual reality with use of mobile workplaces (He, 2018). Each master, supervisor, team leader or shop floor employee can use in their work the assistance of multimodal, user-friendly interfaces through the complexly oriented computerized and digitized technologies, used in Industry 4.0. Industry 4.0 concept integrates the three key lines: internet of things, internet of services and internet of people – networks objects, people and systems (Hirsch, 2014).

Future research directions include the measurement of organizational culture in firms that have implemented lean processes. This would be a step toward looking at the effect that the different quadrants in the Competing Values Framework have on various elements of lean efforts. This would take a significant amount of work, because the manufacturing industry, the leader in implementing and sustaining lean processes, may have institutionalized particular organizational cultures. It would be an interesting step forward in the understanding of how lean processes are operationalized across different firms and industries. However, there are multiple ways to examine culture; the authors believe this method allows the capture of the

entire spectrum (Pakdil, Leonard, 2015).

ANALYSIS AND RESEARCH FINDINGS

Today's industrial enterprises are confronted by implementation of INDUSTRY 4.0 concept with basic problem – stabilised manufacturing and supporting processes. In the world of traditional industrial firms, there is another revolution. It is characterized by the transition from sophisticated factories to smart factories, complex manufacturing processes and systems supporting digital and virtual process and production technologies (Karl, 2018). Computer-driven digital management processes monitor physical transaction processes, creating the original computer copy of the 3D virtual reality process, which is the basis for designing and managing production systems (Palazzeschi, 2018). Physical objects thus become digital objects transformed in the form of digital data into horizontal and vertical information networks and in the form of virtually shared data that serve as a basis for real-time added value creation. The result is more flexible processes, optimal real-time production schedule, effective multivariate production.

In according to identification of complexly needs according employees integration into digitized production processes scientific team used qualitative and quantitative methods of research analysis (Chi-quadrat, explanatory study).

Key interests of scientific research were derivatives from the individual interview, realized during 2016-2017 in 300 industrial companies in Czech and Slovak Republic. Interest groups were production directors, masters, supervisor, team leaders, machine labor. Formulation of core research hypothesis for the identification of production process digital literacy by employment:

H1 Interoperability - cyber-physical systems link each other's human activities to compact, intelligent processes that communicate with each other on a digital basis

H2 Virtualization - by sharing virtual copies of production systems, online digital sensors create data that can be used in virtual 3D planning and control simulation models, while providing data for 3D product prints in real-world production

H3 Decentralization of process management - the ability of cyber-physical systems to make real-time decision making in the form of a digital manager

H4 Real-time data availability of the digital manager - the definition of services claimed by manufacturing processes and systems provides full electronic support for on-line production process management

H5 Modularity - Flexible adaptation of smart plants and smart manufacturing technologies to change production requirements, effective change management with support of digital manager

The questionnaire survey also highlighted the fact that the automation and digitization of production and supporting production processes is also important in setting up a process of digitization of production processes, where the knowledge and experience of employees of selected workplaces can be used with a high efficiency to continually increase the performance of production processes. Here is a demonstrably high assumption that the production technology is eligible for the subsequent digitization of processes in connection with the digital setting of the worker's position. It also has the potential to create new qualifications for workers in digitized production.

Next will be tested the following through digitized technologies managed tasks (results achieved by individual interview in 300 industrial companies, the results in the table are summarisation of important answers and further scientific deductions):

Tab.2 - Core tasks realized by employment in digitized technologies

Specification of production order	Setting up and digitizing of identification codes for product parts and relevant types of production operations Creating digital bindings of the "product - manufacturing process" Providing comprehensive digital inputs and outputs
Production portfolio management by production cell	Identification, setting up and standardization of the collaborative platform for the digitally controlled manufacturing process Flexible simulation of the production process Database of availability and performance parameters of production technologies
Production planning and scheduling	Setting up and standardizing the platform and procedures for digital decision making Personalization / Setting up the e-carrier of digital links Install and manage cloud storage of production data

Flexible job organization	Multi-level, digitally-organized production scheduling in real time Organization and administration of data analytics in real time Creating online error identification and fault elimination
Production process realization	Online Workplace Performance Monitoring Scheme Optimizing material and information flows Digital management of production processes
Customer satisfaction	Setting up a digital protocol for testing the quality of the manufactured product, the production process being carried out Creation of digitally controlled process improvement systems

Source: author

Research results can be summarized follows:

H1

Under “human activities” we understand all activities connected with preparation of production plan – realization of production order by workplace – expedition of order to customer with strong cooperation with computer aided production system. “Human” should know the rules and standards of communication with computers and digitized machines (Caggiano, 2018). An industrial company has clearly identified processes that it wants to integrate within Industry 4.0 in according to the interoperability of employees integrated in the digitized production technologies. The verification of this hypothesis has confirmed that most industrial companies are uniquely focused on the identification of key horizontal processes, oriented directly to the design and management of production processes, and other supporting processes on the vertical line only marginally. The key processes digital literacy abilities and competencies necessary to implement the Industry 4.0 concept were marked:

- Integration of production planning and management - 26% of companies
- Digitization and automation of manufacturing processes - 18% of companies
- Quality management online in manufacturing processes - 14% of companies
- Flexible real-time production organization - 12% of companies
- Adequate personification of production processes and on-line organized communication and management of production processes - 11% of companies
- Optimal setting of supply chains linked to manufacturing processes - 11% of companies

- Setting up maintenance systems and on-line monitoring of machines and equipment
- 10% of companies
- On-line reception and production organization based on customer order specification
- 10% of companies

H2

An industrial company has virtualized production and supporting processes, enabling to the staff simply electronically managed designing, planning and organization of production tasks on flexible production basis. An absolute prerequisite for implementing the Industry 4.0 concept is the company's ability to have stabilized key manufacturing processes. Forty percent of companies in the automotive industry spoke out of this hypothesis, for the engineering industry 82% of the companies confirmed the validity of the hypothesis, 92% were declared by subcontractors for automotive companies and 56% were for the other industry category. In summary, the automotive sector has the greatest need to stabilize key processes.

In according to the identification of important virtualized knowledges and skills there were identified following:

- mechatronics digital literacy - primarily, production technology focuses on minimizing downtime and cost savings in the presence of flexible, modular and casting tools that are able to quickly change ideally while running technology and quickly adapt to new manufacturing settings. This also means that these process elements will claim minimal interference within a defined industrial engineering when integrating into existing production processes. We use the "Plug-and-Play Paradigma" principle for this installation. Because the sub-production modules are heavily dependent on each other and vary greatly, there must be a mechanism to automatically identify, identify and evaluate the typology of the production system.
- provision of modular procurement infrastructure in conjunction with the possibility of mutually combining selected production modules universally and with minimum configuration costs, there must be adequate procurement infrastructure within a given system architecture that takes the appropriate functionality in procurement processes and management of procurement of production modules. These include energy procurement, data routing and comprehensive security management (security means the safety of used and transferred production dates between workplaces, suppliers and customers). The procurement

infrastructure itself must be modular in order to have the required flexibility of production facilities and not just the source of process conflicts

- skills with designing of individualized mass production - Production technology is able to operate economically even with lower production batches. The architecture of the digital process scheme must assume a solution that makes it possible to uniquely identify manufactured products and then optimally link them in the production process. The solution must enable the production modules to individually structure and process the assigned production parameters. At the same time, it is necessary to maximize product and varied varieties - the processes integrated in the production module are assembled so that they can be realized through specific parameters in the widest possible variety
- internal and external network connectivity procedures possibilities and their service ability - the existence of a fast IT connection allowing transparent viewing of ongoing production processes, identification of error messages, subsequent activation of functions oriented primarily to the elimination of errors, thanks to these functionalities can be optimized in real time. The intersection information point must take the integration function and all relevant information and setting parameters directly from the manufacturing device, which then logically configures the standardized schema. At the same time, this intersection declares the inter contenance of the production facilities, their parameters and functionalities. The architecture of the manufacturing system assumes the flexible integration of IT system for planning, control and optimization of production facilities through the modular setting of parameters and system elements. Newly developed IT systems must allow for a relatively quick and cheap integration of intersections and consequently a seamless modular functionality of all production facilities integrated in the production technology.
- the goal of system architecture is the economic production of individual products under the conditions of mass production. The manufactured product is the starting point for the concept of manufacturing processes. Complexity and product variability define the number and layout of production modules as part of the production process.
- the product specification is implemented with a view to product digitization (Product-ID), which allows direct connection to digitization of production processes and active control of production processes. In this context, the following specifications are included:
 - Electromechanical specification - a mechanism for loading and describing a digital product

- Information and technical specifications - creation of digital product model

Each production module has a specific manufacturing, assembly, test or test process. Depending on the needs of the complex manufacturing process, it is possible to set individual parameters exactly. Depending on each product claiming an individually set manufacturing process, the individual manufacturing modules must be mutually compatible, relatively adaptable and cost-effective in terms of optimal interconnection.

H3

The goals for decentralisation of process model were verified through the qualitative and quantitative research as follows:

- create a comprehensive digital process map and digital management
- clear and functional coordination of the production plan according to flexible production rules in conjunction with available production capacities and supporting production processes (production planning, logistics, quality, maintenance)
- defined on-line prioritization of operations and tasks in connection with optimal sequential planning and implementation of "just in sequence optimization" manufacturing orders
- marked physical objects (technologies, machinery, tools, and tools) have their item in a digital manager who schedules them for production operations and controls according to their assigned ID
- cooperative scheduling and organization of production in the triangle "customer - producer - supplier" works optimally through the web interface, this interface actively and reliably utilizes the created interactive environment and data warehouse
- an adequate process model is set to optimize the planning process, organization and production management by using large data warehouse and cloud computing to ensure customer satisfaction in real time (delivery of production order by given time schedule)
- determined on-line optimal combination of supplier deliveries following on-line order / order specification from the customer, including current logistics delivery costs
- continuously improving customer relationship and enhancing customer intelligence through programmable customer service centers with the intention of better programming of production capacities and their more efficient use in real time

H4

Real data time availability is based on the successful implementation of digitized technologies in the production process environment. The definition can be considered as key: "E-production is an Internet application in manufacturing. E-production is not just automation of production ("digital production") but an effective link between automation and Internet technologies (Hwaiyu, 2004). The concept of slim production in the link to agile production and constraint theory understands the implementation of e-production as a transformation of mass production into a group of flexible and efficient manufacturing processes. The goal of lean manufacturing is to produce only what the customer requires and at the same time minimal production costs. Restriction theory requires optimizing material and information flows while minimizing bottlenecks in production. Both of these models are entirely dependent on the ability to adequately anticipate future production requirements and the setting of an optimal "pull" system, which assumes:

- implementation of the Manufacturing Execution Software (MES) in order to coordinate production scheduling and scheduling, set process quality and manufactured products, deploy SCADA / HMI systems for data capture and analysis in functional machine-to-person interface with respect to productivity of production technologies, management of maintenance and warehouse management
 - adequate interconnection of the MES system with the ERP system (Enterprise Resource Planning), which brings to the system the organization and control of the flow of the source requirements in the production process, which subsequently interconnects with the parameters of the supply and customer chain in the form of on-line Internet communication.
- Implementing this infrastructure for building e-production brings many positive effects: 25-60% material stock reduction, 30-45% reduction in cycle times, 17-55% WIP inventory reduction, 35-55% reduction in administrative preparation of the planning process and production control (Hwaiyu, 2004). The indisputable fact of e-production is computer-aided production planning and organization (CAD, CAM, CAPP), especially if we work with a huge amount of production data and we strive to meet flexible requirements according to the daily forecast. As can be seen, linking data management, virtual reality and interfacing between simulation and customer demand is a prerequisite for this phase.

H5

Modularity – flexibility of production system is strong determined through the relevant parameters, oriented on the modularity – flexibility mapping:

- On-line frequency of planning and re-planning of production requirements (shorter product life cycles and correspondingly desirable reduction of production lead times)
- the time-consuming process of digital planning and scheduling (the need for a faster delivery to the customer)
- Quality and reliability of scheduling and scheduling of production processes (reducing the cost of supporting production processes)
- Flexibility of planning in the digital environment by better allocation and setting of competences for process and activity process holders (emphasis is placed on optimizing alternative production costs and utilization of technologically and digitally managed production capacities)
- the complexity of the scheduling and scheduling process (essential condition is the optimal on-line communication in the chain "customer - production - supplier")

For digital planning purposes, it is appropriate to have a built-in digitized infrastructure that determines the downstream effects of digital production technologies.

CONCLUSION

A very important trend in the area of digital literacy of production employs is the digital interconnection of ERP systems and PPS systems via MES systems (Trentesaux, 2009). With this integration, complex manufacturing processes can be optimally digitized, based on well-defined analysis, organization, management and production data management. This integration provides the basis for further digitization of manufacturing processes, followed by the reduction of manual operations and processes throughout the production-administrative production chain. Presented testing and verification of scientific hypothesis gone very important results for further research activities, special according to the integration of production employees into production process design activities, next to the internal and external connectivity oriented on the complexly production chains. In next years it will be very important to give the attention on the employees knowledge and skills with implemented digitized technologies and used metrics for quantification of production process effects.

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PREFERENCES OF REWARD-BASED CROWDFUNDING CAMPAIGN INVESTORS IN CZECH REPUBLIC

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Abstract

The aim of this article, based on empirical research, is to find the main motivation of investors when they invest money through crowdfunding. This article is also trying to explain the importance and position of rewards in reward-based model of crowdfunding campaigns. Research was done through qualitative analysis of questionnaires and the result brought deeper understanding about investor's preferences and decision-making. This paper revealed that amount of money invested is not driven by perceived value of reward, which could imply that people invest for other reason than receiving reward, possibly from solidarity.

Purpose

Goal of this paper is to investigate the motivation and behaviour of investors when facing the decision whether to invest or not and how much money they are willing to invest. This paper is also investigating the importance and position of rewards in reward-based model of crowdfunding campaigns.

Methodology

In order to verify the hypothesis, it is necessary to provide data. Data collecting was done via online questionnaires. The first two hypotheses will be tested by mutual contingency and, in case dependence is found, its strength will be tested using the Cramer coefficient of contingency. The contingency of qualitative characters can be determined by calculation of chi-square, also called independence test. The chi-square can be calculated using the following formula:

$$X^2 = \sum_{k=1}^r \sum_{j=1}^s \frac{(n_{jk} - o_{jk})^2}{o_{jk}}$$

N _{jk}	real frequency
O _{jk}	expected frequency
j....	column
k....	row
r....	number of rows
s....	number of columns

The third hypothesis will be tested by linear regression, a mathematical-statistical method showing the dependence between two signs. The principle is to align the set of points with a line so that the sum of the second powers of the point's deviations from the line is as small as possible. The x-axis is marked with constant data, while y-axis has the coordinates of the variable. The line represents a certain trend of development.

Findings

Throughout this paper we discovered several findings, it is perceived that the author of the campaign is the key in success of the project, or rather sympathies towards the author, but we did not find the statistical evidence for this, so perhaps it does not matter who is behind the project as long as the idea is interesting for contributors. Further it was found that contributor's behaviour is influenced by rewards, but the perceived value is not as important.

Practical implications

The practical implications arising from this paper and its findings are mainly for the authors of reward based crowd funding campaigns. This paper might not tell the authors what to focus on, but rather what not to focus on or in other words what is not important to think about or what to avoid.

Keywords: Crowdfunding, reward based, alternative financing, start-up, online platform.

JEL Classification: L13, D62, G24.

INTRODUCTION

Crowdfunding is part of the so-called shared economy, which has been growing steadily in recent years. The first crowdfunding platforms originated in the 1990s in the US and were used primarily to raise money for creative projects in music or film industry. Crowdfunding took off with the expansion of the Internet. The digital age allows users around the world to participate in the funding of projects. These changes create new tools that introduce new forms of entrepreneurship, and it is necessary to look for suitable resources for their funding (Rifkin, 2010, Chui et al., 2012, Girouard, 2013).

Crowdfunding has become one of the most popular ways of investing primarily in private projects. Crowdfunding is mostly used to raise money for projects that are not of interest to banking and non-banking institutions. The popularity of crowdfunding projects in the Czech Republic is growing every year as indicated by the increasing willingness to contribute to them.

The most successful projects earn over a million crowns. People are getting used to this type of project funding. Successful projects are rapidly spreading among people, and those people are then starting their own projects. In cases where people do not want to or cannot ask the bank for money, they choose crowdfunding portals and turn to the public. They offer contributors various rewards for their support.

LITERATURE REVIEW

Crowdfunding is a way of raising funds for various purposes, projects, business plans, from the general public, usually in small amounts and in a relatively short period of time. (Černý, 2015)

Schwienbacher & Larralde (2010) are imagining under the term crowdfunding an open call in which money can be obtained, or provided in the form of a gift or in exchange for a reward or a right. They also add that literature dealing with the topic of crowdfunding is almost non-existent, therefore the precise definition is rather unclear. Those facts show, that this area should be further examined.

Historically, first models that appeared were non-investment (so-called donor model and reward model) and later emerged investment models (loan model, share model, and fee model) were created. Non-investment models are more suitable for one-time projects than for continuous business purposes. They can help entrepreneurs to test the potential of a business idea or to promote a new product. However, if company or idea has specific features and some minimal public support, crowdfunding investment models can help to get the needed equity for further growth. (Černý, 2015)

Crowdfunding presents several ways to fund projects. Each type of crowdfunding model is suitable for different projects, and project authors have their own specific requirements. Individual types of crowdfunding models differ from one another in terms of what the contributor receives from the author of the project.

Crowdfunding Based on Rewards

While the most basic crowdfunding model is donation-based crowdfunding, reward-based crowdfunding is the type of funding with the highest number of platforms in Europe. (Paulet & Relano, 2017)

According to Guan (2016), reward-based crowdfunding is the most common type of online crowdfunding, which is used worldwide as a tool for collecting contributions to support projects. He also mentions some known crowdfunding platforms such as Kickstarter or Indiegogo. Anderson (2015) also thinks that the reward-based crowdfunding is the most spread and used model of crowdfunding.

Paulet & Relano (2017) claim that reward-based crowdfunding is not only for creative individuals, but it is also excellent for novice entrepreneurs, high-tech companies, small and medium-sized enterprises and for national corporations. The motivation to use crowdfunding can be higher product sales, greater customer engagement, supporting customer loyalty, or deeper partnership consolidation.

Reward-based crowdfunding is currently very popular all around the globe. The project authors receive funding for their projects in exchange for the reward offered. According to Šoltés & Štofa (2016), this reward can be mainly in the form of a discount on products (pre-order), as contributors in case of a successful campaign receive products earlier, but often at a price higher than the final selling price.

In standard crowdfunding projects, more than one type of reward is usually offered, the number of rewards is ranging from 3 to 7. The positive aspect of donor crowdfunding is that the borrower does not have to repay the money received or pay the debt in the form of a share in the company.

The most frequent rewards include sending a thank-you letter, sending a final product, or having a free entrance to a social event related to the project, etc. (Paul Belleflamme, Nessrine Omrani & Martin Peitz, 2015) The contributor's involvement in process of creating is also frequent, especially in the film industry, for example, a minor acting role (De Bruysere et al., 2012). Lin, Lee & Chang (2016) state that it is appropriate to provide a sale of a product that is supported by the contributor.

With reward-based crowdfunding the author of the project offers various rewards at different price ranges, creating a sort of "menu" from which the contributor chooses. If a contributor chooses to bid, he pays a set "price" and gets the reward he "bought", but primarily funds the project. Lin, Lee & Chang (2016) state that rewards play such a pivotal role that just by the set of them it is possible to determine whether the project will be successful or not. Rewards are considered by the authors to be the most important. They can have not only positive but also negative effects, the reward can even discourage the contributors from investing into the project

at all. The success of the project is influenced by its description, timing, social aspects of the project and so on. However, the authors claim that the reward is directly related to the success of the project and highlight this aspect above all.

Marketing studies and psychology claim that the more items are on the "menu", the more difficult it is for the buyer to choose the one that suits him the most. Oversized "menu" is demotivating for the buyer and can discourage him from buying at all because he cannot decide which item would satisfy him the most. In the years 2014-2015, Kickstarter projects had an average of 11 rewards, at least 2, and a maximum of 81 rewards. The authors also noticed a correlation between the success of a project and the number of rewards the project offered, the range of rewards set in a way - the more rewards the better. Results of the statistical analysis suggest that projects with more rewards are more successful than projects that offer fewer rewards. These results contradict the hypothesis of the negative effect of a large number of rewards offered.

Another good example is choice of appropriate rewards policy, such as a special or limited offer of exclusive rewards for the first few contributors. Limited offer is an important aspect of many successful projects. Projects with a limited offer of rewards are more successful in the way that they collect the desired amount about 2 to 2.5 times faster. This is a proven marketing move that encourages the desire to own a precious reward. This emotional response by the contributor is often impulsive and irrational - therefore rewards are sold out faster. Contributors can see how many rewards are still available and perceive "buying" as an urgent need. The issue of limited offers is setting prices because wider range means slower sales. Kunz et al. (2016) claim that, in the case of an attractive quantitatively limited reward, there is a possibility of them being sold out shortly after the start of the campaign. Other rewards become less interesting to the crowd. This makes the whole project less attractive for other potential sponsors.

Timing is also crucial. If the author adds another reward during the run of the project, it can attract other contributors. Continuous updates dynamize the project and are important to keep in touch with the crowd and expand the interest. Very important is also communicating, answering questions and reacting to suggestions and comments. The chance of the project's success is increased if it is supported by prominent or famous personalities who make the campaign more visible and increase confidence in successful completion. (Kunz et al., 2016) Interestingly, although reward-based crowdfunding in the Czech Republic and Slovakia is developing very fast, it is popular only among part of the population, especially among

innovators and socially minded people. This difference is particularly noticeable in comparison with the United States, where this form of funding is widespread. (Šoltés & Štofa, 2016).

Contributors and Their Motivation

Contributors are the driving force of the whole idea of crowdfunding. They are the ones who support a selected project and send a certain amount of money to that project. Contributors are an integral part of each project because they are the target group of all authors of crowdfunding projects. They are the ones who decide whether the project will be successful or if it is going to fail.

Research that focused on crowdfunding campaigns implies that in order for sponsors to be satisfied, it has a great importance delivering of rewards on time and fulfilling specification of rewards. Except these factors, social responsibility, business activity and benefits of the projects are also important. (Zheing, Xu, Wang, Chen, 2017)

Each contributor is motivated by different incentive. According to Damus (2014), among those are responsibility, guilt, reflection, subjective beliefs, fun, empathy and idealism. A contributor who decides to be a part of the project desires for the project to be successful. Empathise with the author and wishes to do something useful for the project. At the same time, the contributor perceives the project as entertainment and adrenaline. Often contributors try to persuade friends and others around them to contribute to the project, too. They have a certain form of idealism and believe that ideas and projects should be supported. If the contributors give too little, they may experience guilt in case of failure of the supported project, feeling like they could have done more.

Research in the expert article on crowdfunding motivation by Gerber& Huie (2013) suggests that investors are motivated to invest money mainly because of empathy for the project, in the social context that some of these investors want to feel that they belong somewhere. Another part of the investors then feel the need to help entrepreneurs achieve the goals of their projects. These motivational factors are associated with any of the above-mentioned crowdfunding models, but they most common for the donation model.

Another strong motivation of investors to fund projects is their desire to own the resulting product or to receive some tangible reward. In these cases, investors act as promoters to support the project. (Gerber & Hui, 2013)

On the contrary, the deterrent is the investor's distrust of the way in which his money is subsequently used by the author of the project. It is a fear that money will not be used to meet the goals of their project, but only for their personal enrichment. This case is partially avoided by the "all or nothing" model when the businessman receives money only when his financial goals are met, thus avoiding fraud involving the use of non-project money. (Gerber & Hui, 2013)

Ryu & Kim (2016) conducted studies to divide crowdfunding investors into groups based on their motivation. These groups include angelic backers, reward hunters, avid fans, and tasteful hermits.

CROWDFUNDING IN THE CZECH REPUBLIC

Most crowdfunding sites in the Czech Republic are focused on reward-based crowdfunding. The first crowdfunding platform in the Czech Republic started its activity in 2011 under the name Fondomat. After the relocation of Fondomat from Prague to London, the project was officially closed at the beginning of 2015.

Among the most popular crowdfunding portals in our country are Hithit.cz and Startovač.cz. In 2016, via these servers, around 60 million crowns were sent by the public to people who were looking for funds for their projects. Hithit.cz in 2016 helped raise 39 million crowns, which was almost half more than the previous year. These 39 million were split between 225 projects. In 2017, a 34% growth was registered, making it 52 million crowns that were raised in total that year. Thanks to this success, the platform has almost doubled the community of contributors.

Tab. 1: The most successful project on Hithit.com

	Server	Number of investors	Requested amount	Collected	Plan fulfilled
Fotshop pro Sportovci Hrdinům	Hithit	1 333	50 000 CZK	359 252 CZK	718 %
Štokrle/záchodová stolička boří střevní tabu (2017)	Hithit	333	75 000 CZK	465 378 CZK	620 %
SKINNERS – botky do kapsy	Hithit	503	90 000 CZK	542 051 CZK	602 %
The Žurnál – diář prehrdinouv na každý deň	Hithit	475	50 380 CZK	262 958 CZK	521 %
Řekněte s Frusackem sbohem plastovým sáčkům	Hithit	1 350	150 000 CZK	637 520 CZK	427 %

Source: Hithit.com

The second largest portal Startovač.cz raised 18,4 million crowns, which was decreasing in-between years by 3%. This was due to a small amount of exceptionally successful campaigns. In 2017, approximately 20 million crowns were raised, almost 10% growth compared to 2016.

Tab. 2: The most successful project on Startovač.cz

	Server	Number of investors	Requested amount	Collected	Plan fulfilled
Anarcho-kapitalismus	Startovač	962	65 536 CZK	656 562 CZK	1 001 %
Re-play staví nové studio!	Startovač	1 193	200 000 CZK	1 173 650 CZK	586 %
Trabantem napříč Tichomořím	Startovač	3 860	500 000 CZK	2 814 415 CZK	562 %
Vybudování Indian studia	Startovač	209	20 000 CZK	110 407 CZK	552 %
Deskofobie (druhá serie)	Startovač	108	10 000 CZK	52 519 CZK	525 %

Source: startovac.cz

Apart from these large and well-known crowdfunding portals in the Czech Republic, smaller servers are emerging in recent years. In the year 2017, Nakopni.me launched almost 50 projects. Among the well-known portals is also Penězdvoj.cz, which in 2015 became the first Czech crowdfunding portal allowing multiple types of funding. This portal allows you to offer acknowledgment, reward or share to your contributors.

The most successful campaigns within the Hithit portal, The most successful campaigns within the Startovač portal

OBJECTIVES AND METHODS OF RESEARCH

The aim of this research was to find out which factors influence the amount of the contribution and thus the success of the whole project of crowdfunding in the Czech Republic. The aim was to verify three hypotheses for two groups of respondents, potential investors, and already experienced investors.

H1: The key motivator is not sympathy for the author. By the key motivator is meant what the most strongly influences the amount of money they contribute.

H2: The amount of the contribution is not affected by the project's intent

H3: The amount of the contribution does not depend on the perceived value of the reward. The perceived value of the reward is represented by the coefficient according to the estimated costs

Nothing	0
Referred as Sponsor	1
Acknowledgement	2
Small Promotional Item	3
Product Discount	4
Counter-service	5
Receiving First Result	6

DATA

The aim of the questionnaire survey was to provide data from respondents on the factors that influence them when deciding on investing in the crowdfunding campaign. The online questionnaire was in the form of Google Forms, it was distributed through Facebook, in a discussion forum on Vinted.cz, and by emails that were targeted directly at investors who are listed in the Hall of Fame on the Startovač.cz platform as the most frequent contributors.

The questionnaire was divided into three parts. The first part was devoted to all respondents and its aim was to provide basic demographic data about respondents, such as age or gender. In total, 147 questionnaires were received from individuals, of which 101 were women (69%) and 46 were men (31%). The age distribution of the respondents was as follows. Most respondents were 18-25 years old, 83 (57%), followed by 41 (28%) people aged 26-40 years. Less represented were groups of respondents aged 40-60 years 21 (14%) and people over 61 years 2 (1%). In addition, the questionnaire differed and divided the respondents into two groups, the questions were quite similar, but they distinguished whether respondents were people who first met crowdfunding (potential investors), or they already have met with a campaign (investors) in the past. The second part of the questionnaire focuses on investors represented by 48 (33%) respondents. The third part was devoted to potential investors, there were more of them, in total 99 (67%). All demographic data are summarized in Table 3.

Tab. 3: Demographic information on respondents

Characteristic	Answer	Frequency	Percentage
Sex	Female	101	69%
	Male	46	31%
Age	18-25 years	83	57%
	26-40 years	41	28%
	40-60 years	21	14%
	61 and older	2	1%
Education	University	69	47%
	Secondary - maturity exam	64	44%
	Secondary	11	7%
	Primary	3	2%
Investing frequency	Regularly	7	5%
	Irregularly	15	10%
	Once	26	18%
	Not yet invested	99	67%

Source: Own processing

RESEARCH RESULTS

Results of this research will be divided the same as the survey, so first, we will examine each hypothesis separately for the investors, and then the same for potential investors. Results will be further analyzed in the next chapter.

Investors

Tab. 4: Dependency analysis – The amount of money invested and the most important motivator - Investors

Dependent	Independent	Df	p-value	H0
Amount invested	Trust	5	0,9846	Not rejected
Amount invested	Good feeling	5	0,5502	Not rejected
Amount invested	Recommendation	5	0,9846	Not rejected
Amount invested	Quality of project	5	0,5589	Not rejected
Amount invested	Reward	5	0,4113	Not rejected
Amount invested	Sympathy to author	5	0,8457	Not rejected
Amount invested	Projects intention	5	0,7205	Not rejected

Source: Own processing

Table 4 shows that the amount invested is not dependent on any of the tested motivations. The hypothesis number one has not been confirmed, and therefore we do not reject that sympathy for the author is not a key investor incentive.

Tab. 5: Dependency analysis – amount of money invested - Investors

Dependent	Independent	Df	p-value	H0
Amount invested	Your age	10	0,7714	Not rejected
Amount invested	Your sex	5	0,2042	Not rejected
Amount invested	Most important motivator	30	0,9798	Not rejected
Amount invested	Least important motivator	40	0,9554	Not rejected
Amount invested	Source of information	30	0,4078	Not rejected
Amount invested	Type of project	30	0,6873	Not rejected
Amount invested	Frequency of investing	10	0,0756	Not rejected
Amount invested	Reward	30	0,0158	Rejected

Source: Own processing

Table number two shows the dependence of the investment amount on other features, and only one dependency was discovered for investors. In order to better understand how strong the dependency is, we used the Cramer contingency coefficient.

$$K = \sqrt{\frac{X^2}{n * \min(r - 1) (s - 1)}}$$

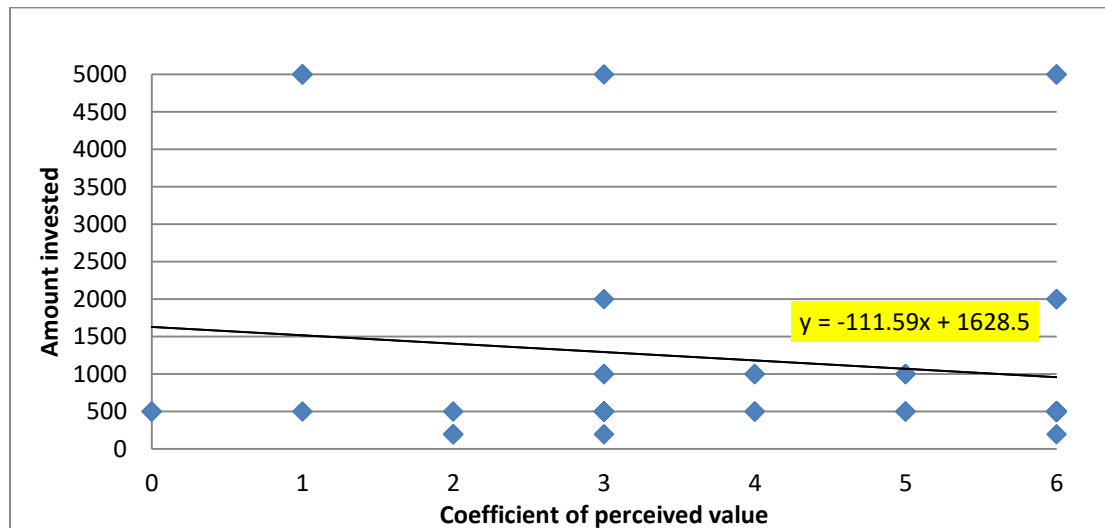
Therefore, for our particular dependence, the calculation is as follows:

$$K = \sqrt{\frac{48,95813}{48 * 5}} = 0,2176$$

The power of dependence is therefore relatively weak.

Hypothesis number two has not been confirmed, the amount of the investment is not dependent on the type of project. It depends only on the reward. This suggests that, ultimately, investors are mainly interested in the benefit of founding a campaign.

Fig. 1: Linear regression - Investors



Source: Own processing

The development of the linear regression shown in figure one shows the indirect proportion between the perceived value and the amount of money that respondents are willing to contribute. The contributors have shown themselves willing to contribute higher amounts, even on the assumption of relatively less valuable rewards. Therefore, hypothesis number three cannot be rejected

Potential Investors

Tab. 6: Dependency analysis – The amount of money invested and the most important motivator – potential investors

Dependent	Independent	Df	p-value	H0
Amount invested	Trust	6	0,2876	Not rejected
Amount invested	Good feeling	6	0,0560	Not rejected
Amount invested	Recommendation	6	0,4592	Not rejected
Amount invested	Quality of project	6	0,1318	Not rejected
Amount invested	Reward	6	0,2336	Not rejected
Amount invested	Sympathy to author	6	0,6860	Not rejected
Amount invested	Projects intention	6	0,0848	Not rejected

Source: Own processing

As with investors, the hypothesis number one was rejected, meaning not even potential investors perceive the author of the project as an important motivation in the context of the size of their contribution.

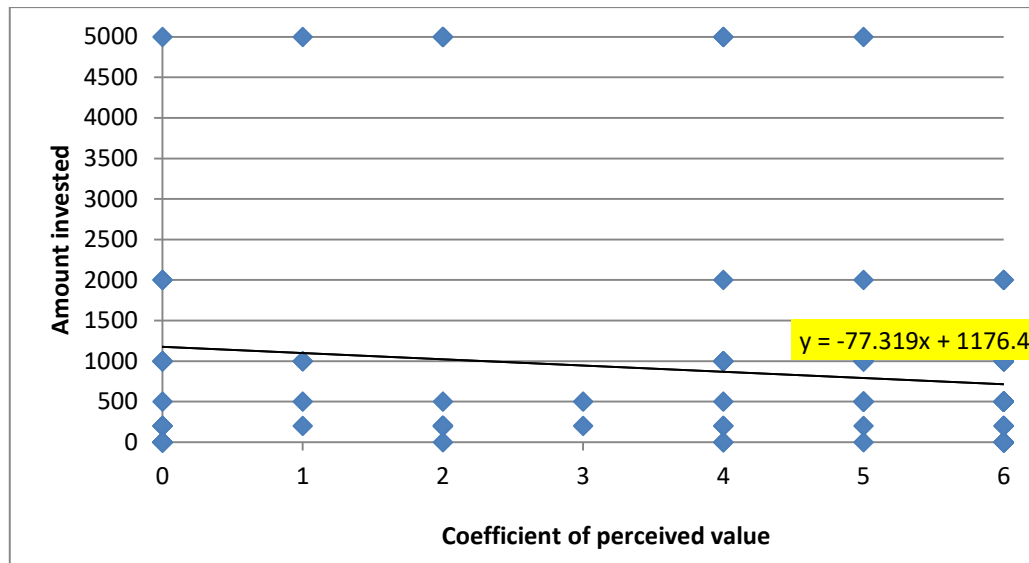
Tab. 7: Dependency analysis - amount of money invested - potential investors

Dependent	Independent	Df	p-value	H0	Cramer
Amount invested	Promotion product	6	0,1753	Not rejected	
Amount invested	Film	6	0,7098	Not rejected	
Amount invested	Games	6	0,0373	Rejected	0,1352
Amount invested	Music	6	0,4145	Not rejected	
Amount invested	Books	6	0,0568	Not rejected	
Amount invested	Most important motivator	54	8,3e-10	Rejected	0,238
Amount invested	Least important motivator	60	0,0002	Rejected	0,1793
Amount invested	Reward–Nothing	6	0,0634	Not rejected	
Amount invested	First reset	6	7,7e-5	Rejected	0,2873
Amount invested	Reward- Other	6	0,0338	Rejected	0,1378
Amount invested	Type of project- other	6	0,0001	Rejected	0,2709
Amount invested	Acknowledge	6	0,0522	Not rejected	
Amount invested	Counterservice	6	0,1597	Not rejected	
Amount invested	Discount	6	0,5964	Not rejected	
Amount invested	Social projects	6	0,2256	Not rejected	
Amount invested	Art	6	0,3043	Not rejected	
Amount invested	Mentioned as sponsor	6	0,2383	Not rejected	
Amount invested	Your age	18	0,0078	Rejected	0,1199
Amount invested	Science	3	0,0453	Rejected	0,1298
Amount invested	Your sex	6	0,0233	Rejected	0,1477
Amount invested	Project type- none	6	3,7e-10	Rejected	0,5601
Amount invested	Education	18	0,2154	Not rejected	

Source: Own processing

From the test that is shown in Table 7, it is clear that hypothesis number two can be rejected for the group of potential investors. During testing, dependencies have been discovered for some types of projects and we can say that some types of projects affect the number of contributions.

Fig. 2: Linear regression – potential investors



Source: Own processing

As with investors, the third tested hypothesis was confirmed. The development of linear regression has a negative directive, therefore we cannot establish a directly proportional relationship between the amount of the contribution and the perceived value of the reward.

Discussion

This research has revealed some interesting information about investors that can help crowdfunding campaigners to better understand the behavior of potential investors and therefore better set up their campaigns. When it came to gender, there were more women investing, in fact, they outnumbered man two to one. 85% of the investors fall into the age group of 18 to 41 years, which suggests that investing through crowdfunding portals is not limited only to young people. The largest group of investors had graduation exam or university degree. More than half of respondents invested in the crowdfunding project only once.

Research has also revealed that in reward-based crowdfunding the reward itself is important to the investors, but they do not care as much about the value of the reward. Most desired rewards were receiving first result and small promotional item. Investors were willing to contribute a higher amount, even if they were simply acknowledged or listed as co-authors.

This research gives an impulse to further exploration of potential investors as some issues have failed to be sufficiently explained. Also, new research questions have emerged as a result. Those are worth to follow up in order of better describing the decision-making and behavior of investors. One of the main questions is the key factor of motivation. If it is not the author, then

what? What is the driving force behind people's decision to invest in these projects? Why can we see the differences between investors and potential investors, should not their behavior be the same? These and other questions remain unanswered and can be explored by further research.

CONCLUSION

Reward-based crowdfunding can be used as an alternative source of funding for promising projects. Crowdfunding platforms in the Czech Republic like Startovac.cz or Hithit.com and number of their fans on social networking can attest to that.

The questionnaire survey investigating the responses of investors and potential investors shows that for both groups an interesting project intent was an important factor. Both groups of investors preferred social projects, science and technology, books and comics. Unfortunately for the authors of projects, this factor is very individual and depends on the personal preferences of each investor. The recommendation for authors of projects is to design their projects to reach the widest possible group of investors.

The author should use the reward-based system to increase the attractiveness of the project, which should include a wide range of rewards with values from tens to thousands of crowns. When compiling the reward system, individual rewards should be as original as possible. As the statistical evaluation of the data showed, the development of the linear regression has a negative directive and it is not possible to state directly the proportional relationship between the amount of the contribution and the perceived value of the reward. Investors were willing to contribute a high amount of money even if the received reward was a rather low price value. In these cases, they preferred to be acknowledged or to be listed as co-authors.

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PUBLIC-SOURCED AGRICULTURE SUBSIDIES IN THE CONDITIONS OF THE CZECH REPUBLIC AND THEIR ACCOUNTING AND TAX ASPECTS

Bohumila Svitáková, Milana Otrusinová

Abstract

The aim of the Paper is the proposal of making subsidies to agriculture in the Czech Republic more efficient in the way of accounting and tax aspects. There have been identified two research questions. First it is necessary to answer how can we make the subsidies to agriculture in the Czech Republic conditions more efficient and also what influence have the accounting and tax aspects by making the subsidies to agriculture in the Czech Republic more efficient. The targeting principle was chosen for making subsidies more efficient. This principle was applied to agriculture branch and the Czech Republic conditions, specifically to the Single Area Payment Scheme (SAPS) subsidy. The adjustment of the economic result to the turning point, so that the economic result without subsidies is equal to zero, was chosen as the main touchstone. The authors in the Paper: set the borderline for granting the SAPS subsidy, chose criteria for sorting out the SAPS subsidy receivers and proposed the formula for the SAPS subsidy recalculation, so that this subsidy should meet the new conditions of the aiming with respect to accounting and tax aspects of subsidies. Proposed methodology was successfully verified on the SAPS subsidy in the Czech Republic for the year 2016.

Keywords: Agricultural subsidies; Public sector; Single Area Payment Scheme, Accounting, Taxes.

JEL Classification: H25.

INTRODUCTION

The goal of this study is to propose the improvement of subsidies for agriculture in the Czech Republic with a focus on accounting and tax aspects. This subject is highly topical. Subsidies for agriculture are the focus of many authors of scientific articles throughout the world. The historical and contemporary development of agricultural subsidies in the USA is described by Bruckner (2016) and Graddy-Lovelace and Diamond (2017), for example. Brannstorm (2009) focus on agricultural subsidies in America with an emphasis on Brazil and South American processes. This topic has not gone unnoticed in Africa or Asia, either. Agricultural subsidies in

Africa are examined by Jayne and Rashid (2013) and Ionne and Horowitz (2016). Gautam (2015) addresses subsidies in India, Lopez and Falcis (2017) in China, Miyake (2017) in Japan, etc. In every continent and in every country subsidy policy for agriculture is given by specific characteristics of the given countries, not only the agricultural but also the economic, political, sociocultural, and other. For the Czech Republic, the most important since the entry of the Czech Republic to the European Union is the Common Agricultural Policy of the EU, which creates the main subsidy framework for agriculture in the entire EU. CAP is one of the fundamental pillars on which the EU is based. Here, too, we find a range of current scientific articles focused both on CAP (the Common Agricultural Policy of the EU), in complex fashion by Czyzewski and Smedzik-Amrozy (2017), for example, and on the individual countries. Czyzewski, Przekota, and Poczta-Wajda (2017) focused on agricultural policy and subsidies in relation to the land market in Poland. Kravčáková Vozárová (2016) discusses the redistribution of subsidies in the agricultural sector in Slovakia. Comparative analysis of support of agriculture in Serbia with other EU member states was the subject of an article by Babic, Milosevic, and Maksimovic (2015). Mary (2013) examined impacts of pillars 1 and 2 of CAP on selected farms in France. And many others. In the Czech Republic, on which this article is focused in particular, Střeček, Lososová, Zdeněk (2009); Prášilová, Severová, and Chromý (2014); Pletichová, Gebeltová (2015); Malá, Červená, and Antoušková (2014), and others address subsidies for agriculture in their research.

In order for the objective of this article to be met, it is necessary first to introduce the subsidies in the Czech Republic, detail the tax accounting aspects of subsidies with a focus on agricultural subsidies, and assess agricultural subsidies in the Czech Republic in terms of efficiency.

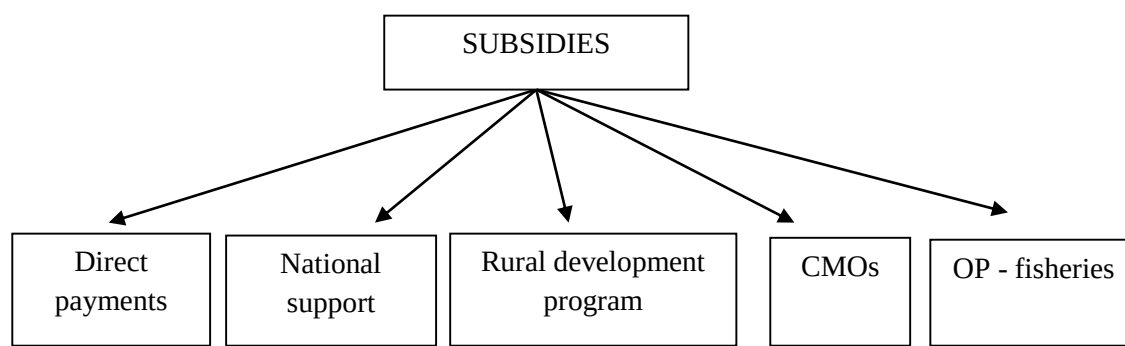
LITERATURE REVIEW

Subsidies for agriculture in the Czech Republic

Agriculture in the Czech Republic has undergone in recent decades very significant changes, particularly from the perspective of subsidy policy for agriculture. Subsidies for agriculture following the accession of the Czech Republic to the EU in the year 2004 were derived from the goals of the Common Agricultural Policy EU. The basic structure of the subsidies for agriculture in the Czech Republic in the programme period of 2014-2020 is in the fig 1.

Direct payments occupy the greatest share of disbursed funds intended for agricultural subsidies. Direct payments during this period consisted of Single Area Payment Schemes (SAPS), Payments for young farmers, Payments for farmers maintaining agricultural processes beneficial to climate and the environment (Greening), Voluntary support bound to production (VCS), and Transitional Domestic Support (PVP). As with the previous programming period of 2007-2013, national support was disbursed through support programmes of the Ministry of Agriculture and support from the Farming and Forestry Relief and Guarantee Fund (PGRLF) (Requester Manual, 2017).

Fig.1: Agricultural subsidy scheme (2014-2020)



Source: Own computation based on Ministerstvo zemědělství (2018)

The requester of the SAPS subsidy may be a natural person or juridical person cultivating agricultural land consisting of a minimum of 1 ha of farmland registered with the Land Parcel Identification System (LPIS). The recipient must also be an agricultural enterprise and active farmer (see Principles) and must uphold year-long Cross Compliance conditions. A single area payment scheme means that the farmer receives one payment instead of several payments (e.g. for grasslands, vineyards, orchards, etc.) as was the case in the previous system of support in the European Union. From the perspective of the state, the essence of the aforementioned system is the allocation of the overall financial package of direct EU payments for each hectare of authorised acreage of farmland, that is, arable land, grassland, orchards, hop fields, vineyards, and gardens. In terms of its acquisition conditions, the SAPS subsidy is very widely focused and supports in general agricultural enterprises in their activities (it is not bound to specific output such as a crop or type of livestock). (Requester Manual, 2017)

The main goal of the Program for Rural Development of the Czech Republic for the period 2014-2020 is the renewal, conservation, and improvement of the ecosystem dependent on

agriculture through namely agroenvironmental measures, as well as investment for competitiveness and innovation of agricultural enterprises, support of the entry of young people to agriculture or regional infrastructure. The program will also support diversification of economic activities in the rural environment with the objective of creating new work positions and increase economic development (Rural Development Program, 2017).

Common market organisations (CMOs) are used for selected agricultural commodities under EU legislation in EU Member States. Special production and trade conditions are established for these commodities, which are also subject to a state intervention, subsidy and import/export licensing policy from the perspective of trade with third countries, as well as trading conditions. The Operational Programme – Fisheries (OP - fisheries), is focused on fisheries. Its given the old programming period, has not recorded any significant changes, just like the Common Organisation of the Markets (Report on the Status of Agriculture, 2016).

Accounting and tax aspects of subsidies for agriculture

The aforementioned classification is based in essence on individual subsidies and subsidy categories. From the accounting perspective it is necessary to divide the agriculture subsidy entirely differently. The basic criteria for classification of subsidies is according to their purpose, namely subsidies of an operational, investment, and financial character.

Operational subsidies are primarily intended for support of everyday operation of an undertaking. Operational subsidies are calculated into operating revenues with reference to their material and temporal circumstances so that the subsidy does not give rise to profit or loss in the individual accounting periods.

Investment subsidies serve for the support of investments e.g. for purchase of machinery, property, buildings, etc. Investment subsidies can be classified as subsidies provided for acquisition of assets and subsidies for compensation of interest included in the valuation of assets. Investment subsidies reduce the valuation of long-term intangible and tangible assets and technical evaluation and are therefore are not accounted for in revenues.

Financial subsidies serve for the compensation of interest not included in the valuation of long-term assets. These subsidies are included in financial revenues, whereas accruals must be taken into account in relation to thereby hidden interest costs.

Legislation addresses subsidies in the Act on Accounting, in Decree No. 500/2002, and in the Czech Accounting Standards for Businesses.

From a tax perspective it is again essential to divide subsidies into operational, investment, and financial. Because subsidies flow from public funds, primarily from taxes, and are primarily provided in the public interest, it can be expected that they will be associated in some manner with a tax benefit for recipients. In the case of natural persons, they are exempt from tax: subsidies from the state treasury or from the treasuries of the municipality, region, state fund, or National Fund, regional councils for regional cohesiveness, support from the vintner's fund, or from an allocated grant or allowance from the state treasury that represents an expense of the state treasury according to the law governing budgetary rules, or a subsidy, grant, or allowance from European Union funds for the acquisition of tangible assets, their technical evaluation, or the recovery from the aftermath of natural disasters, with the exception of subsidies and allowances that are accounted for in income or revenues according to the law governing accounting. Unlike natural persons, operating subsidies are not exempt for juridical persons for recovery from the aftermath of natural disasters. On the contrary, regardless of their purpose, all income from support from the vintner's fund is exempt. For juridical persons, special tax provisions exempting them from taxes of investment subsidies are not necessary, as for these the tax base is derived from their accounting. In general it can be said that operational or financial subsidies are taxable and investment subsidies are exempt from tax, both for juridical persons and natural persons.

It is also necessary to outline the taxation of subsidies for agricultural enterprises that do not manage accounts but who have tax records or who claim expenses as a percentage of income. The documentation of subsidies received as part of tax records of natural persons is based on their tax assessment. As stated above, so-called investment donations are subject to income tax, but are exempt from them, whereas they reduce the initial price of the investment in question (tangible asset and their technical evaluation). Subsidies for recovery from the aftermath of natural disasters are and payments for applying the instruments of state unemployment policy are also exempt. The disadvantage of exempt income is the tax unreportability of associated expenses. Operational subsidies in agriculture are taxable income, therefore the expenses associated with them can influence the tax base from the income of the affected enterprise. In the event of claiming expenses as a percentage of income, a similar situation applies whereas

the taxed subsidies are calculated from income and the percentage of expenses are calculated from this, i.e. the actual expenses that are associated with the subsidies are not considered.

Subsidies for agriculture in relation to economic results of agricultural companies in the Czech Republic

As is clear from the development of agriculture subsidies in the Czech Republic, at present agriculture is ever more associated with maintenance of the landscape, development of rural areas, and protection of the environment. This association not only has an influence on improvement of the standard of living of rural residents and the reduction of the impacts of urbanization, but has also contributed to the importance of subsidies in the agricultural sector, not only for large undertakings but particularly for medium to large sized enterprises. Prášilová, Severová, Chromý (2014) examined the relationship of subsidies and the size of enterprises in the Czech Republic. They determined that the size structure of agricultural companies in the Czech Republic has so far been relatively favourable with respect to subsidies. Střeček, Lososová, Zdeněk (2008) determined that subsidies in agriculture are a significant source of income for farmers, particularly if they do business in less favourable regions. The impacts of LFA payments on economic results of agricultural enterprises are addressed by Štolbová, Hlavsa, Maur (2008). From their research it can be concluded that there is a noticeably high dependency of the business results of agricultural enterprises on subsidies, not only in less favourable regions, but also in the FADN group of enterprises doing business outside of LFA. In general it can be said that subsidies directly influence the operation of commerce and thereby its competitiveness. For this reason it is necessary to make agricultural subsidies as efficient as possible and thereby contribute to improving the status of agricultural businesses in the Czech Republic.

There are numerous opportunities for making subsidies more efficient. One of the highly debated topics of recent years from the area of making subsidies more efficient is the issue of targeting subsidy policies. The definition of the concept of “targeting” subsidy policy can be taken from the OECD manual: Effective Targeting of Agricultural Policies by Catherine Moreddu. Targeting is defined as the creation of a concept focused on precisely specified outputs with the use of appropriately chosen methods (quantitatively and qualitatively measurable) that are applied to clearly defined groups of subjects or areas. A targeted policy is generally defined as conceptual measure that are focused on precisely defined outputs,

demographics, or regions. Their realization requires the identification of goals, groups, and regions. The opposite is broad-based policy, which is carried out in a non-differentiated or untargeted manner (Moreddu, 2007).

Here the basic conditions for measures as part of subsidy policies are defined: Measures should be (Moreddu, 2007):

- transparent - having easily identifiable conceptual goals, financial costs, benefits, and recipients
- targeted - on precisely defined outcomes and as independently as possible of other influences
- customized - providing transfers that are not larger than necessary for achieving clearly identified outcomes
- flexible - reflecting the diversity of conditions in agriculture, capable of reacting to changing goals and priorities, and usable in a time period necessary for achieving precisely defined outcomes
- fair - taking into account the distribution of support among individual branches of agriculture, agricultural enterprises, and areas.

METHODOLOGY

The goal of this study is to propose the improvement of subsidies for agriculture in the Czech Republic with a focus on accounting and tax aspects. Two research questions were subsequently formulated:

1. In what way can agricultural subsidies be made more efficient in the specific conditions of the Czech Republic?
2. What influence do accounting and tax aspects have on improving the efficiency of agricultural subsidies in the Czech Republic?

The principle of targeting was chosen for improving the efficiency of subsidies, which was applied to the area of agriculture and the conditions of the Czech Republic. The essence of this principle is described in chapter: Subsidies for agriculture in the Czech Republic from the perspective of efficiency. The agriculture subsidy policy in the Czech Republic is composed of

many subsidy programs and titles. Certain of them are targeted, others are broad-based. Among the broadest subsidies are the SAPS subsidy; for this reason it was selected as an example for the possibility of more effective targeting. This subsidy and the conditions for its obtainment are described in detail in section Subsidies for agriculture in the Czech Republic.

The balancing of incomes to the minimum amount of business results may be articulated as a goal for the effective targeting of SAPS subsidies. The goal must be articulated in measurable values, for this reason the goal set was for balancing incomes to the reversal point, i.e. business results without subsidies = 0. The goal may also be defined at a different value, however the null business result made the subsidy most effective, as it eliminates loss, but does not contribute to the creation of profit. This goal was set for the very reason of the significant losses of agricultural enterprises in the Czech Republic.

According to this criteria, the SAPS subsidy could be allocated or not allocated to each enterprise solely according to its business results. And yet this raises the problem of financial and administrative demands. If each business were tested for the amount of their business results and according to this result were allocated a SAPS subsidy, this system would then be so financially and administratively demanding that it would be inefficient to carry it out in practice. At the same time it would demotivate the recipients of the subsidy from achieving a profit, since the amount of the subsidy would be based on the amount of their losses. A more effective solution would be the division of subsidy recipients into precisely defined categories and the formulation of a coefficient for calculating the SAPS subsidy for each category.

When evaluating the basic influences acting on the amount of subsidies in agricultural enterprises, these agricultural enterprises can be divided according to their production focus and the size of the business with regard to its legal form - based on the research of Svitaková (2011). This classification can be applied to the allocation of SAPS subsidies as well. The advantage of this classification is that a similar classification is used by the FADN database, whose results can be used to determine the business results of the individual categories. This database is standardized for the entire European Union and its results are used by Eurostat, the European Commission, and other institutions of the European Union. The criteria for classifying recipients of SAPS subsidy looks as follows:

Tab.1: Criteria for classifying recipients of SAPS subsidy

		Field scale	Gardening	Dairy production	Cattle breeding	Pig and poultry production	Mixed production
natural person	5-50 ha						
	50-100 ha						
	100-300 ha						
	300 and more ha						
juridical person	5-50 ha						
	50-1000 ha						
	1000-2000 ha						
	2000 and more ha						

Source: : Own computation based on FADN CR (2018)

It is also necessary to formulate coefficients for calculating the amount of the SAPS subsidy for each category. As suggested by fig. 2, the default element should be the business result or, better yet, the business result without subsidy. The business result may be determined only for juridical persons. For natural persons it is often necessary to operate from the difference between income and expenses. Here the first conflict arises from both the accounting and the tax perspective. The difference between income and expenses is not comparable with the difference between revenues and costs. Moreover, farming businesses - natural persons can maintain accounting and tax records, or claim expenses by percent of income or use flat rate tax. For the last two categories, these enterprises record only income. Moreover, to clean business results, or difference between income and expenses from subsidies is once again complicated, because not every subsidy is recorded in revenues or income, see above. In order to circumvent this conflict, we can once again operate from the FADN database, specifically using the FADN database methodology stated on the following picture 2.

Fig.2 :Deriving the indicators of economic results using the methodology of FADN

Total output (TO)			Balance current subsidies and taxes		
Output crops and crop production	Output livestock and livestock products	Other output			
Intermediate consumption (IC)		Gross farm income			
Specific costs	Farming overheads				
		Depreciati on (D)	Farm Net Value Added	Balance subsidies and taxes on investment	
		Exteernal factors (EF)			Family Farm Income
		Wages	Interests	Rent	

Source: : Own computation based on FADN CR (2018)

From the figure 2 it is clear that business results, or the difference between income and expenses without subsidy, correspond to the difference between overall agricultural production and overall agricultural costs, which are composed of production consumption, depreciation, and external factors. If we calculate this difference for each category per one ha of farmland and divide by the amount of SAPS subsidy for one ha of farmland for the given year, we can obtain a weighting that could create coefficients for calculating the amount of the SAPS subsidy and thereby more effectively target the SAPS subsidy.

$$TSAPS_m = \frac{SAPS_m}{SAPS_{m-1}} \times R_{m-1} \wedge R \geq 0 \quad (1)$$

$$R_{m-1} = (IC_{m-1} + D_{m-1} + EF_{m-1}) - TO_{m-1} \quad (2)$$

Where:

TSAPSm is a targeted SAPS payment for year m per ha of farmland [CZK]

SAPS is a single area payment system per ha of farmland [CZK]

IC is intermediate consumption per ha of farmland [CZK]

D is depreciation per ha of farmland [CZK]

EF are external factors per ha of farmland [CZK]

TO is total output per ha of farmland [CZK]

R is profit in negative terms calculated according to Formula 2 per ha of farmland [CZK]

m is the time period for which the subsidy has been targeted [year]

Source: Authors' results

Index TSAPSm is newly calculated, better targeted payment SAPS for the examined year m. Specifically, this is a proposal for the final amount of the subsidy the agriculture businessman receives if he is included into the relevant category (see Tab.1) instead of the subsidy he use to receive (SAPSm). TSAPSm as well as SAPSm is expressed in Czech crowns. TSAPSm is calculated as the product of the indicator R (which can be simplified as a profit in negative formulation) and a share of the value SAPS for examined year m and the value SAPS of the year before (m-1) – see formula (1). To calculate the R value, see formula (2), it has to be at first add intermediate consumption (IC), depreciation (D) and external factors (EF) see Fig.2. That we get the total inputs (TI). We subtract total output (TO) from them (viz Fig2). All elements entering R and R itself is for the year m-1. Fig.2 and formula (1) and (2) shows that R is a certain form of profit net of Balance current subsidies and taxes. R is a profit in negative formulation, because the subsidies are to be won by only loss-making businesses and if we leave the profit in positive terms, the TSAPS value would be negative. This prevents the TSAPS from being the better target of the final amount of the SAPS subsidy. The condition for awarding subsidies only to loss-making enterprises is embedded in mathematical formulation $R \geq 0$. If R is greater than or equal to 0, the enterprise achieves loss or zero profit and TSAPS can be calculated for that. In the case of R smaller than 0, the enterprise achieves profit, the subsidy is not eligible and the TSAPS is not calculated. All data in both formulas (1) and (2) are counted per ha of farmland in CZK and are obtained from the database FADN CR (2018). In the absence of data to calculate TSAPS from the FADN database for any of the categories, the TSAPS will be determined as the value of the nearest category.

DATA

For verification purposes, the application of this process has been selected for the subsidy SAPS in the Czech Republic for 2016. First it is necessary to calculate the R indicator, i.e. difference between the total agricultural production and overall agricultural costs for us IC, D, EF for the year 2015 for each selected category per hectare of agricultural land see table. 2. The data intermediate consumption (IC), depreciation (D), external factors (EF) total output (TO) are form FADN CR and all elements entering R.

Tab.2: Indicator R for the year 2015 (CZK)

		Field scale	Gardening	Dairy production	Cattle breeding	Pig and poultry production	Mixed production
natural person	5-50 ha	-1.14	-6383.54	-5418.02	6787.8	-15692.63	-1980.02
	50-100 ha	-1388.11	-8555.25	-8850.06	6479.52		1691.57
	100-300 ha	-2429.33		-1451.45	6609.06		-488.9
	300 and more ha	-3661.64		3131.58	6945.76		2488.92
juridical person	5-50 ha	6305.74	15544.68		9958.19		
	50-1000 ha	4737.36	28114.74	13309.84	12051.76		7749.75
	1000-2000 ha	6032.29		13483.89	8137.96		9255.51
	2000 and more ha	785.82		16369.33			8363.34

Source: Own computation based on formula (2) and FADN CR (2018)

From the table it is clear that certain categories are profitable without subsidies, others loss-making. Note that the R indicator gives the difference between costs and income, i.e. for negative values the company is profitable and positive values indicate loss-making businesses. The profitable includes, for example, field scale, gardening, or pig and poultry production for all listed natural persons. Certain data in the table (blank cells of the table) are missing due to insufficient information in the FADN database. The lack of data can be eliminated by increasing the number of respondents in the FADN database and then using this data for more effective targeting of other subsidies from the subsidy policy for agriculture in the Czech Republic.

RESULTS AND DISCUSSIONS

To define more effective targeting of the SAPS subsidy, it is necessary to eliminate all categories where a difference is listed in the negative numbers. The remaining categories multiplied by the share of the SAPS value for 2015 and the SAPS for 2014 per ha of agricultural land in CZK. The share is 0,9918 because the amount of the SAPS subsidies for the year 2015 is CZK 3,543 per hectare of agricultural land (Ministry of Agriculture, 2018) and the amount of the SAPS subsidy for the year 2016 is CZK 3,514 per hectare of farmland (Ministry of Agriculture, 2018). The new effectively targeted TSAPS subsidy rates for the year 2016 are listed in table 3.

Tab.3: New SAPS subsidy rates for 2016 (CZK)

		Field scale	Gardening	Dairy production	Cattle breeding	Pig and poultry production	Mixed production
natural persons	5-50 ha	No	No	No	6732	No	No
	50-100 ha	No	No	No	6426	No	1678
	100-300 ha	No	No	No	6555	No	No
	300 and more ha	No	No	3106	6889	No	2469
juridical persons	5-50 ha	6254	15417	13201	9877	No	7686
	50-1000 ha	4699	27885	13201	11953	No	7686
	1000-2000 ha	5983	27885	13374	8071	No	9180
	2000 and more ha	779	27885	16235	8071	No	8295

Source: Own computation based on formula (1) and FADN CR (2018) where No means not receiving subsidies (profitability of businesses in a given category) and the amount means the final amount of the subsidy for that category per ha of farmland in CZK

From the table it is clear that, after targeting, the SAPS subsidy would be retained only by certain categories of farmers, namely those who are loss-making without the subsidy as compensation for this loss. For certain highly loss-making categories, the subsidy would significantly increase, e.g. for dairy production for juridical persons. Others, e.g. pig and poultry production or field scale for natural persons would not receive this subsidy at all.

From the verification it is clear that the SAPS subsidy can be more effectively targeted in the conditions of the Czech Republic by focusing on reducing the loss-making of the individual categories of agricultural enterprises. This raises several questions, however. Thus targeted SAPS subsidies will not lead to lower profitability of the agricultural sector. On the other hand, profitability in the agricultural sector is essential. The agricultural sector is a very specific area of the national economy due to its primary function, the production of food, and also for reasons of maintaining the landscape. For the state and the European Union, these areas are so critical that significant funds are devoted to the support of this sector, in the form of subsidies. Štolbová, Hlavsa, Maur (2008) and others have proven that in the Czech Republic there is clearly an ever higher dependency of the business results of agricultural businesses on subsidies. In this way the agricultural sector is remaining an almost non-profit sector, which manages subsidies and thereby supports activities that are beneficial to society. Here we find an indicator of autarky or self-sufficiency, which defines the extent to which a given non-profit organization is dependent on subsidies. A similar indicator, this time the indicator of Minimum Amount of Subsidy, was proposed by Svitáková (2011) for defining the dependency of a specific agricultural enterprise on subsidies following an analysis of the status of economic results of agricultural enterprises in the Czech Republic. The profitability of agricultural

enterprises therefore cannot be taken as a high-priority indicator of the agricultural sector. And what will the accounting and tax aspect of this subsidy be like? It did not change in any way. The newly targeted SAPS subsidy will be accounted for and taxes in the same way as the existing SAPS subsidy, except that its amount will not be the same for all enterprises and will be derived from the loss-making of the given part of the agricultural sector. On the other hand, knowledge of the accounting and tax issues of subsidies were essential during the creation of TSAPS, as it indicated that due to its complicated nature, the definition of the reversal point cannot be based either on accounting or tax records of agricultural enterprises, but rather on the FADN database.

CONCLUSIONS

Agricultural subsidies are globally a highly topical subject. In the Czech Republic they have been most influenced since 2004 by the Common Agricultural Policy of the European Union. From contemporary research it can be seen that agricultural enterprises in the Czech Republic are loss-making in the absence of subsidies and the dependency of their business results on subsidies is high. For this reason, it is necessary to optimize the allocation of subsidies as much as possible. The principle of targeting has been chosen for this article as a means for making subsidies more efficient, and has been applied to the Single Area Payment Scheme (SAPS) subsidy in the conditions of the Czech Republic. The balancing of business results to the reversal point was chosen as the main targeting criterion; in other words, for the business result without subsidy to be equal to zero. This goal was set for the very reason of the significant losses of agricultural enterprises in the Czech Republic. In this article, the criteria of dividing recipients of the SAPS subsidy was selected and a formula was proposed for recalculating the SAPS subsidy such that this subsidy might correspond to new conditions for targeting with regard to the accounting and tax aspects of subsidies. The accounting and tax aspects of subsidies are very important for the new formula. The default element for the new formula is the business result without subsidy. The business result may be determined only for juridical persons. For natural persons it is often necessary to operate from the difference between income and expenses. The difference between income and expenses is not comparable with the difference between revenues and costs. Moreover, farming businesses - natural persons can maintain accounting and tax records, or claim expenses by percent of income or use flat rate tax. For the last two categories, these enterprises record only income. Moreover, to clean

business results, or difference between income and expenses from subsidies is once again complicated, because not every subsidy is recorded in revenues or income. Due to this unsuitability of the data from accounting and tax records, the data of the FADN database was chosen as the data source, and for this reason the formula was created as a result of indications of economic results according to the FADN EU methodology. The methodology proposed was successfully verified on the SAPS subsidy in the Czech Republic for the year 2016 and it was thereby proven that agricultural subsidies can be made more efficient in the specific conditions of the Czech Republic.

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QUALITY MANAGEMENT OF PRODUCTION ORGANIZATIONS UNDER THE NEW STANDARD OF IATF 16949

Petr Bris - David Kundera - Muhammad Yousaf

Abstract

The purpose of this paper is to analyze amendments in the field of mandatory standards in automotive organizations and to suggest procedures and recommendations for implementation of these amendments. All the sections of the new standards have been discussed in this paper and managers are suggested different ways to implement the amendments. This paper is focused on the effective implementation of new International Automotive Task Force (IATF) 16949 requirements into companies. The qualitative research was carried out in five medium-sized international and Czech production organizations in the Czech Republic. Differential analysis, analysis of parties involved, and cost analysis were used to solve the problem. The differential analysis was described mainly between standards ISO/TS (International standards organizations/Technical specification) 16949 and IATF 16949. The study presents various solutions for a successful transition to new and revised version of the standard. Each difference in the new IATF standard has been analyzed and several suggestions have been made on how to implement the changes into a particular management practice. The value of this investigation is mostly in the differential analysis, which describes in detail the new requirements of the standard which are not easily read from the norm itself as it is written generally.

Keywords: Quality management, ISO/TS 16949, IATF 16949, automotive industry, standard, new requirements.

JEL Codes: M210, M110.

INTRODUCTION

The research deals with the effective introduction of new requirements of ISO/TS 16949 into the current quality management system which is quite complex. This is a new revision of the

standard, which began to be effective from October 2016 and its introduction to business is allowed until September 2018. Therefore, it is an up-to-date problem which must necessarily to be solved in every organization governed by these standards. Due to the different requirements of the new standard, each company must undergo transformation and identify its own shortcomings. The aim of the qualitative research is to identify the shortcomings of the current quality management system according to the requirements of the new ISO/TS 16949 and then propose measures for the effective introduction of new requirements into this system. The main reason for the research is a set of proposals to eliminate identified shortcomings, and to implement new criteria and documents in line with the requirements of the revised IATF 16949 standard. The previous literature does not deal with the requirements of the standards in detail and to propose how to grasp and implement these requirements. These suggestions follow in a logical sequence further recommendations. Conducting all of the recommendations in organizations can greatly contribute to the innovation of IATF 16949 management that organizations must implement while they want to remain competitive.

LITERATURE REVIEW

ISO/TS 16949 (1st edition) was originally created in 1999 by the International Automotive Task Force (IATF) with the aim of harmonizing the different assessment and certification systems worldwide in the supply chain for the automotive sector (ISO/TS 16949:2009). In preparation for migrating from ISO/TS 16949 to this Automotive Quality Management Standard (QMS), IATF 16949, feedback was solicited from certification bodies, auditors, suppliers, and OEMs (original equipment manufacturers) to create IATF 16949:2016 (1st edition), which cancels and replaces ISO/TS 16949:2009. The IATF maintains strong cooperation with ISO by continuing liaison committee status ensuring continued alignment with ISO 9001. The goal of this Automotive QMS is the development of a quality management system that provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the supply chain (Reid, R. D., 2017, Gruszka, J., & Misztal, A., 2017).

The ISO/TS 16949 standards or the new version of IATF 16949 is intended for component suppliers and service providers in the automotive industry. Implementation of a standard must be recognized by a third party and certified by a certificate. This global valid certificate is a

global standard for the automotive industry and automatically includes several other quality standards (Ford Motor, 2013).

In particular, the QS 9000 (USA) (Chrysler Group, 2014), VDA 6.1 (Germany) (Specific Requirements), EAQF (France) and AVSQ (Italy) (FIAT SpA., 2012). Thanks to this, ISO/TS 16949 is recognized by all major automotive manufacturers and automotive system suppliers. The benefit of this certificate is, therefore, to reduce the number of certificates in the organization, but also to improve and streamline all manufacturing, assembly and maintenance processes in the automotive sector, better quality management and higher profits (Sanongpong K. 2009). Thanks to the constant globalisation process and the systematically encountered fierce competition on international markets, the change in the location of production processes has become a common practice for entrepreneurs representing the automotive sector all over the world. At the same time, the phenomenon of capital concentration can be observed in the automotive sector. This concentration can be seen in the form of numerous fusions and acquisitions continuously taking place on this market, the implication of which are newly-formed entities or capital groups (Chang et al., 1999, Ostadi et al., 2010). The occurring capital concentration and relocation of production entail further consequences. Entrepreneurs from the automotive sector acting in the environment of dispersed business entities have to unify operation standards, including quality standards. In relation to the above in this paper, other authors consider the issue of quality standards used by automotive companies. (Reid, 2005; Zakuan et al., 2009; Rodríguez-Rocha et al., 2009). The nature of the automotive industry in the era of accelerating technological progress, increasing consumer awareness and the ever-changing market demands that global car-makers and their suppliers use and implement systems that are capable of providing the highest quality and safety of their products (Roszak M.T., 2014). Apart from the individual automotive quality management systems characteristic to particular car companies, the basic standard currently used in the international automotive markets is the quality management system based on the ISO/TS 16949 technical specification (Calado et al., 2014,) and the new IATF standard.

METHODOLOGY

The implementation of the standard IATF 16949 in organizations is a significant step because the importance of this standard in the world has been increasing in recent years. The quality certificate is attractive and desirable for small and medium-sized businesses as well, especially,

when they expand rapidly and want to get state or international orders. Other benefits include streamlining business quality policy, mapping individual processes, and gaining a competitive edge. In this article, the differences between the old ISO/TS 16949 and the new IATF 16949 standard were examined and the deficiencies resulting from the differences were identified. Implementation of the difference analysis of standards and analysis of the QMS was carried out in the settlements of 5 international companies from the category of small and medium-sized. The target audience was the organization that planned to conduct an audit in line with the transition of new version of the standard. The research was conducted in 2017. The analysis of documents and standards was carried out in the form of qualitative research in five production organizations, during which both internal and external documents of companies were used. In this work, various research methods and techniques are applied. This is, in particular, a differential analysis and an analysis of the company's stakeholders resulting from the new requirements of the standard. The new version of the standard also includes other analysis such as risk or SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis. However, in the case of stakeholder analysis, cost analysis, risk and SWOT analysis are very sensitive data, therefore, analysis are kept as nonpublicable, confidential documents of companies. Initially, a literature review of the issue, and then an analysis of quality management systems were carried out before the implementation of a new version of the standard. The analysis of quality management systems in companies is meant mainly by the current description of the systems, i.e. what guidelines the company has, how they have a defined process map, how they have a formulated hierarchy of documents, etc. Then a differential analysis was made between the standards, in which the difference parameters were highlighted in detail. After the differential analysis, it was also necessary to focus on the shortcomings of the existing quality management system in companies and at the same time set out proposals for their effective implementation so that companies can successfully complete the audit in the interim period. The data were collected in the framework of qualitative research in the form of unstructured interviews with experts in strategy, quality management, and top management. (see Table 1).

DATA, RESULTS AND DISCUSSIONS

The following text compares the requirements of ISO/TS 16949 with the new IATF. The analysis concerns articles that are super standard of ISO 9001 (ISO/TS 16949 as well as IATF 16949 contains all ISO 9001 articles). Table 1 below differentiate the two standards:

IATF 16949:2016		ISO/TS 16949:2009		DIFFERENCES
4	Organization context			New request
4.3.1	Determination of the scope of the quality management system – appendix	1.1	In general	General The requirements of the standard have been substantially reduced. Newly, the article focuses only on support functions at the production or segregated site to be included in the scope of the quality management system (previously focused), and states that the design and development of the product (not the process) can be excluded from the scope of the quality management system. Of course, this was possible earlier. Not every organization designs the product itself.
4.3.2	Specific Customer Requirements	-	-	New article, but customer requirements also merged through earlier version of ISO / TS. The organization must evaluate and include specific customer requirements in the quality management system.
4.4.1.1	Conformity of Products and Processes	4.1.1	General Requirements – Appendix	The organization must now ensure compliance not only with the customer's requirements but also with the requirements
4.4.1.2	Product Safety	-	-	A new article brings many partial requirements. Requirements have crossed the standard before. Implementation of these requirements is greatly audited by certification auditors
5	Leadership			
5.1.1.1	Social Responsibility	-	-	New Requirement. The company must establish and implement a policy of social responsibility, including at least a policy against bribery, employee behavior rules, and a policy of escalating ethics.
5.1.1.2	Effectiveness and efficiency of the process	5.1.1	Effectiveness of the process	The article only changed the title. Standard also mandated firms to evaluate and improve the efficiency and effectiveness of processes.
5.1.1.3	Process Owners	-	-	A new article, but earlier organizations had to determine QMS processes and manage them to be properly managed, processes must always have a designated owner. The organization must then identify process owners.
5.3.1	Role, Responsibilities and Competence within the	5.5.2.1	Customer Representative	The person who was the representative of the customer had to be appointed before. This person had responsibilities and

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	Organization – Appendix			powers to meet customer requirements. There is no need for a new worker..
6	Planning			
6.1.2.1	Risk Analysis	-	-	A new requirement in which the Standard determines that a firm must include, at least in its risk analysis, the knowledge of the withdrawal of defective products, the product audit, the return of products from the use phase and repairs, complaints, scrapping and reprocessing.
6.1.2.2	Preventive action	8.5.3	Preventive action	The article added point f), i.e. the organization must establish a process to mitigate the impact of negative risk events, including the use of knowledge to prevent recurrence in similar processes.
6.1.2.3	Contingency Plans	6.3.2	Contingency Plans	Previously, the standard only mandated the development of contingency plans such as interruptions to energy supplies, labor shortages, key equipment failures, etc. It now orders regular testing of contingency plans in terms of efficiency, reviewing them (at least once per year), documenting and storing documented information regarding their revisions, incorporating the process of reporting the extent and duration of any situation that affects the client's operations to the customer and other stakeholders.
6.2.2.1	Quality Goals and Planning Their Achievement – Addendum	-	-	Top management must ensure that the quality objectives are met. Emphasis is placed on customer requirements. .
7	Support			
7.1.3.1	Plant, facility, and equipment planning	6.3.1	Plant, facility, and equipment planning	The article newly includes the use of risk identification and mitigation techniques. It also brings the feasibility assessment of new products and operations. For automotive companies there is no news, a feasibility study is one of the outputs of one of the initial phases of APQP.
7.1.5.1.1	Measurement system analysis	7.6.1	Measurement system analysis	Previously, it was necessary to perform an analysis of the measurement system for each type of test and measuring equipment listed in the control and management plan. The standard now requires the prioritization of measurement analysis to be geared to critical or special characteristics.
7.1.5.2.1	Calibration / Authentication Records	7.6.2	Calibration / Authentication Records	There have been several additions. The organization now has to ensure that the verification / calibration and record activities will also include: verifying that the software version used for product and process control is consistent with the prescriptions, records of calibration and maintenance activities for all gauges, and

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				lastly keeping documented measurement information from defective control , measuring and testing equipment. It also applies to equipment outside calibration or equipment during the scheduled calibration.
7.1.5.3.1	Internal laboratory	7.6.3.1	Internal laboratory	The focus has been on customer requirements that the laboratory has to specify and implement. The competence of laboratory staff has been replaced by competence.
7.2.1	Competence – Appendix	6.2.2.2	Training	Only the article name changed.
7.2.2	Competence - training in the workplace	6.2.2.3	Workplace Training	Newer emphasis is placed on providing customer-specific training.
7.2.3	Internal Auditor Competency	8.2.2.5	Qualification of Internal Auditors	New demands are being placed on internal auditors.
7.2.4	Second- party auditor competency	-	-	The organization must now demonstrate the competence of auditors carrying out audits by the second party.
7.3.1	Awareness – Appendix	6.2.2	Competence, training and awareness of severity.	The requirement now puts more emphasis on customer requirements and customer risk.
7.3.2	Employee motivation and empowerment	6.2.2.4	Employee motivation and empowerment	The obligation has been removed that the organization must have a process for assessing how workers are aware of the importance and importance of their activities and how they contribute to meeting the quality objectives.
7.5.1.1	Quality management system documentation	4.2.2	Quality manual	Previously, it was necessary to have and maintain a quality manual. Now the standard adds that the quality manual can be a set of documents. The format and structure is at the discretion of the organization.
7.5.3.2.1	Record keeping	4.2.4.1	Record keeping	Previously only at customer's request. The new standard specifically specifies the length of time that some records are to be stored. In addition, business records.
7.5.3.2.2	Technical Specifications	4.2.3.1	Technical Specifications	From 2 business weeks, organizations have to review the change now within 10 business days.
8	Operation			
8.1.1	Operational planning and control – appendix	7.1.1	Product realization planning – appendix	The new article specifies the topics that need to be included in product planning. New requirements for logistics, production feasibility and project planning have been added.
		7.1.2	Acceptance criteria	
8.2.2.1	Determination of product and service requirements - supplemental.	7.2.1	Determining Product Requirements (NOTE)	The article will now focus only on recycling, the environment and the characteristics identified based on the organization's knowledge of the product and the manufacturing process.

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8.2.3.1.3	Organization manufacturing feasibility	7.2.2.2	Production capacity of the organization.	Previously, the request was related to the review process. New organizations must use a cross-sectional approach to analyzing whether they are able to meet the customer's product requirements. The analysis must be done for each new production technology or product technology and for each changed manufacturing process or modified product design.
8.3.2.1	Design and development planning – appendix	7.3.1.1	Cross-sectional approach	The new article deletes the requirement to develop /monitor and monitor special characters. Special features are dealt with in Article 8.3.3.3, so it is not a complete deletion of the requirement.
8.3.2.3	Development of Products with Embedded Software (SW)	-	-	New standard requirement. The organization must include SW development in the internal audit program. In addition, it must use the quality assurance process for its products with built-in SW developed in the organization.
8.3.3.1	Product design input	7.3.2.1	Product design input	Now, the standard adds requirements for additional product design inputs. These include: requirements for embedded SW, applicable laws and regulations, boundaries and interfaces, considerations about alternatives and risk assessment.
8.3.3.2	Input for the design of the production process	7.3.2.2	Input for the design of the production process	Entry for the design process, the requirement redefines additional inputs for the design of the manufacturing process. These include: alternative production technologies, new materials, handling and ergonomics requirements, and, last but not least, a design and assembly design.
8.3.3.3	Special Characteristics	7.3.2.3	Special Characteristics	The requirement newly refers to the use of a cross-sectional approach.
8.3.4.1	Monitoring	7.3.4.1	Monitoring	The new standard adds the ability to pass on evaluations when developing the product and process to the customer, if required. .
8.3.4.2	Design and Development Validation(DDV)	7.3.6	DDV	We also need to validate the installed end-product software.
		7.3.6.1	DDV – Appendix	
8.3.4.4	Product Approval Process	7.3.6.3	Product Approval Process	The organization must document the approval of the product before it is sent to the customer.
8.3.5.1	Outputs from Design and Development – Appendix	7.3.3.1	Outputs from Design and Development – Appendix	The standard adds additional requirements to outputs from design and development. These include the results of a fail-safe study, spare part requirements and packaging and marking requirements.
8.3.5.2	Outputs from the design process	7.3.3.2	Outputs from the design process	The requirement was supplemented by special features, process variables identification, capacity analysis,

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				maintenance plans and instructions, and device and process capability studies.
8.3.6.1	Design and Development Changes – Appendix	7.3.7	Managing Design and Development Changes	A new customer approval requirement has been added. If the customer so requires, the organization must obtain approval from the change of design and development.
8.4.1.1	General – Appendix	7.4.1	Purchasing Process (NOTE)	The article name has been changed. The Purchasing Process is a new management of outsourced processes, products and services. Otherwise unchanged.
8.4.1.2	Supplier Selection Process	-	-	New article, but the requirement was previously included in Article 7.4.1 (ISO 9001: 2008). A documented process for supplier selection must be established. Previously enough, organization had criteria for choosing suppliers. In addition, the selection criterion for suppliers is clearly defined and should be taken into account by the organization.
8.4.2.1	Control type and scope – addendum	-	-	New request. The organization must have a documented process for identifying outsourced processes. .
8.4.2.2	Requirements of laws and regulations	7.4.1.1	Compliance with legal and other regulations	New standard adds locations where the requirements of laws and regulations need to be met, i.e. in the country of acceptance, in the country of dispatch and, last but not least, in the country of destination by the customer, if set.
8.4.2.3	Development of Supplier Quality Management System	7.4.1.2	Development of Supplier Quality Management System	The new standard adds a brief procedure for obtaining the IATF certificate by the supplier, unless the customer specifies otherwise. It is important to note that not all automotive customers require QMS certification by IATF.
8.4.2.3.1	Automotive product related software or automotive product industry or automotive products with embedded software	-	-	This is a new requirement. The supplier must implement and maintain a software quality assurance process in its products.
8.4.2.4	Supplier Monitoring	7.4.3.2	Supplier Monitoring	New Organizations must monitor warehouse retention and expedition stops.
8.4.2.4.1	Second Party Audits	-	-	New organization must document the criteria for determining the need, type, frequency, and subject of supplier audits.
8.4.2.5	Developer Development	7.4.1.2	Development of Supplier Quality Management System	Only the inputs that have to be taken into account in the development of the supplier have been specified. One is new risk analysis.
8.4.3.1	Information for external providers – Supplemental	-	-	New Important Requirement. The organization must pass on all applicable laws, regulations and product and process characteristics to its suppliers and demand that they be applied throughout the chain.
8.5.1.1	Control plan	7.5.1.1	Control plan	New points are added to the control plan. This is the validation of the first/last

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				piece. In addition, there are situations where organizations need to review and update a control plan such as: a finding that the organization sends a non-conforming product to the customer if there is a change affecting the product, process, measurement, logistics customer complaints, and analysis intervals risks.
8.5.1.2	Standardized Works - Operator Instructions and Visual Standards	7.5.1.2	Work instructions	There has been a new requirement for employees to have readable operating instructions in a language that they understand.
8.5.1.3	Verification of Adjustment	7.5.1.3	Verification of Adjustment	It is now required to keep registers of adjustments.
8.5.1.4	Verification after shutdown	-	-	New Requirement. The organization must ensure the conformity of the product after the scheduled shutdown.
8.5.1.5	Total Productive Maintenance	7.5.1.4	Preventive and Predictive Maintenance	The standard now directly proposes examples of maintenance objectives, e.g. OEE, mean time between failures and mean repair time. The totally productive maintenance system must include documented maintenance objectives of its own choice.
8.5.1.7	Production scheduling	7.5.1.6	Production scheduling	It is newly specified what the organization must include during mass production planning. These are timely deliveries from suppliers, capacities calculations, inventory levels, preventive maintenance and calibration
8.5.2.1	Identification and Traceability – Appendix	7.5.3.1	Identification and Traceability – Appendix	Big changes. The organization must analyse internal and customer requirements and regulations for automotive products.
8.5.4.1	Protection – Appendix	7.5.5.1	Storage and stockpile	The requirement now specifies what protection must be covered, i.e. material and components from external/internal providers, from receipt, through processing to delivery to the customer. These are not major changes.
8.5.5.1	Service information as feedback	7.5.1.7	Service feedback	There has recently been a confusion of service for the use phase.
8.5.6.1.1	Temporary change of process control	-	-	The organization must newly develop a control plan for alternative process management methods and use risk analysis, e.g. FMEA (Failure Mode Effect Analysis).
8.6.1	Release of Products and Services – Appendix	8.2.3.1	Monitoring and Measurement of Production Processes	The requirement is now narrowly focused only on the product/service according to the control/management plan and the initial release of the product/service.
8.6.4	Verification and acceptance of the conformity of the externally supplied products and services	7.4.3.1	Compliance of the purchased product with the requirements	In addition to the article title, there was no change to the request.

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8.6.5	Compliance with laws and regulations	7.4.1.1	Compliance with legal and other regulations	It is newly specified that outsourced processes, products and services must comply with applicable laws and rules in the country of origin and in the countries of destination by the customer.
8.7.1.1	Customer approval based on an exemption	8.3.4	Special customer release for deviations	The article newly adds approval to a product or process that differs from the customer's standard by exception.
8.7.1.2	Control of non-conforming product - customer-specified process	-	-	New request. For non-compliant products, organizations must meet applicable customer-specified management methods. From this demand we can again feel great customer attention.
8.7.1.3	Control of Suspect Product	8.3.1	Managing a Non-Conforming Product - Addendum	Newly, all factory workers must undergo training to detain a suspicious and incongruous product. .
8.7.1.4	Control of reworked Product	-	-	New Requirement. Previously, the ISO/TS standard involved only the management of the non-conforming product (8.3.1), the repaired product (Article 8.3.2) and the suspect product, Article 8.3.1 (ISO/TS). The organization must use a risk analysis methodology, such as the FMEA, before deciding on product reuse to assess risks in the rework process. If the customer so requires, the organization must obtain the customer's consent prior to the recast.
8.7.1.5	Control of repaired product	8.3.2	Control of repaired product	The organization must receive customer approval before starting the repair and prepare a risk analysis for repair processes such as FMEA
8.7.1.6	Customer notification	8.3.3	Customer information	Newly, organizations must have detailed documentation on events where a non-compliant product is sent to the customer.
8.7.1.7	Disposal of non-compliant product	-	-	This is a new requirement.
9	Performance Evaluation			
9.1.1.2	Identification of Statistical Methods	8.1.1	Identification of Statistical Methods	The new standard adds risk analysis to the process, or for which the statistical methods are to be used.
9.1.1.3	Application of statistical concepts	8.1.2	Knowledge of basic statistical concepts.	Now, not all employees need to understand and use statistical concepts. The standard focused only on staff involved in the collection, analysis and management of statistical data.
9.1.2.1	Customer Satisfaction – Addendum	8.2.1.1	Customer Satisfaction - Addendum	Not all employees need to understand and use statistical concepts. The standard focused only on staff involved in the collection, analysis and management of statistical data.
9.2.2.1	Internal Audit Programme	8.2.2.4	Internal Audit Plans.	Newly, organizations must prioritize audit programs based on risk analysis, internal and external performance trends, and process criticality. In addition, the

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				organization must review the effectiveness of the audit program as part of the management review.
9.2.2.2	Quality Management System Audit	8.2.2.1	Quality Management System Audit	The new standard clearly indicates how often the quality management system audits should be audited, i.e. every three years. In addition, audits require specific customer requirements to be audited.
9.2.2.3	Manufacturing Process Audit	8.2.2.2	Manufacturing Process Audit	The standard newly defines the time period during which organizations must audit all manufacturing processes. The audit must include an examination of the effective implementation of process risk analysis. It is important to audit all shifts.
9.3.1.1	Management System Review – Addendum	-	-	The new standard requires that the frequency of management reviewing must be made on the basis of risks arising from internal or external changes affecting QM.
9.3.2.1	Inputs for review of the management system – appendix	5.6.1.1	Performance of the quality management system	New points have to be added as inputs for MRW, point g) Performance review in relation to maintenance objectives, point (e) to assess the feasibility of production that is made when changing existing and new equipment or a new product. The structure of the article has been changed altogether. Now the inputs are specified more precisely.
		5.6.2.1	Entry for review – appendix	
9.3.3.1	Management Review Outputs - Supplemental	-	-	New requirement. If the customer's goals are not met, the management plan must implement a plan of action.
10	Improvement			
10.2.3	Problem solving	8.5.2.1	Problem solving	The new standard specifies what everything an organization must have in addition to a documented problem-solving process.
		8.5.2.3	Impact of remedial action	
10.2.4	Error- proofing	8.5.2.2	Error- proofing	Error proofing methods must be part of the process FMEA and the control and management plan.
10.2.5	Warranty Management Systems	-	-	This is a new requirement, but by law, the company must provide a guarantee for its products.
10.2.6	Customer complaints and field failure test analysis	8.5.2.4	Test/analysis of rejected product	Newly, the analysis must also be related to the SW used - when requested by the customer.
10.3.1	Continuous improvement – appendix	8.5.1. 1	Continuous improvement	New requirements for continuous improvement process. The process must now include methodology, targets, measurement, effectiveness assessment, action plan and risk analysis.

Source: Own processing

CONCLUSION

The aim of the paper was to analyse the shortcomings of the current quality management systems and to propose measures for elimination in accordance with IATF. In the first phase, an analysis of the current quality management system was carried out in companies, and a gap analysis between the old standard of ISO/TS 16949 and the new IATF standard was created. Based on these two analyses, new requirements of the standard were identified, respectively shortcomings in the current quality management system. In Chapter DATA, RESULTS AND DISCUSSIONS, both analyses are identified and removed in the form of suggestions and recommendations. Through these proposals, new requirements have been incorporated into the company's quality management system for the purpose of a new version of the standard under the supervision of an audit organization. The deadline for transition to the new standard ends in September 2018.

In general, the new requirements and recommendations can be summarized as follows: ensuring safe manufacturing processes and products, defining potential risks in development, preparation for production, production and delivery, detailed traceability of products on production batches and deliveries, product liability (safety, function) in full time of use on the market, transfer of customer demand across the supply chain, high management structure Plan-Do-Check-Act.

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STRATEGIC LOGISTICS OUTSOURCING EFFECTIVENESS THROUGH THE IMPLEMENTATION OF 4PL – AN ANALYSIS OF SELECTED INDUSTRIAL APPLICATIONS

Trang Le Truong Diem – Felicita Chromjaková

Abstract

Purpose: The purpose of this paper is to investigate the effectiveness of strategic logistics outsourcing through the implementation of 4PL to support the development of competitive advantage for manufacturing firms.

Design/methodology/approach: Applying the strategic logistics outsourcing theory along with the resource-based view of competitive advantage, the authors point out the vital role of strategic logistics outsourcing in the manufacturing firm competitiveness. The data was collected using questionnaires with 30 manufacturing firms and analysed on effectiveness statistics and t-test to determine the effect of strategic logistics outsourcing on developing the competitive advantage for manufacturing firms.

Findings: The findings indicate that cost reduction, efficient utilization of resources in the supply chain, and ICT application in 4PL services are key drivers to the competitive advantage of manufacturing firms.

Research/practical implications: The research proposes to use a 4th party logistics as a strategic logistics outsourcing provider for achieving the competitive advantage for manufacturing firms.

Originality/value: This is one of the first studies that provide an empirical analysis on the effect of strategic logistics outsourcing in developing the competitive advantage for manufacturing firms.

Keywords: Strategic logistics outsourcing, Fourth party logistics, Competitive advantage, Manufacturing firms, Supply chain.

JEL Codes: L84, M10.

INTRODUCTION

Outsourcing has been considered as a successful solution for enterprises on cost savings and efficiencies while they focus on their core competences. However, new challenges and high

expectations associated with outsourcing are increasing. Manufacturing firms require new approaches to gain more capabilities, flexibilities and innovation beyond cost reduction.

Logistics outsourcing has remarkably grown all over the world. The increasing application of logistics services of manufacturing firms is fostering the development of logistics service providers (LSP). The main motives for logistics outsourcing are mainly focused on cost reduction, flexibility and customer service (T. Solakivi, J. Töyli, and L. Ojala, 2013). LSPs demonstrate their important role in quality issues in manufacturing firms (K. Gotzamani, P. Longinidis, and F. Vouzas, 2010). Enterprises coordinate with LSPs in the variety of reasons. The increasing decision to logistics outsourcing indicates that enterprises may gain value which is helpful for them in dealing with challenges in the business environment.

The strategic logistics outsourcing (4PL – fourth party logistics) involves a high integration between logistics service providers and its customers in the form of managing the whole logistics operations, therefore, it brings significant advantages to manufacturing firms. The 4PL's objective is to minimize individual inefficiencies and, at the same time, maximize the efficiency of the entire actor network by employing information technology (IT) networking and platforms (Mammitzsch and Francyk, 2012). Another study analyzed how different logistics resources such as physical resources, human resources, information resources, knowledge resources and relational resources can be bundled together to assist in achieving sustainable competitive advantage (Wong and Karia, 2010; Somsuk et al., 2012; Phusavat et al., 2013). However, there is limited empirical research that investigates which benefits of strategic logistics outsourcing positively boosting manufacturing firms in developing the competitive advantage.

The intention of this paper is to provide the investigation of the key advantages gained from strategic logistics outsourcing through the implementation of 4PL in creating the competitive advantage for manufacturing firms. The results of the research will support top management to be able to make better decisions on strategic development of logistics outsourcing within their own enterprises. Despite the persuasiveness of the competitive advantage literature, there is little empirical understanding as to how a firm sustains its competitive advantage (Pablo et al. 2007).

The paper is structured as follows: first, the theoretical support and a review of the literature on strategic logistics outsourcing and competitive advantage of manufacturing firms are presented. Second, hypotheses are presented based on the literature review. Third, this section

is about methodology. Fourth, the results are discussed with the respect of the theory and practice.

THEORETICAL PERSPECTIVE

Logistics outsourcing

Logistics concept. Logistics involves the flow of goods, services and information related to the movements of goods and services from the suppliers to satisfied customers without waste (R. C. Lieb, 1992). According to the Council Logistics Management, logistics is the process of planning, implementing, and controlling the efficient, cost effective flow and storage of raw materials, inprocess inventory, finished goods, and related information from origin to consumption for the purpose of conforming to customer wants (D. M. Lambert, J. R. Stock, and M. R. Ellram, 1998). Logistics activities are vary from purchasing, transportation, customs, insurance, warehousing, handling, order processing, information, packaging, labeling, inventory management, distribution, shipment planning to product returns (M. Tanyas and S. Serdar, 2003). Under the trends towards globalization, logistics integration along with the development of Information and Communication Technology (ICT) have created new trading models and become the core of global competitive power (UNCTAD, 2003; Ballou, R. H, 1998). The improvement of logistics has been the important resource to gain and sustain competitive advantage.

Logistics outsourcing. Outsourcing is the common answer to the question “Make-or-buy“ asked by manufacturing industry (Rothery and Robertson, 1996). According to Sink, and Langley (1997), outsourcing is the business strategy which transfers non-core functions to external suppliers so that enterprises concentrate on critical issues for the future growth. Logistics outsourcing means that a part of logistics or all activities of logistics are implemented by logistics service providers. It involves the transferring of an existing process or function to a logistics service provider to provide the service onshore or offshore (Frankfurt, 2005). Gattorna (1998) stated variations on logistics outsourcing as follows:

- Absolute independence (100% insourced): all logistics functions conducted in-house.
- Contracting of specialized functions: some logistics functions outsourced to traditional contractors.
- 3PL: management of parts of the supply chain outsourced to a 3PL provider.

- 4PL (100% outsourced): comprehensive supply chain solutions for clients through integrating 3PL providers, IT and business process management.

Enterprises have been motivated to logistics outsourcing for reaching certain objectives including cost saving (Jiang et al., 2006; Lau and Zhang, 2006; Aimi, 2007), product quality improvement (Bardhan et al., 2006), flexibility improvement (Lau and Zhang, 2006), and market share increase (Skjoett-Larsen, 2000). Logistics outsourcing is the effect of global competition on markets, high focus on core competencies, information and communication technology, and rising customer expectations (Marasco, 2008; Sheffi, 1990). The trend of logistics outsourcing is increasing in the upcoming time. Langley & Capgemini (2008) stated the rate of logistics outsourcing in regions in the world with 49% in North America, 61% in Europe, 57% in Asia Pacific, and 48% in Latin America. Another study resulted that the growth forecast for logistics outsourcing between 2009 and 2022 is 17% (Deepen, Goldsby, Knemeyer, & Wallenburg, 2008).

Strategic logistics outsourcing

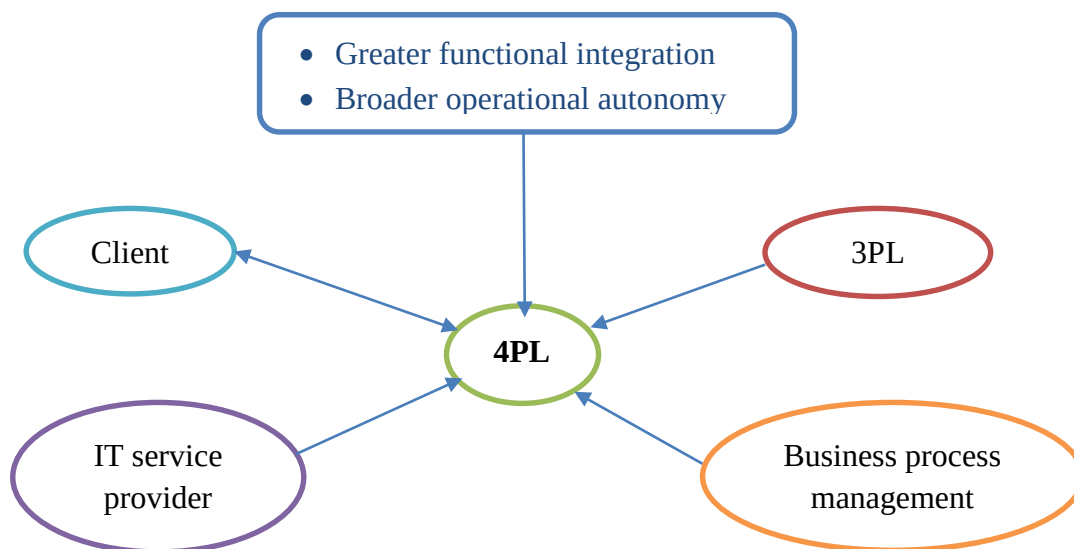
The outsourcing of logistics activities can be defined into three levels including the transactional logistics outsourcing (2PL), the tactical logistics outsourcing (3PL) and the strategic logistics outsourcing (4PL) (Gavrielatos K.A., 2007).

The transactional logistics outsourcing (2PL) is implemented without long-term contracts and bond between outsourcing enterprises and logistics service providers (Gavrielatos K.A., 2007). 2PL providers supply only single operation in logistics chain such as transportation, warehousing, customs formalities, payment in order to meet shippers' demands (Frankfurt, 2005). This type hasn't combined single logistics operations into connected chain. Enterprises in this type include shipping companies, warehousing service companies, customs formalities service companies, payment service companies.

The tactical logistics outsourcing (3PL) is executed based on long-term contracts under the integration of IT system to facilitate free information flow and build transparent supply chain system (Gavrielatos K.A., 2007). Services which are outsourced to 3PLs have shifted from being a single type of service to a broader range of services, including advanced supply chain solutions (Soinio, Tanskanen and Finne, 2012). The operations of 3PL providers involve the collection of outbound shipments from manufacturers and the consolidation of shipments in their distribution centers. The consolidated shipments are then moved to the customer through alternative transportation routes (Tyan, J.C.; Wang, F.; Du, T.C., 2003).

The strategic logistics outsourcing (4PL) is the most advanced model. It leads to the breakthrough solutions to modern supply chain challenges with the purpose of providing maximum benefits to the customers (Gattorna J., 1998). Unlike 3PL, 4PL's service provision combines process, technology and management (Mukhopadhyay, 2006). In recent years, 4PL service providers contribute to the sustainable competitiveness of all the collaborating manufacturing companies (Hoffman, 2000). 4PL development highlights the ways companies initiate innovative practices in the coordination of IT management and others resources to make profound changes for the better competition. Many scholars suggested that logistics operations should be managed by 4PLs networks with strong cooperation between 3PL firms and companies which are developing the latest logistics information technology (Folinas et al., 2004; Bourlakis and Bourlakis, 2005; Krakovics et al., 2008). Fig. 1 demonstrates the cooperation between related parties in 4PL provider (Gattorna, 1998).

Fig. 1: Cooperation between related parties in 4PL



Source: Gattorna (1998)

The 4PL appropriately selects the new technological tools and combine them with conventional means for the logistics decisions based on electronic management of transactions and management systems of related parties in the supply chain (Venkatraman, N., 1989). 4PLs provide customized services, therefore, they increase independence between partners thanks to the sharing on activities of planning and coordination of information flows in the integrated processes along the supply chain.

Key benefits from the application of strategic logistics outsourcing

4PL and cost reduction. According to Supply Chain Executive Board (2005), the 4PL provides logistics services for the supply chain with ample opportunity for cost reductions. In the role of the LSP, the 4PL coordinates storage, shipment and deliveries. With distribution services, the 4PL can use the LSP's assets or its own to deliver products to the client or implement other services such as packing and assembly. In consultancy services for the supply chain, the 4PL can analyze the information flow process to redesign a more efficient chain. In general, the 4PL is responsible for ensuring the most efficient and low cost storage, shipments and delivery. Other scholars stated that 4PL is used to reduce high transaction costs in relationships between seller and buyer. It highlights the role of IT to reduce and absorb complexity (Bourlakis and Bourlakis, 2005). The result of another study (Huiskonen and Pirtilla, 2002; Xin and Peng, 2002) also identified how logistics networks use 4PL to lower logistics costs and enhance efficiency and coordination. J. Mehmman, F. Teuteberg (2016) stated their research results that, from an economic perspective, the 4PL generates cost savings in the production and the logistics processes. Additionally, an improvement in the order cost is possible to the extent that the technology level of the sector is improved.

4PL and supply chain efficiency. In concerning the role of 4PL in the supply chain, Visser et al. (2004), Hoek (2006) stated that the 4PL develops intense knowledge and logistics competence, and provide studies for its client to improve the supply chain. Therefore, 4PL suggests, designs and implements new solutions in the supply chain. Other studies highlighted the strategic nature of 4PL and suggested that 4PL ensures the coordination, integration and competitiveness in the supply chain (Remko and Ian, 2001; Xiu et al., 2003; He et al., 2004; Christopher, 2005; Feng and Juan, 2005). Jianming (2010) concluded that the successful operation of 4PL integrates resources of a supply chain reasonably, efficiently and flexibly. Papadopoulou et al. (2013) suggested that 4PL "is constantly evolving within the complex environment of supply chain and logistics, thus denoting its innovative nature" (p. 176). In order to achieve the objective of 4PL in efficient utilities of resources in the supply chain, the application of information and communication tools (ICT) is the vital importance (Vieira et al., 2013; Piplani et al., 2004). ICT which includes mobile phone, email, radio frequency identification (RFID) and platforms of software like transportation and warehousing is applied to improve transparent communication and information exchange as well as information flow (Bourlakis and Bourlakis, 2005). Gendreau and Potvin (2004) addressed integration among ICT applications

as a crucial element for greater efficiency and effectiveness in transportation processes. Indeed, a highly integrated system could manage processes faster and more efficiently, thanks to higher real-time visibility, increased real-time information provided, and the ability to react to changes during shipment (Mason et al., 2003). Jens Mehmman, Frank Teuteberg (2016) concluded that the potential for optimization that can be generated through the involvement of 4PL is increasing with the number of orders either from within the supply chain or from outside. Brewer, Wallin & Ashenbaum (2014) suggested that firms can decide to outsource specific activities as a strategic move for establishing a competitive advantage to their rivals in the market place. These results of studies acknowledge the importance of 4PL in the achievement of main objectives in enterprises and enhance their competitive advantage.

Competitive advantage in manufacturing firms

Business market has become fiercely competitive and changed constantly. In order to be responsive to the market conditions, manufacturing firms build effective strategies based on their resources to achieve competitive advantage. The competitive advantage of a firm has traditionally been discussed by mentioning to the firm's strategies, process capabilities, and resources (Porter, 1985; Prahalad and Hamel, 1990; Barney, 1991; Persson and Virum, 2001). According to the resource-based view, the firm's superior performance is the result of efficient utilization of resources and capabilities. The resources which enable the firm to develop and sustain competitive advantage must be unique and distinct (Wernerfelt, 1984; Day, 1994; Hinterhuber, 2013). While capabilities must be valuable, rare, inimitable and non-substitutable (Rumelt, 1984; Barney, 1991).

Based on the resource-based view, activities of strategic logistics outsourcing have been studied by many scholars including warehouse management capability (Autry et al., 2005), logistics service quality performance (Richey et al., 2007), and reverse logistics performance (Daugherty et al., 2001). Therefore, the resource-based view of competitive advantage can be applied to explain the development of logistics practices and their impact on firm's competitiveness. The development of logistics practices and capabilities would be able to create competitive advantage for firms (Bowersox et al., 2000; Gligor and Holcomb, 2012). Information technology capability is one of sources of competitiveness when firms build IT-applied supply chain. (Wu et al., 2006). Barney (2012) stated that the resource-based view significantly supports supply chain management capabilities in developing and maintaining competitive advantage.

The objective of the 4PL is to use efficiently resources within the supply chain. Benefits from the application of strategic logistics outsourcing are key drivers for the development and sustainment of competitive advantage in manufacturing firms. Based on the abovementioned literature review, the research hypotheses were developed as follows:

- Hypothesis 1: Cost effectiveness from the application of 4PL is positively related to the development of competitive advantage in manufacturing firms.
- Hypothesis 2: The efficient utilization of resources in the supply chain from the application of 4PL is positively related to the development of competitive advantage in manufacturing firms.
- Hypothesis 3: The ICT application in 4PL services is positively related to the development of competitive advantage in manufacturing firms.

RESEARCH METHODOLOGY

The data for this research were collected through the questionnaires which were developed mainly based on theories of Gattorna (1998), Supply Chain Executive Board (2005), Barney (2012), and Bourlakis and Bourlakis (2005). The questionnaire was designed to address the research issues in manufacturing firms which are applying 4PL services. Responses were measured via Likert's 5-point scale and given by managers. In order to assess the important role of 4PL in developing and sustaining competitive advantage in manufacturing firms, respondents in manufacturing firms were asked to point out the extent to which manufacturing firms achieve from the application of 4PL (1-not effective; 5-very effective).

Data was collected from March 2018 to May 2018. Questionnaires were distributed via email or direct mailing. All managers of surveyed manufacturing firms had been informed about the purpose of the survey to take their agreement to participate. Questionnaires were sent to 30 manufacturing firms which are applying strategic logistics outsourcing. The data was analyzed with IBM SPSS Statistics. One sample t-test analysis was applied to check whether mean values of responses are significant.

RESULTS AND DISCUSSION

Being the neutral providers of various services in the supply chain, the 4PLs endeavor to assist manufacturing firms to effectively utilize their resources. The results of this research are

presented in three groups of benefits from the application of strategic logistics outsourcing. First, cost effectiveness is illustrated in the results of main costs in logistics including transportation costs, warehousing costs, and inventory costs. Second, the efficient utilization of resources in the supply chain is assessed through financial resource, human resource, production process, and asset resource. Third, the ICT application in 4PL services is evaluated through positive results in customer service, information flow, and communication between related parties.

Table 1 shows the results of the analysis of activities and resources which are listed in different groups. All of activities and resources receive value over 3. These results signify that activities in logistics services and resources in the supply chain which are considered as important by manufacturing firms are very diverse. Inventory and customer service are two top activities which have higher value of means than others. This would mean that manufacturing firms pay much attention to reduce this type of cost and concentrate more on delivering better services to their customers. There aren't significant differences between three groups because the key objective of strategic logistics services is to create value to the customers. As a result, main types of costs in manufacturing firms are always considered carefully.

Tab. 1: Statistics of effective activities and resources from applying 4PL services

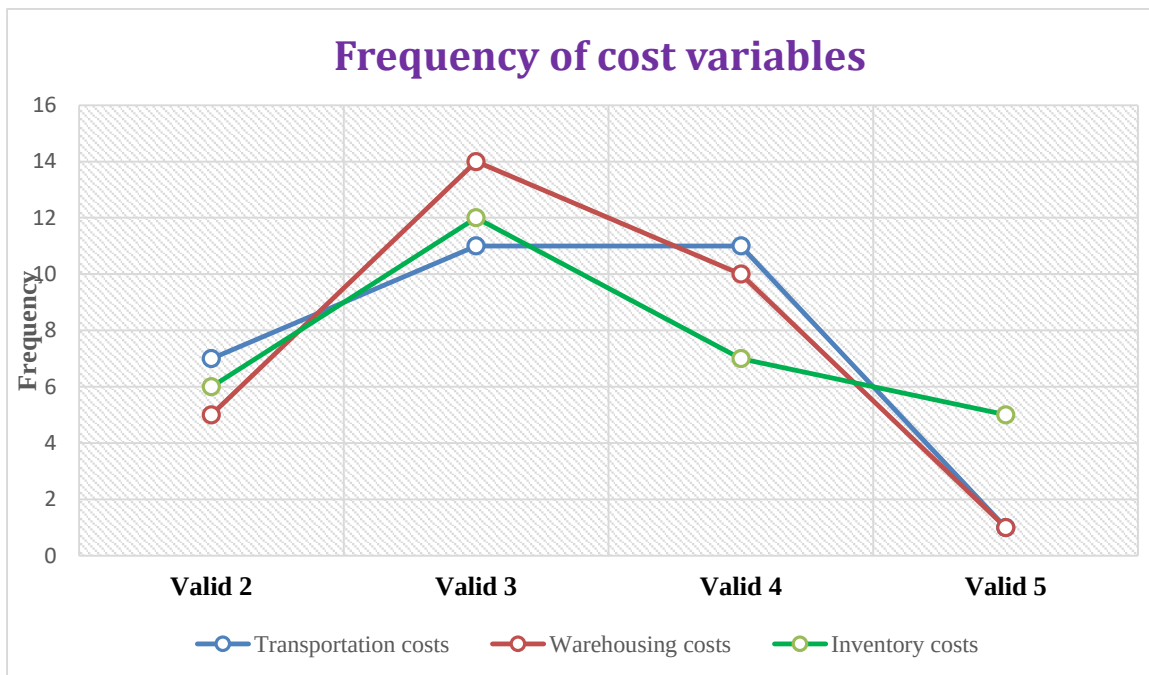
Activities and resources	N	Mean	Std. Deviation	Std. Error Mean
Costs				
Transportation costs	30	3.20	.847	.155
Warehousing costs	30	3.23	.774	.141
Inventory costs	30	3.37	.999	.182
Resources				
Financial resource	30	3.07	.944	.172
Human resource	30	3.20	.887	.162
Production process	30	3.23	.679	.124
Asset resource	30	3.17	.791	.145
ICT application				
Customer service	30	3.27	.944	.172

Information flow	30	3.10	.845	.154
Communication between related parties	30	3.03	.765	.140

Source: Own calculations

Figure 2 presents frequency of cost variables with the validities from 2 to 5. There isn't result for valid 1 in the survey, therefore, the figure doesn't show valid 1 in the graph. Valid 3 gains the highest value and the next one is valid 4 in comparison to the remaining ones. This would mean that most manufacturing firms achieve cost reductions from the strategic logistics outsourcing through the implementation of 4PL. Variable of warehousing costs gains the considerable value with the highest frequency. For valid 4, manufacturing firms highly appreciate the role of 4PL in reducing transportation costs. This type of cost is one of the main ones that directly affect manufacturing firms' objectives in profitability and customer satisfaction. They are important constituents in developing competitive advantage for manufacturing firms. Therefore, the frequency of cost variables highly supports hypothesis 1: Cost effectiveness from the application of 4PL is positively related to the development of competitive advantage in manufacturing firms.

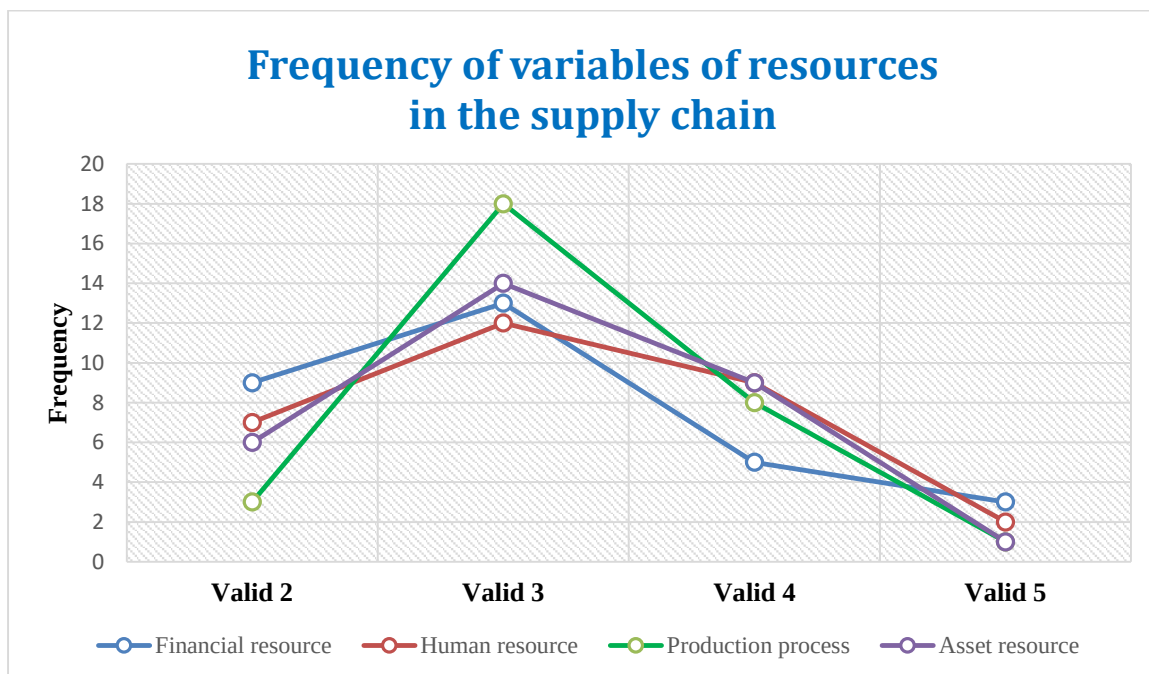
Fig. 2: Frequency of cost variables



The development of an efficient supply chain needs more than an attention in information and communication technologies. It requires process development and changing creation through

the utilization of firm's resources. The increase in the flexibility of logistic activities for the reduction of resources consumption within the supply chain is one of the objectives of supply chain management (Wildemann, 2001). The mean values gained from the statistics imply that strategic logistics outsourcing creates efficiency in using key resources in business operations including financial resource, human resource, production process, and asset resource. Although the significant values aren't considerable high, they achieve enough beneficial values for proving the advantage of strategic logistics outsourcing. Figure 3 illustrates frequency of variables of resources in the supply chain shown from valid 2 to 5. Similar to frequency of cost variables, there is no result for valid 1 from the survey. Valid 3 also gains highest value for all observed resources. The results indicate the efficiency of resource utilization in the supply chain by manufacturing firms when they take advantage of the implementation of 4PL. In manufacturing firms, production process is the vital part in the strategy of making differentiated products which are superior to those of their rivals. Their decisions on outsourcing logistics activities to 4PL generate great opportunities for them to utilize their resources in core competences. This research result implies the validity of hypothesis 2.

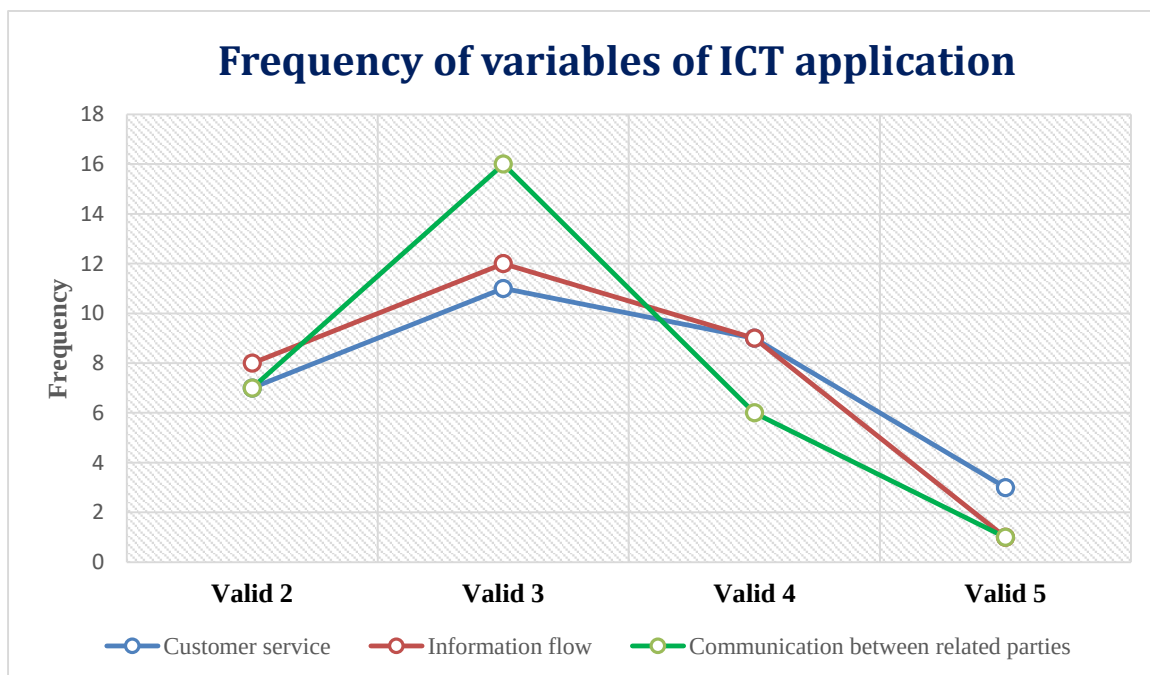
Fig. 3: Frequency of variables of resources in the supply chain



Information and communication technologies represent the technical aspects of supply chain management (Bowersox and Closs, 2011; Closs and Goldsby, 1997; Bharadwaj, 2000; Spanos et al., 2002; Giannopoulos, 2004; Golob and Regan, 2002). The results indicate that

information and communication technologies play a vital role in building networks between related parties in the supply chain in manufacturing firms. All surveyed manufacturing firms appreciate the role of ICT application in enhancing the quality of customer service, information flow, and communication between related parties. From the results stated in table 1, mean value of customer service is the highest one in this group. Being one of key drivers to competitive edge, customer service is currently concentrated more and more by manufacturing firms through the application of technologies. Meanwhile manufacturing firms take advantage of ICT to enhance the quality of communication within their collaboration. It is obvious that technologies bring advanced benefits to all related parties in business operations. It is affirmed by the results of frequency of variables of ICT application demonstrated by figure 4. Nowadays, ICT have transformed communication in the world. The collaboration between related parties in 4PL services is not performed well without the contribution of technologies. Promptness and accuracy are typical examples for enhancing trust and effective collaboration between manufacturing firms and 4PLs. It becomes the foundation for the utilization of both parties' core competences to develop competitive advantage for manufacturing firms. Hypothesis 3 is confirmed to be valid with the analyzed results.

Fig. 4: Frequency of variables of ICT application



The statistics of responses in the survey presents specifically the assessment of respondents to the application of strategic logistics outsourcing through the implementation of 4PL. According to the results stated in table 2, positive assessments from collected responses are mainly focused on valid 3, especially variables of production process and communication between related parties with the highest percentage. As shown in figures 3 and 4, frequencies of these two variables are much higher than others. Other variables such as warehousing costs and asset resource achieve remarkable rates which imply that manufacturing firms gain valuable benefits from outsourcing logistics services to 4PL.

Regarding valid 4, 30% and over give their appreciation to benefits from the implementation of 4PL including transportation costs, warehousing costs, human resource, asset resource, customer service, and information flow. Although the rate for valid 5 is not high, all of surveyed manufacturing firms have recognized high effectiveness of strategic logistics outsourcing to their business performance. There are also a small number of collected responses assessing the effectiveness of strategic logistics outsourcing at limited level. The highest level for valid 2 is financial resource. However, the higher rate of 43.3% for this variable has supported the effectiveness at valid 3. Generally, the statistics have illustrated transparent and positive assessments from manufacturing firms to strategic logistics outsourcing through the implementation of 4PL.

Tab. 2: Percentage statistics of observed variables

Observed variables	Valid			
	2 (%)	3 (%)	4 (%)	5 (%)
Transportation costs	23.3	36.7	36.7	3.3
Warehousing costs	17.6	46.7	33.3	3.3
Inventory costs	20.0	40.0	23.3	16.7
Financial resource	30.0	43.3	16.7	10.0
Human resource	23.3	40.0	30.0	6.7
Production process	10.0	60.0	26.7	3.3
Asset resource	20.0	46.7	30.0	3.3
Customer service	23.3	36.7	30.0	10.0
Information flow	26.7	40.0	30.0	3.3
Communication between related parties	23.3	53.3	20.0	3.3

Source: Own calculations

Table 3 presents the descriptive statistics and the results of the t-test of constituents of competitive advantage in manufacturing firms. The given results indicate the statistical significance of observed variables. Although there are considerable differences in independent variables between groups and variables in the same groups, the results support the aforementioned hypotheses.

Tab. 3: Sample t-test of effective activities and resources from applying 4PL services

Activities and resources	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Costs						
Transportation costs	1.293	29	.206	.200	-.12	.52
Warehousing costs	1.651	29	.109	.233	-.06	.52
Inventory costs	2.009	29	.054	.367	-.01	.74
Resources						
Financial resource	.387	29	.702	.067	-.29	.42
Human resource	1.235	29	.227	.200	-.13	.53
Production process	1.882	29	.070	.233	-.02	.49
Asset resource	1.153	29	.258	.167	-.13	.46
ICT application						
Customer service	1.547	29	.133	.267	-.09	.62
Information flow	.648	29	.522	.100	-.22	.42
Communication between related parties	.239	29	.813	.033	-.25	.32

The analysis of cost reduction in the application of 4PL is to investigate the level of cost effectiveness created from strategic logistics outsourcing. The 4PL can reduce the costs based on the consolidation of demands from the customers to reach economics of scale and make the optimized scheduling for all logistics activities from the perspective of the whole system. Logistics activities are executed by 3PLs in different areas including transportation, inventory,

and warehousing. Warehousing management is considered as an important function in logistics. Warehousing can be a highly costly and labour-intensive function (Murphy and Poist, 1993). Private warehousing is less costly, may make greater use of human resources, and can provide tax benefits (Stock and Lambert, 2001). Thanks to the expertise of 3PLs and transparent strategies of 4PLs, manufacturing firms achieve their objectives with the most effective assumption of costs and time. Therefore, the strategic logistics outsourcing can be viewed as an alternative governance mechanism to enhance efficiency and reduce cost, allowing the firm to achieve a competitive edge through cost advantage. The results of sample t-test show that all types of observed costs are statistical significant. As a result, hypothesis 1: "Cost effectiveness from the application of 4PL is positively related to the development of competitive advantage in manufacturing firms" is confirmed with the research results.

The role of resources in the competitive advantage of manufacturing firms can be easily traced in the corporate strategies. Edith Penrose was one of the first scholars who recognised the importance of resources in achieving a firm's competitive position (Penrose, 1959). Potential valuable services of these resources in the supply chain should be exploited in the right manner to make them available to the firms. In this research, four main resources in the supply chain are mentioned and analyzed with the statistical data. They include financial resource, human resource, production process, and asset resource. These observed variables gain statistical significant values through sample t-test. It means that manufacturing firms appreciate the role of the utilization of resources in the supply chain. One of the perspectives of effective resource utilization is the allocation strategy of firm's resources in the supply chain focusing on core competences. The most effective solution for activities beyond core competences is logistics outsourcing. There is a large number of motives and drivers behind the logistics outsourcing. Strategic logistics outsourcing creates opportunities for positive synergy by bringing the core competences of related parties together. It has been established that strategic logistics outsourcing improves the competitiveness of manufacturing firms by rationalizing business activities and synergic effects. Although the statistical significance of these observed resources are very different, they support the hypothesis 2: The effective use of resources in the supply chain from the application of 4PL is positively related to the development of competitive advantage in manufacturing firms.

Information and communication technologies applied in logistics services are considered as real-time controlling instruments. The analysis of ICT application in 4PL reveals the positive

results in the transparency of communication, information exchange, and information flow. The development and ever changing of business environment require the business approaches to be prompt and responsive. The advances in technology are taking the strategic logistics outsourcing to the new heights. New technologies, e.g. radio frequency identification (RFID), are creating remarkable changes in logistics performance. In former studies on 4PL, scholars pointed that the 4PL is a supply chain solution which combines the capabilities of management consulting, information technology, and 3PL service providers (Gattorna, 1998); or the 4PL is a supply chain integrator that assembles and manages the resources, capabilities, and technology of its own organization with those of complementary service provider to deliver a comprehensive supply chain solution (Qiong Liu, Chaoyong Zhang, Keren Zhu, Yunqing Rao, 2013). This means that technology is an indispensable part in the 4PL services. Respondents highly appreciated the contribution of technology in achieving high quality of information flow, customer services, and communication between related parties. The statistical significances of observed variables in ICT application support hypothesis 3: The ICT application in 4PL services is positively related to the development of competitive advantage in manufacturing firms.

CONCLUSION

The international logistics outsourcing is still growing. Logistics service providers keep launching new services together with applying new technologies to meet their customer's demands. In the ever changing business environment, the indispensable task of manufacturing firms is to develop and sustain competitive advantage over their rivals. Manufacturing firms which focus much on cost reduction and core competences are increasing their demands in the collaboration with strategic logistics outsourcing.

The main objectives of the application of 4PL of manufacturing firms are to reduce operational costs, optimize the allocation of the firm's resources through the use of information and communication technologies. Benefits that manufacturing firms gain from 4PL services are discussed in this research with their statistical significant values. The results reveal that strategic logistics outsourcing significantly contributes to the development of competitive advantage in manufacturing firms. Specific benefits which these manufacturing firms achieve from strategic logistics outsourcing include cost reduction, efficient utilization of resources in the supply chain, and effectiveness in information and communication. However, the research

hasn't analyzed all factors in costs and resources in the supply chain of manufacturing firms as well as proposed model for the collaboration between manufacturing firms and 4PLs to achieve the optimal effectiveness in the development of competitive advantage for manufacturing firms.

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SUPERVISION OF THE VIETNAM DERIVATIVE STOCK MARKET- THEORY AND EXPERIENCE

Dao Thi Phuong Lien, Nguyen Thanh Huyen

Abstract

The establishment of the Vietnam derivative stock market is a prime target in the Decision No. 252/QĐ-TTg of March 1, 2012- Approving the Strategy for development of Vietnam's securities market during 2011-2020. Infact, development of derivative stock market is playing an increasingly important role in the anti-risk for market participants. It is a key stage in the development of financial market, which reflects the deeper and broader growth of the market DSM will help strengthen the function of financial market, expand capital mobilization and reduce the cost of capital, thereby facilitating the development of the economic. Besides the positive points, DSM also imposes huge risks to the financial market. DSM is safe and effective, providing a mechanism for risk prevention, market transparency, responsibility for market surveillance is becoming increasingly important

Keywords: supervision derivative market, transparency derivative market

JEL Codes: H54.

LITERATURE REVIEW OF SUPERVISION MARKET

Polansky et al., 2004, Market supervision is defined '*to encompass the processes and technologies that support the detection and investigation of potential trading rule violations, whether defined in statute or marketplace rules*'. Therefore, market supervision can be understood as the sub-set of processes and technologies that support the detection and investigation of potential trading rule violations with special emphasis on marketplace rules, and the codes of conduct of exchanges and trading venues. Supervision system must meet regulatory requirements to identify, evaluate the trading position or useful tool for managing the securities market in general or DSM in particular. There are 3 criteria for determining the responsibility for supervision DSM:

(1) Jurisdiction- in principle, supervisory responsibilities must be allocated within the jurisdiction of the entity and considered on two main aspects: (i). Jurisdiction to investigate violations of investor institutions/ individuals, the right to request informations, to ask questions regarding potential activities; (ii). Regulatory has the power to convene any individual or investor institution, in certain cases where access to personal or sensitive information, including investor name, insider trading and information related to suspicious activities for effective supervision. The disclosure of the identity and position of investors will be kept confidential in accordance with the law.

(2). Deterrent effect- Participants rely on a high level understanding of the complexity and mode of market operation for personal gain. Stock Exchange is the first monitoring route to detect suspicious behavior. Market regulator with sanctioning rights create a strong barrier, deterrent limit to violations in the DSM.

(3). Organisational capacity and efficiency- This is mainly reflected in the effectiveness of supervision, detection, investigation and enforcement by regulatory bodies. Actually, depending on the specific characteristics of each segment of the market, the law regulates functions, tasks of supervision, detection, investigation and enforcement accordingly. However, it is important to note the completeness of the data, the sequence as well as the log entry, price fluctuations need to be monitored continuously.

The study Preece (2011) shows that the theoretical basis for market supervision analysis is performed on the data structure collected for each specific case and must ensure a clear link between the legal framework and openness of the market. He also demonstrates that transparent market structure enhances competitiveness ensuring stakeholder engagement. Market structure changes will require a proper regulatory framework and monitoring process, ensure the financial market in general or DSM in particular always aiming fair and efficiency.

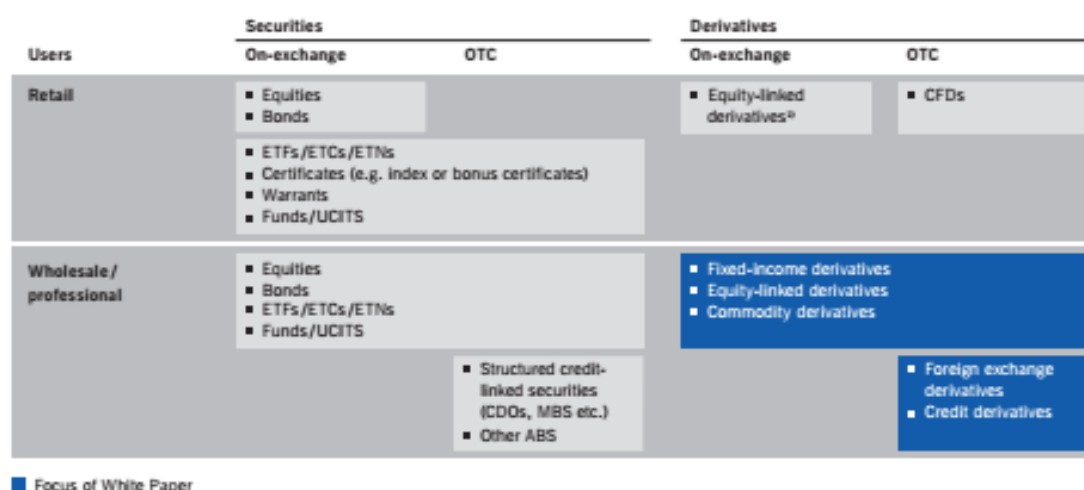
IOSCO (2012), market supervision must ensure that the goal is fair, orderly and prevent market abuse. Securities markets have experienced a dynamic transformation in recent years. Rapid technological advances and regulatory developments have produced fundamental changes in the structure of securities markets, the types of market participants, the trading strategies employed, the increase in the speed of trading and the array of products traded. At the same time posing a lot of risk from illegal or inappropriate behavior can be substantially increased by automation, as market participants have the ability to trade numerous products and enormous

volume in fractions of a second. These developments have also posed challenges to regulators in conducting market analysis and surveillance, and in reconstructing important trading events. Regulators are considering ways to deal with consolidation of monitoring data, as close to real time as possible. They believe that this approach could facilitate management agencies to detect and review abnormal operations almost immediately, which could significantly prevent illegal or inconsistency activities.

OVERVIEW OF VIETNAM DSM

Basel Community on Banks and Supervision (2004) defined “derivatives are contracts based on underlying assets without require any of the underlying investments in those assets”. It is also understood as a contract between two parties to exchange payments based on price or yield without any transfer of ownership or cash flow in the underlying market.

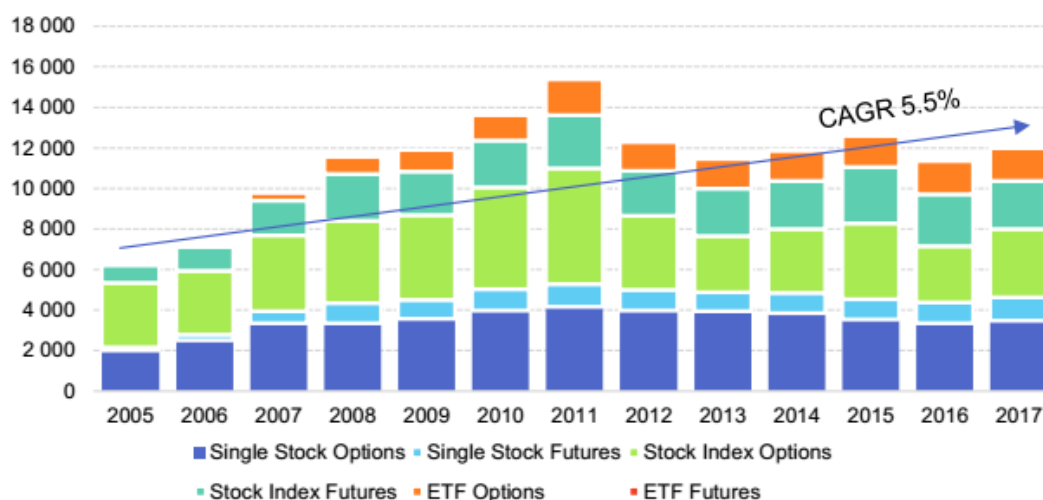
Fig. 1: Overview of financial instruments universe



Source: The Global Derivatives Market, 2017

Derivatives are used to invest, speculate and hedge in financial market. These four types combine in the underlying market to create product of assets and obligations to meet the diverse needs of investors. The flexibility of derivatives explains the incredible growth of the derivatives market in recent years.

Fig. 2: Number of equity derivatives contracts traded worldwide (millions of contracts)



Source: WFE, 2017

Activities of Vietnam's derivatives stock market

Aug.10, 2017, Vietnam's derivatives market officially launched at the Hanoi Stock Exchange (HNX) with stock futures contracts the first to begin trading. Vietnam became the fifth country to have DSM in the ASEAN region and 42nd country in the global. Making the next step to perfect the stock market in particular or the overall financial market of Vietnam. Thereby, improving investor base included foreign investors, institutional investors especially, to promote liquidity in the underlying market.

Vn30- Index was selected with the participation of seven member securities companies. The 4 selected time periods are the futures of current moth, next month, the last 2 months of the last 2 quarters. The fundamental difference from the underlying stock market, goods do not depend on issuer but reflect the expectations of investors with the movement of the market in the future.

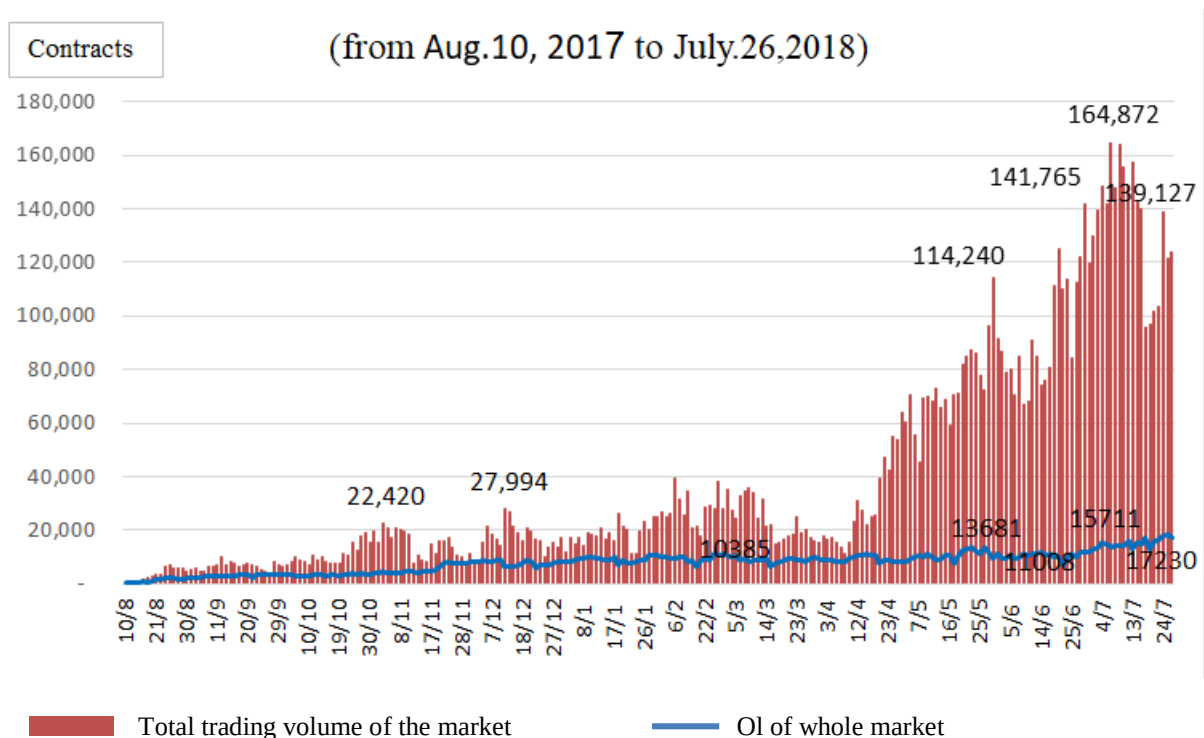
The objective is to step by step set the foundation for a fragmented and risk prevention, after one year of operation, it can be said that DSM has been successful initially certain results, as follows:

The first, DSM is safe and efficient, supervision and reporting are carried out on a daily basis, the market information displayed on the wesite is accurate, timely and meet the needs of the market.

The second, the growth of DSM is very good, surpassing expectations. In one year since the open, DSM has grown very well and stable, specifically:

Statistics show that the growth in trading volume on the DSM has continuously increased. By the end of July 2018, the total volume of the market reached 9,5 million contracts. Average monthly volume from September 2017 to June 2018 increased 35%. Average trading volume was also impressive. In 2017, the average trading volume is 10,954 contracts/ day while from the beginning of 2018 to the end of July 2018, the average trading volume is 58,613 contracts/day, 5.3 times higher than that of 2017. It can be seen that DSM has become an attractive channel attracting investors in the context of market fluctuations. In 2018, OI volume is stable and reached 16,858 contracts on July 31, 2.1 times compare with the end of 2017. Particularly, DSM had a sudden increase in trading volume from May 2018 when underlying market fluctuates sharply.

Fig. 3: Trading volume and OI



Source: HNX

The third, DSM of Vietnam, although still young, it has operated in accordance with the rule of nature and the same international DSM. Properly functioning as a hedging market for

investment activities in other market segments, including stock market as well as the commodities market.

The fourth, transaction supervision is the key of DSM, In parallel with the DSM's development process, regulatory authorities have established tools and procedures transaction supervision. Supervision trading classes are abnormal in the underlying market. As the DSM is primitive, supervision is still at a simplified level. However, the DSM is developing, it is difficult to detect suspicious transactions, it is necessary to develop new methods, modern supervision procedures more effective.

Legal framework

Decree 42/2015/NĐ-CP, dated July 1, 2015 which lays out the legal framework for trading DSM in Vietnam. The implementation trading in DSM will be guided by the Ministry of Finance (MOF) in accordance with the roadmap for the development of DSM approved by the Prime Minister in conjunction with Decision 366/2014/QĐ-TTg on March 11, 2014. In order to create flexibility in the development of new products for the DSM on the prudent basis, depend on underlying assets in line with international rules.

Circular No.11/2016/TT-BTC dated 19 Jan 2016 (Circular 11) provides: (i). Organizing the trading and DSM, mechanism of operation market participants; (ii) The establishment and operation of CCP. This is new organization model in Vietnam, contributing significantly to limiting payment risk, ensuring a safe and stable DSM; (iii). Facilitating the restructuring of the investor base, increasing institutional investors, professional investors with high level of knowledge; (iv). Approved for Exchange, VSD issued regulations on trading and clearing as well as approval of contract forms; (v). Enhancing the role of state management and supervision in the stock market.

However, during the implementation of Circular 11 have been certain difficulties for market participants in the process of building disclosure and processing system. On 16 March 2017, MOF issued Circular No.23/2017/TT-BTC amending and supplementing a number of articles of Circular 11 to be more practical when It was implemented.

On the tax policy implemented Documentary No. 11133/BTC-CST dated 21 Aug 2017 of the MOF on tax policy for income from transfer of derivative contracts in the DSM. Accordingly,

the tax rate of 0,1% for each transfer price applied to both Institution and individuals in the DSM.

Derivative stock market supervision is conducted as in the market to detect and prevent abnormal trading behavior that affects the real value of DSM. Basically, the supervision activity on the DSM is carried out continuously through the day's alerts and analytical reviews on the basis of multi-day trading data. The purpose of supervision is not only to detect infringements but also early warning signs of possible violations to protect the interests of market investors and sustainable development of this market.

On August 2nd, 2017, the Ministry of Finance issued Decision No.1520/QD-BTC regulating the monitoring of trading activities on the stock market. Accordingly, three units responsible for supervision on the stock market are the State Securities Commission (SSC), HNX and Vietnam Securities Depository (VSD). However, from December 8,2017, the securities market supervision must comply with the Circulars:

- + Circular No. 115/2017/TT-BTC dated 25 October 2017 Guiding supervision of securities transactions on the securities market;
- + Circular No. 116/2017/TT-BTC dated 25 October 2017 Guiding compliance supervision by the State Securities Commission of activities in the securities sector of stock exchange and Vietnam Securities Depository Centre.

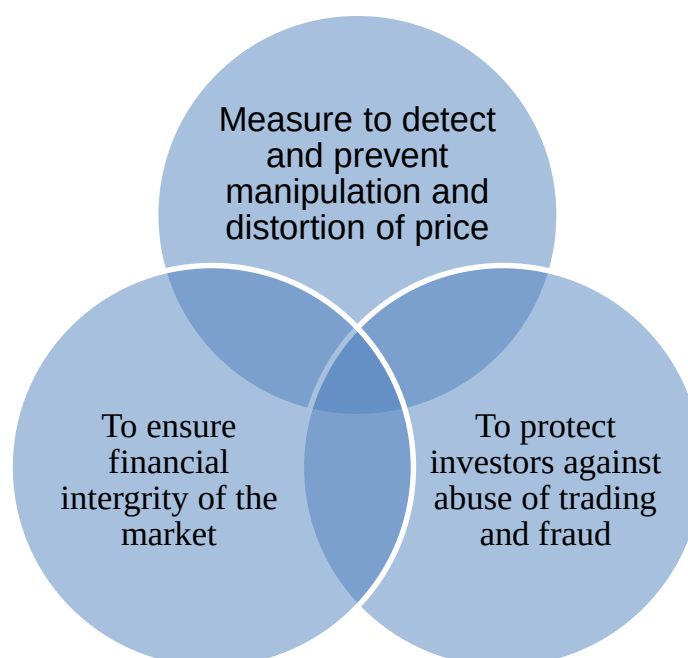
The need to supervision DSM

Market supervision follows the definition stated in the work of Polansky et al. (2004) is “*systems to encompass the processes and technologies that support the detection and investigation of potential trading rule violations, whether defined in statute or marketplace rules*”. Thus, the definition explains that market monitoring and surveillance systems should have processes and technologies that support the investigation and detection of any potential trading violations with special consideration given to the rules of the marketplace and codes of conduct of exchanges and trading venues. The system should be included components such as detection, investigation, and enforcement which are supported by different processes and technologies in order to strengthen the enforcement actions. So that, supervision is required to ensure fairness, transparency and stability of the DSM. This activity must be conducted on

regularly to detect and prevent trading behavior not fair on the both underlying and derivative market.

The purpose of supervision activities in the DSM is similar to other market segments are aimed at market protection. That is: (1). Measure to detect and prevent manipulation and distortion of price, (2). To ensure financial integrity of the market, (3). To protect investors against abuse of trading and fraud.

Fig. 4: The purpose of supervision activities in the DSM



Source: IOSCO

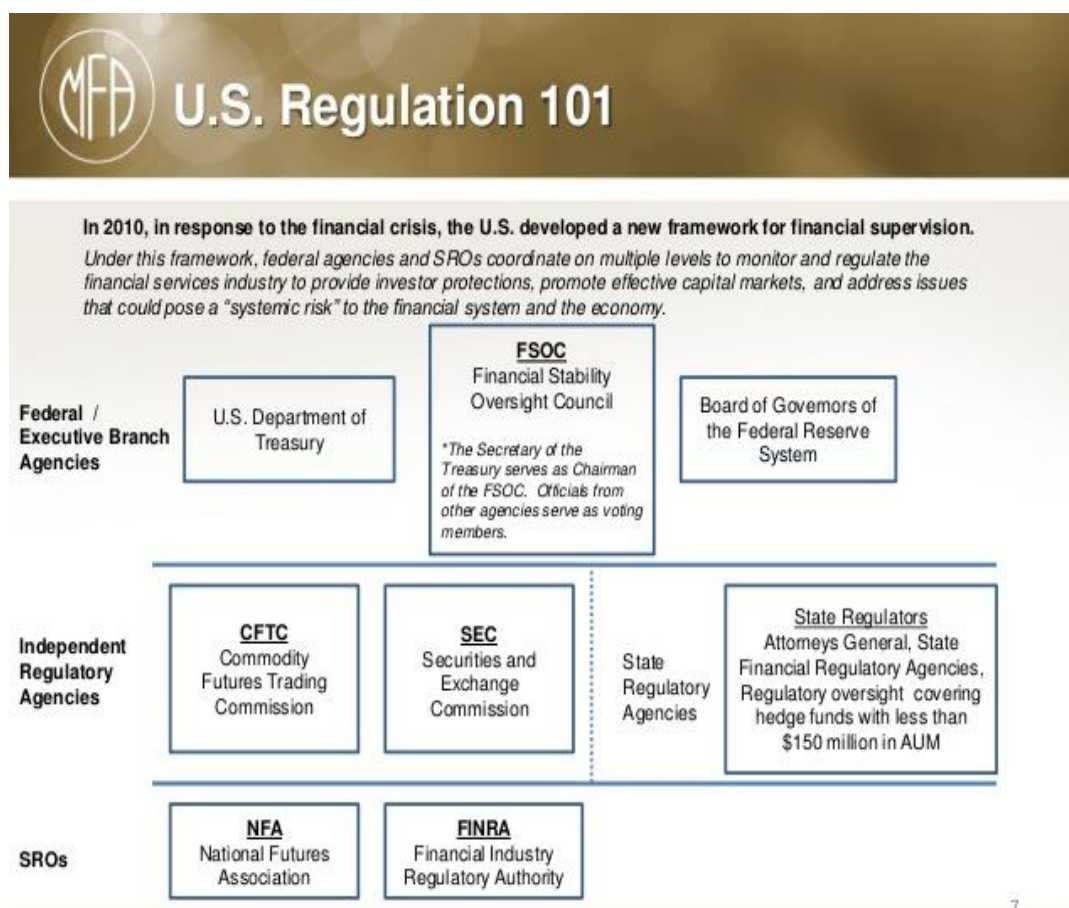
INTERNATIONAL EXPERIENCE ON DSM SUPERVISION

American- The US financial system is quite a complex system in term of both structure and function, which also dictates the same regulatory system. There are 3 level in the supervision system.

Level 1, the two government bodies, Commodity Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC) are responsible for supervision on the DSM. The scope of supervision depends on the derivative that derives from commodities or securities,

which are subject to the Law on Commodity transactions. These two Organizations work closely together to ensure the market is transparent and consistent.

Fig. 5: Structure of financial supervision in US



Source: SEC

Level 2, Self- regulatory organizations (SRO) are National Association Of Securities Dealers (NASD) and National Futures Association(NFA) are assigned supervision on the basis of building self- monitoring system.

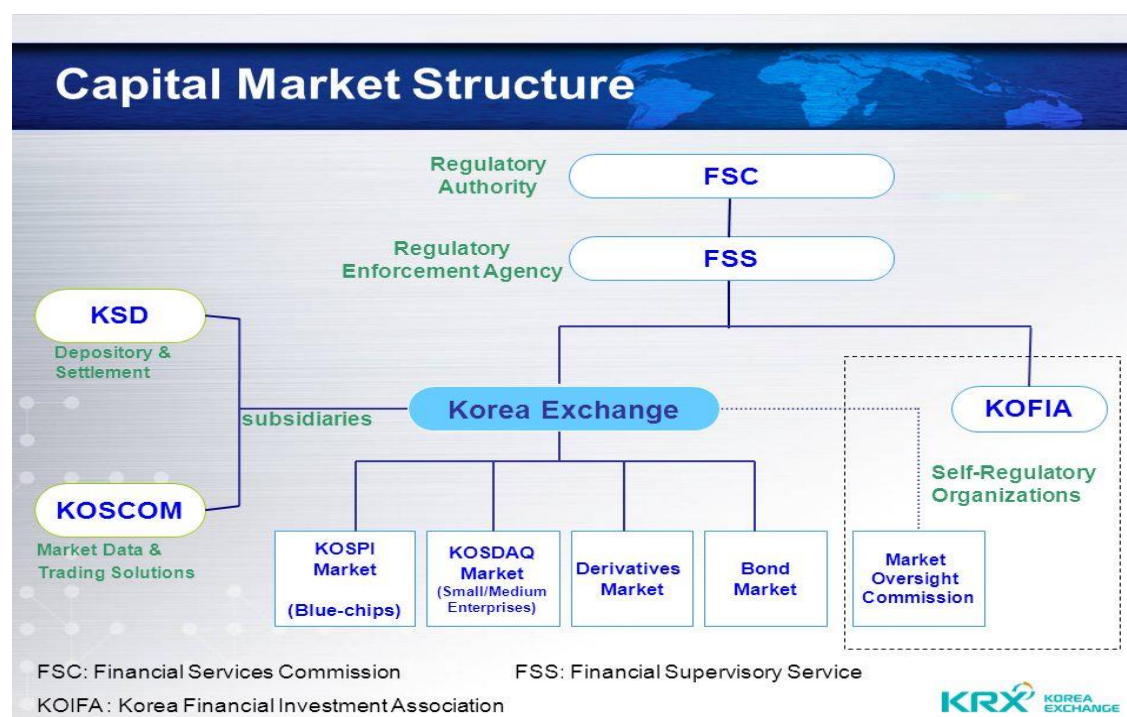
Level 3, belong to Exchanges such as: Chicago Board of Trade (CBOT) and New York Board of Trade (NYBOT) are responsible for issuing regulations on the market and database system for supervision.

These 3 levels coordinate in a uniform DSM management from micro to macro level. Beside that, Commodity Futures Modernization Act of 2000 (CFMA) was enacted in 2000, classifies

innovative derivative financial products, standardizes rule for securities and future contracts. Under these regulations, the CFMA regulate oversight functions of the relevant supervisory authorities to ensure a stable financial derivative market, ensuring that the regulatory framework and operational principle are consistent.

Korea- The institutional arrangements for financial sector supervision involve multiple agencies. These agencies include: (i) the Ministry of Strategy and Finance (MOSF)-responsible for foreign exchange market (FX) policies and financial and economic coordination; (ii) the Financial Services Commission (FSC)-responsible for financial sector policy, prudential policy, supervision, enforcement, sanctions, and financial institution resolution; (iii) the Securities and Futures Commission (SFC)- functions are monitoring, supervising and investigating capital markets activities; (iv) the Financial Supervisory Service (FSS)- conducting the inspection and supervision of financial institutions under the guidance and oversight of the FSC and SFC; (v) the Korea Deposit Insurance Corporation (KDIC)-operating the deposit insurance function and performing the resolution functions under the guidance and oversight of the FSC; and (vi) the Korea Financial Intelligence Unit (KOFIU) established under the oversight of the FSC, performing the financial intelligence function.

Fig. 6: Capital market structure



Source: KRX

Inter-agency mechanisms have been established to facilitate policy coordination and conflict resolution, and cross representation at key decision-making levels and multiple interlocking governance arrangements .

The authorities have a broad set of powers, most of which are used effectively. The on-site examination program could be expanded to ensure sufficient coverage of smaller entities, in particular asset management companies and auditors. Improved oversight of small auditors is important to address challenges in enforcing compliance with the auditor independence and quality control requirements. The on-site inspections should also increasingly focus on ensuring proper handling of customer securities and funds.

The KRX is the main player in the securities and derivatives market, operating three exchanges and offering CCP settlement services for all securities and derivatives traded on the KRX³⁹. KRX developed a front-line supervising system for DSM called the Vitamin System. This is flexible supervising system, based on signals, rules, alerts, visualization system. Buiding effective reporting system, analysis and real-time monitoring.

Singapore- Market surveillance organizations are responsible for maintaining the order of the market and protecting the legitimate interests of the parties, as well as other illegal activities.

Ministry of Finance (MOF)’s regulatory policy is on economic development; the ministry does not have a role as a financial supervisor. Monetary Authority of Singapore (MAS) as Singapore’s central bank, is authorized to act as a banker to, and financial agent of, the government. It has a responsibility to promote monetary stability and credit and exchange policies conducive to the growth of the economy. As the integrated supervisor of the financial services sector, the MAS conducts risk-based supervision of financial institutions. This includes authorization or licensing of financial institutions to offer financial services, setting regulatory rules and standards, and taking actions against

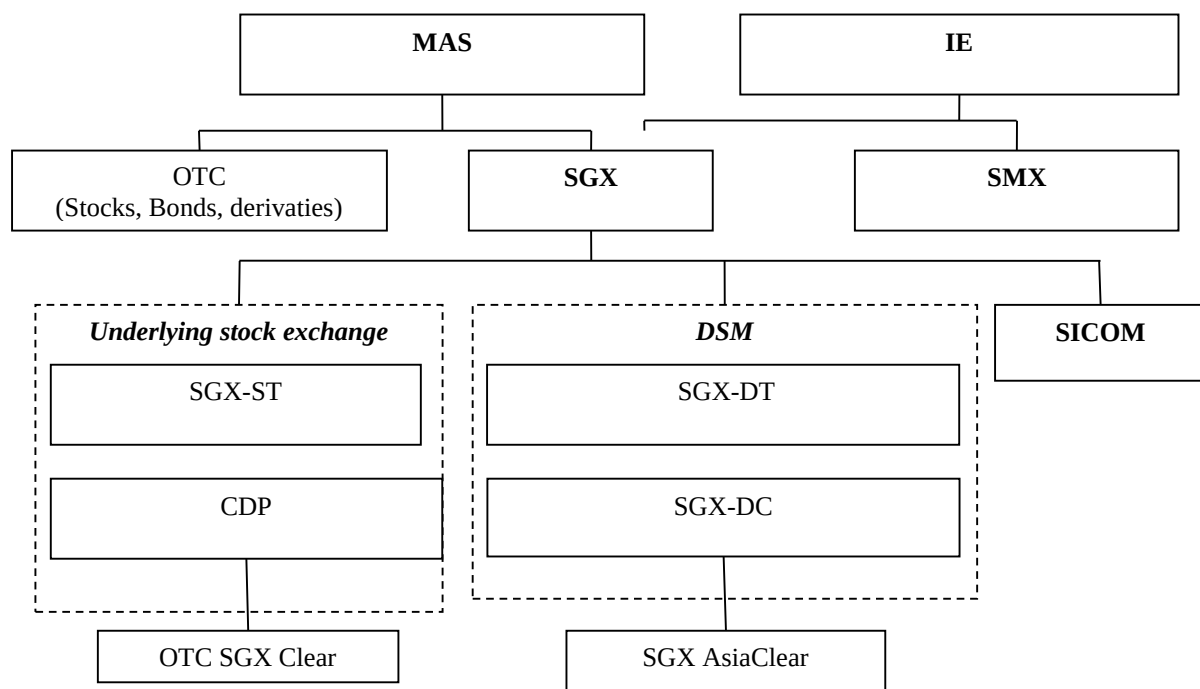
Singapore Exchange Limited (SGX) was formed on December 1st, 1999, with the merger of Stock Exchange of Singapore (SES) and the Singapore International Monetary Exchange (SIMEX). The Risk Management and Regulation division of SGX addresses issuer regulation,

³⁹The KRX operates three exchanges: the Korea Composite Stock Index (KOSPI), Korean Securities Dealers Automated Quotations (KOSDAQ), and derivatives market (DM). It also has a majority stake in the KSD, which is a securities settlement system, central securities depository (CSD), and maintains the register for all securities traded on the KRX.

member supervision, market surveillance, enforcement, risk management, and regulatory policy. As in all other developed economies, there are numerous industry associations within the financial services sector. These include the Securities Association of Singapore, the Life Insurance Association, the Singapore Reinsurers Association, and the General Insurance Association of Singapore.

The *Securities and Futures Act* (2001) created the existing framework for authorization of markets and licensing of intermediaries, the scope of regulated activities, and an enforcement mechanism to enable MAS to carry out its enforcement function more efficiently.

Fig. 7: The Financial supervision structure, Singapore



Source: MAS

SOME RECOMMENDATION

As a full member of the International Organization of securities Commission (IOSCO) in 2014, Vietnam must comply with the “Principles for the Regulation and Supervision of Commodity Derivatives Markets” that fit the realities of the domestic market, included:

- Principle for Framework for Undertaking Market Surveillance: Regulators should establish a clear and strong legal framework for supervising, compliance, surveillance and enforcement activities.
- Principle for Monitoring, Collecting and Analyzing Information: Regulator collecting and Analyzing Information. The vast majority of respondents have developed, employed, and maintained methods for i) the supervising of trading activity on the markets, ii) the collection of needed information, and iii) the analysis of the information.
- Principle for Authority to Access information: Authority require access to relevant information concerning transactions and large position holders and to sanction non-cooperative parties. Some respondents lacked access to individual participants’ positions and transactions.
- Principle for Collection of Information on On-Exchange Transactions – The majority of respondents in jurisdictions with derivatives exchanges (or comparable trading facilities) indicated that a relevant Market Authority has access to information relating to the pricing of contracts.
- Principle for Large Positions – The vast majority of respondents that have a regulated derivative market in their jurisdictions note that they have the means to identify large trader positions for the relevant on-exchange derivatives contracts.

Beside that, there are 3 goals must be ensured in securities supervision are Protecting investors, Ensuring that markets are fair, efficient and transparent, and Reducing systemic risk. Achieve these objectives, need to:

Preventing manipulation and price distortion: The regulator, self-governing bodies and securities exchange should be issue a model contract to ensure appropriate content and an effective surveillance system.

Ensuring Market integrity- the main method used to ensure transparency information in trading, clearing system, margin and capital requirements.

Protecting investors- All countries in the world, protecting investors are always identified as one of the most important and fundamental objectives to develop a stable, fair and sustainable DSM.

State Securities Commission of Vietnam (SSC) has the authority and obligation to establish regulatory oversight relating to trading in DSM, Exchange, Vietnam Securities Depository (VSD), derivatives houses and other participants, including: Laws, Decrees, Circulars establishment of supervision, inspection and violation procedure.

At present, supervision activities in Vietnam's securities market is carry out at SSC, Exchanges and VSD. Accordingly, supervision in the DSM is also done as the underlying market and ensures compliance with IOSCO principles. That is implementing supervision mechanism at 2 levels: level 1 by the SSC to monitor the clearing, trading and general supervision activities in DSM. Supervision level 2 is carried out by functional departments of Exchange and VSD. Exchange monitors trading and market participant activities. VSD monitors the clearing and settlement activities of clearing members and limit of investor positions.

It should be note that derivatives transactions are not the same as securities trading in the underlying market. Therefore, basic supervising criteria on frequency, concentration, volume, transaction price by traditional method. It is important to focus on other important factor to ensure the DSM is stable and sustainable, that is the risk control based on detailed information of each trading account of each investor is updated regularly.

The last, market integrity is a core regulatory objective of securities regulators, and is critical for the well-functioning of any financial market. Having a transparent set of trading rules which are effectively enforced where parties have access to the same amount of information contemporaneously is critical in any market. The integrity of the market is maintained through a combination of surveillance, inspection, investigation and enforcement of relevant laws and rules.

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TASK-BASED STANDARD OPERATING PROCEDURE APPROACH TO IMPLEMENT BUSINESS PROCESS MANAGEMENT IN RETAIL

Diep N.T. Nguyen

Abstract

Purpose: Nowadays Retailers are dealing with not only their rivals' competitions but also pressures of customers' demands, shorter product life cycles, and especially acceleration of innovation in technology. In order to survive and develop, Retailers continue improving their performance through Business Process Management (BPM), which has become an essential instrument to enable their business strategies and objectives to be well-controlled and fulfilled. This paper aims to propose a format of Standard Operating Procedure (SOP) to implement BPM effectively with task-based approach for operations activities including Merchandising, Operations, Promotion, Controlling, Personnel, Supports and Supply-chain in retail.

Design/methodology/approach: To achieve the objectives, Descriptive method was used, comprising (i) Survey approach (interview and questionnaire) to examine the frequency, attitudes, beliefs, prejudices, preferences, and opinions on how BPM was implemented with SOP approach of interviewees, who were key persons in big retailers; and (ii) Observational approach to view performance of retailers in business environment (real-life situation instead of laboratory) and crosscheck the result of survey. With research result, author may identify all most key tasks in a Retailer, which are prerequisites to establish the full set of SOPs so that BPM will be implemented efficiently.

Findings: Different from previous research, this paper focuses on how SOP contributes to BPM implementation in retail industry as well as illustrates that besides initiative process modelling, identification of key tasks in an SOP is very essential to make it clear and comprehensible for operators to follow. Although RACI/RASCI matrix⁴⁰ (Petrakova and Reusch) is used quite popularly in many organizations, it does not satisfy all requirements of Retailers to implement BPM and deploy SOP. Therefore, the proposed "TRATS" model (Task, Responsible, Approval, Time and Standards), which are based on basic tasks in retailing,

⁴⁰ RA(S)CI stands for Responsible, Accountable, (Support), Consulting and Informed.

presented in task-based SOPs, may cover almost the gaps and help Retailers perform BPM more efficiently and effectively.

Research/practical implications: Through the research, author would like to emphasize that BMP and SOPs are well-performed only if they were easily comprehended and firmly conceived by employees, so that business objectives may be accomplished; therefore, SOPs must be detailed and comprised all operational aspects for employees to comply with. The research is also the combination of academic knowledge and practical experience of BPM implementation in terms of SOP, of which expectation is become a reliable source and basis reference for further research in BPM as well as a guideline for Retailers to improve operations management.

Originality/value: Differing from manufacturers, retailers are about people while technology cannot completely replace human skills; therefore, BPM may be presented as items of works chronologically in written, so-called “task-based SOPs“, which are more comprehensible for employees to perform and accomplish the objectives of enterprises easily and efficiently. Expectedly, SOP with “TRATS“ model may be useful for practitioners because it can cover almost all important aspects in BPM implementation, therefore it can help them to improve their business performance. For academics, “TRATS“-SOP (or task-based SOP”) approach may be a new point for researchers who are interested in BPM of retail industry and want to develop it in further literature.

Key words: Business process management (BPM), Operations, Retail, Standard Operating procedure (SOP), Task-based approach.

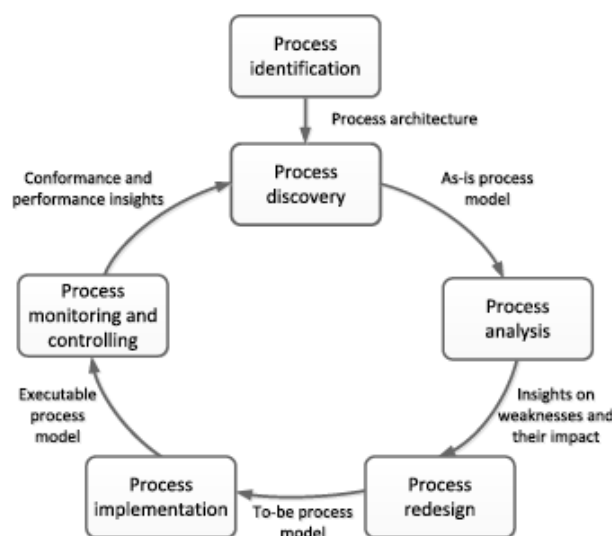
JEL Codes: M12, M19

INTRODUCTION

Business process management (BPM) is the achievement of an organization’s objectives through the improvement and management. More than just software or modelling, it concerns how these processes are implemented and executed (Jeston and Nelis, 2008). BPM is considered as a comprehensive approach to realizing efficient and effective business activities in enterprises (Lemańska-Majdzik and Okręglicka, 2015). As Dumas et al (2012), the first initiative of BPM lifecycle (Fig.1) is termed process identification or so-called process

architecture, in which key business processes identified will be ensured to cover all crucial activities and accomplish the expected outcomes in the relationships among them. The second phase is process discovery, in which processes are presented in detail models to communicate among relevant persons how to deploy. For easier comprehension, process is usually described in diagram or flowchart, which is standardized with Business Process Management and Notation (BPMN) by the Object Management Group (OMG)⁴¹ in 2011. Process analysis is a very important step to identify any issue in a process such as person(s) involved, resource(s) used, outcome(s) expected, time spent and frequency in each task, and performance measures, then to redesign the process. After the process was redesigned, implementation is the very important phase. However, Dumas et al (2012) only focused on one approach, which is deployed in a Business Process Management System (BPMS). In order to be executable and suitable for retail, this phase may be deployed with SOP approach. Therefore, process monitoring and controlling to assess how well BPM perform will be modified and customized accordingly. In addition, this improvement will be presented in task-based SOP approach as a recommendation in this article.

Fig. 1: BPM lifecycle



Source: Dumas et al (2012)

This paper is structured as follows: Firstly, the need of BPM implementation with SOPs will be discussed based on theory grounded and practice combined; then why SOP approach is

⁴¹ <https://www.omg.org>

essential and bring benefits for BPM implementation will be explained. Secondly, identification of key operation processes for SOP preparations to implement BPM in retail will be presented, then the task-based SOP will be introduced as the new point of this article. Finally, it is the conclusion on implications and further research possibilities.

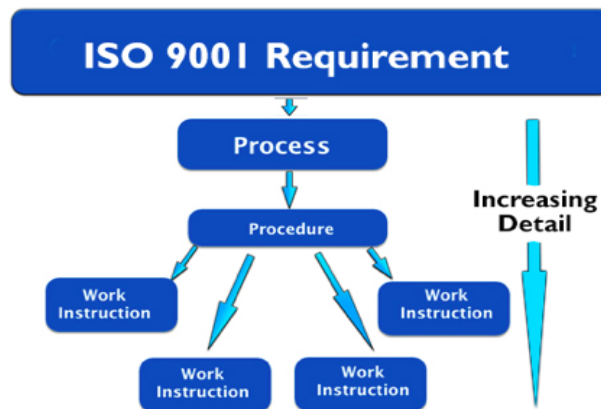
BPM IMPLEMENTATION WITH SOPs

Process vs Procedure

Based on ISO 9001:2015 - Quality management systems⁴², the relationship between Processes, Procedures and Work Instructions is redefined and explained as follow:

- **Process** is the high level of strategic methods of control, determines the needed objectives and resources.
- Whereas, **procedures** add more details of specifications, specific tools and measurement, in which **work instruction** is the step-by-step guideline to implement the process and procedure uniformly (Fig.2).

Fig.2: Relationship between Process and Procedure



Source: Standards Stores (9000 Stores)

The ISO 9001:2015 standard defines the concept of Business Process as: “**A set of related or interacting activities, which transform inputs into outputs.**” It is possible to qualify something more by saying that a process is a sequence of activities with a realization order in time, which converts a given input into an output. Any activity, or set of activities, that uses resources to transform input elements into results can be considered as a process.

⁴² <https://www.iso.org/obp/ui/#iso:std:iso:9001:ed-5:v1:en>

On the one hand, referred to ISO 9001:1987-2000 and ISO 9001:2008, a posting of Transition Support (2018) presents that procedure, also-called documented procedure or documented information, identifies the scope and applicability, definitions, inputs, activities, outputs and reference documents to fulfil the objectives; while a managed process, based on ISO 9001:2015 is the flow which comprised resources allocated (inputs), through activities, and objective achieved (outputs) to make demand satisfied. In this flow, the result is also reviewed and measured to create the improvement. On the other hand, based on their natures, there are several differences between Processes and Procedures, which are described in Table 1.

Table 1: Differences between Processes and Procedures (as their natures)

Processes	Procedures
Are driven by achievement of a desired outcome	Are driven by completion of the task
Are operated	Are implemented
Stages completed by different people with the same objectives; departments do not matter	Steps are completed by different people in different departments with different objectives
Flow to conclusion	Are discontinuous
Focus on satisfying the customer	Focus on satisfying the rules
Generate results through use of resources	Define the sequence of steps to execute a task
People work through a process to achieve an objective	Are used by people to carry out a task
Are dynamic they cause changed	Are static until changed
Make things happen, regardless of people following procedures	Only cause people to take actions and decisions
Function through the actions and decisions that are taken	Prescribe actions to be taken
Select the appropriate procedures to be followed at each stage of a process	Identify the tasks to be carried out

Source: Modified from Transition Support

BPM vs SOP

Business processes has become familiar with all organizations, whether they are government agencies, non-profit organizations or enterprises (Dumas et al, 2012). A business process also involves a number of factors such as manpower, software applications, equipment, materials, and immaterial objects. For enterprises, business processes are what they perform to deliver services or products to their customers. In other words, business process is defined as a collection of inter-related events, activities and decision points that involve a number of factors and objects, and that collectively lead to an outcome of value to customers.

According to Dabaghkashani et al (2012), Business Process Management (BPM) is recognized as the best way to facilitate process improvements by providing real benefits such as Automation of Standard Procedures and Processes, Ability to Visualize, Simulate and Trouble-Shoot Business Processes, Change Business Rules and Processes. They also define that Business process is the complete and dynamically coordinated set of collaborative and

transactional activities that deliver value to customers.

In fact, enterprises use BPM as a framework of their operational activities to optimize their resources in inputs to outputs to satisfy their customers, achieve objectives, as well as increase the efficiency and effectiveness through continuous improvement and innovation. When mentioned about BPM and SOP, in the book *“Business Processes and Standard Operating Procedures: Two Coins with Similar Sides”*, Peinel and Rose (2017) stress that business processes and standard operating procedures are inseparable. In practice, SOP-based approach is one of the most suitable and indispensable instruments obviously during implementation BPM. So, what is SOP?

EPA (2007) and Peinel and Rose (2017) agree that a SOP can be defined as a set of written instructions in which routines or repetitive activities are detailed and followed by relevant individuals so that business processes can be conducted. Additionally, Peinel and Rose (2017) emphasize that SOP serves as blueprints for business process (in term of workflow), to translate requirements, operation standards, assignment and allocation of resources into executable activities to accomplish business objectives under internal control. As Environmental Protection Agency (EPA, 2007) sometimes SOP may be called protocols, checklist, instructions, worksheets and laboratory operating procedures depending on business's natures or purposes. For this paper, hereafter, the term “SOP”/“SOPs” will be used to replace procedure(s), operation procedure(s), standard procedure(s), or standard operating procedure(s).

In a posting related to ISO 9001:2015, Standard Stores claims that the number of processes can determine the number of procedures; meaning that a procedure may be created for each process with detailed work instructions for each task. While a business process is a set of activities that transform resources used as inputs to outputs to achieve enterprise objective(s), a procedure is an approach that describe how to implement a process, and commonly in written.

According to EPA (2007), SOPs are written in concisely and easily understanding forms with sufficient details based on the processes redesigned. Gough and Hamrell (2009) stress that SOPs should be clear, true and interact with each other to reflect how the company operates. Therefore, BPM may be considered as a conceptual framework to achieve the outcomes desired, while SOP with work instructions will perform the necessary activities to accomplish the business objectives which are defined in BPM.

Benefits of SOP

According to Perfect Sourcing (2013), there are many benefits for enterprises that establish the full set of SOPs to implement BPM. However, Environmental Protection Agency (EPA, 2007) states that only if SOPs written correctly are accessed, understood easily, and followed strictly by relevant persons, as well as reviewed, controlled and re-enforced by management, enterprises can obtain the benefits as Perfect Sourcing (2013) mentioned follows:

- i. **Consistent results** - when SOP is followed strictly every time because it can support enterprises to perform exactly as instructed even if there is any personnel replacement. In practice, for instance, McDonald's (the world's largest chain of quick-service restaurants with 14,155 stores in the USA and 36,899 stores worldwide, serving tens of millions of customers daily worldwide according to its official posting⁴³, corporate report⁴⁴ and statistic website⁴⁵), customers can receive the same products or services and assistance at any store because it has the perfect set of standards and SOPs for employees to comply with.
- ii. **Right Quality First time** - that means any organization endeavours to deliver to their customers not only a product but also a quality product. Enterprises are always requested to comply with SOPs with expectation that the outputs of the process must be perfect, any common mistakes or errors must be eliminated. **“Right first time, every time”** recommended by iSixSigma⁴⁶ has become commonly for enterprises, especially for mass companies to reduce the errors or variations occurred, in order to provide perfect products or services for their customers. Nowadays, quality control is especially concentrated as a competitive advantage of corporation with SOP system, which is stated and guided in ISO 9001:2015 – Qualitative Management systems.
- iii. **Better concentration on work** – it may imply that with detailed instructions and accurate directions, employees just rely on SOP as working manual and spend time on task only as their responsibilities, and they know exactly how to handle if any problem or mistake occurred instead of consulting others. So, as compulsory requirements, SOP must be written in concise and clear format, with accurate wording for easy understanding for operators to follow and supervisors to control.

⁴³ <https://www.mcdonalds.com/gb/en-gb/new-sites.html>

⁴⁴ <https://corporate.mcdonalds.com/content/dam/gwscorp/investor-relations-content/annual-reports/McDonald%27s%202017%20Annual%20Report.pdf>

⁴⁵ <https://expandedramblings.com/index.php/mcdonalds-statistics/> (updated on 23Jan2017)

⁴⁶ <https://www.isixsigma.com/community/blogs/right-first-time-every-time/>

iv. **Reduced process delay** - since SOP presents all tasks based on the clear processes or chronological orders with interactions among the peers, idle time will be reduced. Therefore, employees will be proactive to work without instructions or precaution from their supervisor(s), and operations can be executed continuously and smoothly. Thanks to this, enterprise's productivity can be reviewed and improved.

v. **Self-explained methods** - for employees, SOP can make the process understood and followed easily. It will take less time to train employees, even new comers for process deployment. For example, with well-written SOPs, new employees can know how enterprise is run and what they can do and whom they can contact if they need supports, so that they will be acquainted with the tasks and adapt to new environment quickly.

vi. **Minimal miscommunication** - is one of the most important advantages that SOP can provide during implementation of BPM in an organization because of its standardized and unified format and formal wording. Normally, terms used in SOP are defined based on enterprise's nature, culture and technology or system used (if any), so-called internal glossary, for all operators and supervisors. Minimized misunderstanding will help instructions and training more efficiently.

vii. **Workplace Safety** - is one of the most important conditions for enterprise to ensure that working environment is safe for employees. SOP not only provides a manual for machine operation, but also states the security and safety rules in workplace. Moreover, in many production industries, regulations or international standards to control waste are mentioned in SOP to make working place much better.

In practice, although SOP deployment is not the only best approach to implement BPM implementation, it has brought much more benefits that have not been mentioned above such as increasing customers' experience for advanced products and service in globalization era, improving compliance, transparency and risk management in business, enforcing competitive advantages and adaptability based on continuous innovation, which will be discussed in further research.

TASK-BASED SOPs FOR RETAILERS

Why SOP is essential for retailers

"Retail is detail", a common quotation, has been mentioned in many research documents on retailing industry because its operations are really complicated. In practice, BPM in retail

concerns various aspects of operations; therefore, implementation is more complex and required much more detailed, and SOP is the most suitable approach (EPA, 2007).

SOPs are instructions, working methods for tasks to be done so as to ensure that outcomes are perfect as the consistent quality standards identified and enterprises' objectives in the business processes, even there are any personnel changes (EPA, 2007). Moreover, EPA (2007) emphasized that SOP's roles are to indicate compliance, minimize variations and miscommunication as well as control frequently by inspector with checklist using. Thanks to SOP compliance, Retailers may reduce work effort, improve productivity or comparability, increase credibility and legal defensibility. Additionally, relied on SOP, the activities or tasks are listed carefully and assigned to relevant person(s) or department(s) to execute, so that products or services will be accomplished and delivered to customers with the expected quality.

Research methodology

In this paper, Descriptive method was used in two ways: (i) Survey approach (interview and questionnaire) to examine the frequency, attitudes, beliefs, prejudices, preferences, opinions of interviewees, who were key persons in big retailers, on how BPM was implemented with SOP approach; and (ii) Observational approach to view performance of retailers in business environment (real-life situation instead of laboratory) and crosscheck the result of survey.

Sample selection is non-probability (non-random) based on subjective judgement; therefore, to answer research questions and meet research objectives, it may need to be undertaken an in-depth study for particular purpose to explore research questions and gain theoretical insights. The target groups for interviewing through interview protocol are purposively, consisting of operational employees or key persons directly involving BPM or SOP implementation in the five biggest retailers in Vietnam (e.g. Coop Mart, Big C, Lotte Mart, Mega Mart, VinMart, also-called Retailers).

In order to obtain valued and reliable information, research protocol, questionnaires, observation guidelines and recording sheets or checklists (Powell and Steele, 1996) were well prepared with special focus for each group of interviewees to minimize prejudice and subjective as possible. The research was successfully conducted in 2017, with more than 30 interviews (within 15-20 minutes per interviewee) and 2-weeks-observation per retailer thanks to kind cooperation of Retailers' managements. However, confidential assurance and information protection must be committed by the author in accordance with the company's

Code of Conduct, therefore collected data or documented information related to business model, business strategy, BPM, SOPs may be published in this paper only if Retailers' top managements allow. The interviewees' answers will be recorded, analysed and summarized as a research database, which will be the reliable foundation for further recommendation and implication of this paper (IfM - University of Cambridge, 2016).

The final result of direct observation will be a list of both negative and positive findings and interviewees' suggestions (IfM - University of Cambridge, 2016), which can be used to propose a full set of solutions to improve BPM implementation and SOP performance. By the way, author will provide a template of SOP that may be suitable and applicable for Retailers.

Task-based SOP for Retailers – “TRATS” model

Identification of Retail processes based on Key functions

Organizations should have a procedure in place for determining what procedures or processes need to be documented and SOPs should be written by experts who are knowledgeable and experienced with retail operations, possess management skill and logical thinking (EPA, 2007). For Retailers, like other organizations, to implement BPM, usable SOPs are essential and must have sufficient details and clear instructions so that employees with limited experience or knowledge of the procedure, but with a basic understanding, can perform their daily tasks. In practice, management of Retailers identify Key functions and/or sub-function, then break down them into Key tasks and/or Detail tasks. Task Guides are supplementary parts to make BPM and SOP to be clear, comprehensible and easy to follow (Fig. 3)

Fig. 3: Identification of Retail process based on Key functions



Source: Direct Observation result (Author, 2018)

“Retailers add value to products by making the products available to the consumer at the right place, the right time and the right price” (Tang and Lim, 2008), but in practice, in order to fulfil that mission, it is not a simple process. Therefore, identification of retail processes is very difficult, and then preparation SOP is much more complicated. Identification

of processes and procedures should be based on Retailer's functions. Tang and Lim (2008) claim that Retailer's functions commonly comprise five critical functions as follows:

- i. **Merchandising:** including many processing related to selecting suppliers and then purchasing appropriate products to satisfy customers as well as ensure expected profitability.
- ii. **Operations:** which also called store management or sales activities at store such as stock maintenance, display and replenish, sales-support activities and customer service.
- iii. **Promotion:** communicating the retailer's message to the public as public relations (PR), promotional programs or events and other in-store activities for sales support.
- iv. **Control:** which deals with financial aspects of the business, that is, accounting procedures, employees' payroll, sales tallies, customer and supplier bills and auditing.
- v. **Personnel:** which involves employee selection, training, advancement and welfare.

However, the mentioned functions are not sufficient in practice. With the remarkable growth of modern trade, Retailers' functions expand constantly. Two especially vital and dispensable functions should be added including:

- vi. **Supports:** kinds of non-value-added activities which indirectly contribute to Retailers' achievements, comprising General Administration, Maintenance or Technician, Security, IT and IM (information management which manages database and exports managerial reports).
- vii. **Supply-chain:** for Retailers who handle logistics issues by themselves. Nowadays, Supply-chain not only plays the role to control logistic system including central warehouses, transportation means, stock maintenance, but also cooperate with Merchandising for outsourcing or importing to diversify the categories for Retailers.

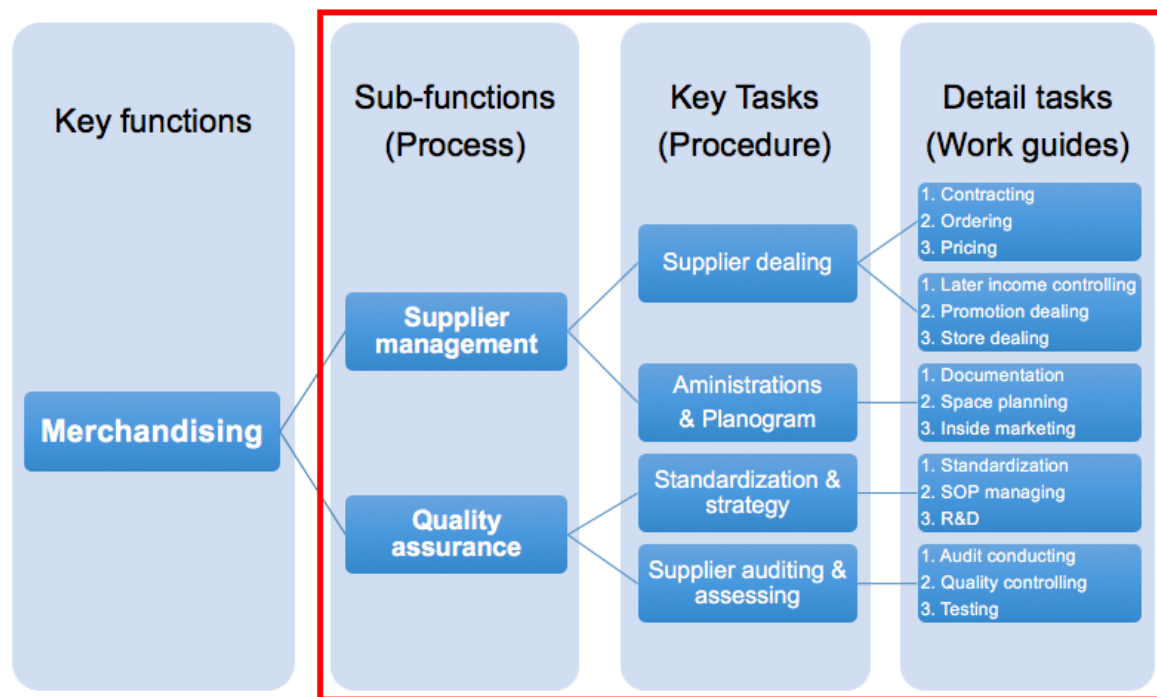
Based on their key functions or sub-functions, the operations process will be identified in terms of tasks. In the lower level, the operations activities will be stated as detail tasks which will be the titles of the relevant SOPs. The diagram below (Fig.4) is a demonstration for identification of retail operations processes and SOPs.

Merchandising process in Fig.4 may be considered as a typical example of Retailers' goods procurement and management. Merchandising, one of the key functions of a Retailer, may be divided into two sub-functions or processes: Supplier management and Quality Assurance from which SOPs will derive. In this case, there are at least 4 groups of SOPs to be compiled with specific purposes as follows:

- i. Supplier dealing concerns seeking suitable suppliers, contracting, benefit negotiating, and store cooperating in pricing and internal marketing.

- ii. Administration and Planogram, the procedures do not involve supplier directly, but strongly support for Merchandisers to deal with suppliers and for stores to push sales up and increase profits.
 - iii. Standardization and Strategy procedures focus on the products quality and standards that Merchandisers use when seeking and contracting with suppliers to ensure that the goods provided by suppliers and delivered to customers with good quality.
 - iv. Supplier Auditing and Assessing procedures are tools to control and assess suppliers whether they are complying with their commitment or propose them the solution to improve their products or process to meet Retailers' requirements before contracts are renewed.
- And each procedure mentioned above will be attached detail guidelines as indispensable portions, that make SOPs clearer and more understandable.

Fig. 4: Identification of Merchandising processes and procedures



Source: Result of research observation (Author, 2018)

Identification of key tasks as operations procedures and work guides

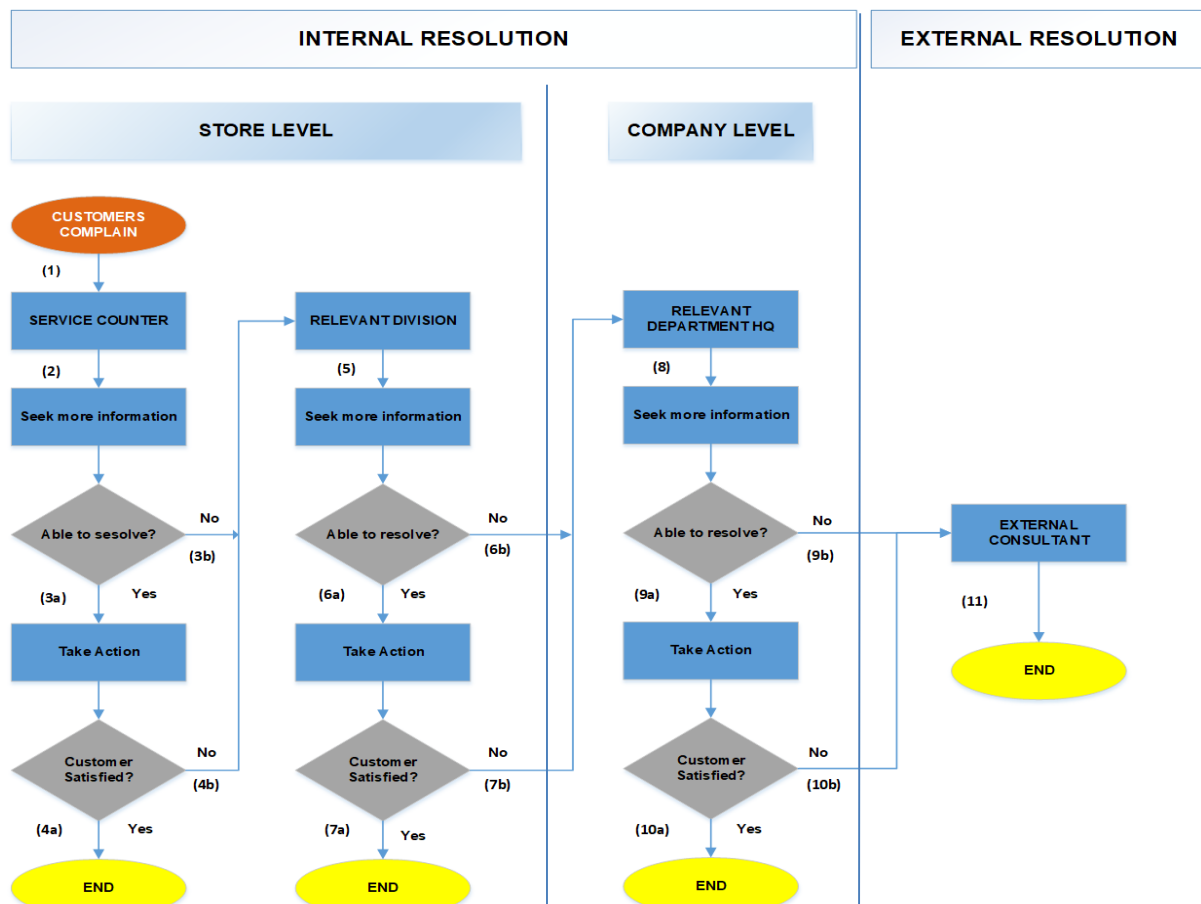
As mentioned above, each key function in retail usually comprises of several sub-functions which are the foundations for operations processes. After operations processes is identified, the most important stage in BPM will be process discovery to identify the key processes to model them in term of diagram with BPMN's support for SOPs written in the next steps. In this phase, the inter-relationships in Retailers are also designed for further assignment to perform the

process objectives (Dumas et al, 2012).

In practice, a Retailer's operations process is made up of many activities which must follow the chronological orders and may be repeated as a fixed frequency. Any inconformity operation activities may lead to unexpected outcomes, so SOPs must stipulate the flow of tasks in work guides to impose the rules on operators to perform strictly; therefore, work guides are indispensable portions of SOPs. Work guides not only make SOPs to be clear and easily understood, but also represent all standards for employees to benchmark while performing their tasks as well as guide them to handle or identify the relevant person to be consulted or supported for breakdown cases.

For instance, the procedure of customer's complaint about breakdown cases in a supermarket (Fig.5) illustrates briefly the process from customer's complaint receiving, handling to ending, in which decisive points and consultants are indicated, while standards and detail instructions are presented in written in the next parts.

Fig.5: Procedure to handle customer's complaint in a Retailer



Source: Direct observation result (Author, 2018)

Identification of operators

Normally, procedures will involve various departments and employees depending on Retailer's structure and system used. While designing BPM and SOP, the prerequisite is to identify who are responsible for each procedure and task. Identification of PIC (person-in-charge) is also the basis for work assignment when implementing the SOP as well as training for concerned employees.

With the uses of RASCI/ RACI model (Petrakova and Reusch), relevant departments and employees are assigned to take charge in the processes as PIC or Operator (R-Responsible), Approver or Supervisor (A-Accountable/ Approval), Supporter (S-Supporting), Consultant (C-Consulting), Information-receiver (I-Informed). However, some procedures do not concern all responsible departments or persons as mentioned, so SOP must be customized depending on operation natures, which will be discussed in the next part.

SOP format selection – “TRATS” model

In fact, there is no rule for selection of SOP format; therefore, Retailers create their own formats which can satisfy their operations requirements with customizations and combinations of various models and styles. As observations conducted, a SOP format will be recommended with the basis of operation activities, that covers mostly all the gaps of previous models, so-called “TRATS” or Task-based SOP (Fig.6)

As emphasized above, a flowchart format used in SOP is a good way to reflect the series of operation activities and depict the overview of the process in BPMN symbol (Fig.6), which is the foundation for allocating the resource and contribution for operation activities. Sometimes, it can be created based on the system or soft-wares used by Retailers such as POS⁴⁷, GMS⁴⁸, SAP ERP⁴⁹, etc., thus SOP format must be modified as soft-ware supplier's manuals.

In order to make retailers' procedures connected and harmonized, or based on unified standards, reference to other process(es) or procedure(s) is essential. Moreover, because the language used in SOP must be understandable and sometimes the terms are very different in various context, definition or redefinition of the key terms is significant. Last but not least, requisitions should be mentioned in SOP so that operators can check to ensure everything ready

⁴⁷ POS: Point of Sales or Cash register

⁴⁸ GMS: Goods management system

⁴⁹ ERP: is Enterprise resource planning software developed by the German company SAP SE.

or request relevant persons or departments to satisfy the requirements before they start the process.

Before deploying, the Task-based SOPs are reviewed, consulted and approved by authorities, and informed to operators and relevant departments (EPA, 2007) as RASCI matrix (Petrakova and Reusch). In the work guides of Task-based SOP format (Fig.7), “TRATS” stand for:

- i. **T-Task:** detailed tasks or operation activities which are listed in chronological order or importance level of the operations. For example, checking mail box to receive customers’ complaint is the initial task to handle problems, but it can be done any time in the process if urgently necessary.
- ii. **R-Responsible:** PIC or Operator who directly performs the tasks assigned. In practice, written report or checklist is used by Operators to record the process status and any problem for supervisor(s) to verify, make decisions or propose solutions to improve the process.
- iii. **A-Approve:** the person in the role of Approver has to verify the process outcomes or make decisions as well as confirm the output to be completed successfully. Sometimes, Approver may be authorized to stop or delay the process to be fixed based on the record of operators about the problems. Some Retailers agreed that Approval should be divided into two levels, for example, Supervisor verifies the result before Manager approves or makes decision. It may take time, but it can mitigate mistakes in operations. Moreover, the Approver plays a crucial role to lead the process and provide solution for process innovation
- iv. **T-Time:** can be understood as time order, time frame and frequency to perform the tasks. It also means that the following tasks can be executed only after the previous one is finished with a lead time added (if any), while frequency stipulates the repetition times of a task. For example, in the procedure of frozen stores controlling, the technician must check the temperature of all stores at least 5 times a day, before opening time, in defrosting time, before closing time, and at midday and midnight to ensure that the frozen goods are preserved in standard conditions.
- v. **S-Standards:** mentioned as the expected outcomes in both quality and quantity. These are the crucial criteria which must be paid special attentions as competitive advantaged in quality management. Standards sometimes are in checklist format for operators to understand for execution and supervisors to control the process and trace errors. Quality assurance (QA) builds up the full set of standards for products and services for employees to benchmark during their operating time. For example, pork meat will be received only if it satisfies sensory

conditions. Additionally, in order to get the maximum profit, it must be cut and packaged optimally as guided to maximize sales and minimize shrinkage.

Once the SOPs are approved for application, it must be informed to relevant departments to operate, especially training for employees to deploy. As a matter of fact, EPA (2007) claimed that even the perfect SOPs would fail if they were not followed strictly.

Reviewing and assessing SOPs should be done periodically to find what points are out of date, so that changes could be made to improve not only for SOP but also for BPM. In practice, SOPs are also changed when Retailers are restructured, or system is updated, so that they are fit to operations.

Historical recording of SOP is one of good instruments for managers to manage documented SOP, which helps them to trace back and what are changed or whether SOP is valid to prevent the invalid one to be used.

Fig.6: A template of Task-based SOP (TRATS model)

<COMPANY'S NAME & LOGO>			
Prepared by	Reviewed by	Reviewed by	Approved by
<Name & Signature>	<Name & Signature>	<Name & Signature>	<Name & Signature>

PROCEDURE OF <Title of Procedure>

REF. No.: <ABC.xx.yyyy> VERSION: <Vxx>

ISSUING DATE <dd/mm/yyyy>

APPLIED FOR < Identify relevant dept(s)/ unit(s) to be applied>

INFORMED TO < Identify relevant dept(s)/ unit(s) to be informed>

I. GENERAL PRINCIPLE/ PURPOSE

- Reference standards (if any)
....
- Terms and Abbreviations (if any)
....
- Prerequisites (if any)
....

II. OPERATIONS PROCESS/ FLOW CHART

PROCEDURE XYZ

```

graph TD
    Start([Demand to implement XYZ]) --> Task1[1. Content of task 1]
    Task1 --> Decision{Result}
    Decision -- Passed --> Task2[2. Content of task 2]
    Decision -- Not passed --> Task1
    Task2 --> Task3[3. Content of task 3]
    Task3 --> End([End])
        
```

Symbol:

- Start or end of the process
- Activity or task
- Decision point

Source: Author's proposal (2018)

CONCLUSION

In order to implement BPM, most of Retailers have used SOP as an efficient approach in severely competitive market with more demands of customers and exceptional growth of technology. Nowadays, with dramatically high-speed development of modern trade, SOP has played a very important role to convey the communication of BPM alongside leading technology knowledge, especially IT to operators, so that they perform their tasks much better. Through SOP deployment, each employee can be aware of his or her responsibilities in the processes, improve productivity, and prevent mistakes to produce quality products or services for customers with the easy-to-understanding guidelines and clear standards.

In retail industry, SOP serves as self-training materials and operation benchmarks to help Retailers to improve their service quality as well as achieve maximum effectiveness. Because Retailer's operations are very complicated, so SOP must be presented all key tasks particularly and constantly updated to satisfy the changes of processes. Therefore, Task-based SOP alongside with instructions and checklist can assist management and staff to eliminate breakdown products or services during business process. With Task-based SOP, productivity of staff can be measured and assessed easily based on tasks accomplished and value added which are provided to customers.

Even a perfect SOP will fail if they are not fully implemented or complied strictly. However, how to motivate employees to comply with SOPs is much more important, SOPs do not cover this issue. Therefore, further research should discuss how SOPs are implemented efficiently and effectively and how to measure the effectiveness of SOP in retail.

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THE CONTRIBUTION OF GUEST ONLINE REVIEWS ON UPSCALE HOTELS TO SUSTAINABLE TOURISM

Vo Thi Nga - Miloslava Chovancová - Lien H.L. Nguyen - Nhat Tan Pham.

Abstract

The study aims to enhance the contribution of guest reviews which can improve level of sustainable management on hotel and tourism regarding advanced Internet usage. The critical role of guest online reviews in the context of increasing hotel purchase probabilities and maintaining sustainable tourism has been investigated by many authors in different regions of the world, but less likely been discovered in Viet Nam. The study designs mainly quantitative with confirmatory analysis that is supported by mixed methods. The questionnaire is delivered to 384 valid samples who are associated in hotel and tourism profession. The majority of the research has been focused on the participant' benefits, led to the guest' intention over the online reviews on the Trip Advisor.com particularly on the high-class hotels. The finding shows that the level of customer satisfaction towards guest online reviews is positively comprised from perceiving service quality including information provided by guest online feedback, the length and speed of management response and customer cognition of making decision process in the online platform. The study' outcome provides its originality value to the tourism and hotel service industry especially the venue's performance and activities in the Internet towards the young and well educated customers. The recommendations for fostering luxury hotel management and managing sustainable tourism are made able to transfer to both developed and developing countries that adopt guest reviews on online platform. The implication and limitation of research are also provided to hotel and tourism industry for future application.

Keywords: customer engagement behavior (CEBs), customer satisfaction, online review, Online Travel Agents (OTAs), service quality.

JEL Classification: O10, O53, P22.

INTRODUCTION

Many hospitality and tourism establishments develop websites, regarding the hotel website and website of online booking channels named Online Travel Agents (OTA) in order to serve for the emergence of hotel and tourism sustainable progress. Yet the online channels significantly

face their beauty and drawback toward guest reviews. The Vietnamnews reported that there are 72% of total population use smartphone and 48% of the portion search for hotel and travel (Anonymous, Vietnamnews, 2017). This online booking channel in Viet Nam contributed US\$671m in 2018, including package holidays, hotel stays (volume of US\$493m) and private vacation rentals (Anonymous, Statistica, 2018). However tourists find difficult to measure the service quality especially in intangible products in hotel and tourism industry before chosen making decision. So, they intend to base on the online review or comment of former travelers to obtain sufficient information. Those guests' online reviews assist potential tourists to decrease their level of perceived uncertainty. Hence, the reviews have a significant impact on online sales, with a 10 percent increase in traveler review ratings boosting online bookings by more than five percent (Ye & R. Gu & Chen, 2011). In addition, the combination of both messenger and message characteristics positively affect the perceived usefulness of reviews (Liu & Park, 2015). As a result, the customer satisfaction towards perceived service quality was created by online review (Li, Ye, & Law, 2013). There is vital to study the importance of online user-generated reviews to business performance in tourism.

The contemporary travelers increasingly are reliable on peer point of views and e-WOM when selecting an accommodation. On the one hand, Ukpabi & Karjaluoto said that the previous customer's reviews on the online websites influence on consumer behaviors for purchasing mostly on OTA websites (Ukpabi & Karjaluoto, 2016). Besides, Pelsmacker et al (2018) mentioned that the digital marketing effects on the online review, so the higher star rating, the more influences on score awarded and sale volume (Pelsmacker, Tilburg, & Christian, 2018). However, there are some unreliable comments and reviews on the online platform as well. Therefore, the consumers distrust on fake reviews in the internet (Ahmad & Sun, 2018). On the other hand, the response of management to guest online review takes into consumer attention as well. The roles has been considered based on the frequency, speed and length of response. This is to foster the communication from the hotelier to past, current and potential customers on social media (Li, Peng, Jiang, & Law, 2017). It is crucial that hotel manages know the factors which contribute or dissatisfy their customer in order to improve service quality and retain customers through service recovery. Another point of view is that, there are various reviews and messages on social media platforms. It is hard for travelers to find helpful reviews and lead to decision making process towards the customer engagement behaviors (Lee, Hu, & Lu, 2018). The importance of the paper is to analyze data from research perspective that

online reviews are stably and quickly becoming one of the most popular marketing and sale tool to explore customer experience and behavior on the Internet. Since research information driven satisfaction from online hotel reviews has not been analyzed much the perception of customer satisfaction in the hospitality establishments. Previous studies have not systematically investigated the critical role of guest online reviews in the context of increasing hotel purchase probabilities and maintaining sustainable tourism in Viet Nam. With this in mind, the new findings will present literature study on guest online reviews, consumer trust then propose a hierarchical model of guest online review's contribution on luxury hotels.

We specifically examine: (1) feedback of customer is such one' advice to indicate one' level of satisfaction in relation to perceived service quality at the hotel and one uses Internet to share experience with the hotel; (2) response of management could make the two-way communication possible, particularly when service-related complaints are expressed in online reviews by consumers; (3) process of decision making is such one believes that one' buying behavior is significantly affected by previous positive ratings from other users. Practically, the study' findings can assist hotel and tourism establishments, online travel websites that encounter ethical practices of reviews manipulation to be more effective strategies to produce higher customer satisfaction and brand awareness on luxury hotels in the online platform.

LITERATURE REVIEW

The theory attempts to explore the influence of guest feedbacks on the various internet sites towards perceived service quality at the hotel. These sites are classified into 03 categories: online feedback site (i.e. TripAdvisor, Yelp,..), OTA (online travel agency) (i.e. Agoda.com, Booking.com, Expedia,..), social networking site (i.e. Facebook, Twitter,..). Individual online reviewers are key 'subjective' aspects of their degree of satisfaction on hotel service including value for money, quality of sleep, and service in overall (Tijana Radojevic, 2017). Any positive online reviews engage the key factors of service quality evaluation and customer satisfaction (Aurelio Mauri, 2013). And based on customer' previous feedback, customers are willing to pay to have that such service (Martin-Fuentes, 2016). On the contrary, any negative comments caused by the unpleasant experience can hurt the hotel' reputation and customer' purchasing intention (Wei Wei, 2013). The online travel agent websites are performing better in most of the aspects while hotel websites are only competitive in website quality (James N.K. Liu, 2014). At the mater of fact, if a hotel is published such a one of the best hotel lists on a well-

known online travel community (i.e TripAdvisor) with good online reviews, absolutely the hotel would be higher booking intentions result and in contrast (Luis V. Casalóa, 2015). To conclude, the use of social internet platform is like Trip-advisor, Facebook, Instagram, and Twitter, etc. involves peer-to-peer communication channel to one and raise healthy engagement between clients and hotelier. The minus of social media is considerable when displeasure ideas about the service quality of the hotel have expressed leading unhealthy influence reputation. Based on those needs, online hotel reviews play crucial technology readiness for hoteliers to study the degree of customer satisfaction and enable them to control the service delivery.

The factors effecting customer satisfaction behinds the rating on Trip advisors towards customer satisfaction evaluation has significant interaction with visitors' characteristics including nationality, highly characteristic destination (Radojevic, 2017). Therefore, the power of online platforms counts on the hotelier' ability to expand word of mouth (WOM), e-WOM effect and social effect among travelers in various tourist destination worldwide. According to Li et al (2017) mentioned that in order to be more interaction with customers, there is the need for management response to online reviewers regarding the frequency, speed, and length of response (Li, Penga, Jiang, & Law, 2017). Besides, destination marketer needs to track online chats and real-time reviews on multiple platforms (Soyoung Boo, 2018). From these perspectives, hotel management plays a crucial role to handle complicated of online guest feedbacks to enhance e-service quality to customers. Consequently, the association of customer satisfaction and brand loyalty towards luxury hotels is looked through theoretical lenses of guest online reviews theory.

The widespread application of the Internet technology has changed the way consumers choose and book hotels, led to affect on the decision making process. Findings from two experiments conducted in Germany and Macau indicate that review valence significantly affects hotel booking intention, and that reader-reviewer demographic similarity moderates this effect (Chan, Lam, Chow, Fong, & Law, 2017). Given the importance of online reviews, companies should proactively try to increase consumers' recommendation likelihood using incentives, and encourage eWOM as a low-cost tool to acquire new customers (Reimer & Benkenstein, 2018). And, consumers are likely to be more influenced by early negative information, then set of reviews is negative in overall (Sparks & Browning, 2011). Certainly, people now are easily post on the Internet a negative or positive consumption on purpose for anyone to see based on their experiences and evaluation. However for future users, those reviews might enhance or

detract from a hotel brand, eventually effect on the establishment' reputation. Thus, as part of decision making phases or choice selections, prospective customers could come to the past purchasers' zone to get information before making purchasing. Eventually, more customers willing to rely on eWOM as an online key of information for particular products or services.

Customer Engagement Behaviors (CEBs) are defined as customer behaviors that “go beyond transactions, and may be specifically defined as a customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers” (J., et al., 2010) . As one of the early attempts, the present study explored one particular manifestation of CEBs in the hospitality setting: posting online hotel reviews. Wei et al (2013) stated that customers enjoy positive CEBs evaluation more than negative CEBs.

The hotel competition worldwide is significant correlation with revenue management towards dynamic rate strategy (Guizzardi, Pons, & Ranieri, 2017). But, the various room rate application in the hotel might effect on the CEBs for repurchasing hotel service quality negatively (Algeciras & Ballesterro, 2017). Business knows that the only measure to survive in the competitive market is to make customer happy. Customer satisfaction has taken as the effective outcome measure towards the Internet (Li, Ye, & Law, 2013). Every marketing effort is directed to be customer focused and hence it is imperative that retailing strategy initiatives result in higher customer satisfaction levels. The impact of online reviews on hotel booking intentions and perception of trust has been studied by Spark & Browning (2011)

Till now reasons based arguments and scientific statistical reports have not been shown and published much by Vietnamese authors regard Vietnamese hotel and tourism industry' facts and figures in the measurement of customer satisfaction when tourists perceive hotel service in Vietnam and lead to repurchase service in the future, but reviews and comments via hotel' website, social channels (e.g, Facebook, Twitter,..) mainly in luxury hotels and hotel chains (i.e. Intercontinental Hotel Group, Marriot corporation, Hilton corporation, etc.) and trustworthy OTA sites (e.g, Trip advisors, Amadeus.com, Agoda.com, Expedia.com,..- such Online Travel Agents market segment). Mauri and Minazzi researched on the 349 young adults named generation Y through online survey to study the affection of WOM in the hospitality industry and analyses a new operational problem for lodging managers (Aurelio Mauri, 2013). The study pays attention on accommodation service in Vietnam which is improving in both quantitative service towards numbers of hotel and numbers of room provided for various market segments and qualitative standard in relation to reach the high demand of upscale

international travelers. Luxury hotels and resorts have been built across the coastline 3400km long to serve for high-class tourists. Whist budget tourists have been accommodated by low and medium lodging venues throughout the country. Within a decade, at the subsequent contribution, total tourism receipts hit from VND30tri. to VND337tri. (from 2005 to 2015). It is modestly increasing 15% growth rate over last year (Anonymous, Vietnamnet , 2017). Following the boom of tourism industry, despite 05 categories of hotel star rating (5-star hotel is highest ranking star (set up by VNAT), the accommodation industry in Viet Nam has suddenly risen from 3,267 hotels in 2000 to 18,800 hotels with 355,000 rooms in 2015 (Anonymous, Vietnamnet , 2017). In addition, there is being significant influenced by changes in currency exchange rates of USD VND for International tourists who are coming to Vietnam absolutely using US dollar to purchase service and products. The competition could be endless in this service sector. As consequences, travelers and tourists got benefit from this battle with cheaper prices which expect to pay from 5 dollars for budget and 150 dollars for luxury option (Anonymous, Vietnamnet , 2017). Further more, food and beverages service are mainly components attached in accommodation service towards nutrition, food security, and good health. As long as Vietnam' cuisine is one of motivation of travelers to visit the country due to its famous with diversity, fresh, and tasty ingredients. Service sector contributed almost 45% in developing country (Anonymous, Vietnamnet , 2017). Brooks et al investigated that Asia is recently experiencing in International capital allocation through the flows of foreign direct investment towards human capital, productivity, endogenous growth, and institutional behavior (Brooks, 2008). Tabaku et al studied the assessment of the quality of the service offered by the hotels in the Albanian coast and also an assessment of the effect of service quality on the satisfaction of hotel customers (Tabaku, 2016). At the matter of fact, Gilbert argued that guest satisfaction measurement became familiar practice in United Kingdom, but with care less adequate assess especially in poor hotel achievement (Gilbert, 1998). The results supported the argument that all these factors play a crucial role in Asia's recent growth, to different degrees in different countries, with complex relationships to investment incentives.

HYPOTHESES DEVELOPMENT

This paper seeks to better understand a range of factors that have potential to influence whether potential tourists trust online reviews of former guests and would purchase it. The authors found that there is significant importance of the perceptions of the tourists on guest online

reviews towards perceived service quality on customer satisfaction for online hotel bookers. In addition, more customers are willing to rely on eWOM as an online key of information for particular products or services. As the result, the association of customer satisfaction and brand loyalty towards luxury hotels is looked through theoretical lenses of guest online reviews theory. In order to measure the impact of online review on guest purchase decision towards luxury hotels, the hypotheses have been analyzed as below:

H1: Customer perceived service quality is positively associated to customer satisfaction towards luxury hotels.

H2: The feedback of customer has a positive effect on such one' advice to indicate one' level of satisfaction in relation to perceived service quality at the hotel

H3. The response of management has a positive effect on the two-way communication, particularly when service-related complaints are expressed in online reviews by consumers

H4. The process of decision making positively effects on one' level of satisfaction in relation to perceived service quality at the hotel H5: Customer feedback, management response, and decision making process towards customer engagement behaviors mediate the relationship between customer perceived service quality and customer satisfaction on luxury hotels.

H6: Customer satisfaction is positively associated to customer engagement behaviors on luxury hotels.

H7: Customer engagement behavior is positively associated to brand loyalty/sustainable tourism on luxury hotels.

RESEARCH METHODOLOGY

Based on those gaps, the researcher conducted a mixed methods included case-oriented in hotel and tourism services. The qualitative and quantitative data randomly were collected by survey, conducted in person and face to face by the researcher. Some researchers have studied about the influence of online ratings and reviews on hotel booking consideration using mix methods (Gavilan, Avello, & Navarro, 2018) (Ahmad & Sun, 2018) (Ladhari & Michaud, 2015). The mix methods help repeat questions, and overcome the different meaning and languages barriers. A study which is conducted on a sample of TripAdvisor using to illustrate the importance of both positive and negative guest online reviews during the step of pre-travel to decide “where to stay” (App. A). Primary data will be required for this study. A questionnaire consists of seven-point Likert scale representing the measurement of all variables reflected in

the conceptualization will serve as a tool to collect data (1. Strongly Disagree, 2. Moderately Disagree, 3. Disagree, 4. Neutral, 5. Agree, 6. Moderately Agree, 7. Strongly Agree)

The survey employed 400 hotel and tourism professionals who have been experienced, trained and known about the service quality, facility, customer related benefits in hotel and tourism industry. Specially, they are in Y generation (born during the 1980s and early 1990s) recently living in Ho Chi Minh City. This area is the most majority numbers of hotels in total of 306 luxury hotels within Viet Nam (Anonymous, Vietnamnet, 2017). Furthermore, it is well known because of its size and most developed in service, economy and education industry especially in hotel and tourism major school and university. Furthermore, the respondents are from the Bachelor degree level, early adaptors, brand influencers, social media drivers. The researchers invited volunteers, normally from 05 to 10 made a small group getting into a room, delivered the survey, and explained the meaning of the study through a structured 03-open question and 16 scaling-question survey in English originally. The Vietnamese survey version was delivered to take feedbacks from Vietnamese respondents then translated into English by an English expertise for accuracy coding and analyzing data strictly. The response time is from 10 – 15 minutes for each respondent providing the answers. From 2017 September 15 to December 29, 400 respondents in total were received. The 16 samples were filtered out because the participants did not complete the questionnaire, and either rated every question at the same scores. Thus, there are finally 384 valid samples. The sample size normally recommended for the standard of 95 percent confidence level and 5 percent margin of error. According to sample size of Hair et al (2006); Krejcie & Morgan (Morgan, 1970), if population is above one million sample unit and population is unknown, the appropriate sample size is 384 respondents. The purpose of this study is to identify customer cognition factors which drives customer satisfaction towards perceived service quality by applying qualitative method; to explore customer cognition factors towards the guest online reviews which drives customer in the event of increasing sustainable tourism or brand loyalty through the quantitative method. Then all data will be accomplished using quantitative methods by testing hypotheses.

The IBM SPSS 22 tool was used to analyze the data. The descriptive statistic was used to access participant's demographic characteristics, their engagement behaviors on service quality when making online and offline reviews, and their experiences on hotel booking channels. The Standard Deviation and the Variance help measure how spread apart our data is to examine the importance level of each attribute in the study. Each factor was calculated the Cronbach's

Alpha Coefficient value (>0.7) to measure the internal consistency i.e. reliability of the measuring instrument of questionnaire (Hair, 2005) (Ramayah, 2011) (Sekaran and Bougie, 2013). The statistic was followed by Kaiser Meyer Olkin (KMO) Bartlett's test of Sphericity to measure the validity of the questionnaire. The KMO statistic, which can vary from 0 to 1, indicates the degree to which each variable in a set is predicted without error by the other variables. Kaiser (1974) and Hair et al. (2006) suggest to accept a value of 0.5 or more values between 0.5 and 0.7 are mediocre, and values between 0.7 and 0.8 are good. Bartlett's test is a statistical test for the presence of correlations among variables, providing the statistical probability that the correlation matrix has significant correlations among at least some of variables. For factor analysis to work some relationships between variables are needed. Thus, a significant Bartlett's test is required, says $p < 0.005$. In order to determine the relationship between dependent variable and a set of multiple independent variables, linear regression analysis is conducted on the fifth. According to Priya Chetty (2015) the coefficients provides the estimation of regression coefficients, standard error of estimates, t-tests, and significance. The estimated regression coefficients are depicted under "Unstandardized Coefficients Beta" which predict the change in dependent variable when the independent variable is increased by one unit conditional on all the other variables in the model remaining constant. The Model Fit output consists of "Model Summary" table and ANOVA table. ANOVA is conducted to determine the significant differences between the means of three or more independent variables to undertake different tasks and measure the outcome of the dependent variables (Chetty & Datt, 2015). The Model Summary includes multiple correlation coefficient R and its Square (R^2) and also the adjusted version of this coefficient as summary measures of the model fit (Priya & Sharma, 2015). The data collected from questionnaires allows us to measure the levels of satisfaction that our attendees associate with our events, and what variables influence those levels of satisfaction. The application of the simple linear regression (var: 1 dep., 1 indep.) has formula: $y_i = 1a + X_ib + \varepsilon_i$ to multiple linear regression (var: 1 dep., >2indep.): $y_i = \hat{\beta}_0 + \hat{\beta}_1 X_{i1} + \hat{\beta}_2 X_{i2} + \varepsilon_i$ by performing a regression analysis on this survey data helps us determine whether or not these variables have impacted overall attendee satisfaction, and if so, to what extent. The regression model would be applied to examine the relationship between two or more variables of the study. The standardized coefficients β can be obtained

from non-standardized using the formula: $\hat{\beta}_{zi} = \frac{s_x}{s_y} \hat{\beta}_i$. The equation of the regression line

becomes: $\hat{y}_{z_i} = \hat{\beta}_{z_1} z_{i1} + \hat{\beta}_{z_2} z_{i2} + \dots + \hat{\beta}_{z_k} z_{ik}$. This information then informs us about which elements of the sessions are being well received, and where we need to focus attention so that attendees are more satisfied in the future.

FINDING & DISCUSSION

Some incomplete set of answers were eliminated, results of 384/400 completed questionnaires (96%) were collected to analyze data. The questionnaire included 03 parts collecting personal information (female: 69%, male: 31%; daily internet usage: <2h (1%), 2-4h (32%), >4h (67%) , and age is not significantly different), exploring customer engagement behaviors by qualitative method with 03 open questions and providing scenarios related to hotel and tourism services by quantitative method with 25 scaling questions in a seven-point Likert scale in order to expect the ideas and measurement of respondents about their cognition regarding guest online reviews which may influence service quality to their engagement intentions for sustainable development, in turn, influence their degree of satisfaction. The expected indicator as “Guest online review” is illustrated in a case study of the Trip Advisor.com with two different comments of guest online comments. The respondents will firstly be asked to read the illustrated comments, then state their degree of agreement with the statements provided towards their perception of guest online review.

Phase 1: Qualitative data

To identify the driving factors of guest perception on customer satisfaction level through perceived service quality towards luxury hotels and to modify the research framework, qualitative method is established by open question: *“You experienced the service, what would you do to response the levels of your satisfaction in relation to hotel service quality? List in order of the most importance to lower (from one to four)”*. Adapted from Braun & Clark (Braun, 2006), the qualitative data has been analyzed by some phases including familiarizing the authors with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and eventually producing the result with five indicators. The result of customer engagement behaviors during receiving service quality on upscale hotels, the first factor “self protection” shows guest reaction on “complain to hotelier” (25%), and “Cancel and switch to other hotel” (1%), the second factor “revenge” has shown guest disappointment to express on “online review” (23%), and “off line” – WOM (17%), the third factor

“repurchase” has shown the guest positive reaction on the satisfaction mood on “recommend to others” (17%), ‘return’ to use the service of the hotels (3%), and rewards/other (15%)

CEBs_ Self protection

In detail, the results of customer “self-protection” while receiving service quality demonstrate that there are mainly 02 reactions of that: complaining, and cancelling or switching to other hotel. Particularly in complaining action is the most importance to lower of CEBs (25%), people prefer to complain directly to management (61 answers), complain to staff (35 ans.), and feedback immediately in room (1 ans.). Certainly, when there are something going wrong or unsatisfied, management could bring to the incidents solutions and the fastest ways to handle the issues, so customers tend to rely on those benefits to claim on. Others, depending on the customers’ mood, time, authority, convenience, and the priority, the customers could bring the issue to staff’ attention and document available at the room. For canceling/switching action is lowest in CEBs (1%), customer could either leave the hotel (2 ans.) or equally switch to other hotel (2ans.). Somehow, the actions are very hard for hoteliers to resolve the problems, because customers did neither say nor do anything, just depart or choose other establishments. The hoteliers would know nothing why those guests go away and have no chance to communicate or try to correct things right as much as possible to obtain customer through service recovery.

CEBs_ Revenge

In detail, the results of CEBs as “revenge” whilst perceiving service quality exhibit that there are mainly 02 reactions of that: online review, and offline or WOM. There are complicated and various ways for customers to share their feeling and experience about certain service they perceived. The results display that customers prefer to online review as the second (23%) in the list of CEBs, such as comment on website (36 ans.), make review on website (16 ans.), feedback on Facebook (8 ans.), inbox to the hotel email address (6 ans.), comment on OTA (5 ans.), ask more information about the hotel (5 ans.), make review on personal page (3 ans.), rely on online guest review (2 ans.), comment to online agent (2 ans.), report to system (2 ans.), take photo and post on social media (1 ans.), vote 5-star rating on hotel website (1 ans.). In contrast, the reactions of customers on offline review or WOM as the third (17%) in CEBS, such as commend to reception (43 ans.), fill up the commend card for the hotel after the stay (10 ans.), and talk to management (7 ans.).

CEBs_ Repurchase

The results of ‘repurchase’ whilst perceiving service quality show that there are mainly 02 reactions of that: recommend to others, and repurchase. When customers are thrill with satisfaction, they would recommend to others (46 ans.), share to friends (10 ans.), review to relatives (1 ans.), talk about service quality to others (1 ans.) (Table 6). The important action that most of the hoteliers desire to have in return that customers ‘repurchase’ the product/service, such as return (6 ans.), continue to stay (2 ans.), and one answer for reaction of re-booking the room, repurchasing, booking decision, and voting 5-star on hotel website.

CEBs_ Other

The other actions of CEBs are various based on customers experienced on luxury hotels. The result shows that customers prefer to give tips (17 ans.), obtain happy (5 ans.), require rates (5 ans.), keep in touch with the hotel (4 ans.), compliment to staff (4 ans.), show satisfaction (4 ans.), keep quiet (3ans.), feel unpleasant (2ans.), prefer nice view (2ans.), and the rest are for 01 answer including appreciate value for money, quality, remind staff, request for explanation, save time, see guest comment, serve with carefulness, staff attitude, style of problem solving, give compliment if good service, and make friends to reception staff.

To conclude, the qualitative data collects various ways and level of customer reaction while receiving service at the hotels. First of all, they would mostly protect themselves against dissatisfaction by complaining, cancelling the stay or even switching to other hotels. Secondly, they could take revenge for their defeat of the service through WOM or eWOM. Last but not least, they would repurchase the service in advance or recommend the hotels to others. In another action, they could give tips and keep in touch with the hotel venue for further association.

Quantitative survey

Demographic profile of the participants is shown in Table 1. The majority of the 384 respondents were female (69%), young people with highly daily internet usage more than 4 hours (66.4%). In addition, the participants’ online hotel booking experiences mostly in OTA channel (42%), the once booking over website of OTA in total is 58% in which via hotel websites at 22%, travel operator at 9% and direct contact to hotels such as via the phone, walk-in and sale in person at 27%. The respondents mostly booked the room via OTA websites from

one to three times at 46%, more than three times is at 12 %, but people who prefer others booking channels at 42%.

The validity of this research was firstly ensured by the construction of the questionnaire. The Pilot test was used by the content of questionnaire draft with 59 participants and then tested by KMO and Bartlett's Test of Sphericity to ensure factor analysis is appropriate to be conducted. The means of results, Cronbach' Alpha (CA) and Exploratory factors (KMO) of each attribute by different categories. The overall Mean score are almost from 4.76 for MR2 (*Hotel promptly responses online guest comments*) to 6.15 for SQ11 (*Service quality evaluation stimulates positive online review*). This analysis indicates that participants somewhat use these criteria when they select hotel booking channels towards management response and positive online reviews. The CA for each attribute shows that the OF1 independent variable (Online feedback is reliable) has a coefficient of correlation of $0.239 < 0.3$. Cronbach's Alpha is value if DK1 Item Deleted is $0.854 > 0.768$. The authors decided to exclude the OF1 variable to increase the reliability of the scale. Running the test again, we have the results of 24 out of 25 attributes > 0.7 (from 0.733 to 0.904). The KMO of independent variables is 0.678, and dependent variables is 0.73 with both Sig Barlett's Test = $0.000 < 0.05$. Therefore, the questionnaire is reliable to run for further analysis with 384 valid samples.

The means of results, Cronbach's Alpha (CA) and Exploratory factors (KMO) of each attribute by category are listed in table 2. The minimum of CA value is 0.7 for confirmatory research or 0.6 for exploratory research (Hair at al, 2006). CA values for all of the factors are acceptable (95% confidence interval). The overall CA of variables are from 0.729 (customer satisfaction) to 0.899 (Management response). The overall KMO of all dependent variables (i.e. service quality, CEBs, brand loyalty and customer satisfaction) is 0.693. The KMO ratio of all independent variables (i.e. online feedback, management response and decision making) is at 0.666. In the Bartlett's Test of Sphericity, Sig of Chi-Square for both factors is 0.000. The results of the rotated component matrix show that 24 observed variables have loading factor greater than 0.5. The tests proves that all factors analysis are appropriate to be conducted.

The Pearson Correlation coefficient is calculated to determine the relationship (weak/strong) among median variables. The Pearson Sig. (2-tailed) correlation among OF and DM independent variables with SQ, CEB, BL and CS dependent variables are less than 0.05. Thus, there is a linear relationship between these independent variables with SQ, CEB, BL and CS dependent variables. The correlation between DM and SQ was strongest with the coefficient

of $r=0.584$, and between MR and BL the correlation was the weakest with a coefficient of $r=0.008$.

The Pearson correlation between BL and MR is greater than 0.05 at 0.876, so there is no linear correlation between these variables. The MR variable is eliminated when performing linear multiple regression analysis. Therefore, the independent variable pairs have relatively weak correlations with each other, so the high probability that there will be no multi-linearity occurs. Eventually, after the Pearson analysis, there are only two independent variables: OF and DM. The results of ANOVA analysis which would enable the researchers to determine the difference between variables.

The simple linear regression (var: 1 dep., 1 indep.) has formula: $y_i = 1a + X_ib + \varepsilon_i$

Multiple linear regression (var: 1 dep., >2 indep.): $y_i = \hat{\beta}_0 + \hat{\beta}_1 X_{i1} + \hat{\beta}_2 X_{i2} + \varepsilon_i$

The adjusted R² value of 0.336 shows that the independent variables (OF, DM) introduced into the regression run affected 33.6% of the variance of the dependent variable (SQ), while the remaining 66.4% was due to exogenous variables and random errors. According to Field (2009), if Durbin coefficient – Watson (DW) is less than 1 and greater than 3, we need to really notice because of the high probability of the first order autocorrelation. The value of DW is in the range of 1.5 - 2.5, there will be no autocorrelation. This is also the standard value we use today. The output shows that DW= 2.245, which is in the range of 1.5 to 2.5, so there is no autocorrelation occurs. The result of ANOVA reflects statistically significant p-value i.e. $p=0.000$ ($p < 0.05$) and $F= 98.914$. Thus, multiple linear regression models are suitable for data sets and can be used. Sig testing of the regression coefficient of DM is less than 0.05, but OF beta is less than 0.05 at -0.236 and Sig>0.05 at 0.597, so the DM is the explanation for the dependent variable, OF is excluded from the model. Therefore, the VIF coefficients of the independent variables are less than 2 at 1.065 so there is no multi-linearity. The regression coefficient DM is greater than 0, and is incorporated into the regression analysis to affect the dependent variable SQ.

The histogram of dependent variable: SQ_Service quality has Mean = -3.21E-15 is near zero, the standard deviation is 0.997 is close to 1, so it can be said, distribute the approximate approximation. Therefore, it can be concluded that: The normal distribution hypothesis of the remainder is not violated. The normal P-P plot of regression standardized residual of SQ shows that the distributive points in the distribution of the remainder are centered into a diagonal, thus, assuming the normal distribution of the residual is not violated. The scatter plot of SQ

shows the normalization residue concentrates around the ordinate line 0, so assuming linear relations are not violated.

The results of ANOVA analysis which would enable the researchers to determine the difference between variables. The adjusted R² value of 0.076 shows that the independent variables (OF, DM) introduced into the regression run affected 7.6% of the variance of the dependent variable (CEB), while the remaining 66.4% was due to exogenous variables and random errors. The Durbin coefficient - Watson is at 1.882, which does not occur autocorrelation. The result of ANOVA reflects statistically significant p-value i.e. p=0.000 (p< 0.05) and F= 16.761. Thus, multiple linear regression models are suitable for data sets and can be used. Sig testing of the regression coefficient of DM and OF is less than 0.05, at 0.157 and 0.201 respectively. So, DM and OF are the explanation for the dependent variable. The both VIF coefficients of the independent variables are no multi-linearity at 1.065. The regression coefficient of DM and OF is greater than 0, and is incorporated into the regression analysis to affect the dependent variable CEB.

The histogram of dependent variable: CEB_Consumer Engagement Behaviors has Mean = - 5.85E-15 is near zero, the standard deviation is at 0.997 and distribute the approximate approximation. Therefore, it can be concluded that: The normal distribution hypothesis of the remainder is not violated. The normal P-P plot of regression standardized residual of CEB shows that the distributive points in the distribution of the remainder are centered into a diagonal, thus, assuming the normal distribution of the residual is not violated. The scatter plot of CEB shows the normalization residue concentrates around the ordinate line 0, so assuming linear relations are not violated.

Hypotheses testing

All seven hypotheses are supported by data (Table 3). Thus, seven hypotheses H1 to H7 we have originally set out in the Research hypothesis. Those accepted hypotheses: H1, H2, H3, H4, H5, H6 and H7 correspond to variables of guest online review: Online feedback (OF), Management Response (MR), Decision Making (DM), Service Quality (SQ), Customer Satisfaction (CS), Consumer Engagement Behaviors (CEB), Brand Loyalty (BL). In other words, all attribute have made sense in regression model.

The standardized coefficients β can be obtained from non-standardized using the formula:

$$\hat{\beta}_{z_i} = \frac{s_x}{s_y} \hat{\beta}_i$$

The equation of the regression line becomes: $\hat{y}_{z_i} = \hat{\beta}_{z_1} z_{i1} + \hat{\beta}_{z_2} z_{i2} + \dots + \hat{\beta}_{z_k} z_{ik}$

So the output has its standardized regression equation:

$$SQ = 0.1236*OF + 0.108*MR + 0.584*DM$$

$$CS = 0.468*SQ$$

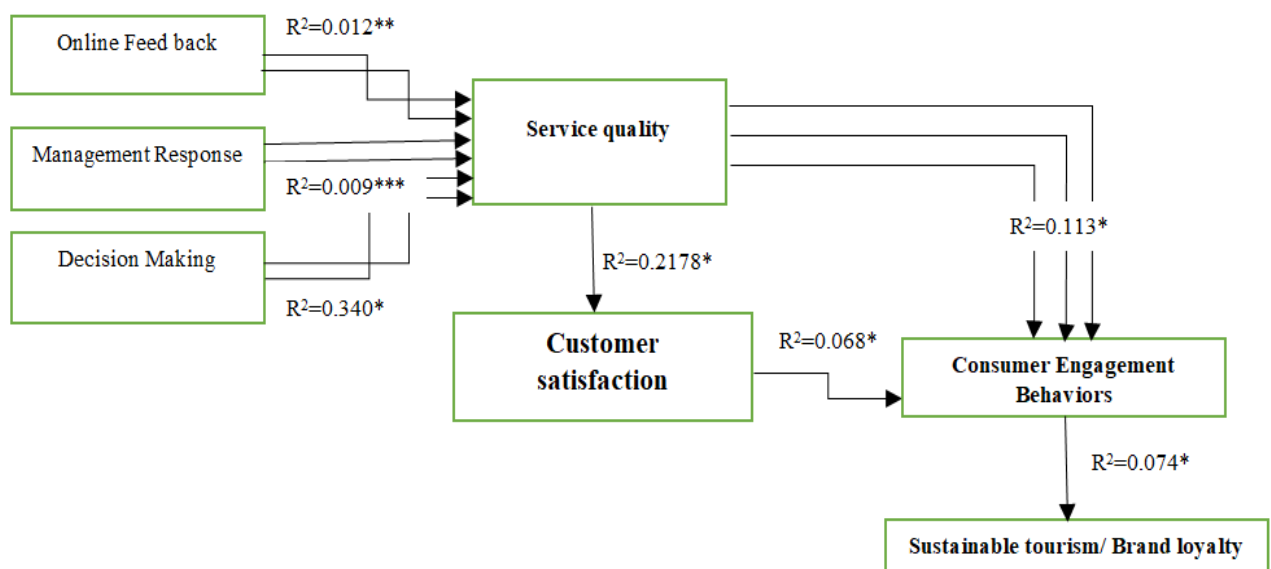
$$CEB = 0.138* OF + 0.173*MR + 0.203*DM + 0.265*CS$$

$$BL = 0.276*CEB$$

➔ Customer satisfaction= $0.468*(0.1236*OF + 0.108*MR + 0.584*DM)$

➔ Brand loyalty= $0.276*(0.138* OF + 0.173*MR + 0.203*DM + 0.265*(0.468*(0.1236*OF + 0.108*MR + 0.584*DM))$

Fig 1. Confirmation of our research model



Notes: n=384, *, **,*** sig. at 3.5%, 1.6%, 0% respectively

Source: Own

The figure 1 shows our confirmation of research model. The output indicates that the level of customer satisfaction towards guest online reviews is positively comprised from perceiving service quality including information provided by guest online feedback, the length and speed of management response and customer cognition of making decision process in the online platform. In turns, the degree of sustainable tourism or brand loyalty regarding guest online review is the value added of the volume customer satisfaction and customer engagement behaviors as well.

CONCLUSION

The main objective of this study is to study the contribution of guest online review towards the luxury hotels and tourism sector in Vietnam. The output aims to improve the degree of customer satisfaction and brand loyalty on the online platform as well. Within the study, feedback of customer is significant advice to indicate customer level of satisfaction towards perceived service quality at the hotel in the way if using Internet to share experience with others. Management response can enhance customer engagement behaviors when service-related complaints in the Internet. In addition, the process of decision making is such customer's buying behavior which is significantly affected by previous positive ratings from other users. The design of the study is mainly quantitative; confirmatory analysis that is supported by mixed methods. Therefore, in practical the study's findings can assist hotel and tourism establishments, online travel websites that encounter ethical practices of reviews manipulation to be more effective strategies to produce higher customer satisfaction and brand awareness on luxury hotels in the online platform. Recognition of factors effect to cognition of customer on guest online review in relation to perceived service quality which is the basic feature of efficient knowledge management can make staffs, managers, owners, governors, institutions and policy makers to make effective and efficient performance and processes in case of luxury hotels. Accordingly, they can direct the hospitality and tourism business to obtain long term competitive advantage through efficient management

This study limitation takes place due to various reasons such as unavailability and inaccessibility of data, time and budget constraints of the researcher and some other practical concerns. The various direct factors which can affect on customer satisfaction and sustainable tourism towards the luxury hotels. However this study considers indirectly involvement of customer's cognition in relation to guest online reviews. The 384 respondents may confuse the understanding the difference among data, information and knowledge provided in the questionnaire. In order to explore, and measure the satisfaction and engagement behaviors in the event of guest on line review towards service quality and its impact to hotel performance, a research would more appropriate to access longitudinal than cross sectional data. As the collected data is from one regions and data collection way with different levels of knowledge and experiences, it may affect the established generalize-ability of the designed framework. The limit of time the researcher spends on asking respondents to do questionnaires on the offline approach.

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Appendix A



HeidiM73
Melbourne,
Australia
16 10

5 stars Reviewed 4 days ago via mobile

Heidi & Ash

What an amazing,opulent and beautiful hotel.Located perfectly in District 1 of Saigon.The service is exceptional,with very well trained English speaking staff.Great food with lots of variety.Highly recommend.

[Thank HeidiM73](#)

Rating score: 5/5, this
guest online review is called positive comment or good comment in the study



Dutchie1362
Santpoort-
Zuid, The
Netherlands
39 8

4 stars Reviewed 2 weeks ago

Great hotel, great service, but very bad booking service.

Great hotel, great facilities and perfect location, however I will NOT return to this hotel. As an engineer I'm travelling all over and my stay's in hotels are very flexible. Due to my work on shipyard, I needed to stay one more day, I could not book one night extra myself, even though I stayed and was there already. Must be done by the booking agent who booked my first stay also, I only needed one extra night..!! So I asked my office to extend my stay, but due to time difference, she made a mistake, and made a booking for 2 nights. Than all started, delete the wrong booking couldn't be done, due to hotel booking policy's.? Than duty manager arrived with some kind of story that they need to keep the room for me, , but I already had that room, then he said, but for your colleague maybe, I'm travelling alone. Anyhow, the extra night 24th of May, could NOT refunded due to the booking policy. As a spire elite member I'm very disappointed in this treatment by this hotel management, I know rules are rules, but this' total nonsense. So fore sure NOT coming back in this hotel.

My next hotel in another town I had NO issue at all, even 2x night extra booking by myself, very flexible staff.and a great hotel.

[Show less](#)

Stayed: May 2017, traveled on business

5 stars Rooms

5 stars Cleanliness

4 stars Service

Rating score: 2/5,
this guest online review is called negative comment or bad comment in the study

Case study of guest online review (Source: TripAdvisor)

Appendix B

Table 1. Demographic and customers experience of online hotel booking and searching information (Source: developed by researchers)

Descriptions	N=384	%
Gender		
Male	119	31
Female	265	69
Daily internet usage		
<2 hours	5	1.3
2-4 hours	124	32.3

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	>4hours	255	66.4
Booked the rooms via	Online Travel Agent	161	42
	Hotel website	83	22
	Travel operator	35	9
Other (direct contact to hotel included phone, walk-in, sale persons,...)		105	27
Booked the rooms via websites of OTAs	Never	163	42
	1-3 times	176	46
	>3 times	45	12

Table 2. Statistic of confirmatory factor analysis (n=384) (Source: developed by researchers)

Expected indicator: Guest online review			Cronbac h's Alpha	KMO	Notes
Guest online feedback	OF1	Online feedback is reliable	0.732	0.666	exclude OF1 (Total correlation = 0.239<0.3)
	OF2	Negative comment can revenge hotel' reputation			
	OF3	Negative comment can hurt hotel' reputation			
	OF4	Paid higher price based on online review			
Management response	MR1	Hotel frequently responses online guest comments	0.899		Independen t variables
	MR2	Hotel promptly responses online guest comments			
	MR3	Hotel' response is clear to engage customer			
Decision making	DM1	Decide to book room because of positive online review	0.856		
	DM2	Online rating lists are more useful and credible on TripAdvisor			
	DM3	Higher booking intentions result on TripAdvisor			
	DM4	Online review affects hotel booking intention			
Service quality	SQ11	Service quality evaluation stimulates positive online review	0.743	0.693	Dependent variables
	SQ12	Customer is willing to pay based on hotel star rating			
	SQ13	Individual reviewers are subjective on value, sleep quality, and service			
CEBs	CEB11	Say negative if not satisfied with service quality	0.738		
	CEB12	Make positive online reviews if satisfied with service quality			
	CEB13	Ask for refund if not satisfied with service quality			
	CEB14	Repurchase service based on online feedback			
	CEB15	Switch to other hotel if experienced unfair price			
Brand loyalty	BL11	Be willing to pay more to book a room based on hotel star rating	0.747		
	BL12	Be willing to pay more to book a room based on score rating			
	BL13	Make booking with hotel' price policy in the future			
Customer satisfaction	CS11	Be satisfied with guest online review	0.729		
	CS12	Keep relying on online review to decide booking			
	CS13	Be happy with hotel management' responses on online comment			

Table 3. Hypotheses testing (Source: developed by researchers)

Hypotheses	Model Summary		Anova		Breaking down the attributes	Coefficients		Histogram (dependable Variable)		Results
	Adjusted R square [0,1]	Durbin-Watson	Sig. (<0.05)	F		Beta (>0)	VIF (<2)	Mean (<0)	Std. Dev. (<1)	
H1: Customer perceived service quality is positively associated to customer satisfaction towards luxury hotels	0.217	1.781	0	107.405		0.468	1	-9.48E-16	0.999	Supported
H2: The feedback of customer has a positive effect on such one' advice to indicate one' level	0.012	2.319	0.016	5.821		0.123	1	-2.21E-15	0.999	Supported

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of satisfaction in relation to perceived service quality at the hotel										
H3: The response of management has a positive effect on the two-way communication, particularly when service-related complaints are expressed in online reviews by consumers	0.009	2.266	0.035	4.492		0.108	1	-2.29E-15	0.999	Supported
H4: The process of decision making positively effects on one' level of satisfaction in relation to perceived service quality at the hotel	0.340	2.240	0	197.932		0.584	1	-2.34E-15	0.999	Supported
H5: Customer feedback, management response, and decision making process towards customer engagement behaviors mediate the relationship between customer perceived service quality and customer satisfaction on luxury hotels	0.113	1.830	0	17.344	OF	0.138	1.074	-5.40E-15	0.996	Supported
					MR	0.173	1.085			Supported
					DM	0.203	1.037			Supported
H6: Customer satisfaction is positively associated to customer engagement behaviors on luxury hotels	0.068	2.199	0	28.789		0.265	1	-5.31E-15	0.999	Supported
H7: Customer engagement behaviors is positively associated to brand loyalty/sustainable tourism on luxury hotels	0.074	2.077	0	32.456		0.276	1	-4.24E-16	0.999	Supported

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THE IMPACTS OF THE EXECUTIVE BOARD'S CHARACTERISTICS ON FIRM PERFORMANCE: AN EMPIRICAL STUDY IN VIETNAM

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Han Thi Thai Tran - Trinh Ngoc Ai Le – Chung Quang Dong

Abstract

Purpose: This study examines the impacts of executive board's characteristics on firm performance of listed companies on the Vietnam Stock Exchange.

Design/methodology/approach:

The study was based on data of 200 listed companies on the Vietnam Stock Exchange in 2014 and 2015. This study collected data in the annual report such as: Chairman holding concurrently general director position, independent directors, female directors, board members achieving PhD degrees, the age of the general directors, the size of the board; and the financial index of listed companies on the Vietnam stock exchange.

Findings:

The characteristics of the board have a direct impact on the firm performance of the company. The outcome shows that the characteristics of the board significantly affect the firm performance of companies listed on the stock exchange. Specifically, number of independent directors and the age of general manager positively impact on firm performance while the size of board of directors has a negative effect on firm performance.

Research/practical implications:

This study is meaningful for owners of listed companies when it comes to the selection criteria for the executive board, which can improve the company's firm performance.

Originality/value:

This research is necessary as a reference base for company owners to establish criteria for recruiting staff for executive boards.

Keywords: Characteristics of the executive board, firm performance, CEO duality, Female director, educational level, CEO age, board size.

JEL Codes: M41, O16, G34.

INTRODUCTION

Adjaoud et al. (2007) indicates that the quality of executive boards plays a central role in corporate governance to achieve shareholders' goals. The results of the study show that the concurrence of ownership and management, equity interests and shareholder rights are important factors in the quality of earnings for the company.

Bathula (2008) argues that the size of the executive board is closely related to the firm performance of the company. Ownership of the director is negatively correlated with firm performance in small-scale companies. However, for the companies with large board sizes, the level of ownership of the board of directors has the same impact on the business operations of the company. Concerning the concurrent work of the Chairman and the CEO, companies with small board size seem to benefit from this concurrence, but the companies with large boards of directors. For companies with large board sizes, there is a loss of independence when one person holds two positions, whereas a small board size company does not.

In Vietnam, the business environment has improved, but the mechanism of corporate governance is still inadequate (World Bank, 2016). Therefore, the research is to understand the relationship between the characteristics of the Board and the firm performance are open-minded questions that need to be answered. However, until to this time, there are a few researches about the characteristics of the Board of Directors and the firm performance in Vietnam. This research expects to find the executive elements that affect performance that help the company achieve the highest levels of corporate governance through improved management.

In section 2, the study examines previous studies on the relationship between management characteristics and firm performance in the world and in Vietnam. In section 3, it represents research methods and data collection. Section 4 describes findings and discussion. The last section is the conclusion and recommendation of this study.

LITERATURE REVIEW

According to Laing & Weir (1999), there are a few evidences of a systematic relationship between the characteristics of the board and the firm performance of the firm at the time of the study. Black (2000) found a positive relationship between corporate governance and firm performance. Meanwhile, Eisenberg, Sundgren & Wells (1998) found the negative relationship between these two groups of factors.

Subsequently, Adjaoud et al. (2007) pointed out that the quality of the Board plays a central role in corporate governance to achieve shareholder goals. Another result of the group is the quality of management that creates value for investors, the concurrency between ownership and management, equity benefits and shareholder rights are important variables in order to create qualified income for the company. In addition, factors beyond the control of the company such as market structure and competition, political environment, demographic change are likely to affect the company's firm performance (Bathula, 2008).

To perform the study, the author used independent variables as follows: Concurrent work between the chairman of the board and the CEO; The number of directors is that the characteristics of the board of directors are related to the performance of the company. This relationship is expressed through the size of the board and depending on the specific characteristics of each company, each characteristic will positively or negatively affect the firm performance of the business. Therefore, the study also confirms the importance of deciding on the establishment of top management teams to improve business efficiency of enterprises.

In 2011, the study of Nugroho and Eko (2011) pointed out that the characteristics of the executive boards including the independence of the board, the size of the board, the degree of ownership of the managers, the members of the board, the term of the board and audit committee did not significantly affect earnings management practices in listed companies on the Indonesian Stock Exchange in the period from 2004 to 2008. Only the concurrence between the chairman and the CEO may affect the earnings management of these companies.

In addition, Bayrakdaroglu et al. (2012) has shown that EVA (economic value added), MVA (market value added) and CVA (cash value added) increase if the CEO is not a member of the board. The size of the board does not have a significant impact on the performance of the business. The ownership of the board has an insignificant impact on the increase of the company's performance in the context of value-based management. However, this author found that foreign ownership factors contributed to increase the firm performance when measuring with the EVA and reduces the company's performance when using the MVA.

Hoang et al. (2017) showed that the characteristics in the board structure improve the income quality (linear correlation). The character of the board is not linear correlated to the quality of income.

From the inheritance of previous studies, the study will look at the relationship between executive board characteristics, the characteristics of management structure and firm

performance in the Vietnam securities market in which the concurrence of the executive board are focused.

Bayrakdaroglu (2012) has shown that the concurrence of management and ownership is related to the company's firm performance, and similar results were also found in Nugroho and Eko (2011), Bayrakdaroglu (2012) and Hoang et al. (2017). However, according to Hanoku (2008), the concurrent work between the chairman and CEOs of small companies has an impact on firm performance. Otherwise, the large size of the board of directors is not affected. Thus, the study will look at the relationship between the concurrence of the chairman and CEO on the firm performance of companies. From the above discussion, we propose the following hypothesis:

H1: The chairman holding concurrently CEO position positively influences on firm performance.

In addition, the study (Nugroho & Eko, 2011) shows the characteristics of the board of directors including the independence of the board, the size of the board, the level of ownership of the manager, the composition of the board of directors, the term of the board of directors and audit committee did not significantly affect the income behavioral management of listed companies on the Indonesia Stock Exchange in the period 2004- 2008. In contrast, Hoang et al. (2017) suggested that the characteristics of the board structure improve the quality of income. For that reason, the study will examine the relationship between the number of independent directors that affect the firm performance of an enterprise:

H2: The number of independent director positively influences on the firm performance.

The presence of women in the board of directors with a large scale is also related to the firm performance as a result of research of Nugroho & Eko (2011). In the opposite perspective, the research of Hoang et al. (2017) shows that the characteristics of the board are not linear correlated to the quality of income. With the contradictory results from previous studies, the study will look at the relationship between the number of female directors and the firm performance of the company:

H3: The number of female director positively influences on the firm performance.

Black (2000) found a same-direction relationship between the educational level and age of the board and firm performance of the company. Meanwhile, Eisenberg et al. (1998) found the opposite relationship between both groups of these factors. Then, Hanoku (2008) gives another idea from his research that these characteristics act either in the same-direction or in the

opposite direction to the business outcomes of the company, it is necessary to consider the size of the board and depends on the specific characteristics of each company. For that reason, the study will explore whether there is a relationship between managerial level, managerial age, and firm performance.

H4: The number of directors with doctoral degrees positively influences on the firm performance.

H5: The age of general directors positively influences on the firm performance.

Hanoku (2008) has confirmed that the size of the board has the same-direction effect on the firm performance of enterprises. In contrast, Bayrakdaroglu (2012) has reported that the size of the board has no significant effect on the firm performance of enterprises. With these opposite results, the study will explore the relationship between the size of executives and the results of business operations of enterprises:

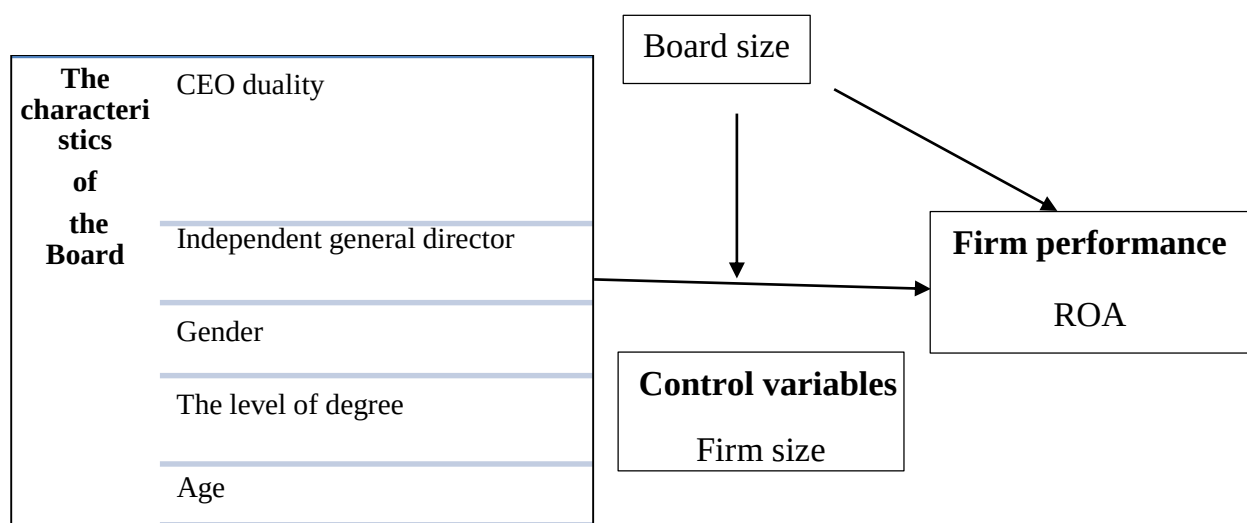
H6: The size of the directors' board positively influences on the firm performance.

METHODOLOGY

The samples

The model of this study was evaluated using models of Hoang et al. (2017) and model of the author Hanoku (2008). On this basis, we propose a model for this study as follows:

Figure 1: The associated model of the board's characteristics and firm performance



Data collection

Based on the definition of the minimum sample size according to the Exploratory Factor Analysis (EFA) model of Hamid et al. (2011) and how to determine the minimum sample size according to the quantitative model regression analysis of Green (1991). The study was based on the collection of 200 companies on both the HOSE and HNX, data was collected in 2014 and 2015, thus, there are 390 observations in this study.

Data was collected from secondary data sources, namely information from audited financial statements and annual reports of listed companies. These reports are either available on the official website of the company or on the official website of Ho Chi Minh and Hanoi Stock Exchange. Data of the characteristics of the directors' board was collected from annual reports of listed firms.

Measurement variables

To test the hypothesis, this paper uses the following variables:

Dependent variable:

Firm performance:

The study used the basic financial indicators as ROA to measure dependent variables. ROA provides investors with information about the profits generated by the amount of capital or assets invested in enterprises. The higher the ROA is, the higher the firm performance is. Therefore, the study used ROA in this study to measure the firm performance of enterprises.

$$\text{ROA} = \text{Profit after tax} / \text{Total assets}$$

Independent variable:

Chairmen's holding concurrently general director (CEO duality) (ChD), independent directors (InD), number of female directors in the board (Women), number of directors with PhDs (PhD), age of the general directors (Age), the directorsize.

Where in:

ChD = Chairman holding concurrently general director position

InD = number of independent directors

Women = number of female directors in the Executive Board

PhDs = number of PhDs

Age = age of the CEO (shown on the annual report of selected businesses)

Directorsize = scale of the Executive Board (as shown in the annual report of selected companies).

Control Variables

The previous studies found the size of firm has the relationship with firm performance (Laing & Weir, 1999; Lehn et al., 2004). This study uses firm-size as the control variables to test the relationship between the characteristics of the Board and firm performance.

Tab.1: Measurement of variables in the model

Variable	Description	Definition
Dependent variable		
ROA	Firm performance (Return on Assets)	Profit after tax / Total assets for firm i in year t.
Independent variables		
ChD	CEO duality	Chairman holding concurrently general director position (ChD is 1 if CEO is dual, otherwise 0)
InD	Independent directors	Number of independent directors
Women		Number of female directors in the Executive Board
PhDs		Number of Board members achieving PhD degrees
Age	Age of CEO	5 groups: 5: < 36 years old, 4: 36-45, 3: 46-55, 2: 56-65 and 1: over 65
Directorsize		Number of Directors in the Executive Board
Control variable		
Firmsize		Total of Sales

Source: author

Regression model

The regression model of the characteristics of the board of directors to the firm performance of the Vietnamese companies is as follows:

$$ROA = \beta_0 + \beta_1 ChD + \beta_2 InD + \beta_3 Women + \beta_4 PhDs + \beta_5 Age + \beta_6 Directorsize + \mu$$

Where in:

- ROA: Firm performance of firm i in year t.
- ChD, InD, Women, PhDs, Age and Directorsize are CEO duality, Independent Directors, number of female directors, number of Board members achieving PhD degrees, the age of CEO and number of directors.
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$: parameters
- μ : random variable.

FINDINGS AND DISCUSSIONS

Findings

To test hypotheses established in this study, we used SPSS 20.0 software to analyze the data and results presented in the tables below.

Table 2 and 3 shows the tests that describe the statistical results of the dependent and independent variables for the samples of the companies. This table shows the minimum, maximum, average and standard deviations for all variables in the regression model.

N Valid: is a sample collection model

Min: the lowest value

Max: the highest value

Mean (Average): The mean value of the statements is conventionally expressed. The calculation is as follows: = Average (number 1, number 2 ... number n)

Std. Deviation: The degree of dispersion of the statements around the mean (the closer the value is to zero (0), the more focused the answer). The calculation is as follows: = Stdev (number 1, number 2 ... number n)

As shown in Table 1, the characteristics of Directorsize varies from 1 to 13 members, compared to an average of 4.19 members. In terms of education, more than 90% of directors in companies do not have the Doctor of Philosophy; in fact, companies have only 1 or 2 directors with a PhD. According to the collected data, many of the directors with bachelor's degrees, masters are just a few. The number of female directors that do not exist in the Executive Board is over 40%, while the majority of companies have only one female director (36.7%), the more the number increases, the less the ratio is. The number of female directors is seven members, accounting for only 0.3% that means only one observation. As for the CEO structure, over 50% of the total observation (61.3%) indicated that most of the companies did not have the concurrent function of the Chairman or the General Director. For Independent Director variables, the number of Independent Directors in the Executive Board is from 0 members to the highest of 8 members. This is due to whether the size of the director board is small or large and the number of board members involved in the board. The age characteristic differs from the other characteristics as the only measure of the CEO's age is shown in Table 3. It can be seen that the age of CEOs generally focusses between 36 and 65 years old, accounting for about 30%, while those aged over 65 and under 36 accounts for 2.8% and 3.6% respectively.

Tab.2 - Statistics describing dependent variables and independent variables in the study

	N	Mean	Std. Deviation	Minimum	Maximum
Directorsize	390	4.19	1.687	1	13
ChD	389	0.39	0.487	0	1
InD	390	2.06	1.507	0	8
Women	390	0.83	0.952	0	7
PhDs	390	0.07	0.291	0	2
Age	376	2.95	0.908	1	5
ROA (EBIT/Total)	390	-37.73	453	-7,643.29	715.31
Valid N (listwise)	375				

Source: processed by the author with SPSS 20.0

Tab.3 - Frequency of characteristic age

Frequency	Age (%)
> 65	2.8
56 - 65	30.0
46 - 55	36.2
36 - 45	23.8
< 36	3.6
Total percentage	96.4
Missing	3.6

Source: own processing in SPSS 20.0

Table 4 shows the correlation between variables in the study. The results show that there are some correlations between dependent and independent variables; specifically, the correlation between ROA and InD with the coefficient of 0.148 and the correlation between ROA and age with a coefficient of 0.138. At the same time, the results show that there is no multi-collinearity in the regression results, so the regression results are not affected.

Tab. 4 - Correlation coefficient between variables.

	ROA	Firmsize	Ln_Directorsize	ChD	Ln_InD	Ln_Women	Ln_PhDs	Age
ROA	1							
Firmsize	0.033	1						
	0.516							
Ln_Directorsize	-0.005	0.302**	1					
	0.92	0						
ChD	-0.076	-0.03	0.033	1				
	0.135	0.552	0.522					
Ln_InD	0.148**	0.300**	0.587**	-0.325**	1			
	0.004	0	0	0				
Ln_Women	0.079	0.147**	0.318**	0.06	0.249**	1		
	0.121	0.004	0	0.239	0			
Ln_PhDs	0.034	0.233**	0.146**	0.045	0.083	-0.016	1	
	0.506	0	0.004	0.378	0.102	0.746		
Age	0.138**	-0.110*	-0.221**	-0.237**	0.039	0.01	-0.025	1
	0.007	0.033	0	0	0.451	0.847	0.63	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Source: own processing in SPSS 20.0

Table 5 shows the number of independent directors, the age of the general director (and the size of the executive board (are significance. This leads to the conclusion that the H2, H5, and H6 hypotheses are accepted and the remaining hypotheses are rejected.

The level of interpretation of the model (Adjusted R Square) is 3.4%. Therefore, 3.4% of the change in firm performance of the listed company on the stock market due to independent variables in the model. And Table 5 also shows that the VIF values of the independent variables are below the threshold 3, so multi-collinearity issues did not happen.

Tab.5 - Regression results of dependent variable.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-208.235	135.1		-1.541	0.124		
Firmsize	4.94E-13	0	0.005	0.097	0.923	0.837	1.195
Ln_Directorsize	-158.817	82.5	-0.136	-1.925	0.055	0.516	1.937
ChD	15.702	54.313	0.017	0.289	0.773	0.783	1.277
Ln_InD	183.613	63.676	0.208	2.884	0.004	0.495	2.021
Ln_Women	66.353	52.857	0.068	1.255	0.21	0.875	1.143
Ln_PhDs	91.706	129.58	0.037	0.708	0.48	0.927	1.079
Age	53.993	27.863	0.105	1.938	0.053	0.872	1.146

a. Dependent Variable: ROA

Model	R	R Square	Adjusted Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.228 ^a	.052	.034	454,43949	.052	2.862	7	367	.006

a. Predictors: (Constant), Age, Ln_Women, Ln_PhDs, ChD, Firmsize, Ln_Directorsize, Ln_InD

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4137839.512	7	591119.930	2.862	.006 ^b
Residual	75791095.760	367	206515.247		
Total	79928935.272	374			

a. Dependent Variable: ROA

b. Predictors: (Constant), Age, Ln_Women, Ln_PhDs, ChD, Firmsize, Ln_Directorsize, Ln_InD

Source: own processing in SPSS 20.0

Discussion

The analysis results indicate that the variable "Chairman holding concurrently general director position" has $\beta > 0$, but the sig value to test for significant independent variables is greater than 0.1 ($\beta = 0.017$, sig = $0.773 > 0.1$). Therefore, this hypothesis is inconsistent with the observable data, meaning that there is no evidence that the CEO and the chairman are one person, which will increase business effective performance. Rejecting H01. The results of this study are in agreement with the results of the study of Nugroho & Eko (2011) and are not consistent with the study of Bathula (2008).

The regression analysis result showed that the number of independent directors was positively correlated with the firm performance ($\beta = 0.208$, $\text{sig} = 0.004$), accepting H02. Therefore, the number of independent directors positively impacts on the firm performance of enterprises. Our findings are consistent with Bayrakdaroglu (2012)'s results, with the result that EVA, MVA, and CVA increase if the CEO is not a member of the board and is not consistent with the Nugroho and Eko (2011), with the result that the independence of the board did not significantly affect earning behaviors in listed companies.

For the variable "Number of female directors" has $\beta > 0$ but $\text{sig} > 0.1$ ($\beta = 0.068$, $\text{sig} = 0.21$), thus concluding that there is no evidence to support the number of female directors affecting same-direction to the firm performance of enterprises, rejecting H03. Probably the female directors in the boards of the Vietnamese companies are too small to represent the gender diversity of the Executive Board; but in general, there should be female directors for directors because their qualities and abilities supplement and support the management and the operation of the business.

The results of the analysis indicate that the variable "number of directors with doctoral degrees" has $\beta > 0$ but $p > 0.1$ ($\beta = 0.037$, $\text{sig} = 0.48$). Based on this result, we conclude that there is no correlated relationship between the number of directors with doctoral degrees and the firm performance of enterprises. Rejecting H04. Surprisingly, this result does not coincide with the study Hanoku (2008) that there is a relationship between education and firm performance. It seems that, in Vietnam, the executives of the companies operating their companies are largely based on much of the experience. Companies without a doctoral degree can be more effective than companies with a doctoral degree. That explains why the results did not find the effect of these two factors in the Vietnamese market.

The analysis regression result also shows that the age of the general director is positively correlated with the firm performance of the firm with $\beta = 0.105$ and $\text{sig} = 0.053$. Accepting H05. According to the statistic, it can be understood that the age of the general manager in the range of 36 to 65 years of age will be prudent and the errors in the decision-making will be reduced to a minimum, resulting that the company's firm performance is guaranteed and improved in the same direction. This finding is in agreement with a hypothesis accepted in the study of Hambrick & Mason (1984). However, this hypothesis is in contrast to the results of research of Mahadeo, Soobaroyen, & Hanuman (2012). They argue that this trend is changing;

diversifying the age range encourages different perspectives and is an integral part of succession planning.

The unpredictable outcome of the analysis is that the size of the board is inversely related to the firm performance of the firm, with $\beta = -0.136$ and $\text{sig} = 0.055$. Accept H06. It can be seen that the smaller the number of members on the board is, the less will be the internal conflict and division of power, thereby improving firm performance. This conclusion is consistent with the results of the study of Bathula (2008) but contrary to a hypothesis in the study of Nugroho and Eko (2011).

CONCLUSION AND RECOMMENDATION

Conclusion

Study investigates the impact of the Board characteristics on firm performance of 195 listed companies on the Vietnam stock market between the year of 2014 and 2015. Based on the research overview and the theoretical basis, we consolidate the reliability of the report and build the research model. After collecting 400 observations from sample size 200, we subtracted 10 observations of 5 companies and the remaining 390 observations were included in the SPSS 20.0 software to handle descriptive statistical analysis, Pearson correlation analysis and linear regression.

This research has identified some characteristics of the board of directors that affect the firm performance of listed companies on the two Vietnam stock exchanges (HOSE & HXN). Research results show that:

1. The number of independent directors affects the same-direction on the firm performance of enterprises.
2. The General Director over the age of 65 has the opposite effect on the firm performance of enterprises.
3. The size of the executive board has the opposite effect on the firm performance of enterprises.
4. There is no evidence that the gender and doctoral qualification of the board of directors affect the firm performance of enterprises.

In addition to the characteristics of the Executive Board analyzed in the study, firm performance is also influenced by a number of other characteristics that are not mentioned in the research model.

Recommendation

From the results of this study, the authors make the following recommendations:

- Listed companies on the Vietnam Stock Exchange should focus on the characteristics of the Board of directors that affect firm performance, thereby establishing appropriate criteria for the recruitment for the Executive Board.
- Financial investors and shareholders should use the advice, analysis results related to the structure of the management board before making investment decisions on listed companies to invest most effectively in Vietnam.

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THE UPS AND DOWNS OF DEVELOPMENT FINANCE INSTITUTIONS IN INDIA – LESSONS FOR OTHER COUNTRIES

Peter Bihari

Abstract

This study aims to make attempts to put the changes in appraisal in context and discuss the establishment of a new long term finance institution in India. The paper is divided into five parts. The first part represents the introduction. The second part of the paper gives a brief summary of the economic argument for development finance institutions in general. The third part deals with the hopeful start of these institutions following India's independence. The fourth part discusses the demise caused by the financial reforms of the 90s. The fifth part is devoted to conclusions, lessons and recommendations. The finding is that it was a strategic mistake to enforce the transformation of development finance institutions into commercial banks and rely solely on market forces for long term industrial lending. This paper has not yet been determined whether development finance institutions will resurrect in India or not. This depends on the role the political decision-makers envisage for market and non-market forces in the socio-economic catch-up of the country. If the forces believing that market-based catching up would take longer than possible as a result of the inadequate operation of the capital markets gain ground, we may expect the reappearance of financial institutions similar to DFIs in India.

Keywords: development finance institution, DFIs, India.

JEL Codes: G2.

INTRODUCTION

Recent years have seen a resurrection of development banks worldwide. Their disbursements increased faster than those of private institutions. New national, regional and multilateral development banks were set up. Policy-makers and academics reassess the evaluation of these institutions. This new wave is a reaction to the more pronounced failures of capital markets following the global financial crisis. Governments recognized that lending by state-owned banks was countercyclical; it helps to mitigate adverse effects of the crisis and plays a bridging role between savings and financing needs.

For a number of years now there has been intensified discussion of the need to establish a national development or long term credit bank in India. This move would open a new chapter in the eventful history of Indian development banks. There were times when they were considered essential in India's catching up with more advanced economies. There were other times when it was believed that private sector actors could successfully take over functions from development institutions. This paper attempts to put the changes in appraisal in context and take a stand in the discussion on the establishment of a new long term finance institution in India. The second part of the paper gives a brief summary of the economic argument for development finance institutions in general. The third part deals with the hopeful start of these institutions following India's independence. The fourth part discusses the demise caused by the financial reforms of the 90s. The fifth part is devoted to conclusions, lessons and recommendations.

THE CASE FOR DEVELOPMENT FINANCE

The economic logic for development finance policies is simple. Capital markets do not allocate resources to areas which are believed to be too risky and/or their payback time is believed to be too long. Reluctance of market-based financing affect two segments of business undertakings in particular: those in need of long term financing and the newcomers. The long time horizon and the long gestation lag may expose banks to an accrued risk they are often not prepared to take. The problem is often compounded by the mismatches in liquidity and maturity. The availability of long term sources represents a constraint to long term lending. As a result of scarcity of long term finance, investments in infrastructure and other specific capital intensive industries lack funding. New companies as well as small and medium scale enterprises in general find it exceedingly difficult to obtain bank financing because of the lack of past record and the foreseeable losses of their early learning period. Even in the advanced capital markets, availability of capital is a function of location, industry and presence of banks in the area. An undertaking in a remote village without bank branches has a very limited chance to have access to capital. (Seidman, 2005) These problems have particular importance in emerging countries with a low density of bank branches.

From a theoretical perspective, development finance policies can stem from market imperfections, more particularly from asymmetric information. Companies have superior

(more, better, earlier) information about their future prospects than creditors or investors. Lenders are more unsure whether the borrower has the capacity and / or willingness to pay back its debt. If the company has better information about its investment returns than its potential investors, external finance may be expensive, a lender will charge a premium to compensate for the disparity in information or will not lend at all. (Greenwald&Levinson&Stiglitz, 1993) In such a situation, some companies would not be able to obtain any credit even though they would be willing to repay the lender. They could earn profits if they were given access to credit. Financial institutions do not channel funds to profitable opportunities. (Stiglitz, (1989) Credit rationing is a result of imperfection in capital markets or, in other words, financial market imperfections imply credit underprovision and lead to a suboptimal allocation of capital and other resources. (Esteva &Freixas,2018)

Governments can fill the vacuum left by market forces, and provide capital via development finance institutions (DFIs) especially to undertakings that might otherwise have difficulty attracting financing. Even if capital markets were perfect, their capital allocation would be limited by the size of domestic savings. In emerging economies this constraint – due to the lack of domestic saving and the lack of domestic capital – is more severe. DFIs can mitigate this constraint by intermediating various non-market funds towards domestic firms. By doing so, they can expand the overall capital supply. These institutions do not measure their performance against profit objectives only. Their lending policy includes the pursuit of a social benefit objective, as well. This duality raises new and old questions. Do governments have additional information on companies' prospects that markets do not have? Is the problem of asymmetric information terminated? What is the optimal trade-off between pure profit-making and social impact? Can we expect the financing granted for non-remunerative projects markets rightly rejected? Is there a risk of subordination of lending policy to short term political interests? Hopefully, this paper will answer at least some of these questions.

THE RISE OF DEVELOPMENT FINANCE IN INDIA

The rationale for development finance in India was much the same as it was in other emerging economies: the aspiration to catch up through industrialization. As a response to market insufficiencies, the post-war Nehru government started the establishment of nationwide

institutions.⁵⁰ In parallel, state level institutions such as State Financial Corporations (SFC) and State Industrial Development Corporations (SIDC), with state governments being the sole owners, were also established. This wave was followed by the creation of many refinancing and sector-specific or specialized institutions in the 80s. The mushrooming of DFIs is reflected in their business activity. Nominal annual growth of their disbursements was especially spectacular in the post 1970s. Their share in total bank lending or in gross fixed capital investments showed a dynamic rising trend until the turn of the century. (see Fig. 1). In 2000, DFI disbursements reached 30% of lending to industry, and constituted around 15% of gross fixed capital formation. It is fair to say that in conformity with the basic principles of their establishment, DFIs had an irreplaceable role in the industrialization process in India.

The composition of disbursements shows certain peculiarities. DFIs provided financing for small-scale industrial sector, agriculture, rural industrialization, village industries, power and railway sectors, or refinanced house loans. However, infrastructure received less than 16% of total disbursements. This low figure indicates that DFIs, contrary to their mandate, did not address the infrastructural obsolescence of the Indian economy adequately.⁵¹ An insufficient infrastructure is an obvious constraint to industrial and economic growth in general.

The spectacular growth of DFI lending from the mid-60s to the end of 90s was supported by abundant funding. The DFI funding came :

- directly from the government in the form of subsidized or interest-free loans,
- indirectly from the government through Reserve Bank of India (RBI) allocation on concessional terms. RBI allocations stemmed from its profits before they were transferred to the government⁵²

⁵⁰ The three most important national institutions are the Industrial Finance Corporation of India (IFCI) set up in 1948, the ICICI (Industrial Credit and Investment Corporation of India (1955) and the IDBI (Industrial Development Bank of India) (1964).

⁵¹ As a belated response to this, newly created institutions were dedicated to infrastructure. The Infrastructure Development Finance Company (IDFC) was incorporated in 1997 as a private company to foster the growth of private capital flows for infrastructure financing. The India Infrastructure Financing Company Limited (IIFCL) was incorporated in 2006, as a wholly-owned government company, to provide long-term finance for viable infrastructure projects.

⁵² In reality, these are government sources as well, as profits of RBI should be part of government revenues. RBI financing means that parliamentary scrutiny over these funds is not implemented.

- Government guaranteed bonds subscribed by commercial banks Their yields stayed below the usual markets rates due to the government guarantee and also because these bonds could be used to meet the statutory-liquidity-ratio requirements of commercial banks.
- off-budget transactions that relied upon public deposits in state-owned banks, post offices and pension funds.
- foreign loans from multilateral institutions such as the World Bank and the regional development banks.
- Open market sources

Low cost government funding not only stimulated the business activity of DFIs but resulted in a dependency. DFIs were subject to political interference. “The government being an important source of finance, it was to be expected that it would exert control over the functioning of these institutions and in determining the leadership of these organizations. This did imply that some political and partisan considerations affected the functioning of the DFIs. It also implied that these institutions were partly protected from close scrutiny by members of parliament and other representatives of the people.” (Chandrashekar, 2015, p9.) Political pressure could force managers into loss making credit decisions against their own will. DFIs operated as wings of government rather than as autonomous institutions. At the same time, political protection made irresponsible business behavior possible , too. Acts of mismanagement were rarely followed by sanctions. Should any loss be incurred, the political connections were available to provide rescue to the company and its managers. The anticipation of a government rescue increases the moral hazard of economically nonviable decisions. As a result, non-performing assets built up and profitability of DFIs suffered.⁵³ This is what Kornai calls soft budget constraint.⁵⁴ Sengupta and Vardhan (2017) concluded that loan quality was worse at the term-lending DFIs. In the absence of overall data for the DFI sector we can illustrate this by the case of IDBI bank, where the percentage of Gross NPAs between 1999 and 2003 ranged from 14.07% to 16.86% of total advances. (Chakrabarty, 2013). The entire banking sector had an approx. 10% NPA rate for the period of 2001-2003. “The share of non-performing assets in loans as at end-March 2002 was at 24.1 per cent in case of India Investment Bank of India (IIBI), 22.5 per cent in

⁵³ In order to maintain the continuous operation of DFIs, when NPAs reached dangerous levels the government took over part of the infected loans. A framework for these interventions were first proposed by the Narasimham report of 1991: “...the Committee proposes the establishment if necessary by special legislation, of an Assets Reconstruction Fund (ARF) which could take over from the banks and financial institutions a portion of the bad and doubtful debts at a discount....” (Narasimham (1991) p.XIII

⁵⁴ Kornai (1980)

case of Industrial Finance Corporation of India (IFCI), and 13.4 per cent in case of Industrial Development Bank of India (IDBI). (RBI, 2003, p.33) For the same period, the ratio of gross NPAs to gross advances (of commercial banks) declined to 10.4 per cent from 11.4 per cent in 2000-01. (RBI, 2003, p.32)

The DFIs in conformity with their mandate were serving higher risk customers, as well. Consequently, it was to be expected that they would have lower profits and higher NPA rates than market institutions.⁵⁵ However, the values cited above are signs of an unsustainable business model.

THE FALL OF DEVELOPMENT FINANCE IN INDIA

India faced an economic crisis in 1990-91, which was manifested in an unmanageable balance of payments, high rate of inflation, unsustainably high fiscal deficit, melting foreign exchange reserves and growing profitability and portfolio quality concerns in the banking sector. Under the pressure of economic malfunctioning, the government of India launched massive macro-economic management reforms (with the primary objective of reducing the fiscal deficit); and structural and sector-specific reforms. The financial sector was a key area of these reform initiatives. The government established a committee under former RBI Governor M. Narasimham to provide an in-depth overview of the financial system. A few years later a second Narasimham committee was established. The reports of these committees had comprehensive recommendations for financial sector reforms including the banking sector and capital markets. The basic assumptions of this committee were that equity and bond markets as well as the banking sector made sufficient progress to better answer the external financing needs of the private sector. Commercial banks gradually improved their project appraisal skills, their risk management capabilities and developed interest in long term lending. Investment commitments to infrastructure projects with private participation increased significantly in the 1990s, from around US\$20 billion at the start of the decade to more than US\$140 billion by 1997. (Spratt&Collins, 2012) A higher retail deposit base aided a better asset-liability match. In addition, the development of the bond markets enabled commercial banks to raise long term funds. Due to these changes the DFIs lost some of their competitive edge in the long term

⁵⁵ However, “this decline in profitability is not so much because of acceptance of social obligations of lending to some sectors at concessional rates of interest but because of deterioration in the asset quality.” (Narasimham (1991) p. 101 On the other hand, the deterioration of asset quality is a consequence of the acceptance of social obligations.

finance market. At the same time, their non-performing assets reached dangerous levels and their profitability declined.

In accordance with the findings of the Narasimham committee, the government launched far reaching liberalization reform(s) in the banking sector which affected the basic function and the institutional setup of DFIs. The modifications aimed largely at enhancing the efficiency and productivity of the banking system through competition. It was felt that less barriers to entry and less constraining regulation would enhance competition. More freedom for commercial banks and less artificial competitive advantage for DFIs were supposed to ensure adequate long term lending by commercial banks.

The major recommendations of the Narasimham committees with a special focus on DFIs are as follows:

Capital and financial market liberalization

- Development of new hedging tools (like Interest Rate Swaps, etc) for asset-liability mismatches opening the way for long term financing by commercial banks.
- Permission of issue of fresh capital to the public through the capital market.
- No bar to new banks to enter the private sector.⁵⁶ More permissive policy allowing foreign banks to open branches and joint ventures in India.
- Gradual opening of the capital market to foreign portfolio investment

Interest rate deregulation

- Regulation and control of interest rates by authorities is proposed to be replaced by interest rates determined by market forces. Concessional interest rates are proposed to be phased out.

Banking autonomy, policy and regulation

- The over-regulated and over-administered banks including DFIs should be given operational flexibility and functional autonomy especially in matters of lending and internal administration. A healthy competition between banks and DFIs is desirable. There should not be any difference in the treatment between the public sector and the private sector banks. “The

⁵⁶ The entry of private sector banks was not allowed until January 1993,

Committee also believes that commercial banks should be encouraged to provide term finance to industry, while at the same time, the DFIs should increasingly engage in providing core working capital.” (Narasimham, 1991, pXXV) The DFIs should obtain their resources from the market on competitive terms and their privileged access to concessional finance through the SLR and other arrangements should be phased out.⁵⁷ This would lead to an actual increase in the cost of funds for DFIs.

- A substantial decrease in the cash reserve ratio (CRR) and the statutory liquidity ratio (SLR) was proposed which would reduce the cost of funding for commercial banks.⁵⁸ Lower levels of CRR and SLR free up funds enabling commercial banks to provide both long term and short term industry lending

Non-performing assets: Assets Reconstruction 'Fund (ARF)' was established to take over bad and doubtful debts. This process was regarded as an emergency measure and not as a continuing source of relief to the banks and DFIs.⁵⁹

Development banks were to be turned into commercial banks and as such they had to satisfy the prudential norms applicable to the banks.⁶⁰ An RBI study argued in 2004 that the role of DFIs could be performed just as well by commercial banks and capital markets, therefore national term-lending institutions should be converted into banks or non-banking financial companies. (RBI, 2004)

The immediate consequence of the financial reforms on DFIs was their extreme marginalization in the development finance arena. This was caused by three factors:

- sharp increase in their cost of funding

⁵⁷ DFIs enjoyed exemption from CRR and SLR regulation.

⁵⁸ Taken SLR and CRR together, banks needed to maintain 53,5% of their resources idle with the RBI. It was one of the reasons for their poor profitability. High SLR and CRR meant locking of bank resources for government use. DFIs exemption from CRR and SLR regulation ensured a competitive advantage vis-à-vis commercial banks. The removal of this exemption eliminated this advantage.

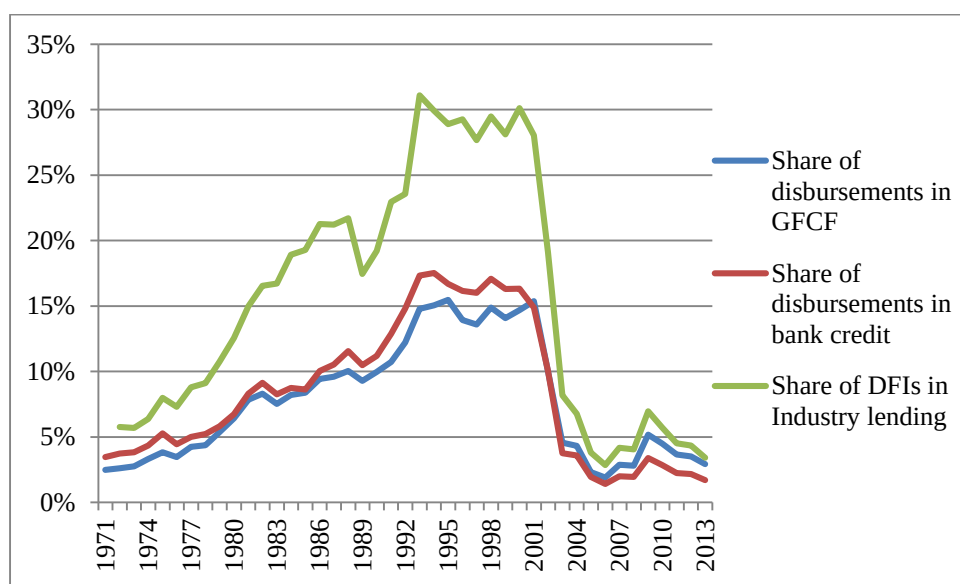
⁵⁹ “It should be made clear to the banks and financial institutions that once their books are cleaned up through this process they should take normal care and pay due commercial attention in loan appraisals and supervision and make adequate provisions for assets of doubtful realisable value.” (Narasimham, 1991, (p.XIV). Warnings have not proved to be sufficient. The RBI was forced to introduce a strategic debt restructuring (SDR) scheme in June 2015, which was a new version of the corporate debt restructuring (CDR) scheme of August 2001.

⁶⁰ This transformation started with the Industrial Credit and Investment Corporation of India (ICICI) in 2002 and continued with the Industrial Bank of India (IDBI) in 2004.

- a reformulation of their business policy
- a reduction in the number of DFIs

The most important single reform measure was halting the concessional funding of DFIs. Government guaranteed bonds were gradually phased out and access to the low cost funds of the Reserve Bank was also discontinued. DFIs could raise resources by way of raising debt and equity in the domestic and international capital market. As a result, their marginal cost of funds increased sharply. Once funding was raised from the markets, DFIs had to operate according to market logic. The more expensive market funding made the use of under-the-market lending rates no longer possible and allowed substantially less lending. Their risk taking pattern had to be similar to that of any other commercial bank, i.e. higher risk customers could not count on credit decisions deviating from pure market considerations any more. As for the total disbursements of DFIs, the spectacular growth of the 1990s was followed by a sharp decline during the first half of the 2000s. This process is the most striking when their share in total bank credit, industry lending and gross fixed capital formation are considered. The total disbursements of DFIs as a percentage of industry lending plunged dramatically from the peak level of 30% to below 5% by the early 2000s. In gross fixed capital formation and bank credit, the share of DFI dropped from 15-17% to 3-5%.

Fig. 1: Evolution of relative weight of DFIs over time



Source: Reserve Bank of India, Handbook of Statistics on Indian Economy, 2017

The downsizing is another factor explaining the marginalization process of DFIs. According to the advocates of the financial reform, commercial banks were able and interested in providing term lending; therefore there was no need to maintain the same number of DFIs. Following the reform recommendations, the government shut down several development finance institutions.⁶¹ Those who remained reformulated their business policy. Their development financing activity faded away, but they made significant penetration into retail banking and in particular to the personal loan market. Comprehensive data are not available; however, individual cases are in full consistency with the above statement. The evolution and the composition of the ICICI Bank's gross advances clearly indicate both the headway of retail banking and a decline of classical development finance activity. While consumer loans represent half of total advances, infrastructure lending has a mere 11% share. ISBI Bank shows similar business characteristics. In its loan book, the share of retail advances increased to 43 per cent in March 2017 from 33 per cent at the end of March 2016. The announced strategy of IDBI Bank is to improve the share of retail business to 50% of book size over the next 3 years.

Fig. 2: ICICI Loan Portfolio, 2002

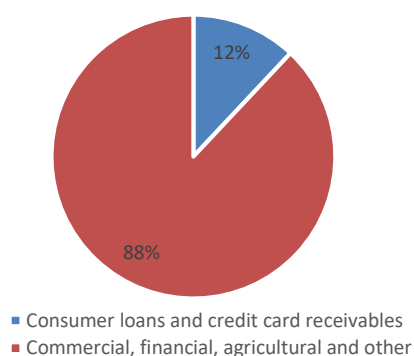
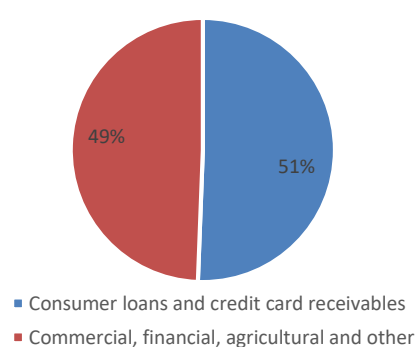


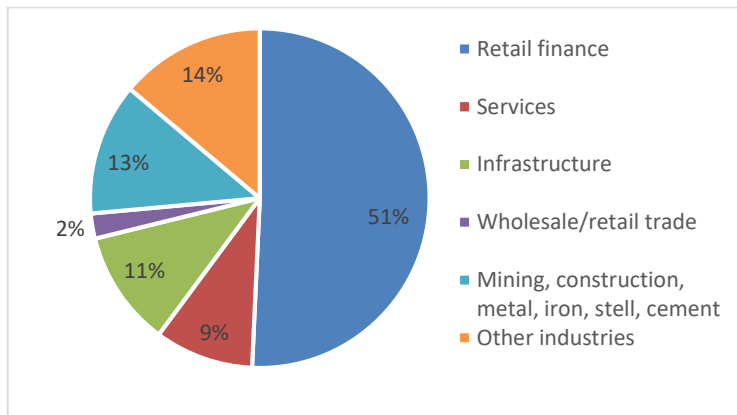
Fig. 3: ICICI Loan Portfolio, March 2017



Source: ICICI Annual Reports

⁶¹ Two national DFIs (IFCI and IRBI) withered away. On state level, SFCs (State Financial Corporation) and SIDCs (State Industrial Development Corporation) Industrial Investment Bank of India were closed down.

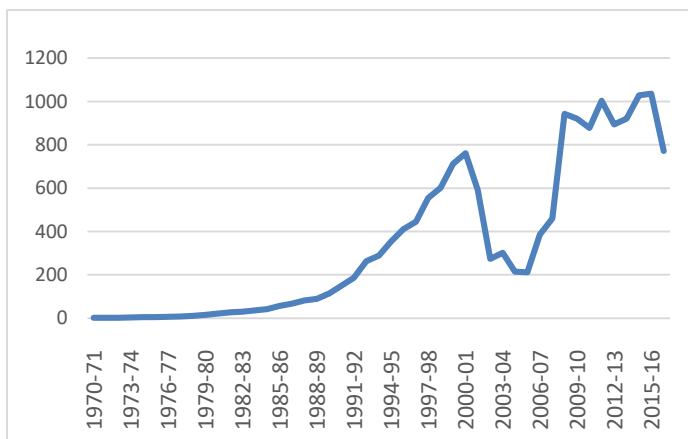
Fig. 4: Composition of ICICI advances, March 2017



Source: ICICI Annual Reports

The new retail banking focus of DFIs not only compensated for the drying up of project lending but helped to reach the earlier peak of disbursements. These post-reform business priorities ensured economic survival but they were inconsistent with the original mandate of DFIs

Fig. 5: Disbursements of DFIs, 1971-2017

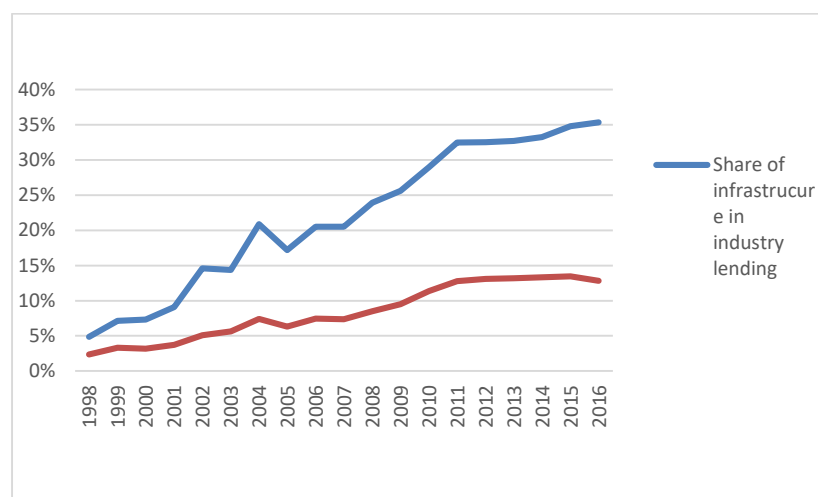


Source: Economic and Political Weekly Research Foundation India Time Series

The transformation of DFIs does not allow to conclude that development finance activity as such collapsed. The question is whether other actors could step in as good substitutes of DFIs in the development finance business. The available evidence is not convincing. Based on the weakening and the transformation of DFIs one could expect a setback in infrastructure financing. This has not happened. While the long term lending of DFIs plummeted, the share of infrastructure in bank lending increased substantially. This suggests that commercial banks

successfully stepped in and compensated for the withdrawal of DFIs. As industry lending grew slower than total bank lending, the share of infrastructure shows a more rapid improvement when compared to industry lending.

Fig. 6: Relative importance of infrastructure lending, 1998-2016



Source: Reserve Bank of India, Handbook of Statistics on Indian Economy, 2017

There are other indicators consistent with this. Prior to the financial reform, DFI disbursements amounted to 50% of gross fix capital formation. However, their plummeting in the early 2000s did not cause a break in the evolution of GFCF. A comparison of the average GFCF growth rates of the five years prior to (18.2%) and following (9.2%) the implementation of the financial reform, shows no break.⁶² The same holds for the 10 year comparison. Alternative sources of financing made an unbroken progress of capital formation possible. Commercial bank lending is one of these. Total bank lending visibly accelerated after the introduction of the financial reforms. Neither the GDP growth nor the inflation performance explain these developments. Both of them had slower growth in the post-reform years. The rapid growth of bank credit was mainly the result of commercial banks effort to fill the void left by DFIs

⁶² The financial reforms consisted of various measures introduced at different points in time . Year 2002 is taken here as the dividing line of the pre and post reform period, as the most striking changes in the position of DFIs started that year.

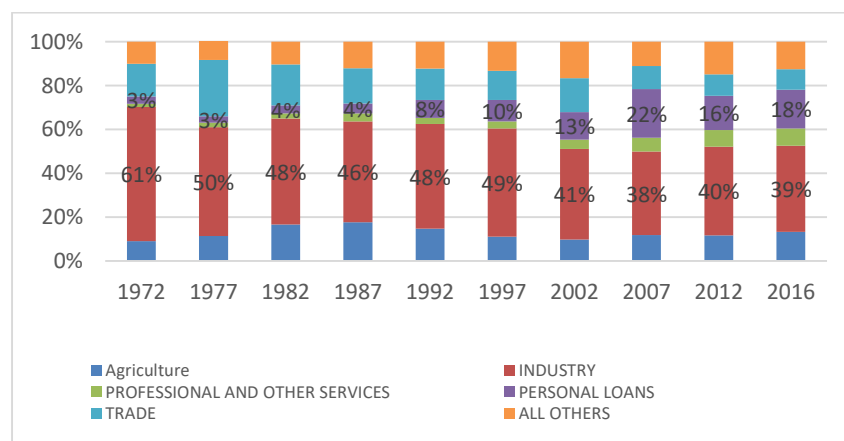
Tab. 1: Evolution of selected financial and macro variables average annual growth rate

	Before financial reform*		After financial reform	
	Preceding 5 years	Preceding 10 years	Following 5 years	Following 10 years
GFCF at current prices	11,0%	13,7%	18,2%	17,4%
Bank credit	15,1%	16,1%	24,4%	22,8%
GDP at market prices	12,2%	14,1%	11,2%	13,6%
CPI-IW	6,8%		4,1%	

Source: Reserve Bank of India, Handbook of Statistics on Indian Economy, 2017

Some other information contradicts the successful transition of development finance from DFIs to commercial banks and capital market institutions. According to Kumar (2015), banks were not able to meet the demand of industry for finance. The rapid growth in bank lending was accompanied by a declining share of industry lending. Undoubtedly, a rapid industrial catch-up is unlikely if industry is getting a smaller and smaller portion of bank credit.⁶³

Fig. 7: Composition of bank lending, 1972-2016



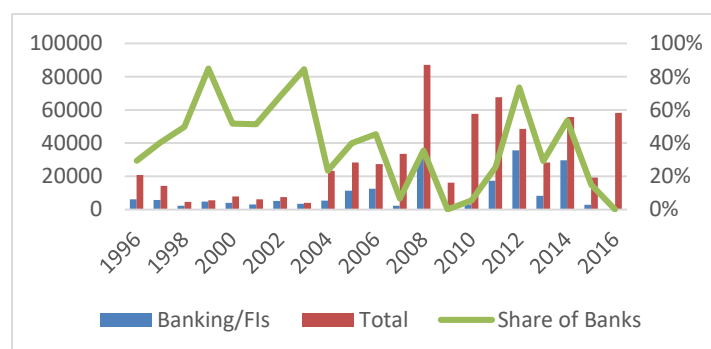
Source: Reserve Bank of India, Handbook of Statistics on Indian Economy, 2017

The inner structure of industry lending reveals additional weaknesses. The post-reform financing proved to be beneficial to urban districts and contributed to a further exclusion of rural areas. Banks closed their loss making rural branches and the tighter branch network

⁶³ This erosion did not start with the introduction of financial reforms. The share of industry in bank lending dropped from 61% to 48% between 1972 and 1992, which were the flourishing years of DFIs. Consequently, even then, the DFIs were unable to compensate for the insufficient interest of commercial banks in industry lending. In the later years, the financial reform did not entail any change in this respect.

caused a decline in the share of rural credit from 15% (1990) to 9% (2014). Kumar (2015) pointed out, the share of long-term deposits in the total bank deposits declined sharply, posing severe limits on long-term lending. The domestic securities market was able to provide only constrained resources to commercial banks. The Indian primary bond market showed an appraisable growth only from 2004 but its size was still only about one third of that of Brazil or 10% of that of China in the middle of 2010s. Chandrasekhar points out that „ between 2003-04 and 2006-07, which was a period when FII inflows rose significantly and stock markets were buoyant most of the time, equity capital mobilized by the Indian corporate sector rose from Rs.676.2 billion to Rs.1.77 trillion.” (Chandrasekhar, 2015, p.10) This latter figure represents 16% of total bank credit.

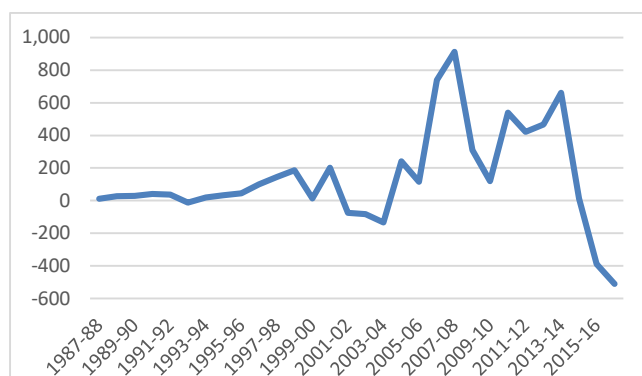
Fig. 8: Resources Mobilised from the Primary Market



Source: SEBI Handbook of Statistics on Indian Securities Market, 2017

As for external sources, commercial borrowing is the most common way for Indian companies to raise money outside the country. This instrument after long years of sleep state embarked upon a rapid but short lived growth path beginning in 2004. First, the global financial crisis, after that the weak growth performance of the Indian economy caused a decline in commercial borrowing, All in all external commercial borrowing proved to be an insignificant source of corporate financing. Even at its peak, commercial borrowing represented a mere 3.5% of total bank deposits.

Fig. 9: Evolution of commercial borrowings, net, Billion



Source: Handbook of Statistics on Indian Economy, RBI, 2017

CONCLUSIONS, LESSONS, RECOMMENDATIONS

The financial reforms deprived DFIs of their regulatory advantages and of their access to concessional funding. As a result, they became unable to meet the demand of the corporate sector for long term financing, thereby their original role remained unfulfilled and their very *raison d'être* could be called in question. In order to survive, they developed a new business profile focusing on retail banking. With the closure and transformation of DFIs and in the absence of a deep and liquid corporate bond market, long term financing had to be carried out by commercial banks. Banks made significant progress to meet industry demands for finance, but the paper concludes that they failed to become good substitutes for DFIs. The rapid exit of DFIs from project finance at the beginning of the 2000s did not produce a break in capital formation or infrastructure spending. Banks' exposure to infrastructure has grown rapidly. However, the declining share of industry in total bank lending is an indicator of constraints to rapid industrialization. A greater boost to industry lending was not compatible with the banks' profit goals. Some of the constraints are of general nature and not specific to Indian market developments. The asset –liability mismatch preventing long term lending is a feature of the banking business in general. Banks (and corporations) in advanced economies rely on the bond and equity markets and external borrowing to mitigate the negative impact of the mismatch. However, the underdevelopment of the Indian bond and equity market, the growing share of bank deposits (mainly short term) and claims on government in household savings and the

irresolute movements of external commercial borrowings do not promise a quick improvement of the mismatch.

This paper argues that the general capital market imperfections argument explaining a suboptimal allocation of capital applies in India. Particularly, the information asymmetry argument has to be reemphasized. Banks physically distanced from the lieu of prospective undertakings will likely have limited information on the prospects of new firms in rural areas and will likely reject many promising plans because of this. Indian commercial banks, too, amass a wealth of information on their clients, improved their project appraisal skills and their risk management capabilities but the unevenness of information and the resulting under provision of credit continues to exist. As the establishment of new bank branches is guided by prospects of profitability, there will remain unserved (mostly rural) areas, where access to finance will be limited. The government is also unable to eliminate the information asymmetry. The government does not have any more information on the profit prospects of projects than the banks. Nor does it have any monopolistic additional knowledge in assessing their viability. There will, however, be projects that hold out less on profits but that verifiably increase social welfare and so can expect funding from state development institutions.

This paper concludes that it was a strategic mistake to enforce the transformation of development finance institutions into commercial banks and rely solely on market forces for long term industrial lending.⁶⁴ Markets are not sufficient to deliver the highest possible social welfare in most advanced economies. They are less so in less advanced economies. Consequently, this paper joins those who recommend the reestablishment of special financing institutions promoting long term industrial lending. It seems that central bankers of India are nuanced advocates of this approach. The Reserve Bank of India released a Discussion Paper on ‘Wholesale & Long-Term Finance Banks’ in April 2017. Former central bank governors Y.V.Reddy⁶⁵ and C. Rangarajan⁶⁶ expressed their open support for the proposal. The key arguments for and features of such institutions are the following⁶⁷:

⁶⁴ Similar views are expressed by Nayyar (2017), Kumar (2015), Ray(2015)

⁶⁵ Y.V.Reddy: Development Banking – Way Forward - NSE-IEA Lecture on Financial Economics at Indian Economic Association 100th Annual Conference 2nd January, 2018

⁶⁶ [C Rangarajan - S Sridhar](#): **We need a bank just for long-term credit in The Hindu Business Line April 09, 2017**

⁶⁷ These are similar to the points made when DFIs were established at the first place

- The proposed new bank(s) will lend to companies which would not get a loan from commercial banks because of the high risk and the long payback period of their project. Infrastructure projects are typically of this kind. High risk is associated with more defaults, therefore it is likely that these banks would be vulnerable to loan portfolio and lower profitability issues. However, the mission undertaken must not be an excuse for every portfolio problem. It is the responsibility of the independent management to take on risks only which do not result in a dangerous increase of NPAs and do not put the stability of the bank in jeopardy. High level of transparency and public accountability might be helpful to separate the impact of company objectives and that of (mistaken) management decisions, *horribile dictu*, external political influence on asset quality. Lending decisions affect territorial, industry, etc. groups differently, and it can be predicted that winners and losers (mostly losers) will express their concerns. The new banks will be subject to public scrutiny and heated political discussions.
- Low cost resources are necessary conditions for competitiveness and for long term lending at reasonable rates. Low capital costs prevent higher client risk taken in conformity with the business policy of the new banks being reflected in higher lending rates. While resources should mostly originate from debt issuances in local and external markets in the form of bonds and asset securitization, special regulatory measures should ensure the marketability of those securities at a low yield level. Relaxations in respect of CRR, SLR, compliance with liquidity ratios, government guarantee for bond issuance are often mentioned as examples (see Reddy, 2018), RBI, 2017) Direct budget transfers and central bank funding may put too much pressure on government finances and represent a vehicle for political interference. Therefore they need to be kept at a low level or fully avoided. Central bank profits are due to the budget, therefore their direct transfer to a particular economic actor prevents the public from deciding on the utilization of public resources. Therefore the earlier practice of transfer of central bank resources to DFIs is not to be reexercised. Access to low cost resources of multilateral and bilateral agencies should be permitted.
- Independent decision-making, the absence of political interference is a precondition of sound management. Words of the first Narashimam report of 1991 apply unchanged today, too. “We believe that ensuring the integrity and autonomy of operations of banks and DFIs is by far the more relevant issue at present than the question of their ownership.” (Narashimam, 1991, p.6) Autonomy can be ensured both in private and public ownership structure of these banks. In the latter case, the personal independence of the top manager is crucial. Appointment

and dismissal procedures, income rules should be set in such a way as to ensure the independence of top managers. Mixed ownership is feasible only if several conditions are met simultaneously. Private capital takes ownership only if it has been ascertained that its profit expectations will be met, i.e. its co-owner will not drive the bank to money losing activities. On the other hand, the state will accept private capital as co-owner if it has been ascertained that their joint venture will pursue social objectives as well. Formal agreements or operational rules cannot, however, of themselves alone ensure the continuous implementation of these expectations. Therefore mixed ownership is a fragile structure.

At the time of the writing of this paper it has not yet been determined whether development finance institutions will resurrect in India or not. This depends on the role the political decision-makers envisage for market and non-market forces in the socio-economic catch-up of the country. If the forces believing that market-based catching up would take longer than possible as a result of the inadequate operation of the capital markets gain ground, we may expect the reappearance of financial institutions similar to DFIs in India.

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THE WAY FORWARD FOR THE VIETNAMESE AUTOMOTIVE MANUFACTURING INDUSTRY

Truong Duy Nguyen

Abstract

After Vietnam initiated major economic reforms (Doi Moi or Renovation) in 1986, foreign investment began to pour in by the lifting of the US-imposed embargo in 1994. In 1997 a research was conducted to examine how foreign investment could help spur economic growth and, in particular, the development of an automotive manufacturing industry in Vietnam. Some twenty years have since passed, this paper revisits the case study and finds that while there has been a great deal of changes in the automotive manufacturing industry worldwide, little has been achieved with regard to policy planning and implementation for the Vietnamese industry in question. After an examination of the Vietnamese automotive manufacturing industry's current state-of-affair, the paper examines the demise of the Australian automotive manufacturing industry in 2017 from different perspective and argued that the Australian case study hold implications for consideration by Vietnamese policy makers who are in need of a bold strategic decision with regard to the future for Vietnam's auto manufacturing industry.

Keywords: Vietnamese car manufacturing industry.

JEL Classification: L52, L62.

INTRODUCTION

Foreign investment, in both forms of direct (often abbreviated as FDI) and indirect, as a tool and contribution on economic development, has been extensively researched in the economic discipline. In favour of foreign investment are arguments of increase in trade, lower price but higher quality of products and services; balance of payment effects, bridging national saving gap, transfer of technological know-how and human capital etc. The against arguments refer to issues like capital outflow; overvaluing technology and high cost of technology transfer, if any at all; deterioration of balance of payments, and exacerbating the already unequal urban-rural economic/social inequality etc.

In early 1997, as part of a postgraduate dissertation thesis, the writer conducted research on the contributing effects, or potential contributions, of FDI to the economic development of Vietnam, ten years after Vietnam introduced comprehensive economic reform (*Đổi mới* - Renovation) in 1986, and two years after the lifting of the US-imposed trade embargo in 1994. In particular, the focus was on the development of a major sector: that of the automotive manufacturing industry.

After twenty years, this paper revisits the development and progress of the Vietnamese auto manufacturing industry and have found little progress has been achieved, with initial objectives and targets unfulfilled Vision for 2030 continues to go sideways with rhetoric rather than concrete measures needed for the development of the sector to take off. The paper examines the demise of the Australian auto manufacturing industry despite billions of dollars of subsidies from a number of categories, then matches them with the current state-of-affairs with the Vietnamese automotive manufacturing industry, before ponders the question of whether Vietnam should make a bold and strategic decision with regards to the future of the industry.

THE VIETNAMESE AUTO MANUFACTURING INDUSTRY 1997-2018

Back in 1997, research in 1997 showed that Vietnam had, at that time, issued licences to 14 auto manufacturers with an estimate for a total domestic market of 60,000 vehicles by the year 2000, and up to 80,000 units by 2005, and the critical manufacturing threshold had been estimated at 100,000 units annually for an assembly plant to be economically viable, and up to 300,000 for a full production line.⁶⁸

The policy at the time forecasted an auto manufacturing industry worth US\$250million, and targeted a local content rate of 30% within the first decade of development.⁶⁹ Ford and Toyota established two largest assembly lines with annual capacity of 20,000 units per year each, with local contents of Toyota's manufacturing bases in ASEAN at the time already achieving an average level of 60%.⁷⁰

⁶⁸ Nguyen, T. (1997), *Foreign Direct Investment in Vietnam*, Master degree Dissertation (unpublished), Macquarie University, Sydney, Australia

⁶⁹ Nghiem Quy Hao

⁷⁰ Business Monitor International

Fast forward to 2017 and with sustaining economic progress over the last two decades, Vietnam has graduated into the middle-income-country band (GDP/capita>US\$1,000/year) in 2010. Figure 01 provides some comparisons with respect to the automotive industry in Vietnam and of its ASEAN neighbouring countries.

Fig. 1: Snapshots of ASEAN's Automotive Industry

					
	Population Million	GDP per capita US\$	Vehicle Production	Vehicle Sales	Product Champion
Southeast Asia	619	3,695	3.88 M	3.14 M	-
Cambodia	15	1,085	-	4,100	Motorcycle
Indonesia	255	3,513	1.3 M	1.21 M	SUV, MPV, Big Trucks
Laos	7	1,666	-	14,700	Motorcycle
Malaysia	30	10,934	600,000	670,000	Passenger Car
Myanmar	53	1,480	4,325 est	1,800	Motorcycle
Philippines	99	2,855	60,000	230,000	-
Thailand	68	6,022	1.8 M	880,000	1-ton pick-up
Vietnam	92	2,007	40,000	130,000	Motorcycle

Note: Singapore and Brunei were not included in the study
"Vehicle sales" and "Vehicle production" refer to total passenger and commercial vehicles

Source: BMJ, OECD, OICA, Thailand Automotive Institute / PwC

ASEAN up Empowering business in Southeast Asia - aseanup.com

Source: <https://aseanup.com/southeast-asia-automotive-industry-overview/>

Figure 02 measures the Vietnamese auto manufacturing industry with the four with an auto manufacturing industry. Thailand, Indonesia and Malaysia have increased production capacity during 2006-14 by 28%, 36% and 34% respectively. Both Thailand and Indonesia increase their utilization rates to the vicinity of 90% by 2014. Yet, Vietnam's capacity increases by only 13% during same and a utilization rate of just 62%.

Fig. 2: ASEAN Member Light Vehicle Capacity & Utilisation Forecast

		2006	2007	2008	2009	2010	2011	2012	2013	2014
Indonesia	Capacity	606,726	695,955	707,639	704,821	795,718	820,384	823,688	823,694	823,690
	Utilization	64.60%	67.20%	76.60%	84.70%	84.30%	83.60%	87.70%	89.30%	89.70%
Malaysia	Capacity	767,000	916,033	1,025,355	1,030,045	1,030,055	1,029,934	1,030,045	1,030,051	1,030,048
	Utilization	63.50%	51.50%	49.00%	54.10%	53.70%	54.90%	54.80%	54.50%	55.30%
Philippines	Capacity	268,075	266,977	238,076	238,078	238,076	238,078	238,080	237,104	238,076
	Utilization	36.00%	39.30%	51.80%	55.00%	57.40%	59.90%	61.00%	61.30%	61.60%
Thailand	Capacity	1,426,373	1,596,248	1,712,833	1,838,825	1,838,827	1,838,825	1,831,288	1,838,831	1,838,826
	Utilization	86.40%	84.10%	82.70%	82.20%	84.00%	87.20%	90.40%	91.30%	91.20%
Vietnam	Capacity	87,938	94,529	94,916	94,532	99,551	99,137	99,546	99,547	99,542
	Utilization	47.70%	48.30%	51.40%	52.40%	54.10%	60.20%	63.00%	62.30%	62.60%

Source: PwC Automotive Institute AUTOFACTS Global Automotive Outlook, 2007 Q2 Release. Copyright 2007. PricewaterhouseCoopers LLP. All rights reserved.

The Vietnamese government imposes a very high import tax regime in the world. Specifically:

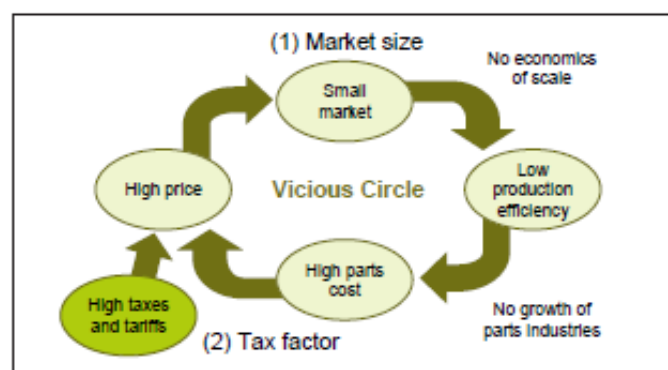
- a)** Import tax of 30% for vehicles imported from ASEAN-member states, and 70% from the rest of the world. (The 30% ASEAN rate has been eliminated from 01/01/2018 for ASEAN-made vehicles with a local content ratio of at least 40%);
- b)** *Vehicle-specific tax*⁷¹ of 40% for vehicles with engine capacity of <2,000cc, 50% for the 2000-2500cc range; 60% for 2500-3000cc, and 90-150% for vehicles >3000cc; and
- c)** 10% Value-added tax on top of the two taxes of a) and b) above.

In addition to this, the registration levy stands at 10% on the final sales price (RRP) on top of all of a), b), and c) above. These measures cumulatively increase the retail selling price in Vietnam by several folds, and have provided more than US\$5 billions in tax revenues in from 2011-2017 from more than US\$11.7Billions paid for the importation of some 528,000 vehicles.⁷² At the same time, they are causes of the vicious circle of issues and problems hammering development of the Vietnamese automotive manufacturing industry, as presented in Figure 03 below.

⁷¹ Thuế Tiêu thụ Đặc biệt or TTĐB in Vietnamese. Similar to luxury-car tax in Australia

⁷² Tuổi Trẻ Online

Figure 3: Two Causes of High Prices



Source: Kenichi Ohno Vietnam Development Forum

Source: PwC (2007)

By 2016, annual vehicle sales in Vietnam had reached around the 300,000 mark, with close to 30% being fully-imported, as depicted by Table 01 below.

Tab. 1: Vietnam's Annual Automotive Market

Year	CKD (Locally Assembled)	Mkt Share	CBU (Fully- imported)	Mkt Share	Total
2013	88,008	79.6%	22,511	20.4%	110,519
2014	116,541	73.8%	41,269	26.2%	157,810
2015	173,040	70.6%	71,874	29.4%	244,914
2016	228,964	75.2%	75,463	24.8%	304,427
2017	194,960	71.5%	77,790	28.5%	272,750
2018 ^a	87,426	84.3%	16,320	15.7%	103,746

(a) Up to and including the month of May

Source: Vietnam Automobile Manufacturers' Association (VAMA) reports

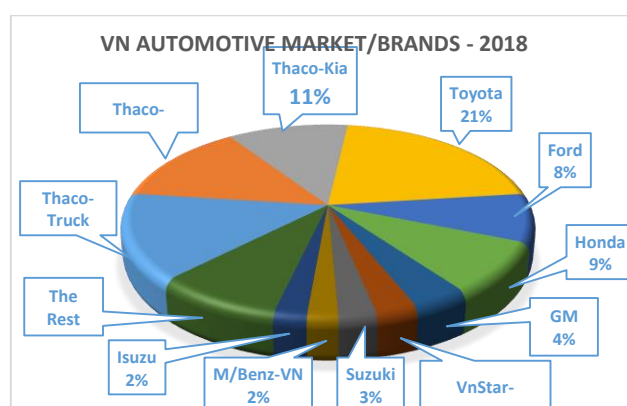
In 2017, sales of locally produced vehicles buckled the trend of steady annual increase of more 35% in each of the three previous years and fell by 34,000 units (or ~15%), perhaps due to consumers postponing purchases in anticipation of the ASEAN's zero-tariff coming into effect from 01/January/2018. Yet sales of fully-imported vehicles slightly increased, as if to prove a popular belief in the superiority of fully-imported vehicles over locally-made ones.

However, Government Decree No 116/2017-ND-CP in late 2017 creates non-tariff barriers via cumbersome administrative paperwork to slow down import expected to increase substantially as a result of the ASEAN zero tariff. As such import has fallen by 47% in the first five months of 2018 (only 16,320 units) compared to the same period of 2017 (30,480).

Vietnam is an oligopolistic market where the top two competitors, a local and foreign-invested manufacturers, dominate with a market share of 39%; and 21%, and the next three (all 100% foreign-invested) account for 8%, 9% and 4%. As such the top five accounts for 81% of the market as detailed in Table 02 and its accompanying Chart below.

TABLE 02: VIETNAM'S AUTOMOBILE MARKET/BRANDS 2015-18								
Brands	2015		2016		2017		2018 (up & including May)	
	Units sold	Mkt Share	Units sold	Mkt Share	Units sold	Mkt Share	Units sold	Mkt Share
Thaco-Truck	36,400	17%	43,787	16%	38,023	15%	14,698	14%
Thaco-Mazda	20,359	10%	32,098	12%	26,015	10%	13,821	14%
Thaco-Kia	21,310	10%	33,024	12%	22,136	9%	11,427	11%
Toyota	50,285	24%	57,036	21%	59,355	24%	21,482	21%
Ford	20,740	10%	29,011	11%	28,588	11%	8,215	8%
Honda	8,312	4%	11,501	4%	12,134	5%	8,919	9%
GM	7,365	4%	9,726	4%	10,576	4%	3,966	4%
VnStar-M/bishi	4,145	2%	6,113	2%	6,672	3%	2,898	3%
Suzuki	5,880	3%	7,694	3%	6,076	2%	2,658	3%
M/Benz-VN	4,362	2%	5,927	2%	7,108	3%	2,151	2%
Isuzu	7,091	3%	8,082	3%	7,965	3%	2,306	2%
The Remaining	22,315	11%	27,837	10%	25,969	10%	8,948	9%
Total	208,564	100%	271,836	100%	250,617	100%	101,489	100%

Source: Vietnam Automotive Manufacturers' Associations (VAMA) Reports



Source: VAMA Monthly Reports

In June, 2018, one brand new local manufacturer, set up in late 1017, Vinfast, bought off the foreign-invested manufacturer GM, swinging the mixture in favour of local competitors (accounting for 43% of production capacity) versus foreigners (38%) among the top five.

GLOBAL AUTOMOTIVE OUTLOOK and TRENDS

Tab. 3: Global Output of Auto Manufacturing Industry

OICA > Production Statistics > 2017 Statistics				
2017 PRODUCTION STATISTICS				
Country	Cars	Commercial vehicles	Total	% change
China	24,806,687	4,208,747	29,015,434	3.19%
USA	3,033,216	8,156,769	11,189,985	-8.13%
Japan	8,347,836	1,345,910	9,693,746	5.31%
Germany	5,645,581	0	5,645,581	-1.76%
India	3,952,550	830,346	4,782,896	5.83%
South Korea	3,735,399	379,514	4,114,913	-2.69%
Mexico	1,900,029	2,168,386	4,068,415	13.00%
Spain	2,291,492	556,843	2,848,335	-1.30%
Brazil	2,269,468	430,204	2,699,672	25.20%
France	1,748,000	479,000	2,227,000	6.54%
Canada	749,458	1,450,331	2,199,789	-7.21%
Thailand	818,440	1,170,383	1,988,823	2.28%
UK	1,671,166	78,219	1,749,385	-3.70%
Turkey	1,142,906	552,825	1,695,731	14.12%
Russia	1,348,029	203,264	1,551,293	19.01%
Iran	1,418,550	96,846	1,515,396	18.19%
Czech Rep.	1,413,881	6,112	1,419,993	0.00%
Indonesia	982,356	234,259	1,216,615	3.30%
Italy	742,642	399,568	1,142,210	3.53%
Slovakia	1,001,520	0	1,001,520	-3.70%
Italy	742,642	399,568	1,142,210	3.53%
Slovakia	1,001,520	0	1,001,520	-3.70%
Others	536,725	221,947	758,672	16%
Poland	514,700	175,029	689,729	1.16%
South Africa	321,358	268,593	589,951	-1.51%
Hungary	502,000	3,400	505,400	-4.01%
Argentina	203,700	268,458	472,158	-0.13%
Malaysia	424,880	35,260	460,140	-15.82%
Belgium	336,000	43,140	379,140	-5.08%
Morocco	341,802	34,484	376,286	9.00%
Romania	359,240	10	359,250	-0.02%
Taiwan	230,356	61,207	291,563	-5.80%
Sweden	226,000	0	226,000	10.04%
Slovenia	189,852	0	189,852	42.00%
Portugal	126,426	49,118	175,544	22.68%
Netherlands	155,000	2,280	157,280	74.97%
Uzbekistan	140,247	0	140,247	59.10%
Austria	81,000	18,880	99,880	-8.98%
Australia	88,195	10,437	98,632	-38.85%
Finland	91,598	0	91,598	90.83%
Serbia	79,360	552	79,912	-0.51%
Egypt	9,970	26,670	36,640	1.13%
Ukraine	7,296	2,246	9,542	81.27%
Total	73,456,531	23,846,003	97,302,534	2.36%

Source: <http://www.oica.net/category/production-statistics/2017-statistics/>

Above are statistics from the International Organisation of Motor Vehicle Manufacturers (OICA), showing a global automotive production at 97 million units in 2017, and with the exception of China accounting for nearly one in every three vehicles produced, the five Asian countries of China, Japan, India, South Korea and Thailand (all in the top 12) account for more than 50% of the total global output. Of Vietnam's ASEAN neighbours: Thailand is ranked 12th with an output of 2 million units, Indonesia vehicles; Indonesia 18th with 1.2 millions, and Malaysia 28th with 460,000 units.

It is also of interest that in 2017, the year that the Australian automotive manufacturing become extinct, Australia is ranked 39th in the world with an output of just about 100,000 vehicles.

Researchs have also revealed that vehicles produced in both the EU and North Americas tend to be intra-exported within the block. For Asia, with the exception of China and India, 34% of the production from Japan, Korea and Thailand are exported to the USA, and 12% to the EU.⁷³ By 2018, Australia and the Middle East are the only two regions without a local automotive manufacturing industry and import 100% to satisfy domestic demands.

Pressures from Public and Governments

Consumer and social changes have seen governments around the world imposing stricter vehicle exhaust/emission standards. Frankfurt, a city in Germany, is leading the movement in banning diesel-engine vehicles from their city centres, with others expected to follow soon. Major vehicle markets like China, India, France, and the UK have introduced legislations banning the sale of new fossil-fuel vehicles by 2030 to 2040.

Self-Improving Automotive Manufacturing Industry

Current trends clearly point the future to electric vehicles (partial-hybrid to full electric) as well as hydrogen, ethanol and biogas. Tesla is the first manufacturer to only make full electric vehicles. Volvo and Jaguar-Range Rover (JLR) have recently pledged to switch to only hybrid to full electric vehicle from 2019 and 2010 respectively. Other global manufacturers such as Ford has invested US\$11Billions to produce 40 electric vehicle versions by 2022, and GM has pledged to have 20 new fully electric versions available by 2023. Indeed, estimates are that electric cars are set to reach between 125-220 million units by 2030, accounting for 35% of the global market by 2035, and more than 66% by 2050.⁷⁴

Calls have been made for the automotive manufacturing industry to leave behind attempts to improve mechanical efficiency in combustion engine and to move forward onto a more

⁷³ APC - Australian Productivity Commission 2014 Report

⁷⁴ International Energy Agency's Report in May 2018.

dynamic era of renewable-fuel engine and to take advantage of 4.0 revolution of autonomous driving, drone-flying vehicles if they are to remain competitive.⁷⁵

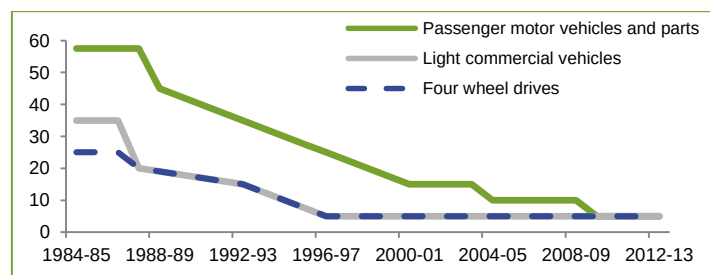
DEMISE OF AUSTRALIAN AUTO MANUFACTURING INDUSTRY

Australia offers a unique case study in which high level of government subsidization over three decades still lead to the demise of the Australian auto manufacturing industry.

a) *A\$30Billion is a large package of subsidization.*

Australia is a small market when the economy was opened up in 1983 bringing down import tariff, as shown in Figure 04 below, the Australian government provided a combined financial assistance of A\$30 billions to the local manufacturing industry from 1997 to 2012.⁷⁶ In fact, during 2002-13 period, GM-Holden received A\$2.17Billions, Toyota A\$1.2Billions; and Ford A\$1.1Billions.⁷⁷

Fig. 3: Tariff rates (%) for the Australian auto industry



Source: AAI (2013)

Calculations from the Australian Productivity Commission Report in 2014 show that Australia provides the highest level of subsidisation in the world, in both categories of subsidization per vehicle and per capital, as shown in Table 05 below.

⁷⁵ Tsang, R *et al*

⁷⁶ APC 2014 Report

⁷⁷ Davison, R

Tab. 5: Governments' Support to Auto Manufacturing Industries

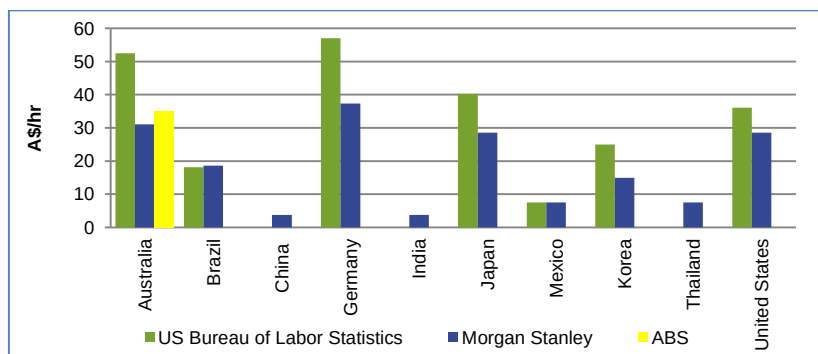
	US\$/vehicle	US\$/capita
Australia	1,885	17.75
Sweden	297	5.30
Germany	206	14.33
USA	166	5.41
France	100	2.97
Britain	22	0.56

Source: Autopolis (2011), and Australian Productivity Commission

b) Australian automotive manufacturing costs are high compared globally

Australian auto manufacturers have argued that they have been facing a twin problem of **a)** Australia's multi free trade agreements have renders Australia's effective average import tariff of 3.5% among the lowest in the world⁷⁸ and **b)** high production costs in Australia that is "... double that of Europe, and nearly four times Ford in Asia. Automotive manufacturing is not viable for Ford in Australia."⁷⁹ Figure 05 provides comparisons of the spread of labour costs among auto manufacturing countries.

Figure 05: Hourly Labour Costs in Auto Manufacturing Industry in 2012



Sources: Australian Bureau of Statistics (ABS); US BLS (2013); Morgan Stanley (2013); Australian Productivity Commission estimates

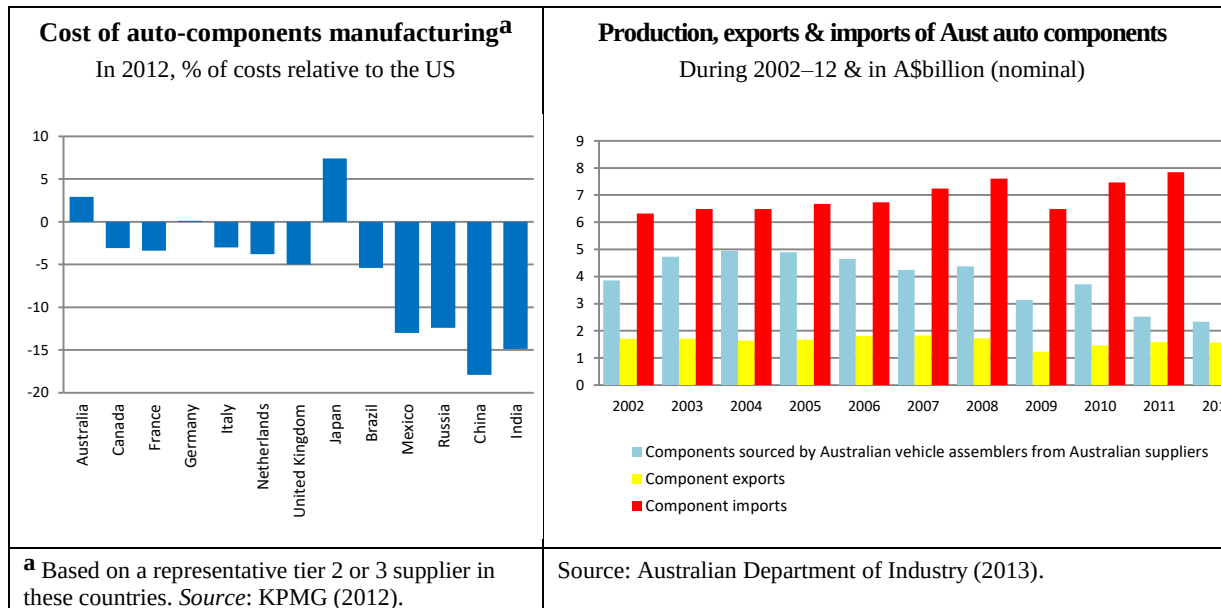
c) Australian component manufacturing costs are also high compared globally

Costs in the Australian auto-component manufacturers are also high, in fact the second highest in the world, behind only Japan, forcing local auto makers in Australia to reduce reliance on domestic suppliers and to increase imports, as depicted in Figure 06 below.

⁷⁸ 3.5% for countries with an FTA and 5% for those without an FTA with Australia, and no other non-tariff barrier except a luxury car tax of 33% for vehicles with a selling price above A\$65,000.

⁷⁹ The New York Times

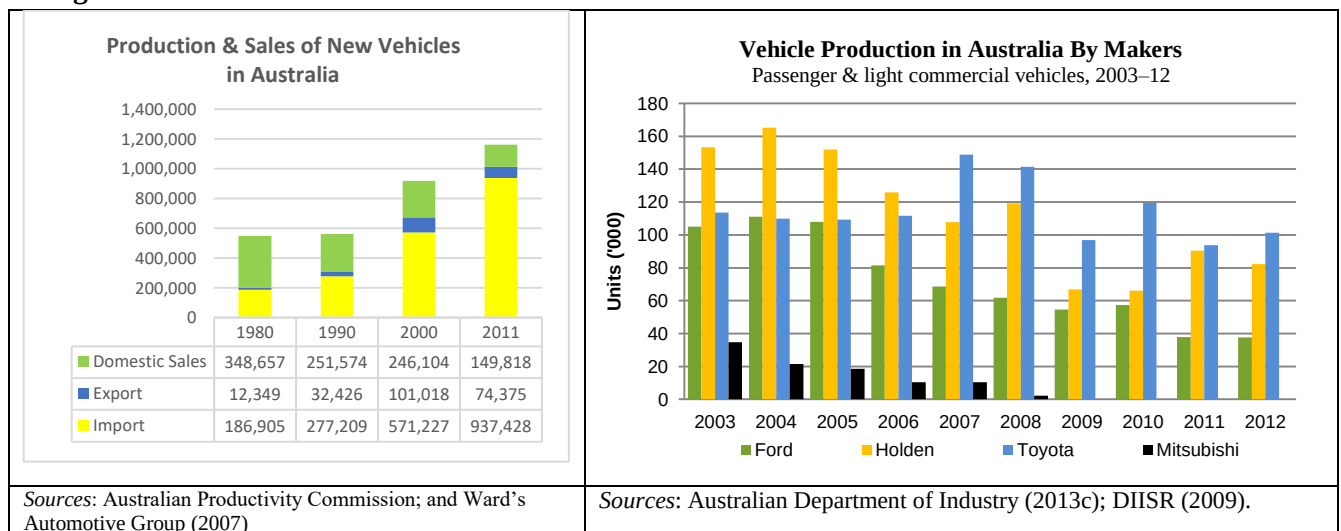
Fig. 6: Costs of Auto-components and Level of Imports in Australia



d) Economy of Scale

General consensus among experts seems to suggest of an annual production capacity of 200,000-300,000 units per assembly plant as the minimum necessary condition to achieve an economy of scale and cost competitiveness.⁸⁰ Figure 07 shows no Australian auto manufacturer has attained this level, whilst in receipts of substantial government financial support.

Fig. 7 : Australian Production and Sales of New Vehicles



Reduction in the number of platform (core architecture of a vehicle, inclusive of chassis, floor,

⁸⁰ APC (2014)

suspension system, front and rear axles and engine bay) helps cut costs significantly.⁸¹ For example, Ford has reduced the number of platform from 27 in 2007 to just 14 in 2012, and further down to only 7 by 2017, and cut back the number of suppliers in Ford global operations from 1,260 (as of December 2012) to just 750. This type of consolidation across global manufacturers has resulted in a smaller number but larger and more globalized component suppliers increasing their share in the value-added chain of vehicle manufacturing from 66% to 78%, as noted in the Australian Productivity Commission 2014 Report.

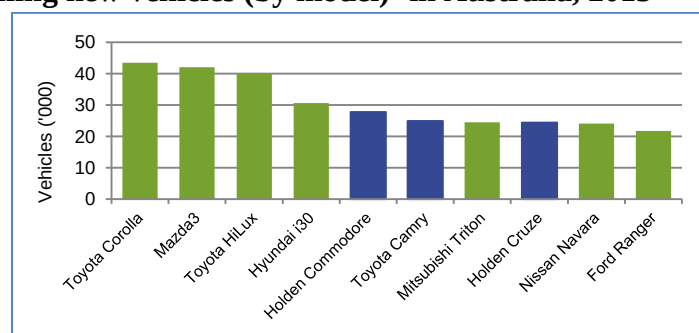
e) Market Fragmentation

Australia is a small but fragmented market with some 66 brands among the one million vehicle sales in 2013,⁸² and the three highest-selling brands enjoy a low sale figure of ~40,000 units in 2012 as indicated in Figure 08 below. In the Australian Productivity Commission 2014 Report it has been noted that the USA and EU have a similar number of brands for an annual sales of 16-18 million units each.

f) Internal Price Transfer

Critics have argued that the three local manufacturers have simply engaged in double-dipping, ie profiteering, from both **a)** the billions of dollars of government support/assistance, but **b)** high profitability due to high selling prices in Australia and low importation costs (from their own low-cost manufacturing bases elsewhere).

Fig. 8: Highest-selling new vehicles (by model)^a in Australia, 2013



^a The blue bars are models assembled in Australia.

Source: FCAI (2014).

⁸¹ Evalueserve 2012.

⁸² FCAI.

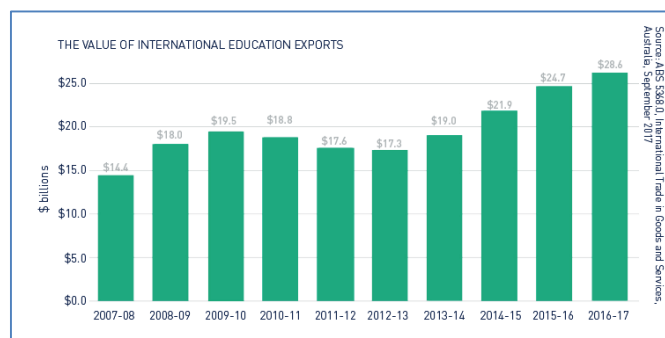
It has been argued that the support/assistance “... *does not seem to help the industry adjust, but keep it in existence. There seem to be no prospect of getting it off life support to being internationally competitive and viable*”. The CEO of GM-Holden seems to have conceded the argument with comment that “... *if the assistance was not there, we would go away. We would just do this (producing cars) somewhere else in the world*”.⁸³ In fact, the charge is that the three local manufacturers exploited the assistance package to unfairly boost profitability of their parent companies, then decided to quit when they are publicly challenged by the Australian government over their long-term commitments to Australia and the latter’s demand for a better dividend for its support.⁸⁴

Although indepth research will be necessary to shed light into the issues, it was evidently clear from all the points raised in **a)** to **f)** above, it is evidently clear that after three decades of government support and assistance to the tune of more than A\$30billions, the Australian automotive manufacturing could not survive the high pressure of global competition.

g) Case of Success: the Australian Higher Education Sector

In contrast to the failure of the auto manufacturing despite A\$30billions of government support, export of the Australian higher education industry, in the form of overseas students coming to Australia to obtain a world renown education, has gone from a zero starting point in the early 1990s to become the third largest exporter (after iron ore & coal) with annual revenue⁸⁵ of more than A\$15Billions from 2008-09 and more than A\$20Billion since 2014-5, and is expected to pass the A\$30billion mark in 2018-19, as depicted in Figure 09 below.

Fig. 9: Export of Australian Higher Education Services



⁸³ Lauder, S.

⁸⁴ Tan, Su-Lin and West, M.

⁸⁵ Tution fees only. Accommodation, transportation, hospitality & recreational activities and living costs are not counted.

Source: Universities Australia, Data Snapshot, 2018, page 29

IMPLICATIONS FOR VIETNAM AUTO MANUFACTURING INDUSTRY

There are significant lessons that can be learnt for both policy makers and the Vietnamese auto manufacturing industry.

a) Subsidisation

Following Australia's failure to prop up its auto manufacturing industry despite substantial financial assistance package, and the Australian Productivity Commission's findings that the rationale for subsidisation for the auto manufacturing industry is weak, it seems neither feasible nor plausible for Vietnam to engage in a similar practice. A\$30 billions are a huge sum.

However, the Vietnamese auto manufacturing industry could still benefit from a government mandatory preferential vehicles purchasing policy similar to the existing scheme in which anyone whose traveling is paid for by the government must fly with the national & state-owned Vietnam Airlines.⁸⁶ Details from the Ministry of Finance show that by the end of 2016, the stock of public vehicles stand at 37,286 vehicles purchased at a cost of more than US\$1Billion.⁸⁷

Although there is no split between the locally produced and fully-imported types so as to quantify benefits (or losses) to local auto manufacturers, they could have benefited from a psychologically appearance of support, trust and confidence from the government in its fight with fully-importing competitors.

b) Development of the Auto and Auto-component Manufacturing Industries in Vietnam

After 20 years from 1997, both the Vietnamese auto manufacturing and their auto-component suppliers are still in early stage of development. Earlier planned targets in 1997 such as local contents reaching 40% by 2005, and 60% 2010 simply did not materialise. In fact, apart from the Toyota Innova model enjoying a top notch of 37%, average local contents is at a single-digit level of between 7%-10%. Mr Phạm Tuấn Anh, Vice-Director, Department of Industry, Ministry of Industry and Commerce, has conceded that “... after more than a decade of

⁸⁶ Decree 32/2015/QĐ-TTg dated 04/08/2015 stipulated that for use by ministers a vehicle of up VND1.1Billion can be purchased; VND920Millions and VND720 for officials of lessee rankings.

⁸⁷ Phuong Anh

planning and development to get the auto-component manufacturing sector up and running, everything seems to be still at the same starting point.”⁸⁸

Yet the Decree No 1211/QĐ9-TTg of 24/07/2014 setting another overall plan of development for the auto manufacturing industry to 2020, with a vision for 2030, still calls for contents localisation to reach 25% by the 2020 in passenger vehicles, 30% for truck and 35% for 10-seat-and-above vehicles. These ratios must increase by 2025 to 40% for the former, and 45% for the latter two. The choice of 40% and 45% are not a coincidence but determined with an eye to the ASEAN agreement which has come into effect from 01/01/2018 allowing tariff-free importation of vehicles with local content ratio of at least 40%.

Reports have pointed out that local manufacturers do business, on average, with just two local auto-component suppliers, and with a low 7-10% localisation rate, some 90% of components are still supplied by foreign suppliers or those within the parent manufacturers’ global operation chain (discussed in details in Section 4c – the Australian auto-component sector).

In late June, 2018, GM sold off entirely its business and operations in Vietnam to Vinfast, within the Vingroup conglomerate, a newly created novice without any experience in the automotive manufacturing industry. It is hard to digest the real reason for the transaction: that Vinfast has made GM a too-good-to-refuse offer or is this an ominous sign that foreign-invested manufacturers are exiting the Vietnam market. Toyota has threatened to pack up and leave Vietnam (discussed in section *f*) below)

c) Economy of scale

As argued earlier in the paper, it is necessary to attain a minimum production of 200,000-300,000 unit/assembly plant/year to achieve economy of scale and cost competitiveness. AS Figure 09 shows, production capacity in Vietnam has barely increased. Currently, with a total manufacturing output oscillating around the 200,000 mark, Vietnam will have an uphill battle competing against the two ASEAN neighbours of Thailand and Indonesia. Table 03 has shown that Thailand is ranked 12th in the world with an annual production of 2 million units, and

⁸⁸ Thanh Nien (a)

achieving a local content ratio as high as 85-90%;⁸⁹ and Indonesia 18th with 1.2 millions units/year, which are six to ten identified earlier in the paper.

High import taxes and other tariffs have generated a vicious circle (Figure 03) of high import/tariff regime leading to high price, and when combined with a small market size making it difficult to build an efficient and economy-of-scale production capacity to achieve low-cost competitiveness in the long run. This will make competition with neighbouring countries like Thailand and Indonesia (China and India to some lesser extent) a very challenging task, not just in the foreseeable but long-term future. Without the potential and possibility of exporting, the Vietnamese auto manufacturing and auto-component industries may suffer the same fate as that of the Australian.

d) *Internal Price Transfer and Collusion by Foreign-invested Manufacturers*

In 2017, Toyota requested lowering all three types of taxes, and a government assistance package of 50% the difference in costs between locally-manufacturing and fully-importing due to a 20% cost discrepancy between the two.⁹⁰ Without government assistance, Toyota warned that it might cease manufacturing and become a fully-importing retailer to enjoy the ASEAN zero import-tariff from vehicles Toyota manufactures in Thailand, and Indonesia.

It is the similar arguments the three major Australian manufacturers had successfully deployed for A\$30Billions worth of subsidies, then simply killed off the industry when subsidisation was no longer possible (as argued elsewhere in the paper). Vietnam has stated that it will not provide subsidisation and Toyota has yet left Vietnam yet, but with global manufacturers holding the upper hand, the future does not bode well for both policy makers as well as the Vietnamese automotive manufacturing industry.

e) *Export Markets for Vietnam-made vehicles*

As stated elsewhere in the paper, both North Americas and the EU enjoy high level of intra export within the block. China and India are onto themselves in that they mostly produce for

⁸⁹ Thanh Niên (b)

⁹⁰ Thanh Niên (b)

domestic consumption and very little import and export. Only in Japan, South Korea, Thailand and Indonesia that manufacturers enjoy a high proportion of export, to markets such as Australia/New Zealand and the Middle East (both without a local auto manufacturing sector).

f) Case of Success – The Smartphone Manufacturing Sector in Vietnam.

The smartphone manufacturing sector in Vietnam did not exist in 1997, but has arisen to become the largest exporter by value in Vietnam in 2017, earning over US\$30 billions. Competitors in this sector would certainly have negotiated for preferential government assistance such as land rent, tax-holidays period etc, just like those received by the automotive manufacturing industry, and it has grown to become globally competitive within the same time frame and business and operating environment. Figures 10 provides some indepth details.

Fig. 10: Export of Vietnam's Smartphone Sector

VIETNAM's EXPORT OF SMARTPHONE (in US\$Millions)					GLOBAL TOP 15 SMARTPHONE EXPORTERS & GLOBAL MARKET SHARE - 2017		
Yr=2013	2014	2015	2016	2017		US\$Billions	%
19,325	21,333	25,088	33,690	30,232	China	127.3	48.0%
Source: Cellphone Exports by Country http://www.worldstopexports.com/cellphone-exports-by-country/					Vietnam	31.5	11.9%
					HongKong	23.9	9.0%
					Netherlands	22.8	8.6%
VIETNAM's TOP 9 SMARTPHONE EXPORT MARKETS					USA	11.9	4.5%
	Yr=2017	US\$Millions	%		Korea	7.0	2.6%
	UAE	3,821	12.6%		Germany	5.5	2.1%
	USA	3,447	11.4%		Slovakia	4.8	1.8%
	Austria	3,070	10.2%		Austria	4.7	1.8%
	UK	2,008	6.6%		Singapore	4.5	1.7%
	Germany	1,642	5.4%		Czech	3.7	1.4%
	Thailand	1,187	3.9%		Sweden	1.8	0.7%
	France	1,123	3.7%		Thailand	1.7	0.6%
	Russia	1,068	3.5%		Taiwan	1.6	0.6%
	Spain	874	2.9%		UK	1.5	0.6%
					Others	10.8	4.1%
					TOTAL:	265.0	100.0%

CONCLUSION

The paper has found the Vietnamese auto manufacturing industry still in early stage of development. A regime of high import tax and tariff, coupled being of small market size, and unrealistic planning have all hindered rather than helped the industry develop and grow as with neighbouring countries of Thailand, and Indonesia, Global competition grows ever more fierce and intense, with production efficiency, economy of scale and cost competitiveness the crucial factors determining the survival of the entire industry in any country.

Analysis of Australia both as a market and its automotive manufacturing industry shows many similar characteristics and issues with Vietnam, as a market and the auto manufacturing

industry. The demise of the Australian auto manufacturing industry in 2017 provides ominous signals of the fate awaiting the Vietnamese industry should Vietnamese policy makers fail to heed the Australian lesson its adoption of pick-the-winners approach instead of rely on competition and market forces, with which two cases of success, one in Australia and one in Vietnam, are highlighted in the paper.

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TRANSMISSION OF MONETARY POLICY THROUGH ASSET PRICING IN VIETNAM

Suu Nguyen Duy – Nghiem Quy Hao - Nhu Nguyen Thi Quynh

Abstract

Research transmission mechanism of monetary policy through asset price channels to the macro elements of Vietnam's economy by using the SVAR model with the data from quarter 1/2000 to 3/2014 quarter. The results estimated with a lag of 4 as follows: VN-Index response with M2 and inflation index. Besides, the VN-Index response very weak to changing interest rates. For variable index of industrial growth, the VN-Index response very weak in the short term and almost no long-term response.

Keywords: Transmission mechanism monetary policy, asset price channel.

JEL Codes: E42, E51.

INTRODUCTION

The research on the transmission of monetary policy through the asset pricing channel has received a lot of attention from well-known economists in many countries around the world. Typical examples are Roberto Rigobon, Brian Sack (2004); Dan Horatiu (2013). Asset pricing plays an important role in the growth of major economies studied by Miskin (1996).

In Vietnam, although there have been many research articles on this subject, it only stops at the Granger relationship analysis, exploring the transmission channels without going into empirical analysis on the price channel. Assets that are real property prices, exchange rates, stock price index. The study of Tran Ngoc Tho and Nguyen Huu Tuan (2013) shows that the mechanism of monetary policy transmission in Vietnam is approached by the SVAR model. Nguyen Duy Suu (2015) studies the interest rate channel in monetary policy transmission in Vietnam, Nguyen Phuc Canh (2015) studies the asset price channel through financial assets. The research papers have not analyzed empirically in depth about asset price channels. Based on the shortcomings of previous studies, the authors add to these shortcomings by conducting a study on the topic "*Transmission of Monetary Policy through Asset Pricing in Vietnam*". Topics aside from the introduction for choosing the topic remain (2) Literature review, (3) Research Methods, (4) Research Results and (5) Conclusions.

LITERATURE REVIEW

Monetary Policy

The national monetary policy consists of national-level decisions on monetary affairs made by the state authorities, including decisions on the objective of currency value stability which is denoted by the inflation rate, and decisions on the use of tools and measures to obtain the set objectives. Sim (1980) study first introduced the modeling of VAR in the macroscopic aspect. That study has prompted future researchers based on this to study transmission mechanisms, including those in Vietnam. For a more general look at monetary policy transmission, Mishkin (1995), Bernanke & Blinder (1992) and many other economists have done a lot of research on this issue.

*Lending interest rate increase => Capital cost increase => Investment decrease =>
Aggregate demand decrease*

Asset Price Channel

According to the study by Mishkin (2000), the author categorized it into three asset classes: stock price, real estate price and exchange rate with important transmission in monetary policy affecting aggregate demand, affecting the growth and inflation situation in each country.

Theory of financial asset price

The price of financial assets affects the investment based on the model q - James Tobin:

The model q-Tobin (1969) establishes the relationship between stock prices and investment costs. This theory explains the price of financial assets affected by monetary policy and the impact of monetary policy on other variables in the economy. When q is high, the market value of the business is higher than the replacement cost of capital. Firms issue shares and receive a higher price than the price of capital assets. As a result, capital expenditures increase because Firms buy more capital assets but actually only a small number of issued shares. Mishkin (2004) argues that when the money supply in society increases ($M \uparrow$), it decreases the market interest rate, when the bonds are less attractive than stocks, causing the stock prices to rise ($P_s \uparrow$). Higher stock prices will raise more capital ($q \uparrow$), lower replacement cost ($c \downarrow$), resulting in higher investment stimulus ($I \uparrow$) and increased aggregate demand ($Y \uparrow$).

M increase => Ps increase => Q increase => I increase => Y increase

The impacting on consumer wealth based on Modigliani's life cycle model (1963):

Mishkin (2007) and Bovin, Kiley and Mishkin (2010), documented that the change in wealth will have a variety of effects on consumer behavior. The theory of asset price volatility in the monetary policy transmission mechanism suggests that it is based on the influence of money supply to adjust interest rate channel, credit channel and exchange rate channel. It further clarifies that property prices directly affect both housing and company wealth and the effects on investment and consumption. Modigliani's life cycle model (1963) establishes consumption theory as determined by the source of consumer income. According to Modigliani (1963), the influence of wealth on consumption is based on the level of resources and consumption of consumers. The resources are made up of the capital of the consumers themselves, real capital and financial assets, in which the stock is the major component. As monetary policy loosened, market interest rates declined, stock prices increased ($P_s \uparrow$). At that time, the value of capital assets held increasingly leading to increased wealth ($W \uparrow$) of private. At that time, private spending more led to increased aggregate demand ($Y \uparrow$).

M increase => P_s increase => W increase => C increase => Y increase

METHODOLOGY

Research Model

Referring to Bernanke & Blinder (1992)'s method of research, Kim and Roubini (2000), the author suggests the following model:

$$Y_t = f(IPG_t, CPI_t, AUP_t, IRL_t, OIL_t, EXU_t, M2_t, VNI_t)$$

Estimation of SVAR model coefficients is determined by the highest average probability method. Based on the model coefficient matrix of Elbourne (2008), keep the structure but change the position of the variables to determine the coefficient of the model.

Structural matrix of the residual of the SVAR model:

$$\begin{pmatrix} u_t^{IPG} \\ u_t^{CPI} \\ u_t^{AUP} \\ u_t^{IRL} \\ u_t^{OIL} \\ u_t^{EXU} \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ b_{21} & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ c_{31} & 0 & 1 & 0 & 0 & 0 & 0 & c_{38} \\ d_{41} & 0 & d_{43} & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & e_{53} & e_{54} & 1 & e_{56} & 0 & 0 \\ f_{61} & f_{62} & 0 & 0 & 0 & 1 & f_{67} & 0 \\ g_{71} & g_{72} & g_{73} & g_{74} & g_{75} & g_{76} & 1 & 0 \\ 0 & 0 & 0 & 0 & h_{85} & h_{86} & 0 & 1 \end{pmatrix} \begin{pmatrix} \varepsilon_t^{IPG} \\ \varepsilon_t^{CPI} \\ \varepsilon_t^{AUP} \\ \varepsilon_t^{IRL} \\ \varepsilon_t^{OIL} \\ \varepsilon_t^{EXU} \end{pmatrix}$$

Data of research

In order to test the asset price transmission channel which has an impact on inflation and growth in monetary policy in Vietnam, we have collected all data from reliable official statistic channels in Vietnam and the world. Data taken from Q3/2000 to Q1/2014.

Variables

Tab. 1: Describe in detail the variables in the model

Variables	Name	Sources
IPG_t	Industrial Product Growth	(IMF), Q3/2000 – Q2/2014.
CPI_t	Consumer Price Index	(IMF), Q3/2000 – Q2/2014.
M2_t	Money Supply M2	(IMF), Q3/2000 – Q2/2014
IRL_t	Lending Interest Rate	SBV, Q3/2000 – Q2/2014
VNI_t	VN-index	Vietstock.vn, Q3/2000 – Q2/2014
EXU_t	Exchange rate (USD/VND)	SBV, Q3/2000 – Q2/2014
OIL_t	World Oil Price	eia.gov.vn, Q3/2000 – Q2/2014
AUP_t	World Au Price	kitco.com, Q3/2000 – Q2/2014

Source: Author's calculations

Since the data series is a series of economic data over time, it should be seasonal. Seasonal adjustment is to limit the impact of the season on research results. Therefore, the author uses the X12 census method in Eviews to adjust the data series.

RESULT OF RESEARCH

Descriptive statistics analysis

Tab. 2: Descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
IPG_SA	0.121	0.112	0.326	-0.059	0.0743	55
CPI_SA	2.030	1.590	8.757	-1.085	1.882	55
IRL_SA	0.090	0.075	0.166	0.035	0.034	55
OIL_SA	3.932	4.572	40.892	-56.248	14.535	55
AUP_SA	3.329	2.443	34.955	-19.726	8.067	55
M2_SA	4.873	5.033	17.096	-9.310	4.721	55
VNI_SA	47.665	28.855	234.57	-45.822	56.672	55
EXU_SA	0.730	0.354	4.440	-0.995	1.111	55

Source: Author's calculations

After seasonally adjusted data, specific variables change: for the industrial price index, the average value is 0.12, the median value is 0.11 while the standard deviation is only 0.07. For the consumer price index, the mean value is about 2.03, the median value is lower with 1.59, and the standard deviation is 1.88. With the lending rate, the average value is 0.09, the median value is 0.07 while the standard deviation is 0.03. With oil prices, the median price index was 3.93, the median was 4.57 and the median deviation was relatively large at 14.53. With the gold price, the average value is 3.33, the median value is 2.44 while the standard deviation is quite high at 8.07. With the money supply M2, the average value was 4.87, the median value was 5.03 while the standard deviation was 4.72. With the stock price index, the average value was 47.67, the median value was smaller at 28.85, the standard deviation was also high at 56.67. Finally, the average exchange rate is 0.73, the median is 0.35, the standard deviation is higher with 1.11. Although some data have standard deviations above the median, no abnormalities are observed, so the data are appropriate and can be tested for subsequent steps.

Stationary Test (Unit root test)

Tab. 3: Stationary Test

Variable	Name of variable	T- Statitic	Prob.	Result
IPG_SA	Industrial Product Growth	-6.134896	0.0000	Stationary D(1)*
CPI_SA	Consumer Price Index	-4.786241	0.0003	Stationary D(0)*
M2_SA	Money Supply M2	-6.192210	0.0000	Stationary D(0)*
IRL_SA	Lending Interest Rate	-6.585862	0.000	Stationary D(1)*
VNI_SA	VN-index	-5.638103	0.000	Stationary D(0)*
EXU_SA	Exchange rate (USD/VND)	-4.426971	0.0008	Stationary D(0)*
OIL_SA	World Oil Price	-5.826139	0.000	Stationary D(0)*
AUP_SA	World Au Price	-8.513043	0.000	Stationary D(0)*

Source: Author's calculations

The results show that almost all series stationary at the origin series, only the IRL_t series and the IPG_t string do not stationary at the origin series. According to Gujarati (1999), it is suggested that if the time series do not stationary at the origin series, but stationary at the first-order error, then the VAR method can be used for forecasting. The results indicate that the IRL_t data series stationary at a difference of the first with a statistically significant level of 1%. This result fully complies with the stop qualification constraint when applying the SVAR model.

Determining the optimal lag

Tab. 4: Determining the optimal lag

Endogenous variables: IPG_SA CPI_SA AUP_SA IRL_SA OIL_SA M2_SA EXU_SA VNI_SA						
Exogenous variables: C						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-792.537	NA	5947.020	31.39362	31.69665	31.50942
1	-628.278	270.5437	120.1526	27.46191	30.18919*	28.50408
2	-549.089	105.5850	79.44779	26.86627	32.01781	28.83483
3	-462.058	88.73781*	54.49040	25.96308	33.53887	28.85802
4	-362.374	70.36505	46.12343*	24.56372*	34.56376	28.38503*

Source: Author's calculations

The optimal latency based on two information standards, AIC and SC, with the smallest delay will be chosen as the optimal latency. From the results of the optimal latency determination as shown in Table 4, the results show that latency is four quarters. Also according to other standards in optimal latency testing, information standards such as FPE, HQ also yielded similar results.\

Co-integration Test

Tab. 5: Co-integration Test

Hypothesized	Eigenvalue	Trace Statistic	Critical value 0.05	Prob.**
No. of CE(s)				
None *	0.941038	533.2809	159.5297	0.0000
At most 1 *	0.901844	391.7375	125.6154	0.0000
At most 2 *	0.884722	275.6777	95.75366	0.0000
At most 3 *	0.717033	167.6571	69.81889	0.0000
At most 4 *	0.619876	104.5359	47.85613	0.0000
At most 5 *	0.527652	56.17297	29.79707	0.0000
At most 6 *	0.257297	18.67096	15.49471	0.0160
At most 7	0.073147	3.798034	3.841466	0.0513
Trace test indicates 7 cointegrating eqn (s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's calculations

The stationary test shows the result of some stops in the differential series so it is very likely that there is still a long-term equilibrium relationship between the variables. Thus, the author's Johansen Cointegration Test to determine the long-term relationship that exists between the variables in the model. The results of the cointegration test indicate that there are seven co-ordinates with a significance level of 5%. With the above results, the variables have a long term relationship, so the SVAR model is perfectly consistent.

Estimated result in model

Tab. 6: Estimated result in model

Independent variables	Dependent variables								
		IPG	CPI	AUP	IRL	OIL	M2	EXU	VNI
	IPG	0.558*		-56.939**			30.826*		
	CPI		0.975*		-0.005**	5.119**			26.745**
	AUP	-0.004**	-0.007***			-0.540**			
	IRL	-2.819***		-3.589**	1.189*				
	OIL				0.338**	-0.644*			-2.496
	M2		0.174**	2.168	-0.0009**			-0.1350*	- 10.076**
	EXU			5.032	0.0032**	8.277**			40.020
	VNI		-0.012**		-0.065**		0.0441		-3.726
	C	0.231	0.895	18.458	-0.0009	-31.207	4.837	0.448	115.360
Akaike AIC		-2.89	3.44	6.83	-7.08	7.24	5.52	3.28	10.48
Schwarz SC		-1.64	4.69	8.08	-5.83	8.49	6.77	4.53	11.73
R-squared		0.848	0.851	0.781	0.987	0.894	0.824	0.665	0.816
Adj. R-squared		0.577	0.585	0.3918	0.964	0.705	0.512	0.068	0.490

(*), (**), (***) Denotes significance at 1%, 5% and 10%

Source: Author's calculations.

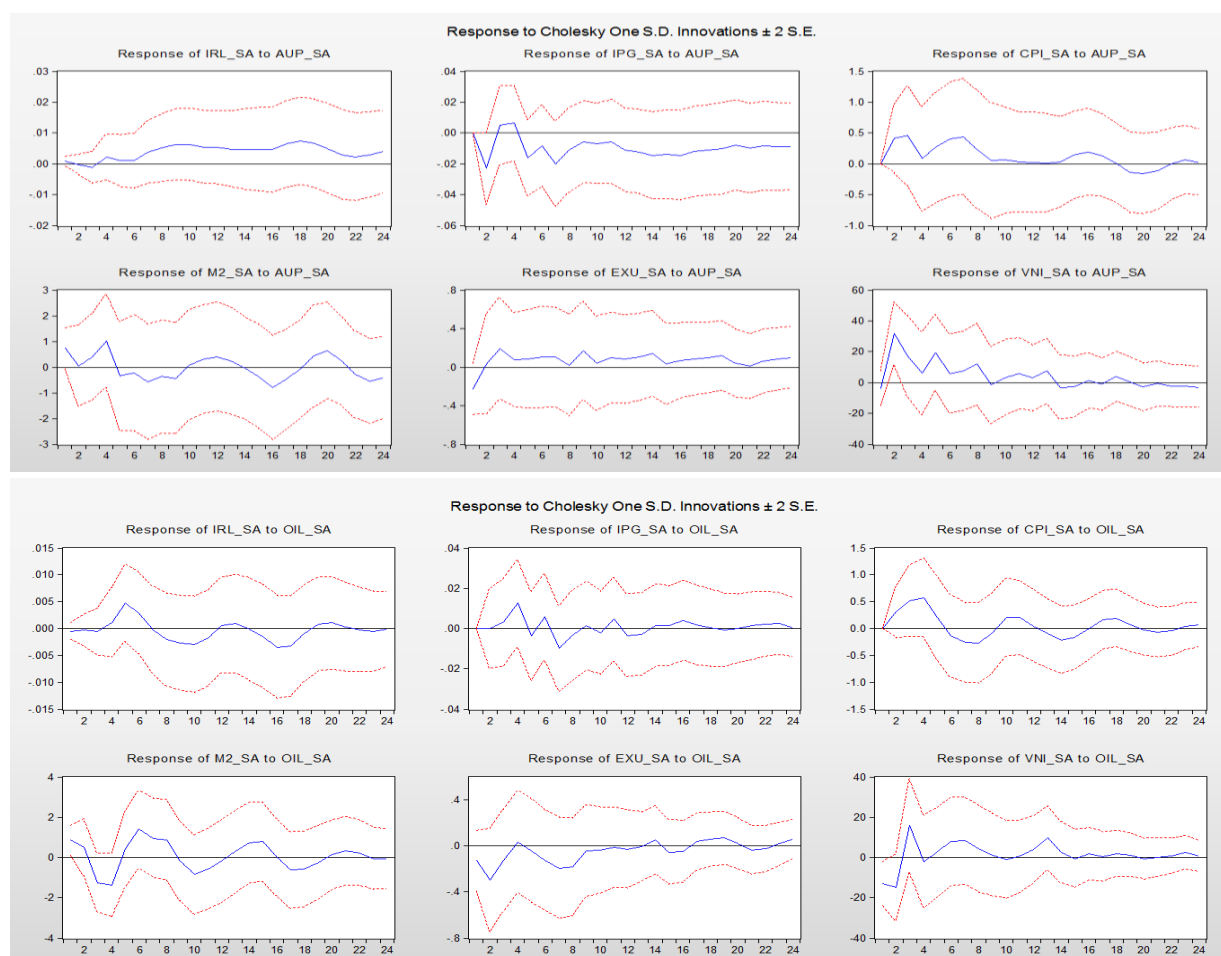
The result of the model estimation with optimal lag of 4 shows that most of the coefficients of determination R^2 have a high statistical significance, indicating that the model has a close relationship between the independent and dependent variables. According to the model estimation, when the industrial growth index increased by 1%, it increased by 0.558%, the M₂ money supply increased by 30.826% but caused the gold price to decrease by 56.939%. As the consumer price index rose by 1%, it increased by 0.975%, oil price increased by 5.119%, exchange rate was also high at 26.745%, while lowering gold price by 3.589%, lowering the index. Lending interest rate is 0.0051%. As the price of gold rose 1%, it simultaneously reduced other variables with the industrial growth index down to 0.0035%, reduced the consumer price index to 0.007%, reduced oil prices to 0.5399%. The lending interest rate rose by 1% to self-inflicted gains of 1.189%, causing the price of gold to fall to 3.589%, affecting itself at a reduced price of 0.644%. Interest rates increased to 0.338%. As M₂ money supply increased by 1%, CPI rose by 0.174%, gold price increased by 2.168%, while making the index decreased

to 0.0009%, causing the exchange rate to drop to 0.135%. When the exchange rate increased by 1%, causing the gold price to rise to 5.032%, the lending interest rate increased by 0.0032%, causing the price of oil to increase to 8.277%.

Impulse Responses Analysis

Interest rates are the regulator of monetary policy of the State Bank of Vietnam. Thus, the author examines the response of interest rates to external asset price shocks: world crude oil prices (OIL) and world price of gold (AUP). Looking at Figure 4.1, interest rates respond fast to the world oil price shock but with the shock of gold prices, interest rates are quite stable. Specifically, in the second quarter the new interest rate response to the oil price shock increased to the fifth quarter from 0.001% to 0.005% and tends to 4/4 interest rate increase/decrease 0.004%. For the gold price shock, the interest rate reaction faster than the specific oil prices from the first quarter, interest rates increased slightly 0.001% and increased slightly to 0.007% to the 19th quarter and the phenomenon of interest rates. The shock of a sharp drop in oil prices has had a significant impact on Vietnam, which has prompted the central bank to regulate fast interest rates to ensure budgets as well as ensure overall economic demand. Next is the reaction of other macroeconomic variables in the country (M2 money supply, exchange rate) to the external asset price shocks.

Fig. 1: The response of domestic variables to the world asset price shock



Source: Author's calculations.

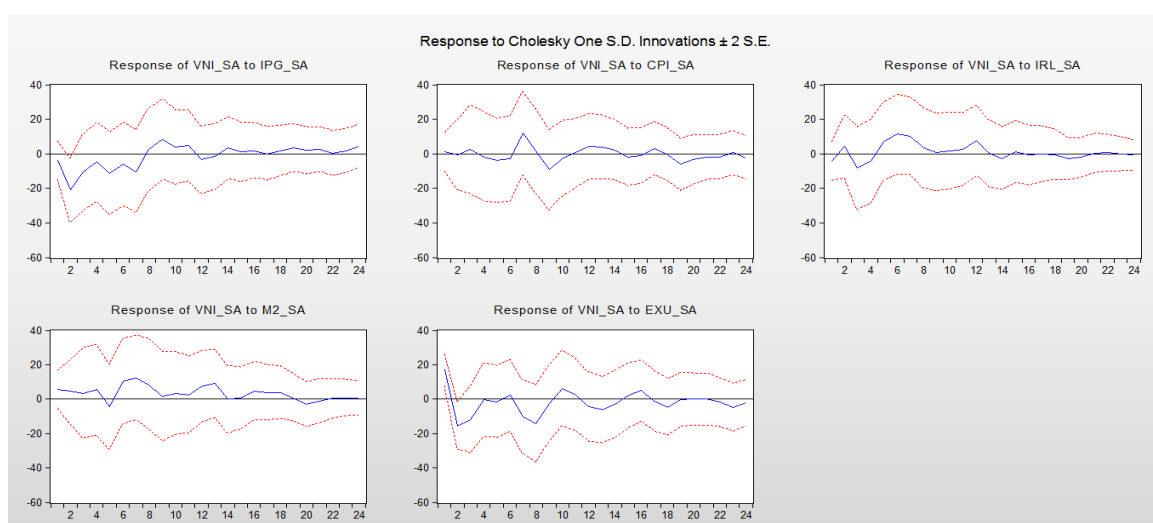
At this stage, the central bank is using tightening monetary policy by raising interest rates and reducing money supply to ease inflation in Vietnam. After that, the money supply in the quarter 6 was pushed to the market quite strong increased nearly 3% compared with the second quarter and signs of decline. According to the trend, M2 money every four quarters has a strong reaction to the oil price shock. For the gold price shock, M2 money supply has increased by 0.7% compared to before the shock. The M2 peaked at 1% in the fourth quarter and tended to fall slightly to the tenth. From the 10th to the 24th, money supply fell sharply again in the fourth quarter and dropped to 0.8%.

Nominal exchange rates have been relatively stable in response to world oil and oil price shocks since the third quarter. That is, the exchange rate only reacted in the first three quarters. Specifically, the exchange rate was down 0.13% at the start of the impact of the oil price shock,

a further 0.16% dropping in the second quarter and tends to stabilize in the following quarters after a sharp increase of nearly 0.26% in the Q3. The exchange rate hit the bottom as a sharp drop of 0.23% in the first quarter but stabilized over the long run from Q3 to Q4.

The industrial growth index of Vietnam reacted quite sharply in the first seven quarters but began to stabilize from the eighth quarter to the 24th quarter before the oil price shock. The reaction of the global price shock to the industrial growth index in the first eight quarters and stabilization in the following quarters with a peak drop of 0.023% in the second quarter. This suggests that price shocks Externally has a strong influence on Vietnam's growth in 8 quarters so the adjustment of monetary policy through the money supply tools are likely to be sensitive to shock. For the consumer price index, inflation reacted very sharply to the oil price shock in the first 10 quarters with a peak of 0.42% in the fourth quarter, bottoming out - 0.25% in the 6th quarter, down nearly 0.67% and similarly before Gold price shock, sensitive inflation rebounded strongly from Q1 to Q10, declining and not responding to long-term shocks (four quarters from Q10 to Q4) and began to react strongly, up to the 20th quarter. The reaction of inflation to external asset prices is true because the Vietnamese economy is in an era of global integration, with a sensitivity to external asset prices such as oil prices. Industry input costs, to aggregate demand and affect commodity prices involved.

Fig. 2: The response of VN-Index price index in front of regional variables in the country.



Source: Author's calculations.

Based on Figure 4.2, the VN-Index has reacted quite weakly to the interest rate shock.

Specifically, at the start of the shock, the index fell 4% in the first quarter, slightly up in Q2 (up 8% from Q1). The strongest reaction point of the VN-Index is 8% in the sixth quarter and then stabilizes in later quarters. The VN-Index reacts strongly to the M2 money supply and the inflation index. Specifically, the VN-Index increased sharply by 12% in Q7 and decreased by 16% in Q9 compared with Q7 then stabilized before inflation shock. The VN-Index increased 6% in the first quarter as the money supply shock, unstable response to money supply for a long time (from Q4 to Q20). With the money supply shock in the last quarter. For the exchange rate shock, the VN-Index reacts quite quickly and the trend is unclear. The sharp decline from the first quarter before the exchange rate shock, the VN Index was at 20% in the first quarter and declined sharply to -15% in the second quarter. The exchange rate shock was extremely strong in the first two quarters. As for the index of industrial growth, the VN-Index reacted very weakly and almost did not respond from the 12th to the 24th.

Analyzing variance Decomposition

After shock transfer analysis, the author uses the Variance decomposition method to measure the impact of variables on each variable in the study, based on Table 6, the author analyzes the variance The result is as follows:

Tab. 7: Analyzing variance Decomposition

Period	S.E.	IPG_SA	CPI_SA	AUP_SA	IRL_SA	OIL_SA	M2_SA	EXU_SA	VNI_SA
IPG_SA									
1	0.0502	100.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0870	48.2312	4.1972	19.0493	12.3512	4.6768	5.0472	5.8159	0.6323
12	0.0962	41.9916	12.0078	18.1424	10.6771	4.2976	4.8752	7.2710	0.7374
24	0.1176	36.6694	11.1136	23.2803	9.50224	3.3207	5.3491	9.7416	1.0231
CPI_SA									
1	1.1932	5.1232	94.877	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	2.8654	7.9712	35.1332	10.6187	8.7116	12.6443	15.8902	3.3777	5.6538
12	3.0004	9.0998	33.4747	9.7661	8.5956	12.4956	16.4840	4.3201	5.7641
24	3.1759	9.8287	31.7248	10.1018	9.1111	13.0602	15.3444	5.0560	5.7730
VNI_SA									
1	40.2372	0.9228	0.0885	0.8648	1.0350	11.0124	6.9841	17.9211	61.1712
8	83.7430	12.3123	2.5463	27.8692	6.0156	11.7752	7.1733	14.1749	18.1332
12	87.0543	13.0094	3.8045	26.5102	6.4823	11.2444	7.4178	14.0283	17.5032
24	90.9051	12.7242	4.6363	25.8004	6.2394	11.7076	7.9799	14.4445	16.4677

Source: Author's calculations.

Industrial product growth (IPG), the results after the variance decomposition analysis showed that the change in the value of industrial production was largely influenced by itself and subjected to very weak effects. In particular, inflation had the strongest impact on industrial output growth in 12Q08 at 12.0%. Meanwhile, share prices have the lowest impact compared to other variables and the strongest in the 24th quarter with just 1.0%. On the other hand, the world price of gold has the strongest impact on the industrial price index in the 24th quarter at 23.2803%. In the interest rate variable, this variable had a weak impact on industrial growth and the strongest impact was recorded in the eighth quarter at 12.4%. With the strongest impact on the eighth quarter, the global crude oil price was affected at 4.7% and the M2 money supply was at 5.1%. Meanwhile, the peak impact of the exchange rate on industrial output was strongest in the 24th quarter with 9.7%. In order to achieve the primary goal of economic growth, a combination of policies will be the driving force behind growth.

Consumer price index (CPI) variable, the variance distribution results show some macro variables such as money supply. This is perfectly consistent with theory because when the central bank adjusts its monetary policy through money supply, inflation is almost directly affected. In particular, the money supply had the strongest impact on inflation in the 12th quarter at 16.5%. In the short term, the inflation index is affected by itself at about 94%. Part of the psychology of people when the shock of high inflation in the past makes the current inflation will be higher with reality because they expect too much. Industrial output growth hit the strongest performance in the 24th quarter with an impact of 9.8%. Theoretically, the two variables of economic growth and inflation have a relationship that is proportional to each other means that when the economy grows hot, inflation will also increase.

Stock index (VNI) variables, the variance distribution results show that the stock price index has a moderate impact before its own shock of only 61.2%. Meanwhile, the short-term (in the first quarter) exchange rate impact on the stock market is strongest at 17.9%. Inflation almost did not affect the VN-Index in the first quarter and the strongest impact on the stock market was around 4.6% in the 24th quarter. For exogenous variables such as world crude oil prices and prices World gold has implications for the volatility of the Vietnamese stock market. Both of these variables had the strongest impact on the eighth quarter, with 11.8% for world crude oil prices and 27.9% for world gold prices.

CONCLUSION

The study finding that in Vietnam, the interest rate response fast to the world oil price shock, but with the gold price shock, interest rates were relatively stable. Another important macro element in monetary policy making is money supply. As the money supply impact on other asset prices in the second quarter, the money supply has started reacting but the world oil price reacts very strongly. The M2 peaked at 1% in the fourth quarter and tended to fall slightly to the 10th. On the other hand, VN-Index responses strongly to the M2 money supply and the inflation index. Specifically, the VN-Index increased sharply by 12% in Q7 and decreased by 16% in Q9 compared with Q7 then stabilized before inflation shock. The VN-Index rose 6% in the Q1 as a money supply shock, unstable response to long-term money supply (from Q4 to Q20). In addition, the stock price index reacts very weakly to the change in interest rates. This conclusion is similar to the Bangladesh market when in the study by Md. Kabir Ahmed, Md. Akhtaruzzaman, Shubhasish Barua (2006) pointed out that short-term interest rate increases cause a slight negative impact on stock price indices but do not affect long. As for the index of industrial growth, the VN-Index reacted very weakly and almost did not react from the 12th to the 24th quarter. From the results of the study, when central bank policy formulation monetary or monetary tightening, tight controls on money supply and inflation are needed because these two factors respond rapidly and sharply to asset shocks outside and in Vietnam's stock market.

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USE BALANCED SCORECARD (BSC) PERSPECTIVES IN THE SERVICE SECTOR IN VIETNAM

Tan Phat Tran

Abstract

This study attempts to provide empirical findings for the advantages of implementing Balanced Scorecard System (BSC) for service providers by determining influences of Balanced Scorecard System on business. The concept of BSC is employed to evaluate the perceived importance of the relationship between the Balanced Scorecard System and business performance to facilitate the goals of service providers. Balanced Scorecard System covers key perspectives, including financial perspective, customer perspective, internal process perspective, growth and ideal learning perspective towards service quality. To achieve its objectives, the study designs a questionnaire and distributes it randomly to three major groups of stakeholders of two service firms (i.e., two hundred customers, seventy employees and thirty managers). This study uses BSC perspective variable which is frequently employed to assess the performance of financial perspective, customer perspective, internal business process perspective, learning and growth perspective. Using ordinary least squares (OLS) regression and the sample of three groups of stakeholders, the study finds some important results: (i) two groups of employees and managers show that BSC has considerable impacts on BSC dimensions with variance, (ii) all three groups of stakeholders are in favor of the strong relationship between BSC and goals, (iii) all three groups of stakeholders affirm the causal relationship among BSC dimensions with variance. Therefore, Balanced Scorecard is an effective framework for performance, which aids in improving organizations' outcomes related to service users and stakeholders without escalating costs. It is also found that organizations whose cultures focus on innovation, innovation and learning use this framework more effectively. Moreover, service providers have quite different perspectives in using Balanced Scorecard. Thus, it is recommended that Balanced Scorecard should be used in organizations and in managing customers' feedback. Lastly, the study concludes with implications for service providers and limitations addressing.

Keywords: Balanced Scorecard (BSC), service sector, Vietnam.

JEL Codes: O30.

INTRODUCTION

On 26 December 2004, a tsunami attacked Phuket, Thailand seriously. It caused severe repercussions, such as 5395 deaths, 2817 missed people, and 8457 injuries. Moreover, it destroyed 6791 homes, 315 hotels and resorts, as well as 3719 acres of agricultural land. This disaster raised the role of Corporate Social Responsibility (CSR). An important area for CSR is the service sector, but studies about this topic only focus on developed countries (Henderson, 2007). Additionally, a lot of local service providers have not incorporated CSR into their operations and strategies. As a consequence, empirical studies about CSR in the service sector, particularly in Vietnam, are of paramount importance.

At the beginning of the 21st century, there was an increasing attention in CSR in the hospitality industry. Notwithstanding, there is still a lack of empirical studies on the link between CSR and financial performance of firms (Godfrey and Hatch, 2007; Margolis and Walsh, 2003; McWilliams and Siegel, 2000). The association between CSR and financial performance of firms is different in the studies of ClaverCortes et al. (2007); Kirk (1995); Nicolau (2008); Rodríguez and del Mar Armas Cruz (2007); Kang et al. (2010); Lee and Park, (2009). Recently, Garay and Font (2012) examine the impacts of CSR on the financial performance of small and medium firms. The differences in findings and methodology issues raise the demand of refining the theory with more suitable models. Moreover, literature provides little emphasis on CSR in areas such as Vietnam and how service firms can use CSR to reach their business targets and to ensure sustainability. Therefore, this study is conducted to fill the gap in the literature by identifying how CSR affects performance and the goal achievement of small and medium service firms in Vietnam.

To evaluate the performance of service firms, this study uses the balanced scorecard (BSC), a common tool in the field of business management. According to Huckestein and Duboff (1999); McPhail et al. (2008); Fisher et al. (2010); and Chen et al. (2011), balanced scorecard is a good measurement for business performance. Nevertheless, the application of balanced scorecard is challenged for small and medium firms because of difficulties in defining main performance dimensions (Hudson et al., 2001; Garengo et al., 2005). Particularly, BSC demands the inclusion of visions and goals, and these are frequently neglected by small and medium firms. In addition, these small and medium firms are exposed to more risks than large firms regarding decision making, information controlling, and financial instability.

Consequently, it is essential to have a systematic management tool such as BSC which can help them to stay strongly in the competitive market as nowadays.

There are some criticisms about BSC and its suitability. Most commonly, BSC merely takes into account three types of stakeholders, including shareholders, customers, and employees while ignoring environmental and social issues (Brignall, 2002). These two issues are intimately linked with CSR. CSR is a complicated concept which is the voluntary contribution of firms to economic, social and environmental enhancement. Figge et al. (2001, 2002) introduce a more thorough approach known as Sustainability Balanced Scorecard (SBSC). It incorporates environmental and social aspects into firms' strategies. However, this theoretical hypothesis has received little empirical support.

The study attempts to extend the existing literature in certain areas. Firstly, it identifies how CSR influences the service industry in a developing country. The study tries to find whether CSR has direct or indirect impacts on the service industry. More clearly, if there is an indirect impact on the service industry, it further investigates to discover the pathways through which CSR influences business. Secondly, the study is based on the BSC model, and it captures differences in interests of stakeholders. It assesses shareholders, managers and customers separately. By this way, the study can get insights into different perceptions of each group of stakeholders about CSR, dimensions of BSC, and visions of service firms. Generally, the objective of this study is to promote CSR in the service industry by supporting empirically for the benefits of CSR to firms and providing an effective tool for performance management and sustainable development.

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Corporate social responsibility (CSR) and business performance

There are various definitions of CSR, but the concept is still complicated (Carroll and Shabana, 2010). Especially, Dahlsrud (2008) lists 37 different definitions of CSR even though this number does not reflect the true number of definitions since some are omitted (Carroll and Shabana, 2010). The most common one is defined as "Triple Bottom Line" by Elkington (1997). According to Elkington (1997), firms are sustainable when they achieve economic development, social justice and environmental quality. Following this, Marrewijk (2003) makes it clearer by economic, environmental and social responsibility. This study is based on the definition of Marrewijk (2003) because this definition takes into account the stakeholders.

Studies about CSR in the service industry are mainly based in Western countries (ClaverCortes et al., 2007; Kang et al., 2010; Lee and Park, 2009; Nicolau, 2008; Garay and Font, 2012). For example, Kirk (1995) surveys Edinburgh and the UK, showing that CSR has less benefits than marketing. By contrast, Rodríguez and del Mar Armas Cruz (2007) reveal that firms having more CSR activities have greater financial returns in Spain. This positive association is confirmed in the study of Nicolau (2008). Lee and Park (2009) use the sample of 85 firms from S&P 500, Russell 1000, and Russell 2000 and confirm that CSR positively affects profitability of hotels while there is no significant relationship for casinos. Kang et al. (2010) employ the data from S&P 500 and Russell 3000 and find the positive relationship between CSR and firm value in the hotel and restaurant industry.

Recently, studies concentrate on small and medium firms which consider CSR as a strategy to sustainability instead of philanthropy. Garay and Font (2012) investigate 400 small and medium firms in Catalonia, Spain and indicate that CSR has favourable influences on economic performance and competitiveness of firms.

Balance scorecard (BSC) and sustainable balanced scorecard (SBSC)

The balanced scorecard is developed by Kaplan and Norton (1992), and it is amongst the most common tools in the world of business. The foundation of BSC is based on a number of theories, such as the shareholder value, principle agent framework, uncertainty and multi-period optimization, and stakeholder theory (Kaplan, 2010). The BSC measures performance by four dimensions including Financial, Customers, Internal Business, and Learning & Growth to have a balanced assessment of the organization (Kaplan and Norton, 1992). In accordance with Kaplan and Norton, (1992, 1996, 2001, 2004), BSC begins with an examination of goals and visions. After that, firms conduct a systematic evaluation of related factors which are required to satisfy planned strategies based on the evaluation of the profit chain and value chain (Heskett et al., 1994; Porter, 1985). It then follows the identification of important performance variables which are needed to accomplish visions and missions.

One special feature of the BSC is the causal relationship between its dimensions (Kaplan and Norton, 2000, 2001, 2004). To illustrate, well-trained employees (Learning & Growth) reduce faults and process time, leading to improvement in services and customer management (Internal Business). Moreover, it enhances customer experience (Customers), and eventually leads to higher profits (Financial). All dimensions in the BSC are connected with each other.

The Learning & Growth, Internal Business, and Customers dimensions are leading factors and their impacts are shown in Financial dimension.

The BSC dimensions can be incremented to make it more suitable with business goals and strategies (Kaplan, 2010). Figge et al. (2001, 2002) introduce environmental and social aspects into firms' strategies. This is a more comprehensive approach and it is known as the Sustainability Balanced Scorecard (SBSC). Figge et al. (2001, 2002) confirm that SBSC is able to show a link between short-term financial results and long-term resources like sustainability. It connects non-financial activities with common BSC dimensions, having the causal paths toward long-term strategies of firms. Moreover, the SBSC displays the considerable effects of non-market perspectives on the Learning & Growth, Internal Business, Customer and Financial dimensions.

Corporate social responsibility and balanced scorecard

Numerous studies have demonstrated the association between balanced scorecard and corporate social responsibility. The sustainability balanced scorecard provides a chance for companies to transfer sustainability visions and strategies into actions since it allows for the integration of environmental and social issues in the general management of firms (Bieker, 2003). The organizations have become more and more attentive to including social and environmental sustainability in their management models. To achieve this purpose, sustainability balanced scorecard is among the most popular tool of managing CSR (Chalmers and Palomero, 2011). Moreover, balanced scorecard is a well-established system for employing CSR strategies and activities (Chiarini, 2016). Particularly, the hierarchy of balanced scorecard facilitates the evaluation of CSR activities and multifaceted social behaviours of organizations (Costa and Menichini, 2013).

According to Schaltegger and Wagner (2006), the structured evaluation of strategic social and environmental issues with the critical support of balanced scorecard is important in affecting performance measurement and management. Hansen and Schaltegger (2012) emphasize that sustainability balanced scorecard attempts to balance financial objectives and social, environmental objectives. They further show that each architecture of sustainability balanced scorecard depends on the value system of organizations and corporate social responsibility strategy that the organization chooses to pursue. Hansen and Schaltegger (2016) demonstrate that sustainability objectives can be integrated in balanced scorecard and it is related to

corporate sustainability strategy. In addition to measuring CSR, sustainability balanced scorecard is also employed to manage CSR (Gminder and Bieker, 2002). Apart from these, sustainability balanced scorecard is used commonly to measure CSR activities in many studies. Outstanding papers include Lämsiluoto and Järvenpää (2008), Thanaraksakul and Phruksaphanrat (2009), Hsu et al. (2011), Mehralian et al. (2016), and Sands et al. (2016). Differently, a number of studies have deployed other forms of balanced scorecard for evaluating CSR activities of organizations. Hansen et al. (2010) propose the community-enabled balanced scorecard to assess the integration of community objectives and business objectives into the strategic management of organizations. They prove that the community-enabled balanced scorecard is an effective tool for organizations engaged in corporate community involvement. In addition, Bhattacharya et al. (2014) develop another structure of balanced scorecard which is known as green-balanced scorecard, and it is used to measure performance involved in social performance and sustainable performance constructs. The study indicates that the green balanced scorecard helps managers to decide whether suppliers' performance satisfy environmental requirements.

Hypotheses development

Balanced scorecard and causal relationships

As mentioned earlier, the causal relationship between dimensions of BSC goes from Learning & Growth through Internal Business to Customers and lastly to the Financial dimension. Testing causal relationship helps to provide more accurate results. Three hypotheses of the study are presented as below:

- H1. There is a positive relationship between the Learning & Growth and Internal Business dimensions.
- H2. There is a positive relationship between the Internal Business and Customer dimensions.
- H3. There is a positive relationship between the Customer and Financial dimensions

Effects of CSR on balanced scorecard dimensions

Following the SBSC model of Figge et al.'s (2001, 2002), the CSR dimension has an influence on four dimensions of the BSC. Four relevant hypotheses are presented as follows:

- H4. There is a positive relationship between the CSR and Financial dimensions.
- H5. There is a positive relationship between the CSR and Customer dimensions.

H6. There is a positive relationship between the CSR and Internal Business dimensions.

H7. There is a positive relationship between the CSR and Learning & Growth dimensions.

Effect of CSR on Goals

CSR can improve performance of the service industry and help to fulfill its goals directly and indirectly. CSR has indirect effects through operational cost control, stronger brands, close relationship with stakeholders and the community (Dwyer, 2005). It also has direct effects on goal fulfilment if the goal emphasizes economic, social and environmental criteria.

H8. There is a relationship between the CSR and Goals dimensions.

Effects of Balanced Scorecard Dimensions on Goals

The BSC is developed as a top-down approach in which visions and missions are initially identified. After that, the indicators are chosen to analyze these visions and missions.

H9. There is a positive relationship between the Financial and Goals dimensions.

H10. There is a relationship between the Customer and Goals dimensions.

H11. There is a relationship between the Internal Business and Goals dimensions.

H12. There is a relationship between the Learning & Growth and Goals dimensions

Effects of goals on visions

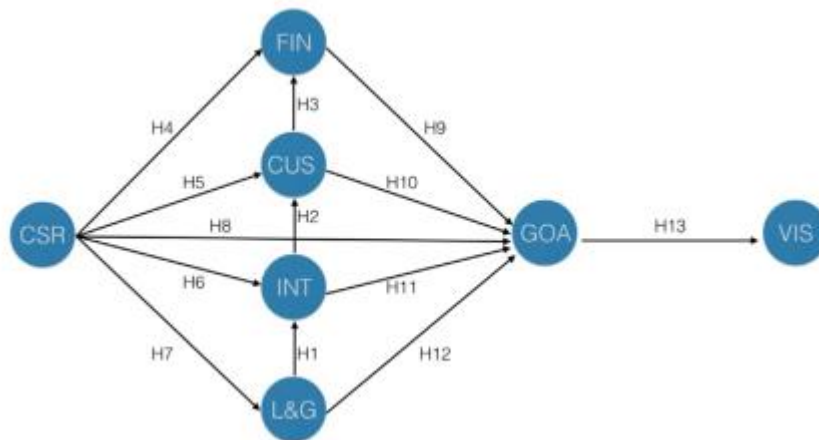
Each firm ought to have visions and missions. The vision defines what firms wish to become (Ireland et al., 2009), and the mission clarifies which business firms want to perform and customers they want to serve (Kemp and Dwyer, 2003). Goals are general statements that firms need to satisfy to achieve their visions. Goals divide visions and missions into smaller parts and provide stepping stones in order to make it easier to achieve visions and missions (Kaplan and Norton, 1996). Hence, goals need to be compatible with visions and missions, and they are the first step for accomplishing visions and missions. Considering this link, a hypothesis is presented as below:

H13. There is a positive relationship between Goals and Visions.

METHODOLOGY

Proposed model

Fig. 1: Proposed model



Source: own

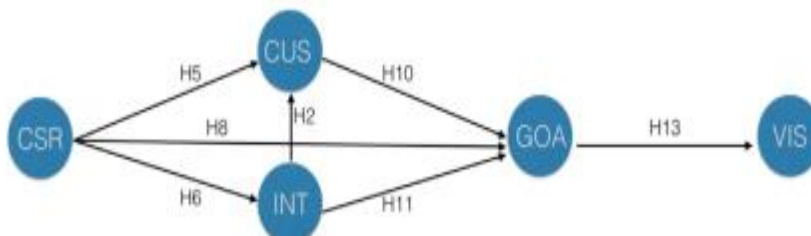
The proposed model for various stakeholder groups

This study attempts to investigate perceptions of stakeholders, taking into account aforementioned dimensions (CSR, FIN, CUS, INT, L&G, GOA and VIS). As different stakeholders have various interests as well as responsibilities, they perceive dimensions differently. Accordingly, each type of stakeholders should be studied separately, and each model is adapted for each group.

Proposed model for customers

The group of customers is not aware of Financial, Learning & Growth and some Internal Business of service firms. Therefore, the model solely consists of Customer dimension, CSR dimension, several Internal Business indicators, Goals and Visions.

Fig. 2: proposed model for customers

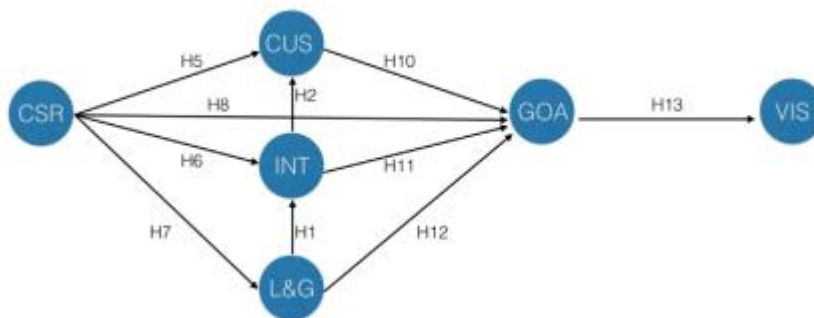


Source: own

Proposed model for employees

The group of employees engages more in visions and missions than customers. Even though they are not those setting visions, missions, and goals, they turn these visions, missions, and goals into reality. Apart from Financial dimension, the model for employees includes all other dimensions because employees do not have sufficient knowledge of financial indicators.

Fig. 3: proposed model for employees

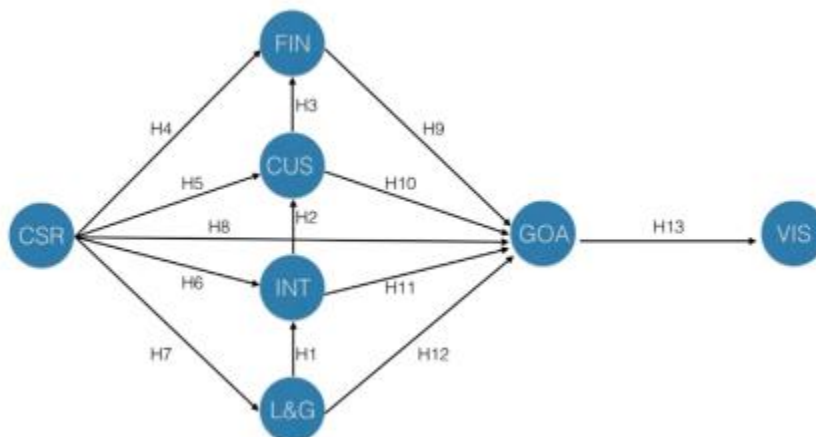


Source: own

Proposed model for managers

Managers handle all strategies and aspects of firms, and they are also those who establish goals for firms. Consequently, the model for this group covers all dimensions.

Fig. 4: proposed model for managers



Source: own

Questionnaire design

This study tests the relationship between CSR, dimensions of the BSC, visions and goals by investigating perceptions of stakeholders about each dimension. The first step involves developing the framework and models as presented above. The second step involves designing a questionnaire and carrying out surveys. The final step is to return questionnaire for analysis. The indicators of CSR were referenced from Tyrrell et al. (2012). The indicators of visions and missions were obtained from the interviews with managers of the service industry. The indicators of the BSC dimensions were sourced from Denton and White (2000) and Phillips and Louvieris (2005).

The BSC indicators were chosen by experts. The experts were asked to rank the importance of indicators from 1 to 5, and the response of 5 has the greatest importance. Those indicators having the average rate higher than 3 were chosen. The survey used the scale from 1 to 5 with 5 being the most important and 1 being not important.

DATA ANALYSIS AND FINDINGS

The data was collected from 2 service firms in Vietnam for 4 months. Two companies's current service offerings are well developed compared to the state of the art in this market. Three surveys were used to collect information of three groups: customers, employees and managers. Overall, the study collected 300 surveys, including 200 surveys from customers, 70 surveys from employees, and 30 surveys from managers, with response rate as 56%, 70% and 40% contacted participants. Table 1 (a) - (c) demonstrates the demographic features of stakeholders. It can be seen from Table 1 (a) that the ratio of male and female customers is similar. Major customers are from Europe accounting for 54% and Oceania accounting for 27%. About 65% of customers have bachelor degrees and higher. More than 60% of the customer are in the range from 31 to 60 years old. Lastly, around 86% of the customers use the service again.

It can be seen from Table 1 (b) that more than 50% of the employees are female, making up for 54%. About 57% of the employees fall in the range from 19 to 30 years old. The employees have lower education than customers, with the percentage of 29% having at least bachelor degrees. Almost all employees work in less than three years, about 91%.

It can be seen from Table 1 (c) that all managers are 31 years old or more. About 80% of the managers are female. Most of managers have at least bachelor degrees and work for more than 2 years, about 93%. Approximately 33% of the managers work for more than 6 years.

The study performs partial least squares (PLS) employing Smart-PLS (Ringle et al., 2005). It follows a two-stage approach to test the structural model and measurement model. The structural model consists of hypothesized theoretical relationships. The measurement model is defined when the theoretical research model is built in PLS (Urbach and Ahlemann, 2010).

The Composite Reliability (CR) test is used to check reliability of the results. The CR for three groups is higher than 0.7, meaning that the results can be relied on. The average variance extracted (AVE) is used to check the convergent validity. All variables have AVE higher than 0.5, strengthening the convergent validity. The discriminant validity is checked by the link between correlations among constructs and the square root of AVEs. The results are shown in Table 2. It can be seen that discriminant validity is obvious between all variables.

In groups of managers and employees, the square root of AVE is less than the correlation coefficient shared between the construct and other constructs in the model. This means that discriminant validity is not supported between variables for managers and employees.

Tab. 1(a): Demographics of customer group

	N	%		N	%
Gender			Continent		
Male	112	56	Asia	18	9%
Female	88	44	Africa	12	6%
Education level			America	8	4%
Secondary education	42	21	Oceania	54	27%
Vocational school	27	14%	Europe	108	54%
Bachelor degree	71	36%	First time visit to Phuket?		
Master degree	28	14%	Yes	75	38%
Ph.D.	12	6%	No	125	63%
Others	20	10%	First time stay at the hotel?		
Age			Yes	28	14%
Under 18	0	0%	No	172	86%
19–30	28	14%	How did you book the hotel		
31–40	40	20%	Hotel's website or reservation number	18	9%
41–50	60	30%	Online booking website	69	35%
51–60	42	21%	Travel agency	89	45%
Above 61	30	15%	Walk-in	6	3%
			Others	18	9%

Souce: own

Tab. 1(b): Demographics of employee group

	N	%		N	%
Gender			Department		
Male	32	46%	Front office	12	16%
Female	38	54%	Housekeeping	14	19%
Education level			F&B	20	27%
Secondary education	34	49%	Procurement	2	3%
Vocational school	7	10%	Accounting	6	8%
Bachelor degree	20	29%	Concierge	2	3%
Master degree	0	0%	Securities	4	5%
Ph.D.	0	0%	Gardener	5	7%
Others	9	13%	Maintenance	5	7%
			Others	3	4%
Age			Working duration in hotel industry		
Under 18	0	0%	0-1	32	46%
19-30	40	57%	2-3	26	37%
31-40	28	40%	4-5	10	14%
41-50	2	3%	6-10	2	3%
51-60	0	0%	>10	0	0%
Above 61	0	0%			
Working duration in the hotel (years)					
0-1	42	60%			
2-3	22	31%			
4-5	4	6%			
6-10	2	3%			
>10	0	0%			

Source: own

Tab. 1(c): . Demographics of manager group

	N	%		N	%
Gender			Department		
Male	6	20%	Front office	3	10%
Female	24	80%	Housekeeping	5	17%
Education level			F&B	8	27%
Secondary education	0	0%	Procurement	1	3%
Vocational school	2	7%	Accounting	3	10%
Bachelor degree	27	90%	Concierge	1	3%
Master degree	1	3%	Securities	2	7%
Ph.D.	0	0%	Gardener	1	3%
Others	0	0%	Maintenance	3	10%
Age			Others	3	10%
Under 18	0	0%	Working duration in hotel industry		
19-30	0	0%	0-1	1	3%
31-40	23	77%	2-3	5	17%
41-50	5	17%	4-5	10	33%
51-60	3	7%	6-10	11	37%
Above 61	0	0%	>10	3	10%
Working duration in this hotel					
0-1	4	13%			
2-3	11	37%			
4-5	7	23%			
6-10	6	20%			
>10	2	7%			

Source: own

Tab. 2: Result of measurement model for customer group

	AVE	CR	R ²	CSR	CUS	GOA	INT	VIS
CSR	0.617	0.906	-	0.785				
CUS	0.707	0.879	0.464	- 0.022	0.841			
GOA	0.675	0.949	0.295	0.540	0.030	0.822		
INT	0.794	0.920	0.000	- 0.015	0.681	0.044	0.891	
VIS	0.740	0.934	0.638	0.511	0.012	0.799	0.032	0.860

Source: own

Tab. 3: Result of measurement model for employees group

	AVE	CR	R ²	CSR	CUS	GOA	INT	LG	VIS
CSR	0.712	0.937	–	0.844					
CUS	0.795	0.921	0.721	0.728	0.892				
GOA	0.778	0.969	0.723	0.825	0.718	0.882			
INT	0.724	0.948	0.735	0.744	0.834	0.728	0.851		
LG	0.746	0.954	0.624	0.790	0.784	0.763	0.849	0.864	
VIS	0.850	0.966	0.904	0.771	0.700	0.951	0.669	0.720	0.922

Source: own

Tab. 4: Result of measurement model for manager group

	AVE	CR	R ²	CSR	CUS	FIN	GOA	INT	LG	VIS
CSR	0.622	0.904	–	0.789						
CUS	0.764	0.907	0.605	0.570	0.874					
FIN	0.749	0.954	0.754	0.681	0.831	0.865				
GOA	0.749	0.964	0.806	0.765	0.753	0.842	0.865			
INT	0.639	0.925	0.559	0.674	0.775	0.759	0.762	0.799		
LG	0.689	0.939	0.551	0.742	0.733	0.650	0.757	0.717	0.830	
VIS	0.815	0.956	0.886	0.770	0.746	0.771	0.941	0.750	0.805	0.903

Source: own

Insufficient discriminant validity

To solve the issue of insufficient discriminant validity, Podsakoff et al. (2003) introduce a common method factor which helps to decline variance inflation as well as to decline shared variance estimates between latent constructs and observed variables, and thus increasing value of AVE estimates. Nonetheless, this makes the model more complicated.

The study employs the Five-Point Plan of Farrell (2010). First, if data lacks discriminant validity, the exploratory factor analysis (EFA) should be performed to find out the item that performs poorly in cross-loading. If an item cross-loads more than one latent variable, the elimination of the item could enhance discriminant validity. Second, if it fails, the similar constructs can be merged into one construct. Third, if it fails, more data needs to be collected. Final, if all of these methods work, independent variables need to be omitted in the regression (Cohen et al., 2003).

The study combines some methods to tackle with the issue of insufficient discriminant validity. First, EFA is conducted using SPSS. Those items with high cross loading are omitted. After omitting, the discriminant validity is still insufficient. As a consequence, high cross-loading items are omitted manually, and some indicators are omitted for all groups of stakeholders. After the omission of these factors, data has more discriminant validity. Nevertheless, for groups of managers and employees, Goals (GOA) and Vision (VIS) do not discriminate from each other.

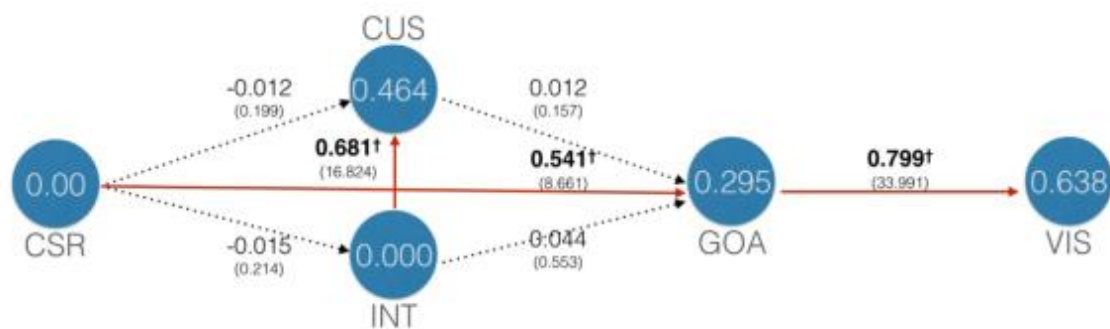
Structural model

Customer group

The variance of Vision (VIS) is observed through the coefficient of determination R^2 . The R^2 of Vision (VIS) is 0.638, meaning that Goals can explain 63.8% of the variance in Vision. This R^2 is considerable.

The inner model path coefficient is also observed. This coefficient illustrates how strong the impacts of a variable on another variable are. The differences in weights of path coefficients allow for a ranking order of importance of the variables. Figure 5 displays path coefficients for customers. It can be seen that there are three important paths, from CSR to Goals, from Internal Business to Customers, and from Goals to Vision.

Fig. 5: R^2 and path coefficient for customers



Source: own

Tab. 5: The fitness of the model.

Fitness indicator	Ideal standard	Fitness of the model
Chi-square (χ^2)	The less the better	276.791
χ^2/df	<3	1.586
GFI	>0.9	0.925
AGFI	>0.9	0.903
RMSEA	<0.08	0.045
SRMR	<0.08	0.0403
TLI (NNFI)	>0.9	0.965
CFI	>0.9	0.975

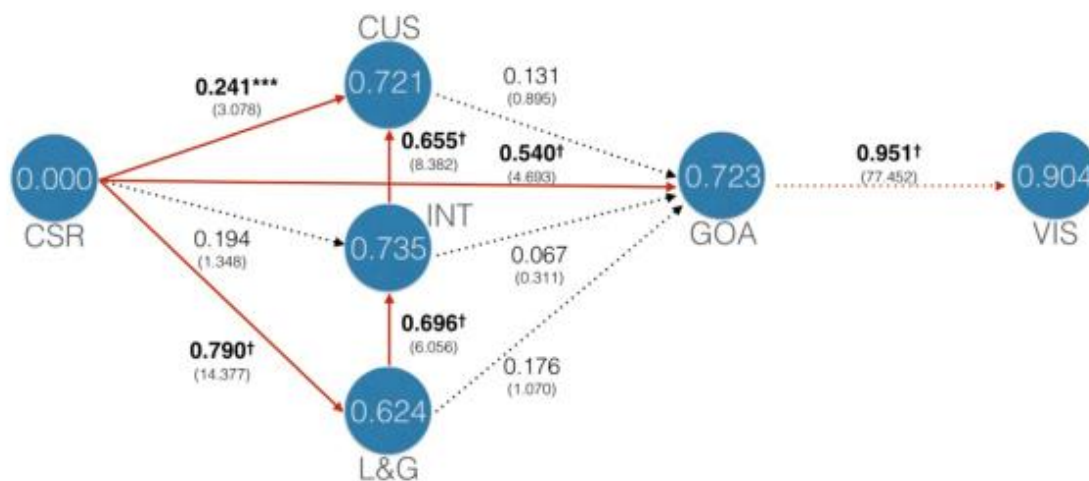
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The good fitness of the model is the prerequisite of analysis of SEM. The fitness indicators of this study as shown in Table 5, are all consistent with ideal standard of fitness of SEM.

Employee group

Figure 6 demonstrates the results for the employees. The coefficient of determination R^2 is really high at 0.904. This means that Goals can explain 90.4% of the variance in Vision. Moreover, many paths also have significant coefficients: H1 (Learning & Growth to Internal Business), H2 (Internal Business and Customer), H5 (CSR and Customer), H7 (CSR and Learning & Growth) and H8 (CSR and goals). This reveals that employees perceive direct and indirect impacts of CSR on customers. In addition, employees perceive that CSR affects Goals. Nonetheless, employees do not distinguish between goals and visions.

Fig. 6: R^2 and path coefficient for employees



Source: own

Tab. 6: The fitness of the model.

Fitness indicator	Ideal standard	Fitness of the model
Chi-square (χ^2)	The less the better	278.791
χ^2/df	<3	1.686
GFI	>0.9	0.975
AGFI	>0.9	0.983
RMSEA	<0.08	0.055
SRMR	<0.08	0.0603
TLI (NNFI)	>0.9	0.985
CFI	>0.9	0.995

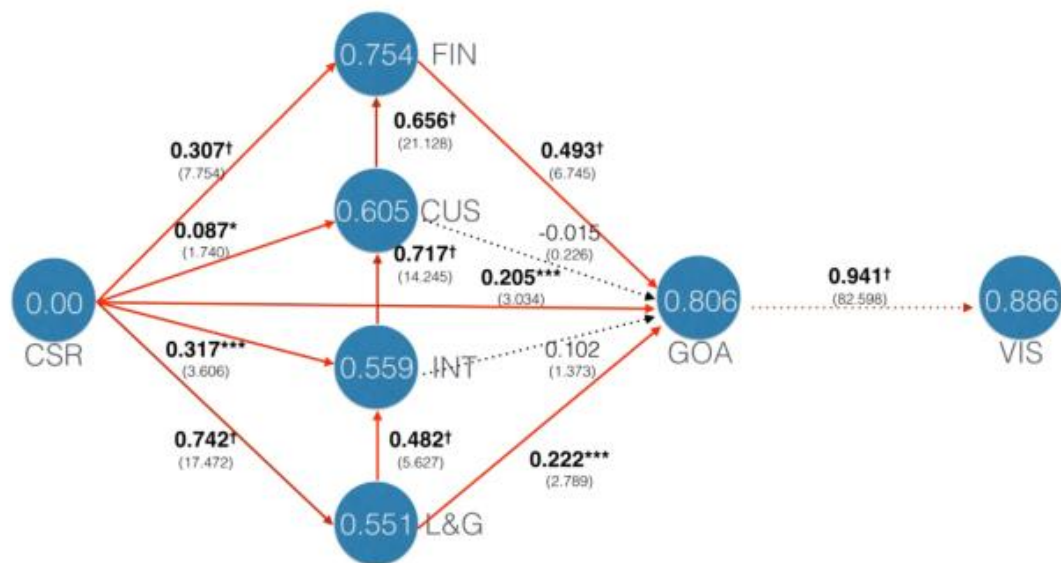
Source: own

The good fitness of the model is the prerequisite of analysis of SEM. The fitness indicators of this study as shown in Table 6, are all consistent with ideal standard of fitness of SEM.

Manager group

The coefficient of determination R^2 is 0.886, which is really high. This means that Goals, can explain 88.6% of variance in Vision. It is clear that managers perceive the importance of CSR and its impacts on business performance, goals and visions by a display of significant path coefficients with the exception of H10 and H11. As managers have the best knowledge in management and customers, they believe that CSR has both direct and indirect impacts on all dimensions of the BSC. To be specific, the path from CSR to Learning & Growth and then up to Financial dimension influencing Goals is firmly supported. H13 illustrates the significant result but there is insufficient discriminant validity.

Fig. 7: R^2 and path coefficient for managers



Source: own

Tab. 7: The fitness of the model.

Fitness indicator	Ideal standard	Fitness of the model
Chi-square (χ^2)	The less the better	281.731
χ^2/df	<3	1.886
GFI	>0.9	0.995
AGFI	>0.9	0.998
RMSEA	<0.08	0.065
SRMR	<0.08	0.0613
TLI (NNFI)	>0.9	0.998
CFI	>0.9	0.996

Source: own

The good fitness of the model is the prerequisite of analysis of SEM. The fitness indicators of this study as shown in Table 7, are all consistent with ideal standard of fitness of SEM.

DISCUSSIONS

The study attempts to suggest a potential management tool to include CSR in business of the service industry in a developing country. CSR influences goals of business directly and indirectly by different paths. The first path is from CSR to Goals directly. The second path is from CSR to the Financial dimension and then to Goals. The third path is from CSR to Learning & Growth and to Goals. The final path is from CSR through Learning & Growth, including causal relationship effects that affect the Financial dimension, then to Goals. The causal relationship between dimensions of the BSC is confirmed, particularly Learning & Growth to Internal Business, Internal Business to Customers, and Customers to Financial dimension. CSR has direct and indirect impacts on goals through Learning & Growth to Internal Business, Internal Business to Customers, and Customers to the Financial dimension. Hence, the study recommends that the service industry should adopt CSR in their business.

Another objective is to evaluate three groups of stakeholders. This sets the study apart from other studies because previous studies mainly concentrate on the perception of managers. For the group of employees, there are links from CSR to dimensions of the BSC but no links from dimensions of the BSC to goals. For the group of managers, there are links from CSR to dimensions of the BSC and to goals. This implies that employees are solely aware of the benefits of CSR to BSC dimensions, but they do not perceive how it could benefit the entire business. On the contrary, managers understand how CSR benefits BSC dimensions as well as achieve

goals and visions. Nevertheless, awareness of employees is essential because they deal with customers directly. Hence, firms should motivate employees to engage in SBSC dimensions, goals and visions. The managers have a clear understanding of SBSC dimensions, goals and visions, so they should be responsible for sharing with their employees (Denton and White, 2000). For the group of customers, CSR merely has direct impacts on Goals. There is a significant path from Internal Business to Customers, but their relationship to goals is not significant. The findings suggest that CSR should be performed as the strategic management to enhance business performance since customers perceive that CSR is directly linked with business goals.

The findings show different perceptions of the role of CSR according to perspectives of stakeholders. For managers, CSR influences all BSC dimensions directly and influences Goals and Vision indirectly. For employees, CSR influences Learning & Growth, Customers and Goals directly. Meanwhile, customers think that CSR affects Goals directly with no effects on other dimensions. This raises a demand for firms to take into account many stakeholders in building goals and business strategies.

Finally, our model indicates that CSR, Financial, Customer, Internal Business, and Learning & Growth dimensions can explain 80.6% of the variance in Goals. This means that if firms conduct these dimensions, they can potentially achieve 80.6% of their business goals. As a result, this model can be used as a tool to include CSR in the operations of firms.

CONCLUSIONS

This study devotes to provide a deep understanding of the advantages of CSR by the identification of paths through which CSR affects business. The study makes some contributions in the service industry. Firstly, the results show that the changes towards sustainability occur in this country. The stakeholders of firms hold the perception that CSR can help firms reach their goals and visions. Secondly, the study contributes to the literature of performance measurement systems in the service industry. Our findings provide empirical evidence for the suggestion that BSC can help service firms in achieving their goals and visions. The combination of CSR and BSC in this study can become a foundation to discover more for service firms in developing countries. Thirdly, our approach concentrates on important stakeholders, which can illustrate differences in the perceptions of important

stakeholders about CSR, BSC dimensions, goals, and visions. Furthermore, this helps to enhance the chances to develop the appropriate visions and goals for their business.

The study has two limitations. The first limitation is that the study is based on only two firms in the service industry. The results cannot be generalized into the whole service industry. The other is that all questions in the survey are subjective, which makes the results different among groups of stakeholders and limits the extent of conclusions. Future studies can be done with the employment of this model for other firms and sectors in the service industry. This study tests direct and indirect impacts of CSR on visions and goals, but it does not examine the mediating impacts of BSC dimensions. The examination of mediating impacts of BSC dimensions may provide more insights into the impacts of CSR and BSC on business strategies of firms in the service industry. Besides, the model should be applied with a bigger sample and a greater number of stakeholders. Lastly, further studies can use qualitative methods, including in-depth interviews to provide more information which is hard to be captured by quantitative methods.

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VALUE CO-CREATION AND BEHAVIORAL INTENTION IN SOCIAL COMMERCE: THE ROLE OF TECHNOLOGY ACCEPTANCE MODEL

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Abstract

Purpose: This study applies the Technology Acceptance Model (TAM) and the Service – Dominant Logic (S-D Logic) in an attempt to develop a framework, which explains the antecedent and consequences of value co-creation with social media platform in social commerce.

Design/methodology/approach: The paper develops a conceptual model by integrating cutting-edge research in perceived usefulness, perceived ease of use, attitude, value co-creation, purchase intention, eWOM intention to study how these constructs interact with each other through a systematic review.

Findings: From the theoretical analysis, we recognize that technology acceptance factors have an indirect effect on value co-creation which is mediated by attitude toward social media.

Research/practical implications: This study contributes a better knowledge of behavioural intention by incorporating a variable not previous studied in social commerce context: value co-creation. Managers can get a deeper insight into current understanding of achieving a competitive advantage in Social Networking Sites (SNSs) strategy from this research.

Originality/value: This study offers a theoretical background for future empirical research into the research field of value co-creation within the social commerce setting

Keywords: Value-co creation, Technology Acceptance Model (TAM), Service-Dominant Logic (S-D Logic), behavioural intention, Social commerce.

JEL Codes: M3.

INTRODUCTION

Social commerce, a subset of electronic commerce, provides important advantages for retailers (Nadeem et al., 2016). Traditional offline product category domains like clothing, furniture, and footwear are now online. In particular, social media platforms are enabling new forms of

firm-customer interaction, in which customer participation is more intense and relevant (Barrutia & Gilsanz, 2013; Mikalef et al., 2013). Additionally, firms are massively participating in customer relationship management, brand communication, product promotion and co-development (Mikalef et al., 2013). Although social commerce studies have received more attention in various perspectives, like user behavior, business strategies, and adoption strategies (Pappas et al., 2017), social commerce has not yet been fully understood (Nadeem et al., 2016). Value co-creation through social commerce is emerging, as a new research model in Information System (IS), marketing, and service science and innovation management (See-To et al., 2014). Drawing the Service-Dominant Logic (S-D Logic), the term “value co-creation” is a process that firms and customers integrate their resources to generate value (Paredes et al., 2014). Customers actively participate in value creation by using their own knowledge, accessing comments and suggestions from other customers. The customers are co-creators of their own value: as beneficiaries, they determine what they value. Despite of the important of this subject has for academics and those in charge of firms; however, knowledge about the way in which customers participate in value co-creation is still very limited (Payne et al., 2008). Few studies have analysed value co-creation from the customer’s perspectives (Vega-Vazquez, 2013).

The S-D logic (Vargo et al. 2008) suggests that value is co-created with customers and this co-creation determines by customer experiences and interactions with the firm and others. Value co-creation takes place when customers interact with technology features (Balaji & Roy, 2017). In social commerce, the highly personalized interaction between customers and companies take place in social media platforms, where customers can communicate, review products, review others’ opinions, share their experience and sharing information about products and services. Several studies have used technology acceptance models to identify the factors that determined customer acceptance of retail technology (Huang & Liao, 2014; Pantano & Servidio, 2012). Balaji and Roy (2017) highlighted the role of technology in facilitating value co-creation and suggested investigation of customer value from a technology viewpoint. In this study, the study adopts the technology acceptance model (TAM) to investigate how customers co –create value through their interaction on social platforms. Based on customer’s perception of usefulness or ease of use of social media platforms, customers are offered opportunities for resource integration and this facilitates value co-creation.

Drawn on the S-D logic and TAM, this study develops a framework to explain the antecedent and consequences of value co-creation with social media platform in social commerce. In particular, the study aims to examine the concept of customer value co-creation in social commerce. Additionally, the study identifies the underlying platforms or technology acceptance factors as a point of interaction that determines the value co-creation behavior and impact on customer's intention to buy in social commerce environment.

The paper first assesses the current literature on value co-creation in social commerce. Next, the research framework and related hypotheses are shown, followed by the methodology and discussion. Finally, the several theoretical and managerial implications are discussed.

THEORETICAL BACKGROUND

In this section, we provide a review of the theoretical foundation of this study. In particular, we will discuss the concept of value co-creation in social commerce based on Service-Dominant Logic (S-D), and Technology Acceptance Model.

Value Co-Creation in Social Commerce

The term of value co-creation is developed by Prahalad and Ramaswamy (2004a,b). Value co-creation refers to “the value created by the joint activities of parties, i.e. customers and firms. Involved in direct interaction” (Balaji & Roy, 2017, p.10) and these joint activities require interactive and corporative efforts between customers and firms. The value of a product or a service is not created by the companies solely, but it also depends on the customers. The company provides the product to customers (creating value), and customers use the product based on their skills and knowledge (co-creating value) (Gronroos et al., 2013). Meanwhile, customers may also create value by engaging actively in the development process of a product or service (Ranjan et al., 2016). In social commerce, value comes not from the platform itself (which is source of revenue for the platform provider), but from how a particular social media platform is used and from the information that is created and shared on these platforms (Culnan et al., 2010). Social media can impact the relationship among customers involved in co-creation as well as the relationship between customers and the hosting firm.

According to the Foundational Proposition 6 of Service-Dominant (S-D) Logic (Pyane et al., 2008), “the customer is always a co-creator of values”. The original of value co-creation is that a company offer a product as an input of value co-creation and a customer co-creates the values

of the product by applying her skills and knowledge in using the product (Vargo et al., 2008). Customers adopt their knowledge and skills to the resources provided by the social media platform, they co-create value with firm (Wang & Hajli, 2014). Meanwhile, firms can involve their customers in increasing sales, facilitating word of mouth (Chen et al., 2011) and enhance brand popularity (De Vries et al., 2012) on these platforms.

The term of value co-creation has received attention on proposing and developing theoretical frameworks and measure to explore the value co-creation (See-To et al., 2014; Yi & Gong, 2013). For example, Yi and Gong (2013) suggest a customer co-creation behavior scale through the integration of customer participation behavior and citizenship behavior. Co-creating value needs the customer and the company to be in alignment, and it includes the company's inclination to share control to empower the customer (Ranjan et al., 2016). In the context of social commerce, the value co-creation of this study is adopted from the study of See-To et al. (2014). In particular, value co-creation is the combination of behavioural alignment and empowerment and control. Behavioural alignment related to the way that the company and the customers are able to interact effectively and efficiently to discuss and create new ideas for the product/ service over social media (See-To, 2014). Meanwhile, the empowerment and control is the way customers' feeling when they has the control on whether they would make the decision on gaining information via social media platforms or not (See-To, 2014).

The basis of value co-creation is the interaction concept (Parades et al., 2014). Co-creation of value can take place only if interactions between the firm and the customer happen (Gumession & Mele, 2010). There is no value co-creation if there is no direct interaction (Gronroos, 2011). The existence of interactions provides a platform for favourably influencing the customers' usage processes and value co-creation. Platforms or technology acceptance factors is reflected through the Technology Acceptance Model (TAM).

According to Gronroos (2011), value is determined by customer's experience through the interaction. In social commerce setting, social media platforms is a point of interaction between customers and firms. Value co-creation takes place when customers interact with social platforms during retail shopping, which can motivate its adoption and continued use (Vargo & Lusch, 2016). According to Gumession and Mele (2010), there are two core phases underlying the whole process of value co-creation. The first is about interaction between customers and firm; and the second about the integration of customer and firm resources. In this way, the interaction between parties is the most crucial antecedent to resource integration. Additionally, Gronroos (2011) argued that interactions affect experience and experience

determines value emerging from the interaction. Hence, we can understand that consumer's experience refers as a consumer's resources. The TAM suggests that attitude should be an outcome of an overall favourable social media usage experience (Rauniar et al., 2014).

Based on these above discussion, this study borrow the Technology Acceptance Model (TAM) to explain the technology features, which can lead to a favorable attitude, which in turn value co-creation in social media.

Technology Acceptance Model

The acceptance and use of technical innovation has been the content of much academic research, and in recent years several theories that provide new insights have emerged at both the individual and organizational context (Im et al., 2011). These theories that have been identified in the literature have the same dependent constructs, use or intention to use, but there are different antecedents to understand acceptance of technology. In the extant social media research, there are a large number of theories and models in order to explain the behavior of human at the personal/ individual level.

There are five dominant theories: The innovation diffusion theory (IDT) (Rogers, 1995), Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1991), and Technology Acceptance Model (TAM) (Davis, 1985), and theory of perceived risk (TPR). In particular, the IDT was introduced to explain the critical factors affecting individual technology acceptance over time since 1960 (Rogers, 1995). One of the most important theories of human behavior from the aspect of social psychology is TRA, which was proposed that beliefs influence attitudes, then in turn affect to intentions and consequently generate behaviors (Fishbein & Ajzen, 1975). Following this theory, attitude and subjective norms are confirmed as the decisions of behavior in TRA. In the vein of this theory, TPB was drawn from the limitations of TRA. The perceived behavioural factor, referring as the person's own perception toward the importance of obtaining the outcomes, was added in the mode. In addition, TAM is also an extension of TRA with a simple and practical theoretical model to predict user's adoption of information system. The original TAM consisted of perceived usefulness (PU), perceived ease of use, attitude toward using behavioral intention and actual usage. In the current study, Technology Acceptance Model (TAM) is adopted.

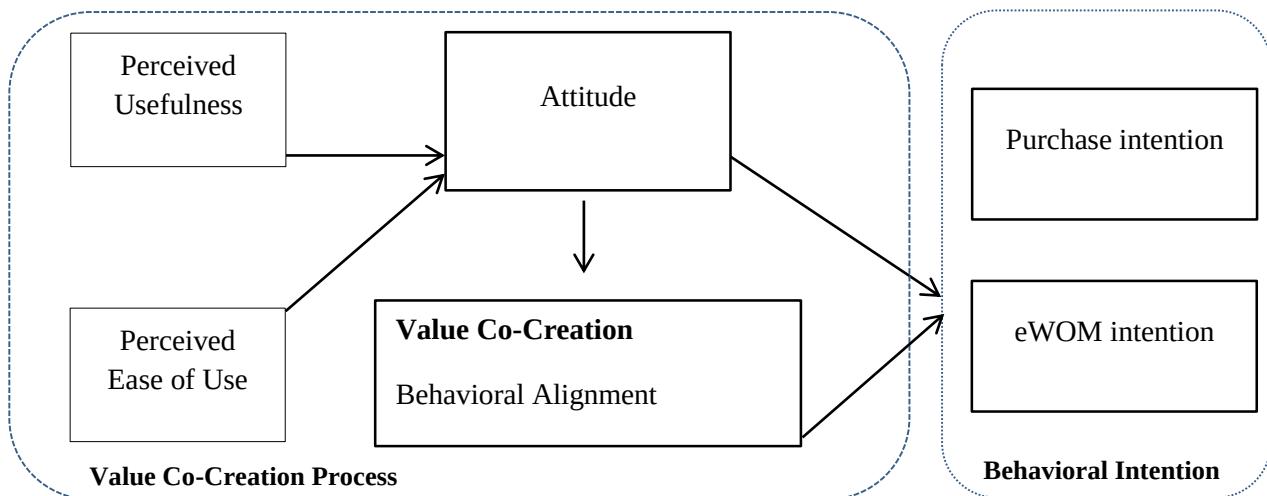
Studies of the acceptance of technologies explain user perception of usefulness and the ease of use that are a result of a system-user interaction (Davis et al., 1989). Perceived usefulness (PU) is described as the degree to which an individual believes that the use of a certain technology

may useful to someone to achieve a concrete outcome (Davis et al., 1989). Perceived ease of use (PEU) can be defined as the degree to which a person believes that using a particular system is free of effort. In the original TAM, Davis (1989) postulated that perceived usefulness and perceive ease of use of a system are the important elements affect to an individual's attitude. Attitude encompasses the customer's positive and negative feelings about performing behaviors (Fishbein & Ajzen, 1975).

MODEL DEVELOPMENT

In this study, we develop a new research models based on the theoretical background and the existing literature review at Figure 1. The model will fill a general overall picture of evidence in the theory of how technology acceptance factors affect behavioural intention through attitude in the social commerce environment. In the following sub-sections, we will explain these constructs integrate with each other. We shall also provide propositions based on the conceptual model.

Figure 1: A conceptual Model



Source: Own author

Relationship between Technology Acceptance Factors, Attitude, Behavioural Intention

In the current study, we define PU as the extent to which the social media users believe that using a particular social media site helps to gain the related goal-driven needs of the individual. PU represents beneficial results related to features of the technology being used. Perceived social media to have a high level of usefulness in terms of obtaining updated information and recommendations on products and services, they may tend to spend more time and effort

leaning about products and services, and rely more heavily favour on social media. Additionally, the social media platforms offer a free account and easy-to-use tools. PEU refers to the degree to which the social media platform is free of effort. When customers perceive ease of use in engaging in social-media-related activities, they will form a positive attitude toward social media. It is hypothesized that:

Proposition 1a: Users' perceived usefulness has a positive effect on their attitude

Proposition 1b: Users' perceived ease of use has a positive effect on their attitude

The TAM has been proven to a dominant model with a high explanatory power for the variance in users' behavioural intentions related to IT usage in a wide variety of context (Chang et al., 2015). In social commerce, new technology has facilitated the integration of a diversity of interaction modes with social media platforms. In the current study, behavioral intention is defined as users' intentions and plans use social media platforms for shopping. McKnight et al. (2002) defined behavioral intentions in terms of customer intentions to engage in three specific behaviors—(a) follow the advice of the web vendor, (b) share personal information with the vendor, and (c) purchase goods or services from the vendor. In this study, eWOM intention has been extensively studies in marketing research and remains a hot topic (Balaji & Roy, 2017). Hence, behavioural intentions involves the willingness to spread positive WOM via social media platforms (or eWOM intentions); and purchase intentions.

According the definition of the TAM, the intentions are the direct outcome of attitudes. There is a strong relationship between attitude and behavior when evaluating an innovate technology (Chang et al., 2015). First of all, customers' attitudes toward social commerce are an important concept in marketing as its link to purchase intentions has been found in previous studies (Chang et al., 2015; Cheung & To, 2016). It is clearly understand that favorable attitudes toward social commerce lead to higher intentions to revisit platforms and be likely to formation purchase intention. Additionally, eWOM intention or sharing of information via social media is a crucial aspect of the online experience (Mikalef et al., 2013). Customers' informal opinion about products and brands derived from consumption experiences (Sen & Lerman, 2007; Mikalef et al., 2013). This is based on the rationale that positive attitudes toward SNSs influence current and subsequent purchase activities, leading to the spread of positive e-WOM (Tabbane & Hamouda, 2013). Based on this rationale, the following hypothesis is tested:

Proposition 2a: Users' attitudes have a positive effect on purchase intention

Proposition 2b: Users' attitudes have a positive effect on eWOM intention

Relationship between Attitude in social media and Value Co-Creation

Social commerce has provided a platform where customers can participate and interact with firms. According to S-D Logic, experience and knowledge are created during the interactions (Morid & Shajari, 2012). During the interactions, resources such as experience and knowledge are created. When customer perceive social media platforms as ease of use and fewer complexes, they are more likely to interact with it, explore the benefits it offers and thus develop a positive attitude toward social media. The TAM suggests that attitude should be an outcome of an overall favourable social media usage experience (Rauniar et al., 2014).

Additionally, interactions have been used in consumer culture theory, where the sociocultural context of interaction is highlighted (Gronroos, 2011). According to the consumer culture theory, attitude is a cultural resource, which is formed in the interaction between customers and firms. Thus, we consider that attitude is a manifesto form of customers' experience, or a customer resource.

Previous studies suggest that customer experience is the key in generating value perceptions (Grewal et al., 2009). As the above discussion, attitude is a more complete understanding of customer experience (Davis et al., 1989). Hence, customer experience in social media platforms is reflected in term of attitude toward social media and it is suggested that attitude have a direct impact on value co-creation.

In particular, social media provides a natural platform, where customer can interact and enhance their experience. They can actively engage with the online retailers and are favourable with social commerce platform. This leads to be happier and more attracted to the use of social media for co-creation activities. Increased engagement in this platform explains a viable means for customers to enhance the value experienced. In this way, attitude toward social media has a direct influence on the way in which value is created and contributes to the process of value co-creation. In the light of the above discussion, the hypothesis is developed:

Proposition 3: Attitude in social commerce will be positively related to value co-creation.

Relationship between Value Co-Creation and Behavioural Intention

According to Payne et al. (2008), when customers join in value co creation process, they gain a better understanding of the company and participate in the product or service offered by firms, which in turn influence on their purchase intentions. Previous studies stated that perceived value co-creation leads to repeat purchase behavior and behavioural intention (Sweeney et al., 2015). In the social commerce context, it is argued that customers who participating in value co-creation have a positive relationship with customer's behavioural responses (See-To & Ho, 2014).

Electronic word of mouth (eWOM) has been widely studies in marketing research and received attentions (Balaji & Roy, 2017). eWOM refers to —customers' experiences and views conveyed through written words based on internet technologies (Kim & Park, 2013), or customer exchange positive as well as negative evaluation based on direct and indirect experiences with the other buyers (Hong & Yang, 2009). Customers can post their opinion, comments, or reviews of product on weblogs, discussion forums, review websites, retail website (e.g. Amazon.com), newsgroup, and social networking sited (e.g. Facebook.com) (Cheung & Lee, 2012). In the social commerce context, online platform provides a shared space for its users to communicate with each other, and people can share their consumption experiences with or receive useful product recommendations from their online friends. According to Shin et al. (2014), customers spread positive word of mouth when they feel comfortable in their interaction with firms. When customers can control of the information on social media, they are able to make a purchase decision and eWOM intention (See-To & Ho, 2014). According, we posit:

Proposition 4: Value co-creation positively influences customers' purchase intention

Proposition 5: Value co-creation positively influences customers' word of mouth intention

DISCUSSION

Suggested method for empirical testing the model

Based on the above discussion, we develop the theoretical model on Fig.1, which comprise of 5 sets of propositions, for Information system and marketing researchers to improve their studies for exploring the roles of technology features in affecting behavioural intention through attitude toward social media and value co-creation. Researchers can conduct various approaches to examine the five propositions. First of all, researchers can carry on a qualitative

study, for instance, using Qualitative Comparative Analysis (QCA), which has recently received increased attention in social commerce (Chari et al., 2016; Mikalef et al., 2016). This method can identify multiple pathways that are able to explain the same outcome. Researchers can also combine self-reported data with real data from using social media, and extend them with semi-structured interviews, observations and eye-tracking data which may gain a deeper understanding on user behavior. Second, researchers can conduct a quantitative method to test these propositions by using collecting data and using the statistical methods to testing hypothesis. Meanwhile, the study can combine qualitative method (e.. QCA) with regression-based techniques to gain a deeper insight on the data and explore of each variable on the outcomes. The results will provide the predictor variables and highlight the role of technology features on value co-creation. Further, the effects of value co-creation on purchase intention and eWOM intention can be explored.

Theoretical contributions

The present study develops and validates a research model of customer value co-creation in social commerce. To our knowledge, our study is one of the first to apply the grounded theory of S-D logic and TAM. The purpose of this research is to investigate the antecedents and consequences of value co-creation under the consumer's perspective.

First of all, we review the limited literature on co-creation value and specifically investigate directions in social commerce studies from the customer's perspective. Despite the growing importance of customers as value co-creators, several studies have investigated about the way in which customers participate in value co-creation (Lee & Kim, 2018); thus, the dimensions of value co-creation are not well understood. This study provides a novel perspective that addresses customers' interaction with social media platforms during retail shopping. As such, this research will fill a critical gap in understanding antecedents and consequences of value co-creation under the perspective of the customers in social commerce context.

Second, value co-creation occurs when customers interact with firms; however, the role of interaction has largely ignored this phenomenon. In the current study, the interaction between customers and company takes place in social media platforms. The technology features of social media platforms are reflected in the factors of technology acceptance model (TAM) (Yang et al., 2017). This study contributes to the value co-creation literature by examining consumers' perception of ease of use and usefulness toward social media platforms. Even

though the technology acceptance factors has been introduced in customers' decisions of social media usage (Chang et al., 2015), empirical research these factors on value co-creation process is, to some extent, limited (Balaji & Roy, 2017). Thus, the present study attempts to fill the gaps in identifying the increasingly important role of technology in facilitating value co-creation.

Thirdly, attitude toward social media plays a critical role on influencing value co-creation. The S-D Logic stated that interactions to stimulate resources integration is the central phenomenon in the way value co-creation (Gumesion & Mele , 2010). Attitude is referred as an outcome of interactions, as well as a consumer resource, affect to value co-creation. This result is consistent with the prominence of attitude as a precedent for behavioural intention. Therefore, this study contributes to value co-creation literature review by highlighting the existence of attitude for successful social commerce adoption.

Finally, the study advances the understanding on how value co-creation affects purchase intention and a new variable of behavioural intention- eWOM intention. Despite of the growing interest in the topic of value co-creation, little knowledge exists on the effects or consequences of this construct (Cossio-Sliva et al., 2016). An understanding of value co-creation in the context of customers' purchasing is significant (Gronroos, 2008). Several studies center on the influence of co-creation on loyalty (Coosio Sliva et al., 2016), satisfaction (Vegavazquez, 2013), purchase and repurchase intention (See-To & Ho, 2014). The current study significantly contributes to covering part of the gap in the literature concerning the consequences of customer participation in joint value co-creation with the firm. The model we suggested provides the role of value co-creation in encouraging consumers to make a purchase decision. Especially, this study is the first that relates customer value co-creation and eWOM intention. To sum up, the study shows the role of technology features, attitude toward social media on knowing the customer's interactions on value co-creation process. These interactions are very important because of their influence on purchase intention and eWOM intention.

CONCLUSIONS

Value co-creation plays an important role in the firm's competitiveness and the organization's survival (Payne et al., 2008). Consumers is more informed and educated, more needs and options. The new consumer demands a greater value generation from firms. The paradigm of S-D logic pointed out that the customer creates value and the firm facilitates value creation.

Value co-creation happens in the interactions between customers and firms. Social commerce provides a natural platform for interactions. For instance, customer reviews are widely available for products and services, generating create value for both customers and companies. They participate actively in the process of creating value (Payne et al., 2008). Additionally, firms can explore alternative revenue models and make more profit by attracting potential buyers via recommendations and customer interactions, which can be established in social networks and collaboration environments.

Although many companies encourage customers to participate in value creation activities, empirical research has ignored how customer-firm interactions co-create value via platforms (Gronroos, 2011). Additionally, social marketers do not seem to focus on examining the interaction concept in value co-creation and they do not analyse the condition of facilitating customer creation (e.g. social media platforms) in computer-mediate environment (Cheung & To, 2016).

This study has importance implications for online retailers in using social media for business strategy. Firstly, firms can gain a deeper knowledge about the way in which customer value co-creation. They can adopt social media platforms that are usefulness and easy-to-use in value co-creation process. Second, social media platforms that are simple and possess practical features can a salient predictor of consumer attitude toward social media. Firms should be able to improve customers' attitude by creating direct interactions with its consumers in popular social media sites. When consumers have positive experience on these social media sites, they can actively participate in co-created value. Additionally, by doing so the firm creates opportunities to engage itself with its customers' practices, and to affect their outcomes. Moreover, it could be expected that companies will acquire knowledge about how the term of value co-creation and positive attitude will lead to a purchase decision and spreading positive word of mouths to others. These helps firms increase the sales volume and attracting more consumers.

Regarding limitations, the study focused only on the interactions of technology factors. Thus, future research should integrate the concept of resource integration as a direct effect of our main predictors and an interaction effect. Moreover, the proposal of the study is from the customer's viewpoints, which consider consumer resources – attitude toward social media. A longitudinal perspective should consider the specific consumer resource-related variables and their relationships in cross-sectional research. The present research considers behavioural

intentions rather than effective behavioural loyalty. Future research should analyse consumers' behavior under the various perspectives.

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WHY ARE THERE FOREIGN INVESTMENT APPEARANCES IN COUNTRIES? CASE STUDIES IN VIETNAM

Ho Thanh Tri - Patrick Asango Okanga - Truc Nguyen - Ho Thanh Tung -
Juraj Sipko

Abstract

Foreign direct investment (FDI) contributed significantly to the economic growth in Vietnam. In line with this have increased sources of capital, technology transfer, know-how, etc. By using the theory of Ricardo's comparative advantage, the research explained the issue of foreign direct investment in different countries and their impact on the real economy. As Ricardo pointed out that if the country produces goods in lower opportunity costs, this country could be more competitive in the international market with goods services. Therefore, the different nations concentrate on specialization on products and services in which they dominate with the comparative advantages. The case study provides analysis of comparative advantages in Vietnam. The paper concluded that for the development of the Vietnamese's economy the inward of the foreign direct investments is paramount importance. Also, the inflow of the foreign direct investment will also bring the Vietnamese's economy on the sustainable path as well as this economy will be more competitive not only in the region but also globally.

Keywords: foreign direct investment, FDI, comparative advantage, Vietnamese's economy.

JEL Classification: B22, F21, F23.

INTRODUCTION

Foreign direct investment (FDI) contributed significantly to economic growth through the addition of domestic sources of capital, technology transfer, modern techniques, etc. for the countries receiving investment. On the one hand, FDI supplements source of capital for the economy and increases factors of production such as labor, raw material inputs, etc., which provides employment opportunities for a large part of the population. On the other hand, through this investment forms, in the countries that receive investment there formed a business system with foreign capital, which diversifies the economic components, promote competing capability of other economic sectors to produce products with higher quality but lower prices.

Therefore, the production capacity of the economy improves; the growth of products' supply, goods and services are much promoted. As a result, developing countries, with their high investment demand to achieve the growth target, increasingly compete for each other to attract more and more FDI sources.

In more than two decades as its economic improvement began in 1986, Vietnam started the change from a centrally planned market economy to a socialist-oriented market economy. Vietnam also joined the regional and multilateral trade organizations such as AFTA, APEC, WTO. At the same time, Vietnam has signed bilateral trade agreements with great powers in the world such as U.S, Canada, Japan, etc. This significant progression based comparative advantage of Vietnam like natural and young labor resources.

There are considered five factors promote foreign investment includes marginal productivity disparity of capital between countries, the unique advantage of multinational companies, market access and reduce trade conflicts, exploited expert resources and technology, access to natural resources. About the marginal productivity disparity of capital between countries, (Helpman 1984) stated that there are differences of marginal productivity of capital between countries. A capital surplus country will lower the marginal productivity. Also, a country that lacked capital will have higher marginal productivity. This situation will lead to the move of capital flow from the surplus to the deficit to maximize profits. Explained the special advantage of multinational companies: (Dunning, Lundan 2008) indicated multinational companies that have the particular advantage that allowed them to overcome the obstacles of cost abroad are ready for direct investment abroad. When they chose the investment location, the multinational company will select those countries with the conditions (labor, land, political) and allowed them to develop the specific advantages. About the side of market access and reduce trade conflicts, the FDI was a measure of a battle of bilateral trade. For example, Japan often gets complaints from the US and Western European countries because Japan has a trade surplus, while the other nations were trading deficit in bilateral relations. To handle with the above problem, Japan has enhanced direct investments on the market; they had manufactured and sold cars, computers in America and Europe. Why has the foreign investment in these countries? The comparative advantage of Vietnam by using young labor resource? This topic will explain those issues.

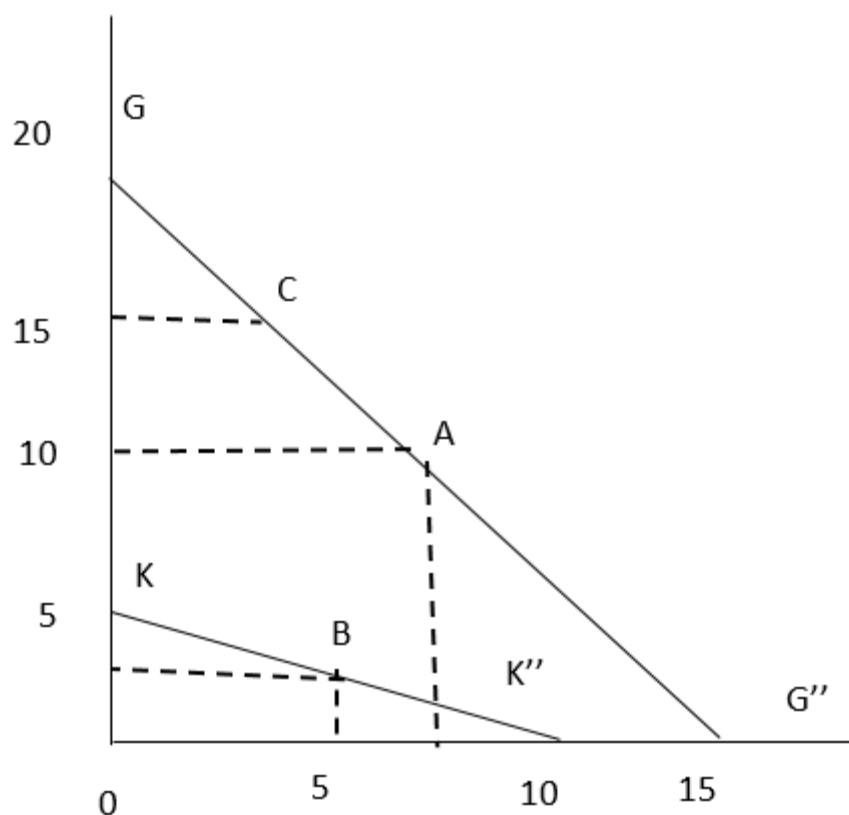
THE THEORY OF COMPARATIVE ADVANTAGE

To make clear about the investment between countries, we learn about the comparative theory of David Ricardo. Ricardo focused on analysis cost comparison and found out how the countries can benefit from trade at a relatively lower cost. Ricardo pointed out that if the state produces goods in lower opportunity costs, specialized center. And the participation in international goods exchange with the countries of other sector specialization, although these products that the state can produce. That seems contrary to conventional thought of people, the mathematical logic of this argument can be demonstrated with a simple example as follows.

Assuming that Ghana is more useful in the production of both rice and cocoa items, which means Ghana had an absolute advantage in the production of both elements. In Ghana, we must be spent ten units of resources to produce 1 ton of cocoa and 13.33 the units of resources to produce one ton of rice. So with 200 units of resources available, Ghana could produce 20 tonnes of cocoa without producing rice, 15 tonnes of rice when it doesn't provide cocoa, or any amount of combinations in between and on the production possibility frontier (PPF) of the country (GG'' in Figure 1).

In Korea, suppose that producing one ton of cocoa needs 40 units of resources, also that producing one ton of rice needs 20 units of resources. Just like Korea could produce 5 tonnes of cocoa without rice production, 10 tons of rice when it doesn't produce cocoa or any amount of combinations in between and on the production possibility frontier (PPF) of the country (KK'' in Figure 1). We suppose that in this case there isn't trade between the two countries, each country will use half the number of available resource unit to produce each product. As such, no trade, Ghana will produce 10 tonnes of cocoa and 7.5 tonnes of rice (point A in Figure 1), while Korea will produce 2.5 tonnes of cocoa and 5 tonnes of rice (point B in Figure 1).

Fig.1: The theory of comparative advantage



Source: Own research

Even when Ghana has the absolute advantage in producing both products, why this country should still participate in exchanging with Korea? The answer is: although Ghana has the absolute advantage in producing of both products, this country has an only comparative advantage in cocoa production: Ghana could produce cocoa four times more than in Korea, but only 1.5 times more than in rice production. As such, Ghana's cocoa production is more efficient than rice production.

Tab. 1: Comparative advantage and the benefits obtained from trade

Supply to produce 1 tonne of cocoa and rice		
	Cocoa	Rice
Ghana	10	13.33
Korea	40	20
Consumer production when there isn't trade		
	Cocoa	Rice
Ghana	10	7.5
Korea	2.5	5
Total output	12.5	12.5
In case of production specialization		

	Cocoa	Rice
Ghana	15	3.75
Korea	0	10
Total output	15	13.75
Quantity of consumption when Ghana exchanges of 4 tonnes of cocoa for 4 tonnes of Korea rice		
	Cocoa	Rice
Ghana	11	7.75
Korea	4	6
The increase in consumption through trade specialization		
	Cocoa	Rice
Ghana	1	0.25
Korea	1.5	1

Source: Own research

Without trade, the total cocoa of the two countries is 12,5 tonnes (10 tonnes of Ghana and 2,5 tonnes of Korea), and the whole rice is 12,5 tonnes (7,5 tonnes of Ghana and 5 tonnes of Korea). In this case, each country must consume what two nations produce. By participating in the trade, the two countries can increase total production of rice and cocoa, and the consumers in the two countries can use more than both products.

The Benefits of trade

We envision that exploiting the comparative advantage in the production of cocoa to increase output this product from 10 tonnes to 15 tonnes. The cocoa total will spend 150 units of resources, so the remaining 50 units will produce 3,75 tonnes of rice (point C in Figure 1). Meanwhile, Korea will specialize in the production of rice and make out to be 10 tonnes of rice. As such, the total output of both products has increased. Before specialization, total output was 12,5 tonnes of cocoa and 12,5 tonnes of rice. Currently, both countries have 15 tonnes of cocoa and 13,75 tonnes of rice (3,75 tonnes of Ghana and 10 tonnes of Korea). That is illustrated in table 1.

That both countries can benefit from trade. If Ghana and Korea exchange cocoa and rice at 1:1 ratio and each country choose 4 tonnes export to exchange for 4 tonnes import, both countries will be able to consume more cocoa and rice than when not done specialization and exchange (Table 1).

So, if Ghana exchanges 4 tonnes of cocoa with 4 tonnes of rice for Korea, this country still has 11 tonnes of cocoa, which are 1 tonne more than before the trade. With 4 tonnes of rice that have been exchanged with Korea, Ghana will have a total of 7,75 tonnes of rice, more than 0,25 tonnes compared to when no specialized. Similarly, after trading 4 tonnes of rice with Ghana, Korea will also 6 tonnes of rice, which are more than 1 tonne comparing with before

specialization. Adding to that, with 4 tonnes of cocoa swapping, Korea will have a total of more than 1,5 tonnes comparing with before trade. As such, the amount of rice consumed and cocoa have increased in both countries, and it is the result of the specialization and exchange.

The basic message of the comparative advantage theory is that the world's potential output will be much significant in the condition of free trade is not restricted. Ricardo suggested that the lack of limits of trade between national countries will lead to more consumption of consumers in all countries. This occurs even when the state doesn't have an absolute advantage in the production of any goods. As such, this theory has provided a reasonable basis for encouraging trade liberalization and so far, Ricardo's theory is persuasive when often viewed as the primary argument for those who advocate for free trade.

THE CASE STUDY IN VIETNAM

The comparative advantage of Vietnam

Viet Nam's successful during a quarter of the century has been impressive. According to the 'Doi Moi' reforms, Vietnam started in the 1980s, entered the change from a centrally planned market economy to a socialist-oriented market economy. Vietnam is one of the ASEAN countries highest economic growth in recent years. This is a young nation with the ages from 15 - 29 years (22 million - Table 2), above that of Thailand (15 million) but below that of Indonesia (64 million). According to (Mekong Capital 2005), the leading advantage of Vietnam is young labor force which supported economic growth and specific competitiveness types.

Tab.2: Regional comparison of demography, literacy, and education

	Youth 15 - 29 year (000)	Adult literacy rate	Net enrollment primary education
Indonesia	64353.7	95.2	96.2
Malaysia	8550.9	94.2	97.3
Philippines	28112.8	95.4	93.8
Singapore	778.1	96.8	100.0
Thailand	15606.7	96.1	103.1
Brunei Darussalam	109.5	97.2	97.4
Cambodia	4814.6	80.7	97.0
Lao P.D.R	2033.0	79.0	95.2
Myanmar	14191.3	89.5	86.4
Vietnam	22561.5	94.8	96.6

Source: ASEAN - Profile, socio-demography, investment and connectivity, 2015

Following the research of (Rowley, Truong 2009a, Rowley, Truong 2009b), Vietnam's labor force is generally well-educated and hard-working. However, they also lacking creativity, the

reason is due to the weak educational system, and not enough the skills for jobs. As exhibited in Table 2, Vietnam has a level of basic education that is comparable to Thailand, Indonesia, Malaysia, with each country achieving a 94% adult literacy rate, and net enrollment primary education is 96%.

Tab.3: Economic growth development in Vietnam (1991-2015)

1 st Five year plan (1991-1995)	2 nd Five year plan (1996-2000)	3 rd Five year plan (2001 – 2005)	4 th Five year plan (2006 – 2010)	5 th Five year plan (2011 – 2015)
1991: 6.0	1996: 9.3	2001: 6.9	2006: 7.0	2011: 6.2
1992: 8.6	1997: 8.2*	2002: 7.1	2007: 7.1	2012: 5.2
1993: 8.1	1998: 5.8*	2003: 7.3	2008: 5.7*	2013: 5.4
1994: 8.8	1999: 4.8	2004: 7.5	2009: 5.4*	2014: 6.0
1995: 9.5	2000: 6.8	2005: 7.5	2010: 6.4	2015: 6.7
Average: 8.2 %	Average: 6.98 %	Average: 7.26%	Average: 6.32%	Average: 5.9 %

Source: Data UNCTAD

The changes from a centrally planned market economy to a socialist-oriented market economy help Vietnam economy to make significant progress. (Bradsher 2006) noted that Vietnam moving from a low level of development to enhanced socio-educational forms at the rate even faster than China and India. GDP average rates reached 8.2% during 1991-1995 and a yearly average of 6.98% in the next period, even in the context of the Asian financial crisis in 1997 (Table 3). That proved the Vietnamese economy was stable and the second fastest developing economy in the Asia Pacific area after only Singapore at the same period.

Tab.4: GDP growth comparison in ASEAN (2016)

	Average growth rate (%)	Population (Absolute value in thousands)	Average growth rate 2011 – 2016 (%)	Per capital GDP (millions USD)
Indonesia	5.0	261115	5.2	941625
Malaysia	4.3	31187	5.1	287365
Philippines	6.9	103320	6.5	367014
Singapore	2.0	5622	3.3	287451
Thailand	4.3	68864	3.2	385921
Brunei Darussalam	-2.5	423	-1.5	12223
Cambodia	6.9	15762	7.2	18788
Lao P.D.R	7.0	6758	7.6	15119
Myanmar	5.7	52885	7.4	65540
Vietnam	6.2	94569	5.9	194738

Source: Data UNCTAD

Nevertheless, these achievements are insignificant, if Vietnamese's economy compares some other economies in the region. For example, Vietnam's per capita GDP is just about 67% of Singapore and 50% of Thailand in 2016 (Table 4). According to (Cam Ha 2006), Vietnam needed 12.7 years to catch up with Thailand, and 197 years to reach the standard of Singapore. Another exciting thing is that before the Asian financial crisis, Thailand learned a lot of agriculture innovation model from Vietnam. Another exciting thing is that before the Asian financial crisis, Thailand learned a lot of agriculture innovation model from Vietnam. And now Thailand is one of the leading countries in agricultural export in ASEAN region.

Tab.5: The global competitiveness index 2016-2017

	Overall index (Rank)	Basic requirements (Rank)	Efficiency enhancers (Rank)	Innovation and sophistication factors (Rank)
Indonesia	41	52	49	32
Malaysia	25	26	24	20
Philippines	57	65	58	53
Singapore	2	1	2	12
Thailand	34	44	37	47
Brunei Darussalam	58	50	87	78
Cambodia	89	96	97	118
Lao P.D.R	93	99	104	93
Vietnam	60	73	65	84

Source: The global competitiveness report 2016-2017

Although Vietnam's GDP has tended to increase over the years, but the Growth Competitiveness Index (GCI) of Vietnam becomes continuously weakened, while other countries in the region such as Indonesia, Malaysia, Thailand have been increasing their rankings (Table 5 and table 6). Through the index of a country's primary like basic requirements, efficiency enhancers, and innovation factors that help explain Vietnam's poor performance. The economic development strategy towards open markets in the region and globalization. Vietnam has more opportunities and no less challenging.

Tab.6: The global competitiveness index 2016-2017: Efficiency enhancers

	Efficiency enhancers (Rank)	Higher education and training (Rank)	Goods market efficiency (Rank)	Labor market efficiency (Rank)	Technological readiness (Rank)
Indonesia	49	63	58	108	91
Malaysia	24	41	12	24	43
Philippines	58	58	99	86	83
Singapore	2	1	1	2	9
Thailand	37	62	37	71	63
Brunei Darussalam	87	65	68	47	84
Cambodia	97	124	76	58	98
Lao P.D.R	104	106	72	30	121
Vietnam	65	83	81	63	92

Source: The global competitiveness report 2016-2017

Comparative advantage theory and its development, allows us to perceive more important for Vietnam in the new context. Vietnam's comparative advantage in the process of international economic integration: Firstly, from the analysis and argument above: Vietnam's comparative advantage is the static advantage or the 'low level' advantage, these advantages are not renewable or renewable very little. We can seen very clearly in the two advantages: Vietnam's natural resources and labor force. Despite the fact that Vietnam is considered to have many natural resources, the total of national labor calculation proves that it actually does not have many natural resources. About labor force, Vietnam has a lot of young labor force, however this labor force is not familiar with industrial labor, their use of new technology is especially limited. Thus the quality of labor is not high, but the wages of labor is too high comparing with the actual productivity.

Secondly, comparative advantage of the current low level (producing products using many elements of labor, the low value) is an important factor that attracts many foreign investors in Vietnam. But if based on this advantage, Vietnam will have difficulty to change to change and structure the economy, industry to a higher level. Moreover, the conditions to freedom of AFTA, along with the development of various types of new technology, will provide the investment of multinational companies into other countries with the conditions and advantages of producing higher levels (high technology, skilled employees, modern infrastructure, etc.

Case study: Samsung corporation in Vietnam

According to the information from Samsung corporation, since April 2009, this corporation has been using more than 100.000 employees working in its production facilities at the Yen Phong Industrial Zone in Bac Ninh Province and Pho Yen District in Thai Nguyen Province. Samsung corporation contributes as important to Vietnam and helps to make Vietnam the second-biggest exporter of smartphones in the world, after China. In 2017, Samsung had \$214 billion, estimated for nearly a quarter of Vietnam's total exports. Samsung also is the most significant South Korean investor in Vietnam, contributed \$108 billion FDI flows for this country after it joined the World Trade Organization (WTO) in 2007. This foreign investment capital resource helps Vietnamese's economy grow at 7.4% in the first quarter of 2018, one of the fastest rates in Asia.

Why Samsung Corporation of South Korea is the most prominent firm in Vietnam, for Samsung, Vietnam provides an attractive option instead of manufacturing in China. That is labor resource is young, cheap and numerous. The cheap worker reduces costs in Samsung's facilities, help the smartphone products from this company an advantage over Apple in less expensive.

Case study: Unilever Vietnam

Since 1995, Unilever corporation started its operation in Vietnam. To date, this corporation invested more than \$300 billion in Vietnam with the products such as Personal Care brands, Oral Care products, Foods and Tea-based Beverages. During 14-year operation Vietnam, Unilever knew as one of the most successful foreign-invested companies in business performance and community support activities.

The contribution of Unilever to Vietnamese' economy can be measured through wealth creation, labor market, and GDP. That also is the company strategy. About the employment generation, the direct employment created by UVN looks to be almost small when compared with other large companies, occupies the 27th position (2007), but it is essential to make a significantly substantial impact on indirect employment. According to the survey of by the Central Institute for Economic Management (CIEM 2007), Unilever Vietnam has successfully installed and developed a system of local companies, including 76 input suppliers, 54 co-

packagers and 200 distributors with more than 400,000 retail outlets in Vietnam. Unilever Vietnam chairman JV Raman indicated Vietnam's competitive advantage a market with a very young population and great potential. This labor resource is a core of the business development of Unilever in Vietnam.

CONCLUSION

David Ricardo's comparative advantage theory is the basic foundation of international trade theory. Although there are still some limitations the comparative advantage theory is very important in the theory and practice for all countries. Research and application of the comparative advantage theory to the specific situation of Vietnam is a necessary job, contributed to the identification of the Vietnam's comparative advantage; on that basis to orient and give a solutions to promote and develop Vietnam's comparative advantage in the international labor division, which contributed to promote and improve the efficiency of foreign direct investment.

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