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CONTENS

Dear Readers,

This is the second issue of volume VI of the scientific journal Acta Oeconomica Universitatis Selye published by the Faculty of Economics at J. Selye University. Please allow me to look back and evaluate the last year, which was exceptionally important for our journal. Since its publication both the managing editor and the editorial board have placed a great deal of emphasis on selecting quality manuscripts from contributors, as well as on increasing publication requirements. We have been doing our best to keep up with the demands of the scientific community and deliver high quality content. We have also been very much pleased to receive papers from foreign authors and universities. The proportion of foreign authors in our past few issues was between 63.6 and 76.9%. This has made our journal significantly more international. All published papers are double-blind peer-reviewed, and we put great emphasis on following scientific and publishing ethics. In order to increase our international recognition we started publishing papers in English language, which is the lingua franca of the scientific community. At the same time, we also started to use the APA citation format, which is widely used in social sciences, i.e. in economic sciences as well.

The quality of our journal, the Acta Oeconomica Universitatis Selye, has been constantly growing, and it has been registered in a number of prestigious scientific databases, such as ERIH Plus, Index Copernicus and Google Scholar. Recently, we have also received the approval of CEEOL - Central and Eastern European Online Library. This also confirms the quality of our journal. Thus, the year 2017 proved to be another important milestone in the development of our scientific journal. Our reputation with the scientific community has been increasing each year: the number of citations of research papers has been growing along with the constantly improving values of our evaluation factors and citation index. In the future we will continue to make further efforts to fulfil the standards of prestigious scientific databases by introducing full-text search free of charge in order to follow the principle of Open Access Journals. We are also planning to redesign our website in 2018 to make it more transparent and more user-friendly through an editorial information system. After taking these steps we will meet all the recommendations of the most important scientific databases, namely of Web of Science and Scopus.

Finally, I wish you a lot of success and creative ideas to produce high-quality scientific papers and publish them alone or in cooperation with others.

Ladislav Mura
Executive Editor

EXPLORING COMPONENTS OF ORGANIZATIONAL POLITICS, WITHDRAWAL BEHAVIOURS AND PERFORMANCE IN A TRANSITION ECONOMY

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Abstract

This study examines the associative relationship and direction of effect of components of organizational politics on performance and withdrawal behaviours. The study is based on survey data obtained from questionnaire administered on 280 respondents in full-time employment in two organizations. Results of data analysis revealed that perceived political dimensions of organizational policy and self-promotion political behaviour are positively related with performance and absenteeism. Perceived politics of reward and favouritism in career progression were found to have positive implications on absenteeism and turnover intention while the direction of effect of favouritism on performance is negative. It seems evident that context is of essence in understanding behavioural consequence of politics and, possession of skills to influence positive perception of politics is intuitively beneficial to foster positive organizational consequences

Key words: *Politics. Absenteeism, Turnover, Performance, Withdrawal Behaviours*

JEL Classification: M10, M12, M19

Introduction

Organizational behaviourists and management students have come to understand that organizations are more or less purposive miniature society, and, that effective management require an understanding of the political dynamics of

managerial actions and decisions. Organization consist of structured coalitions of individuals designed to be coordinated as a unit in the pursuit of defined corporate goal, however, groups and individuals' interests, motivations, and preferences may be diverse. These diversities of interests of groups and individuals within organisations are often the subtle, expressed or unexpressed motivations for competition for positions and resources, and the ultimate political activities that result in dis-proportionate allocation of resources and power to units within the organization inconsistent with contributions to corporate goals.

Politics, power, personal conflicts and struggles for resources remain common phenomenon in organizations; indeed, power and politics which are pervasive in all work organizations are intricate part of organizational life. Therefore, being naive of power and political dynamics of organizational life may have catastrophic consequences for internal cohesion and management effectiveness According to Valle &Witt (2001) politics consists of actions that are inconsistent with organizational norms, self-seeking and actions that may sacrifice organizational goals for personal interests.

Organizations as social systems are not immune to the nature and context of the society, therefore, politics has become an intricate part of organizational life. Extant literature provided succinct definitional exposition of organizational politics as the deployment of power to influence decision (Pettigrew, 1973), the management of the influence to obtain ends sanctioned by the organization or sanctioned ends through non-sanctioned means (Meyer & Allen, 1977). Organizational politics consist of actions that are focused at achieving personally significant ends and may involve the maneuvering of powers to facilitate personal ends or obstruct, de-emphasize obstruction to those significant personal ends. Therefore, organizational politics may be self-serving in terms of maximizing personal interest, avoiding negative outcomes through actions that are aimed at influencing others for personal goals (Riggio, 2003). The connotations of self-serving drive in politics may assume negative or destructive consequence on work outcomes and organizational well-being.

Politics do serve positive organisational ends. Mintzberg (1985) posit that a system of politics is necessary to correct certain organizational deficiencies and dysfunction. Lobbying, networking and communication skills are political tools capable of developing competitive advantage and healthy development (Cox, 2006). Notwithstanding, studies have linked organizational politics to negative outcomes such as absenteeism, turnover intention and poor job performance (Levy, Rosen & Chang, 2009). According to Poon (2004) organizations riddled with politics provide an unpleasant working environment, and hinder the promotion of work-related behaviours. However, differences in perceptions between individuals suggests that contextual variables may significantly determine the outcome of organizational politics, thus, creating the need for replicative studies across geographical and industry environment. Perceptions guide individuals in the organization and interpretation sensory impressions to give meaning to their environment (Robbins, Judge & Sanghi, 2008).

Perceptions of politics in organizational settings consist of individual observations, organization and interpretations of others self-interest behaviour (Ferris & Kacmar, 1992). There is, however, the propositions that perceptions may differ from objective reality (Uzma, Nasir, Sadia & Abid, 2013). Gandz & Murray (1980) had argued that organizational politics represent a subjective rather than an objective reality. Notwithstanding research evidence suggest that perceptions of organizational politics have implications for management, organizational behaviours as well as employees'

work attitude, therefore, responses to and interplay of dimensions of organizational politics suggests an attractive field to be explored (Ferris, et al, 2005, Kacmar & Ferris, 1991). The exploration of organizational politics have been a fruitful field in that the notion of the importance of its perception is a common theme in literature (Ferris & Kacmar, 1992).

Organizational politics do produce negative work outcomes harmful to the employees and the organization, for example, Drory, (1993) found that politics had different outcomes on both lower and higher status employees. He submitted that politics had damaging effect on lower level employees with no negative effect on higher status employees. Consequently the need for examination of the concept in the light of differences in individuals and group perceptions (Byrne, 2005, Witt, Karmac & Zivnuska, 2002, Poon, 2003). An evident outcome of negative perceptions of politics is organizational withdrawal behaviour, i.e, the tendency to reduce or refrain from participation in organizations' activities. Extant literature identified absenteeism and turnover as components of organizational withdrawal (Lyons, 1972).Absenteeism describe a habitual pattern of absence or not reporting for duty or obligation (Sowmya & Panchanathan, 2011), the frequency and duration of work time lost when employees stay away from work, often without permission(Adeniji & Osibanjo, 2012). Absenteeism constitute economic burden on the organization in terms of slacks required to make for short fall in required manpower per period. An extreme dimension of response to politics is turnover or intention to exit the organization, this can be costly in terms of loss of resourceful personnel or poor commitment to the organization. However, it is intuitively appealing that positive perceptions of politics have desirable consequences such as improved performance and commitment. Conceptually, performance is concern with achievement of goals or standards Hag (2013) found politics to negatively relate to job outcome, however, research evidence suggest politics has complex relationship with job performance and outcome(Vigoda-Gadot, 2000).

Managers may not admit the political and power dimension of managerial actions because of the negative connotations attached to politics, especially in developing countries (Khan & Hussain, 2014). Generally, organizational politicians are adept in actions, such as lobbying, which may engineer bias in resources, position allocation and sacrifice merit in managerial decisions inconsistent with traditional management (Malik, Danish & Ghafoor, 2009). Politics has become an intricate part of organizational life and political skills have become an important ingredient for success in managerial positions. Aftab, Mughal & Arif, (2013) observed that organizational politics have impact in formation of human relations. Besides, studies have highlighted that organizational politics affect employees' performance (Adams, Ammeter, Treadway, Ferris, Hochwarter, 2002; O'Connor & Morrison, 2001). Consequently, those who failed to acknowledge political behaviour fails to recognize organization as a social and political entity. Therefore, the present study examines perceptions of components of organizational politics and implications of these for withdrawal behaviour and performance. What directions of influence do components of politics exert on withdrawal behaviour and performance?

Material and Methods

Participants in this study are from two organizations. These respondents are employees in a private and profit-oriented firm and a university environment both in

Nigeria. The university is mission owned, however, due to financial demand of attaining a world class status, the institution is not run as social welfare arm of the proprietor's mission. In operations, programming and goals the university has orientations toward securing reasonable financial returns from her activities. The prevailing justification for such approach is the need for the institution to be financially independent to exert minimum strain to the proprietor's financial base.

Furthermore, the university's management philosophy seem to assume that union activities are disruptive to academic activities and inconsistent with the thrust of her mission. Therefore, there are restrictions on unionization, for example, students union's positions are filled by direct appointments of the university management rather than through democratic process of election. In addition, academic administrative positions such as deanship and heads of department are also by management's direct appointment rather than exercise of choice by academic staff; consequently, positions holders are more responsible to management than subordinates.

We may reasonably assume that continuity in office and securing reasonable performance from staff consistent with management expectations will require reasonable demonstration and balancing of political skills. Similarly, the firm is a profit-oriented commercial enterprise in a competitive industry requiring high-skilled personnel. However, the company's employee consistent with the demand of the industry enjoy reasonable level of unionization and unions activities. Boundary spanning executives understand the need for political skills in securing results and acceptable performance in the industry. Data was collected from these organizations through self-administered questionnaire. Although participations in the study was voluntary the study sought to elicit willing participations by explaining purpose of the study and assuring confidentiality and non-identification of respondents. Sample from each organization was quite diverse involving different cadre/levels of employees: junior, middle and upper level management.

The design of the research instrument benefited from earlier works; however, some of the items were re-worked and adapted to fit the present context. The instrument was segregated into two sections, the first section focused on respondents' profile: sex, age, marital status, managerial level, and job experience. The second segment was devoted to the key research variables in the study: politics, organizational withdrawal items (turnover intention and absenteeism); and performance. These key research variables were measured using a multi-item index. Perceptions of politics was measured using 8 items on a 7point likert scale. Organizational withdrawal was measured using turnover and absenteeism. Turnover was measured with four items while absenteeism was measured with five items both on a 7 point likert scale. Performance is considered a multi-dimensional construct and require consideration of different behavior to understand (Aguinis, 2009). Therefore, performance was operationalized on two dimension: self-rated and supervisors rated performance. These items were merged as indicator of individual job performance. In The study assume that supervisors' rating may be coloured by politics while individuals, by nature, are likely to over-estimated his/her contributions to amplify personal relevance or contributions, therefore, the study considered merging the two evaluations as measure of performance seem a reasonable assessment of performance. Data was processed using the SPSS 22

Results and Debate

Demographic Characteristics of the Sample

Results of data analysis are presented in the following section. The demographic characteristics of the data set are as shown in table 1. The effective sample for the study is made up of 280 respondents, 7% of the questionnaire were not returned or improperly filled from the initial size of 300 copies of the questionnaires administered. 47.9% of the respondents being from University settings and 52.1% from the case firm. 55.4% of the respondents are males while 44.6% of the respondents are females, with reference to age only 83 respondents (29.6%) are in the age bracket of less than or 30years; 77.1% of the respondents have work experience of at least 4years and above. The choice of industry for the study limit poor comprehension of the research instrument as the employees are reasonably educated. 24% of the respondents have a minimum of a diploma, therefore respondents are reasonably informed of the demand of the research instruments and the required response

Table 1 Respondents' Demographic profile

Variables	Frequency	Percent	Variables	Frequency	Percent
Gender			Work experience		
Males	155	55.4%	< 3years	81	28.9%
Females	125	44.6%	4-8 years	113	40.4%
Age			9year and above	86	30.7%
< 30 years	83	29.6%	Education		
31-40 years	110	39.3%	Diploma & below	57	20.4%
41 and above	87	31.1%	Univ. Degree	223	79.6%

Source: Computed from Field Data, 2017

Descriptive Statistics of Dimensions of Politics

Table 2 show the descriptive statistics of perceived operations or existence of various components of organizational politics. It is evident these dimensions of politics are considered as being actively present notwithstanding the official managerial unwillingness to the acceptance of such. Generally, there is fair level of agreement with individuals' perception of the prevalence of organizational politics in different facets of these organizations' life. However, there is measured disagreement with the statement 'rewards do not come to hard workers' (A7: mean 2.86) while there was strong agreement with the statement reward come to hard worker (A5: mean 5.86). The prevailing opinions seem reinforce that hard workers or diligent employees are favoured in reward.

Similarly, responses with regard to the strength of favouritism rather than merit being the propelling force for moving ahead (career progression) ranged from mild agreement to being undecided (A4: mean 3.72). This reflect human nature and tendency to own achievements as outcome of personal intelligence, diligence, determination or planning. It is more fulfilling to acknowledge career or job progression as outcome of self-effort and performance than being a result of favour by the system or some other benevolent managers or 'god fathers'. The opinion is that promotion and pay are based solely on merit (A1: 5.68); this perceptions on pay and promotion safeguard the integrity of the system as being fair and provide 'god fathers' and benevolent managers credible basis for defense of questionable actions. There is strong agreement on the liberty enjoyed in airing opinions (A2: 5.00), however, such expression of opinions was considered safer when it is in agreement with management rather than expression of divergent opinion (A3: mean 5.32) Thus, it appeared that though respondents may not want to acknowledge politics, however the crux of corporate politics and capacity to use the system for personal ends may reside in individuals ability to agree with managers or protect the interests of managers with holds on the lever of power. Managers whose opinions weigh in the streams decisions in the organization

Table 2 Descriptive Statistics of Dimensions of Organizational Politics (N=280)

Variables	Mean	Std. Dev.	Variance	Skewness
A1	5.68	1.38	1.91	-1.80
A2	5.00	1.55	2.40	-.99
A3	5.32	1.55	2.42	-1.21
A4	3.72	1.71	2.93	.045
A5	5.88	1.28	1.66	-1.44
A6	4.37	1.60	2.57	-.28
A7	2.86	1.83	3.36	1.04
A8	4.53	1.66	2.77	-.53

Source: Analysis of Field Data, 2017

Table 2 seem to provide evidence of organizational politician within the ranks as evidenced by those who are more prime at building their career by pulling others down. (A8: mean 4.53). These individuals may have their conducts and behaviours questioned on the ground morality and integrity, however, much of their managerial energy seem focused on manipulating the system and, possibly in cabal alliances to promote self or safe berth for personal goals.

Table 3 below indicate that some dimension of politics are associated significantly with performance as well as organisational withdrawal behaviour variables utilized in the study i.e turnover intention and absenteeism.

Table 3 Correlations Matrix of Dimensions of Politics, Performance and Withdrawal behaviour

Variables	1	2	3	4	5	6	7	8
Reward	1							
Policy	.28**	1						
Favour	.17	.104	1					
Climate	.14**	.038	.16	1				
Pull	.25**	.24**	.22*	.05	1			
Performance	.33**	.26**	-.02	.21*	.30**	1		
Absenteeism	.29**	.19*	.27**	.13	.20*	.22*	1	
Turnover	.35**	.28**	.38**	.19*	.15	.15	.39**	1

***. P<0.01*

**.p=05.*

Source: Analysis of Field Data, 2017

Generally, organisational reward system are designed not only to compensate the employees but to motivate towards higher job performance. Perception of politics current of the reward system (that is, expected reward) is significantly related to performance. This is somewhat consistent with extant literature on motivation (Vroom, 1964, Lunenburg, 2011).

Similarly, perceived politics content of organisational policy covary with performance (r= 0.26, p<0.01) absenteeism (r=19, p<0.05) and turnover intention (r =0.28, p < 0.01). Specifically, respondents' perceptions of the 'political cloud' of the organisational environment (organisational climate) is significantly related with turnover intention and performance. Intervention of politics in superior-subordinate work relationship and social interactions have consequence on performance and turnover intention. However, statistically such relations with absenteeism is not significant. A plausible explanations seem to be that beneficial or positive perception of political dimension of organisational climate tend to enhance performance while those who are dis-favoured may be more predisposed to exit rather than being absent from work which may have career consequences in terms of response to official query on account of absenteeism. Self-promotion political behaviour, that is, conduct that reflect the dark side of politics or such as place self-interest above common good (pulling others down to get ahead) is positively related with both performance (r =.30, p<0.01) and absenteeism (r =.20, p<0.05). It seem credible to support the assertion that organisational politician are less likely to exit the organisation so long as their skills and capacity influence decisions and work outcomes to secure personally desirable ends, though this may contradict common good or damage others. Generally, dimensions of politics are associated with performance, absenteeism and turnover intention, however, perceived favouritism in promotion, self-promotion political behaviour and observed prevalence of politics in work outcomes are not statistically related to performance, absenteeism and turnover intention. It may be inferred that absenteeism is a potential precursor of turnover intention (r =0.39. p<0.01) or that turnover is a likely outcome of absenteeism

Multivariate Regression of the Variables

We computed bivariate correlation of the variables as a preliminary checks prior to using a multivariate regression analysis to examine the pattern and direction of the effect of the dimensions of politics variables on both performance and withdrawal behaviour intentions. The outcome of the direction of the influence of perceptions of components of politics is presented in table 4

Table 4: Multivariate Regression of the Variables

	Performance			***Absenteeism***			***Turnover***		
Variables	β	S.E	t	β	S.E	t	β	S.E	t
Reward	.15	.06	2.25*	.37	.13	2.95**	.48	.14	3.37**
Policy	.07	.03	2.04*	.07	.09	1.13	.13	.15	1.80*
Favour	-.14	.06	-2.20*	.22	.12	1.87*	.65	.14	4.80**
Climate	.15	.05	2.82**	.08	.11	.81	.17	.12	1.46
Pull	.14	.04	2.79**	-.06	.10	-.58	-.37	.11	-3.43**
R			0.44			.39			.54
R^2			.19			.15			.29
Adj.R			0.16			.12			.26
F			6.12			4.45			10.46
Sig			0.00			0.001			0.00

***<0.05*
**>0.01*
Source: Analysis of Field Data, 2017

The direction of effect of favouritism in getting people ahead, i.e career progression, on performance is negative (β = -.135, p<0.05). This seems to imply that perceived favouritism rather than merit being the basis for career progression negatively affect performance, this is expected given the consequences of such perceptions on team work. Studies have suggested managerial approach to moderate politics in order to enhance teamwork (Valle & Witt, 2001), other components of politics exert positive effect on performance. This is inconsistent with Hag (2013) suggestion that politics negatively relate with job outcomes, in essence Vigoda-Gadot (2000) opinion is more relevant in this context. However, perceived political cloud of reward (β = .36, p<0.05) and perceived favouritism (β = .22, p> 0.05) have statistically significant positive effect on absenteeism. It seem evident that perceived prevalence of politics on reward and favouritism predispose to absenteeism. This is consistent with expectation as ends are considered influenced by political manoeuvring; we expect this to have consequence for the team functioning. Self-promotion political behaviours (puling others down) negatively influence absenteeism, though not statistically significant (β = - .06, p>0.01). Similar direction of influence is discernable on the strength of politics on turnover intention. However, perceived favouritism seem to have a magnified positive influence on turnover; while self-promotional efforts (pulling others down to get ahead) exert stronger negative effect on turnover intentions (β = -.37, p<0.001). The detrimental effect of politics as indicated in earlier studies may be difficult to

generalise (Ferris, Adams, et. al, 2002) and the need for examination of politics among groups and context appeared relevant (Byrne, 2005; Poon, 2003)

Conclusions

The focus of the present study is to examine the associative relationship between components of politics, performance and withdrawal behaviour. Findings from the study indicate politics do not consistently exert negative influence on performance. Mintzberg (1985) submissions that politics is necessary to correct organizational deficiencies and dysfunctions is not a flawed proposition. Indeed, components of politics exert positive effect on performance, however, perceived favouritism in career progression is detrimental to performance. The positive effect of politics on performance is somewhat inconsistent with earlier studies (Samad & Amir, 2011; Cheng & Feng, 2007, Aryee, et. al, 2004, Zivnuska et.al, 2004). The outcome of this study give credence to the need to take cognizance of contextual variables in understanding the implications of politics for organizational and work outcomes. In reference to career progression formalizations of procedures appear to be a promising alternative in constraining perceived managerial favouritism and personal agendas in progression. The effect of favouritism on performance which have been shown to be negative may be moderated by formalization of career progression procedure.

Perceived prevalence of politics on reward and favouristism have positive implications for absenteeism and turnover intention. Predisposition to these withdrawal behaviours suggest the notion that organizational politics have detrimental effect on organizational functioning is not misplaced. Turnover and absenteeism are costly for effective organizational functioning in terms of costs associated with missed work and turnover costs i.e replacement of valued employees. Formalization of the reward and career progression procedures and adherence to established procedure is an attractive options in this dimension.

Furthermore, the indication from the present study are that individuals with political skills or adept in self-promotional political behaviour indicate higher job performance. The extension of this opinion are that self-promotion political ends could enhance corporate good if this lead to improved performance. It is intuitively beneficial for managers to possess skills to influence positive perception of politics in the organization; such effort have positive consequences on performance.

However, it is noteworthy that though the current study add to the growing research effort to understanding the implications of politics to life in organizations there are limitations to note in the study. These limitations, however, are to serve as springboard for further studies on the consequence of politics on organizational withdrawal behaviours and performance. The study's limitations are as exist in the use of self-report data gathering, though, supervisors rated responses was also utilized we must note that these supervisors are also actors in the political process in the organizations. Notwithstanding, there are notable strengths in the current study. The diversity of respondents' education, work experience and education is an attractive strength in the study which extends the external validity and generalization of the finding from the study beyond the scope of single organizational sample and job type.
Key to research variables (politics):

A1= Promotion and pay is based on merit; A2= Encouraged to air personal view, A3=Safer to agree with management than personal opinions, A4= Favouritism not merit get people ahead, A5= Rewards come to hard workers, A6=Only few are

helped by policy changes, A7= Reward do not come to hard workers, A8=People build up themselves by tearing others down

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THE CONTRIBUTION OF FINANCIAL DERIVATVIES TO PUBLIC AND PRIVATE SECTOR FINANCING IN NIGERIA

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Abstract

This paper examines the contribution of financial derivatives in bridging funding gaps in Nigeria's public and private sector. The period studied was from 1996 – 2014. Results show that financial derivatives have a positive significant influence on private sector borrowing, while it does not exert significant influence on public sector borrowing. The growth rate of financial derivatives transactions in Nigeria is low and insignificant and it amounts for a very low and insignificant proportion of transactions in the capital market. In order for financial derivatives to contribute significantly in filling funding gaps in Nigeria, effective sensitization programs and formulation of appropriate regulatory framework should be put in place in order to achieve needed deepening of Nigeria's capital and money market, and flexibility in financing development projects both in the private and public sector.

Keywords: *financial derivatives, public sector financing, private sector financing, funding gaps, alternative financing.*

JEL Classification: E60, G30, G32

Introduction

Financial derivatives are defined as financial instruments and contracts that derive their value from the performance of an underlying asset. The asset is referred to as underlying" because the value of the financial derivative is dependent on its performance. Such an asset could be an interest rate, company stock, commodity, credit or index. According to Koehler (2011) financial derivatives as contracts between two different parties, where conditions are specified under which payment are to be made between the parties. These conditions include dates, values and definitions of the underlying asset, contractual obligations of each party and the notional amount. Similarly, Vashishta and Kumar (2010) defined financial derivatives as securities that their prices are depend on or are derived from one or more underlying asset. He further mentioned that the derivative contract is determined by the fluctuations in the value of the underlying asset. They further mentioned that financial derivatives are instruments

which offer investors the opportunity to hedge their exposure to risky investments and also speculate in order to make profit.

Financial derivatives are usually traded either over the counter (OTC) or via specialized exchanges. The four main types of financial derivatives are forwards, futures, options and swaps. Financial forwards are defined as non-standardized contracts between two parties to buy or sell an asset at a specified future time for a price agreed upon today. In a forward contract, the party that agrees to buy an asset is said to be taking a "long position" while the party that agrees to sell an asset said to be taking a "short position". The price that is agreed upon is referred to as the "delivery price", which is equal to the "forward price" at the time that the contract is entered into. Financial forwards are used to hedge against risks, especially currency risk or exchange rate risk; and it is also used for speculation purposes in order to allow a party take advantage of an underlying instrument that is time-sensitive (Afza and Allan, 2011). Financial forwards are traded Over-The-Counter (OTC) and usually require collateral calls such as credit ratings or value of assets under management on the side of the counterparties. Financial futures, which are a bit similar to financial forwards, are defined as standardized contracts between two different parties to buy or sell a standardized quantity and quality of a given asset at a specified future date for a price agreed upon today, which is known as the "futures price", with delivery and payment occurring at a given future date, that is referred to as the "delivery date". Financial futures contracts are negotiated at specialized exchanges, referred to as Futures Exchange, and this acts as intermediary between the buyers and sellers of financial futures. In a financial futures contract, the party that is agreeing to buy the asset is taking a "long" position while the party that agrees to sell the asset is taking a "short" position. The Futures Exchange does not only act as an intermediary between buyers and sellers of futures contracts, but also helps in mitigating the risk of default on the side of any of the counterparties involved. For this reason therefore, a futures exchange requires the both parties to put up an initial amount of cash, known as a "performance bond". These margins are set as a percentage of the value of the futures contract, and are proportionally maintained for the lifetime of the contract in order to mitigate risk of counterparty default. A Financial Option is a contract that gives its buyer the right, but not the obligation, to buy or sell an underlying asset at a specified price on or before a specified future date. The price at which the asset is to be bought is referred to as the "strike price". The seller of an option has the obligation to fulfill the transaction either to buy or sell the asset), if the owner of the option decides to exercise the option. The payment made by the buyer of an option to the seller for this right is referred to as "premium". An option that conveys to the owner the right to buy a given asset is referred to as a "call option", while an option that conveys to the owner the right to sell a given asset is referred to as a "put option". Options can be either traded over the counter or via specialized exchanges, referred to as Options Exchange. Options contracts are the oldest form of financial derivatives instruments and have been known since the 16th century. Trading activity and academic interest in options increased in the mid 1970s when options were issued with standardized terms and traded through clearing houses on regulated exchanges. He also mentioned that over the counter options are written as bilateral and customized contracts between a single buyer and seller, one or both of which may be a market maker. Furthermore, Fernandez (2007) mentioned that financial options are important tools that gives investors the privilege of multiple parcels of real estate before having to execute the purchase of any single one, thus giving the buyer the opportunity to purchase the asset at his own convenience. Financial swaps are standardized contracts, whereby two counterparties

exchange cashflows of one party's financial instrument for that of the other party. It usually involves the exchange of a fixed rate of cashflow for a variable rate of cashflow. The income streams that are exchanged are referred to as the "legs" of the swap. The swap agreement clearly defines the dates when the cash flows are to be paid and also the way that they are accrued and calculated. The cashflows in a swap are calculated over a notional principal amount. Unlike futures, forwards and options, the notional amount is not exchanged with the counterparties. Swaps can thus be in either cash or collateral, and they can be used to hedge against interest rate risks or to speculate on the changes in expected direction of the movement of prices of an underlying asset. Lizenberger (1992) mentioned that swaps are of five generic types namely; interest rate swaps, currency swaps, credit swaps, commodity swaps and equity swaps. Interest rate swaps usually occur when one counterparty exchanges a variable rate of interest for a fixed rate of interest, while currency swap involves exchanging the principal and fixed rate interest payments on a loan in one currency for principal and fixed interest payments on an equal loan in another currency. Commodity swaps, he further mentioned, is an agreement whereby a floating price is exchanged for a fixed price over a period of time. Equity swaps or risk swap is a form of contract in which the buyer (known as the equity holder) pays a premium to the seller (known as the silent holder) for the option to transfer certain risks. These risks can include any form of equity, management or legal risk of the underlying asset. In its execution, the equity holder can transfer shares or management responsibilities. Financial swaps are traded over the counter and they have few specialized investors. According to Duffie and Huang (1996), the value of a swap is the net present value (NPV) of all estimated future cashflows. A swap is worth zero when it is initiated and in time, it may become either positive or negative.

Financial derivatives have evolved over time to become a major contributor in the worlds' financial system. However, despite its immense benefits, there are catastrophic risks that could occur as a result of its abuse. Catastrophic financial disasters are a consequence of abuse of financial derivatives as was evidenced in the sub-prime mortgage crisis that rocked the United States and European financial markets in the mid to late 2000s. According to Beets (2004), the use of derivatives could result in large scale losses due to leverage or borrowing. He further mentioned that while financial derivatives help investors to earn a high return on investment, the risk garnering high level loses is also possible if the price of the underlying asset significantly moves against them. In a related study, Emira, Izudin, Meldina and Beriz (2012) opined that though financial derivatives are beneficial in deepening the capital market of countries by developing a viable alternative instrument and also helping in debt financing, some derivatives instruments, such as swaps, expose investors to counterparty default risk. They further suggested that close monitoring, legislation and counterparty eligibility checks ought to be carried out in order to have reduce the risks of financial derivatives. In another study, Koehler (2011) mentioned that the relative complexity of financial derivatives instruments and imperfect market information makes the instrument highly risky for market participants to utilize them effectively. He therefore recommended that appropriate enlightenment ought be given to market participants before they engage in derivatives trading activities.

Financial derivatives are mainly used for the purposes of speculation in order to make profit and to hedge against financial risks. Axelson (2013) in his study titled "A Theory of the Evolution of Derivatives Market" developed a theory of the opening and dynamic development of a futures market with competing exchanges. He mentioned that the optimal contract design involves a trade-off between the hedging potentials of a contract and its degree of substitution with competing contracts. As

design costs reduce, more exchanges enter, but if costs go down fast or reach zero, the market consolidates (fewer number of exchanges). He then developed implications of how the hedging potential and cross-correlation of contracts develop over time. The model in the study was also extended the model to a case where demand is uncertain before trade has been observed and he discovered that the probability of markets to open are negatively related to the probability of further entry and the ex ante uncertainty, and positively related to the time lag between inventions. In another related study, Bartram, Brown and Fehle (2006) in their paper titled "International Evidence on Financial Derivatives Usage" mentioned that popular theories of financial risk management indicate that non-financial corporations may use derivatives to lower the expected costs of financial distress and to coordinate cash flows with investment policy. They used a database of 7,519 firms in 50 different countries and showed that traditional tests of these explanations result in little explanatory power for determining the power for determining which firms use derivatives. They further mentioned that risk management choices are determined endogenously with other financial and operating decisions in ways that are intuitive but difficult to attribute to specific theories. These findings are important implications; firstly, it explains why identifying specific motivations for financial risk management is difficult. Secondly, it indicates that derivative usage can have significant effects on other firm decisions such as the level and maturity of debt, dividend policy, holdings of liquid assets, and the degree of operating hedging. Thirdly, it implies that future empirical and theoretical research on corporate risk management needs to examine a broader array of firm characteristics and decisions to better isolate the roles that financial derivatives play in financial policy.

The options pricing theory is any model that is used for calculating the "fair value" of an option. The most commonly used models are the "Black-Scholes Model" and the Binominal Model. These theories postulate that the pricing of options have wide margins for error because their values are derived from other assets. Furthermore, time also plays a vital role in options pricing theory, because calculations involve time periods of several years and more. There is difference between American options and European options. American options are can be exercised at any time prior to its expiration, while a European option can be exercised only at expiration. He therefore said that this made American options more valuable than European options. A summary of the determinants of option value was given in his work and is stated below.

Table 1 Determinants of Derivatives Option Value

Factor	Call Value	Put Value
Increase in Stock Price	Increases	Decreases
Increase in Strike Price	Decreases	Increases
Increase in Variance of underlying asset	Increases	Increases
Increase in time to expiration	Increases	Increases
Increase in interest rates	Increases	Decreases
Increase in dividends paid	Decreases	Increases

Source: Karlsen (2010). Pricing of Financial Derivatives

In another related study, Mackenzie (2003) in his paper titled "Constructing a Market Performing Theory: The Historical Sociology of a Financial Derivatives Exchange" did an analysis of the Chicago Board Options Exchange where he explored the performativity of economics, a recently developed theme in economics sociology. He opines that Economics is crucial to the creation of financial derivatives exchanges, helping to remedy the drastic loss of legitimacy suffered by financial derivatives in the first part of the 20th century. He mentioned that options pricing theory of neo-classical economics succeeded empirically not because of it discovered pre-existing pricing patterns, but because markets changed in ways that made its assumptions more accurate and because the theory was used in arbitrage.

Osuoha (2013) described the Black-Scholes model of options pricing with the following equation

Value of Call = $S\,N(d_1) - K\,e^{-rt}\,N(d_2)$
S = Current value of the underlying asset
K = Strike price of the option
t = Life to expiration of the option
r = Riskless interest rate corresponding to the life of the option
$^{\delta}$= Variance ofthe underlying asset

$$d_1 = \frac{\ln\left(\frac{S}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}}$$

$d_2 = d_1 - \sigma\sqrt{t}$

Mykland (2003) in his study titled "Financial Options and Statistical Prediction Intervals" mentioned some problems with real option pricing models. These are:-

1. The underlying asset may not be traded, which makes it difficult to estimate value and variance for the underlying asset.
2. The price of the asset may not follow a continuous process, which makes it difficult to apply option pricing models that use this assumption.
3. The variance may not be known and may change over the life of the option, which make the option valuation more complex.
4. Exercise may not be instantaneous, which will affect the value of the option.
5. Some real options are complex and their exercise creates other options (compound) or involve learning (learning options.

In another related study, Jobst and Sole (2012) mentioned that financial derivatives usage across countries could differ due to religious beliefs, and in Islamic countries where the principle of sharia does not allow for speculation and gambling, but stipulates that income must come from only profits from the shared generation of goods and services between counterparties rather than interest or guaranteed return. He therefore concluded that only measures such as synthetic loans (sale-repurchase agreements), asset based lease contracts and equity-based profit sharing contracts are tenable in countries which strictly practice only Islamic Finance.

Funding gaps are amounts of money needed to fund ongoing developmental operations or future development of a business or public infrastructure project that is not currently provided by cash, equity or debt. These gaps could be covered through venture capitalist investments or by other financial instruments, such as the use of financial derivatives. According to Blundell-Wignal (2007), hedge funds, which are

highly geared, have contributed immensely for funding both public and private sector projects in OECD countries. He further mentioned that in order to expand the scope of funding options for projects, hedge funds ought to be considered.

Funding gaps in the Nigeria public sector has been a major bane to infrastructural development in the country. This has led successive governments in the 4th republic to seek for appropriate means such as direct foreign investment (DFI), private-public partnerships (PPP) and also build, operate and transfer (BOT) methods in order to quell the menace of infrastructural decay. However, bureaucratic bottlenecks and inefficiency have been blamed for the relatively low level of effectiveness of government-private sector partnerships in Nigeria. Private-public partnerships in Nigeria are faced with challenges such as dearth of financing, high interest rates when financing is available, lack of technical expertise and inexperienced project financing. The study also showed, however, that the mutual relationship between the private and public sector have contributed immensely to infrastructural development in the country and they therefore recommended the establishment of a proper regulatory framework for the proper implementation of public-private partnerships. Also, Sanusi (2012) in his paper titled "The Role of Development Finance Institutions in Infrastructure Development: What Nigeria Can Learn from BNDES and the Indian Infrastructural Development Company" mentioned that Nigeria invests more than 7% of its GDP annually on infrastructural development, and this is the highest amongst sub-saharan African countries. Despite this, 70% of the roads in the country are in bad shape while 60% of the country's population lacks access to constant electricity. He further mentioned that, according to research findings, the country needs to invest at least 12% of annual GDP. This would amount to an annual investment of $10 billion over ten years, and it is an amount that the Federal Government of Nigeria cannot solely provide. He thus mentioned that in order to fill this huge gap, there is a need to move beyond the traditional forms of project financing to more creative forms of financing such as use of alternative financial instruments like financial derivatives as has been used in developing economies such as Brazil and India. Furthermore, Oteh (2010) in her paper titled "Capital Market As a Long Term Option for Financing Infrastructure Development" mentioned that with the exception of major cities, Nigeria's infrastructure sector is grossly underdeveloped, and gone are the days when government solely financed infrastructural development. She further mentioned that in order to achieve an optimal infrastructure growth, private sector participation is needed, and the capital market will play a key role in raising funds both from organized private sector and foreign investments. She therefore recommended for regulatory policies and appropriate waivers that will encourage a robust and deep capital market. In another related study, Igwe and Oyeyola, Ajiboshin and Raheem (2013) in their study titled "A Review: Nigeria's Transportation System and the Place of Entrepreneurs" discussed the problems of transportation infrastructure that beset Nigeria. They recommended that in order to create an effective public transportation system, private sector participation is needed, and a policy that encourages entrepreneurship and proper implementation of a private-public partnership (PPP) model via creative forms of funding will bring about needed improvement in public transportation infrastructure. Furthermore, Ikpefan (2009) in his study titled "Challenges of Public-Private Partnership in Infrastructure Financing in Nigeria" described public-private partnership as the process that involves the participation of the private sector in the provision of new infrastructure assets or revamping of existing infrastructure services that where hitherto provided by the government. He further mentioned that it is imperative that government seeks financing and technical

expertise from the private sector in order to ease the financial constraints on the government and also bring about efficiency in the dispensing of service and positive multiplier economic effects. He therefore recommended that sound financing mechanisms should be put in place in order to ensure sustainability. Also, Tule, Okafor, Obioma, Okorie, Oduyemi, Mohammed and Olaoye (2015) in their working paper titled "Leveraging Pension Funds for Financing Infrastructural Development in Nigeria" mentioned that there is a need to access low interest capital in order to execute long term capital infrastructural projects, and that limited availability of low interest capital is a major funding gap for the public sector. They further agree that pension funds, due to their nature, frees governments from the burden of borrowing from banks and international bodies at high interest rates in order to finance long term capital projects.

Nigeria's organized private sector, just like the public sector, is beset by funding challenges as well. These challenges range from the need for alternative sources of finance for projects, the need for more opportunities for speculation and profit taking, the need to hedge against adverse movements in interest rates, exchange rates and deepening of the financial market through the creation of a viable alternative sources of finance and more creative financing strategies. In an empirical study, Morakinyo, Okunola, Ogunrayewa and Dada (2015) in their study titled "A Review of Private Sectors' Involvement in Urban Housing Provision in Nigeria" mention that there is an inadequate supply of affordable housing in Nigeria. They further mention that despite various approaches by government in order to ameliorate this challenge, a major funding gap exists in Nigeria's housing sector. They further mention that the private sector alone cannot meet the funding of affordable housing, thus creating a viable funding gap. They recommended that the private sector should bring about more creative funding techniques in order to significantly impact positively on the Nigerian housing market. This could include leveraging on the capital and money market and also the use of financial derivatives instruments. In another related study, Fapohunda (2013) in his paper titled "The Pension System and Retirement Planning in Nigeria" examines the features, characteristics and challenges of the pension scheme system in Nigeria. Using data from official publications and documentations, the paper concludes that the pension scheme is not achieving desired results due to limited funding on the part of the private sector as well as well as the government, and recommends collaboration, sincerity and commitment amongst all the stakeholders.

This study is aimed at analyzing the contribution of financial derivatives in meeting public and private sector financing gaps in Nigeria. Specifically, the study aims at analyzing the extent to which financial derivatives usage bridges funding gaps in Nigeria's public sector, analyze the extent of financial derivatives usage in the bridging of funding gaps in Nigeria's private sector and examine the extent to which financial derivatives deepen the Nigerian Capital Market (NCM) as an alternative financial instrument. A null hypothesis was propounded that financial derivatives do not significantly bridge funding gaps in Nigeria's private sector and was tested at a 0.05 level of significance.

Materials and Method

Secondary data was used for this study and the data was obtained from the Nigeria Stock Exchange annual reports and also from the Central Bank of Nigeria (CBN) annual reports ad statistical bulletin. The figures obtained are volume of trade of financial derivatives instruments (in US dollars), percentage proportion of financial

derivatives in raising of capital, growth rate of financial derivatives transactions and capitalization of financial derivatives market in Nigeria. period in consideration was between years 1996 to 2014. The Ordinary Least Square (OLS) model was used for the analysis of this study. The OLS provides minimum variance mean unbiased estimation when the errors have finite variances. The OLS is a method for estimating the unknown parameters in a linear regression model, with the goal of minimizing the sum of the squares of the differences between the observed responses in the given dataset. The OLS provides minimum variance mean unbiased estimation when errors have finite variances.

For the purpose of this study, a linear model was adopted, it is illustrated below thus
$FD = \beta_1 PV + \beta_2 PU + \beta_3 GR + \beta_4 PD + \sigma$
Where FD =Financial derivatives usage
PV = Private sector borrowing
PU = Public sector borrowing
GR = Growth rate of financial derivatives usage over the past 10 years.
PD = Proportion of financial derivatives (in percentage) to total market Capitalization.
σ =Random term

In the above model, financial derivatives are the dependent variable, while the market capitalization of derivatives market in Nigeria, the growth rate of derivatives usage, and proportion of financial derivatives relative to stock market are the independent variables.

The model used for this study was adopted because of the relationship between financial derivatives, the dependent variable, and the independent variables for the study. A linear model was adopted in order to reflect the effect that the independent variables have on financial derivatives and to know if financial derivatives reach ascertain threshold in order to be considered as significant in its usage for mitigating private and public sector funding needs..

In addition, the General Autoregressive Regression Conditional Heteroscedasticity model is used in order to check for volatility of the data. GARCH was also adopted because the data for the independent variables are daily data, and because weighted moving average was used as it serves as a smoothing model.

Results and Debate

Results of the analysis done are provided below.

Table 2 Presentation of Results

Model	Estimate	Standard Error	t-value	P-value
Intercept	17.8857494	5.6558848	3.162	0.00170
PV	3.5703376	0.9871485	3.617	0.00034
PU	-0.0006239	0.0142013	-0.044	0.96498
GR	0.0849882	0.0674485	1.260	0.20845
PD	0.0242169	0.0149247	1.623	0.10553

Data source: Central Bank of Nigeria Statistical Bulletin, 2016

Key: PV – Private sector borrowing
PU – Public sector borrowing
GR – Growth rate of financial derivatives
PD – Proportion of financial derivatives relative to total market capitalization

From the presentation of results above, it can be seen that Private Sector Borrowing (PV) is statistically significant, thus financial derivatives have a positive significant influence on private sector borrowing in Nigeria. This is agreement with the findings of Oke (2011) who mentioned that private corporate organizations in Nigeria, especially managed funds (mutual funds and hedge funds) effectively utilize the benefits of derivatives instruments in order to achieve higher returns on investment and also hedge against adverse price movements. It is also in agreement with the findings of Tijani and Ajape (2013), who opine that close-ended managed funds in Nigeria are more likely to utilize financial derivatives instruments in order to achieve a high level of gearing that is used in hedge funds in order to generate higher profits for investors. The findings from the study show that Public Sector Borrowing (PU) is not statistically significant, thus showing that financial derivatives have not been used for financing government projects in Nigeria. This is in agreement with Sanusi (2012) and Ikpefan (2010) who both opine that Nigeria should adopt the pattern used by other developing economies, especially India in utilizing financial derivatives for public-private sector partnerships in infrastructural development projects. Sanusi (2012) in his paper further mentions that financial derivatives have not been significantly utilized in government infrastructure projects in Nigeria.

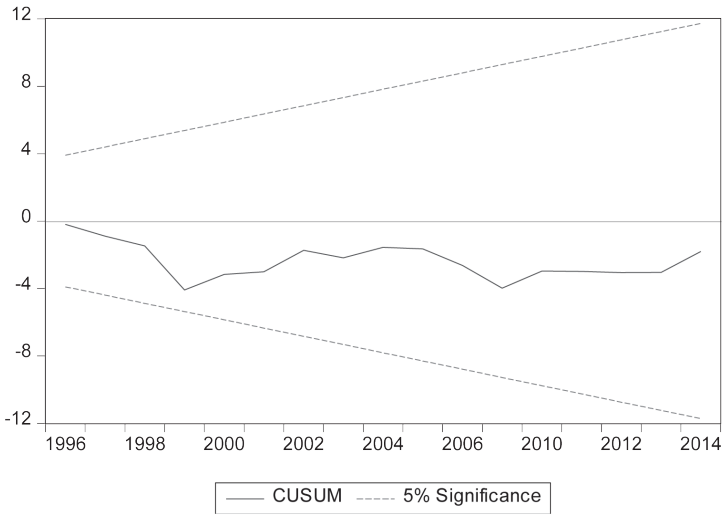
There has not been a significant rate of growth in the use of financial derivatives transactions, in proportion to capitalization of Nigeria's capital market over the past 10 years. The variable 'GR' is not statistically significant, and this shows that the level of transactions of derivatives have not grown significantly in Nigeria over the past 10 years. This is in agreement with the findings of Fadun (2013) who mentions that financial derivatives utilization in Nigeria has not grown to the level attained in developing economies, especially in Asia. He further mentions that the growth rate of financial derivatives transactions in Nigeria does not keep up with the growth rate of transactions in stocks and bonds.

The proportion of financial derivatives transactions relative to total transactions in Nigeria's capital and money market is very low, below 2%, and findings from the analysis shows that this is not statistically significant. Derivatives are at a very low level of utilization as stocks, bonds and debentures are more utilized than financial

derivatives. This is in agreement with the postulation of Morakinyo et. al. (2015) who mention that financing of capital projects are done only via sale of shares, bonds and direct borrowing from financial institutions, and the low level of utilization of financial derivatives in financing such projects brings about a form of inflexibility, thus creating a significant funding gap for infrastructure development. Furthermore, Oke (2007) also opines that the prevailing infrastructure financing gap in Nigeria hinges on the fact that there are limited avenues for financing capital projects especially infrastructure such as roads, airports, etc.

For stability of long and short-run coefficients, this study uses the cumulative sum (CUMSUM) and cumulative sum of squares (CUMSUMsq) tests to evaluate the error correction model.

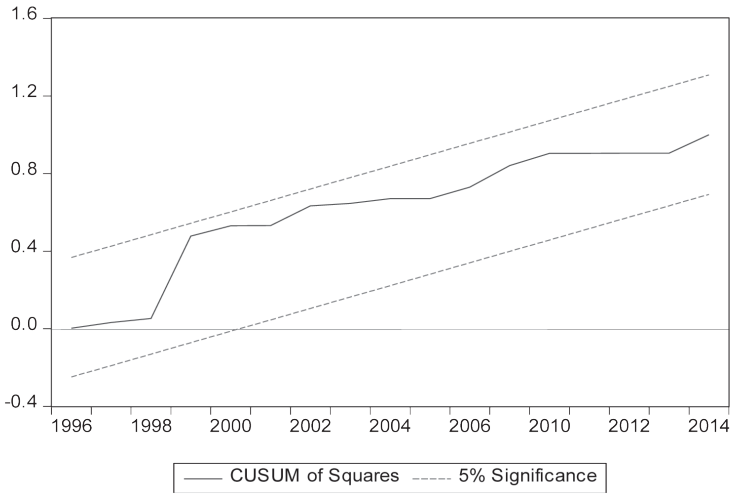
Figure 1 CUSUM test for the error correction model



Source: Central Bank of Nigeria Statistical Bulletin, 2016.

As can be seen from figure 1, the plots of the CUSUM statistics are well within the 5 percent critical bound. This implies that all the coefficients in the model are stable and are appropriate for statistical analysis.

Figure 2 CUSUMsq for the error correction



Source: Central Bank of Nigeria Annual Reports, 2016

The diagram in figure 2 shows that the plots of the CUSUMsq statistics are within the 5% critical bound. This implies that the coefficients in the model are stable and appropriate for analysis.

With the results obtained from the statistical analysis, we thus accept the null hypothesis that financial derivatives have not significantly bridged the funding gap in Nigeria's public sector. We also accept the null hypothesis that financial derivatives have not significantly contributed as a major instrument in deepening Nigeria's Capital Market. However, we reject the null hypothesis that financial derivatives do not significantly bridge private sector funding gaps and accept the alternative hypothesis that it bridges private sector funding gaps in Nigeria at 5% level of significance.

Conclusion

Financial derivatives have not been significantly and effectively used as a viable instrument for meeting funding needs of Nigeria's private and public sector and also do not significantly fill the role of a viable alternative financial instrument. An implication of this is that funding sources for private sector projects in Nigeria is limited only to the stock market. Another implication is that the funding sources for private-public partnership (PPP) projects are also limited, and can only be sourced via the Stock Exchange and the bond market. The third implication is that despite the existence of a financial derivative exchange in Nigeria, it does not significantly impact the overall financial market of Nigeria, and thus does not significantly deepen Nigeria's financial market.

As a result of the findings of this study, the following recommendations were made:

1. There is a need for more sensitization and education for the investing public on the workings of financial derivatives, its advantages and the risks involved in its usage.
2. Appropriate legislation should be established that will govern derivatives transactions in Nigeria should be put in place in order to regulate transactions and usage if financial derivatives.
3. Sensitization programs should be organized for the investing public and also for fund managers by experts in order to educate them on the advantages as well as risks of using financial derivatives.

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DIRECT SUPPORT ROLE FOR THE ARABLE CROP PRODUCTION OPTIMIZE

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Abstract

The arable cultivation, sowing structure and income is simultaneous optimization of the linear programming should be used. This method can be used to determine an optimal sowing facility that meets the requirements for greening and maximizes the use of support options to provide the largest income for the farmer. My overall goal is to maximize the potential income besides the farm size. The first specific objective is to look at the competitiveness of green peas, with the support of the production of industrial vegetable crops linked to production, and its reduced scale.

Key words: *Arable cultivation, Linear programming, Income*

JEL Classification: C6, C4, Q1

Introduction

In my research I have chosen to examine the optimization of the income and seeding-structure of the raising of different field cultures relating to a given plant size.

Hungary has 4.3 million hectares arable land and 50% of it is seeded by wheat and corn. Furthermore, industrial crops like sunflower or green pea are quite significant. Therefore in my research I would like to carry out the optimization of the income and seeding-area of the previously mentioned cultures.

The significance of the determination of the optimal seeding-structure has further intensified after the reform of the Common Agricultural Policy in 2013 since due to the indirect subsidies the "greening" was introduced.

In order to obtain the subsidy maximally there were many conditions to be suited. Therefore the science-based optimization of the income and seeding-structure in case of bigger farms is inevitable.

By the new system of indirect subsidies it is necessary in Hungary to apply the conditions of the "greening" title if we want to obtain the support.

Within these conditions farmlands have to obey the regulations in connection with diversification, ecological target territories and preservation of lawn regardless of their size of territory. In this way those large farms (with more than 30 hectares of territory) which have seeded only wheat and corn in their whole territory previously would not comply with the criteria of greening, therefore they would not get significant subsidies.

In order to optimize simultaneously the seeding-structure and income of field cultivation it is beneficial to use the linear programming.

With the help of this method we can determine the optimal seeding-structure which complies with the criteria of greening (diversification, ecological target territory and preservation of lawn). Moreover, it uses maximally the possibilities of subsidy, thus ensuring the biggest possible income for the farmer.

With the application of linear programming we can consider not only the criteria of greening but also further supports which are given within indirect subsidies. These kinds of subsidies can be area-based or they can be subsidies for the raising of industrial vegetable crops that are connected to production.

I have set as a general target the maximization of possible income regarding the given size of field. I have also set more specific targets to my general aim.

As a specific target I intend to examine the competitiveness of the green peas considering the support of the raising of industrial vegetable crops that are connected to production and their decreased size.

The system of direct aid

The Common Agricultural Politics (CAP) of the European Union has three fields that are closely connected to each other therefore the 2 pillars of the CAP are created of these fields.

The first pillar consists of the market organization and indirect support while the second pillar consists of rural development.

The amount of money CAP gave for Hungary was 12.3 milliard Euros in the new budget period of 2014-2020, from which the amount for the indirect supports was 8.85 milliard Euros (~72%) and the rural development got only 3.45 milliard Euros (~28%) (Palakovics et al., 2016).

The reform of Common Agricultural Politics in 2015 has introduced more conditions and pretences regarding indirect subsidies.

Within this reform Hungary has introduced from the compulsory elements the area-based subsidy (SAPS), the green-component and the support for young farmers while asa national voluntary element it has introduced the subsidy bound to production.

Besides this, the simplified support system for small farms has been introduced as a further voluntary element while degressivity is compulsorily applicable.

Henceforward those elements of support will be introduces which constitute part of the linear programming model made by be (Potori, 2012).

A) Area payment

In order to obtain the area-based support one need at least 1 hectare territory but the minimal supportable size of parcel is 0.25 hectare. The payable amount within SAPS is 143 Euros per hectares. Every other indirect subsidy (greening, support of vegetable-fruit and plant protein bound to production) are entitled only to SAPS (Palakovics et al., 2016).

B) Green component

At the determination of the size of territory entitled to greening support we have to take the area determined to the unitary territory-based support as a basis.

The amount of the subsidy of greening is 81 Euros per hectare which is paid annually and which cannot be refunded.

Basically greening consists of 3 different practices. The first part is crop diversification, i.e. the diversification of crop production.

Within this we have to grow at least two plant cultures in a field above 10 hectares while in a field above 10 hectares we have to grow at least 3 plant cultures.

In case of 2 cultures the plant culture raised in the biggest area can occupy 75% of the field.

In case of 3 plant cultures the plant culture raised in the two biggest areas can occupy maximum 75% of the field, which cannot exceed together 95% of the field.

The second part of greening is assigning territories with ecological significance. Within this part at least 5% ecological target area has to be assigned in fields above 15 hectares. The third part of greening is preserving constant lawns, during which we have to preserve the amount of the areas that are considered to be constant lawns. The conditions of greening can be seen in the first table (Internet_1).

Table 1 Green backup conditions

<table>
<tr><th>Arable area size</th><th>Crop diversification</th><th>Ecological target area</th><th>Permanent grassland conservation</th></tr>
<tr><td><10 hectares</td><td>-</td><td>-</td><td rowspan="4">All permanent herbage areas must be preserved.</td></tr>
<tr><td>10-15 hectares</td><td rowspan="2">At least 2 crops (largest crops up to 75% of the area)</td><td>-</td></tr>
<tr><td>15-30 hectares</td><td rowspan="2">Assigning ecological target area which covers at least 5% of the arable land.</td></tr>
<tr><td>>30 hectares</td><td>At least 3 crops (largest crops up to 75% of the area, the two main crops a maximum of 95 per cent)</td></tr>
</table>

Source: Palakovics et al., 2016

C) Coupled support

The condition of the entitlement to the support of the industrial vegetable crop is that the raising of crops shall happen at least 0.3 hectares. To apply this support we have to cultivate determined cultures like green peas, sweet corn, green beans, dried beans, spinach or sorrel. Besides this it is compulsory to apply minimal seed-corn determined by hectares and it is compulsory to prove the procurement of the seed with an invoice. The amount of support is decided base on the size of fields and the available amount of money in the given year. In 2015 it was 164 Euros per hectares (Fodor, 2015).

Material and method

During my examination I have carried out the optimization of seeding-structure and income of 4 different cultures.

The usage of data necessary for these optimizations is based on secondary data collections. The following data were collected to the building of model:

technological plan of different cultures, expenditures, specific outputs, sales prices and the amount of supports.

I have compiled the technological plan of field cultures, the purchase price and the costs of machine based on Apáti's (2016) data, on which the model itself is based also. I have used the 5-years average outputs of the annual crop rates of Hajdú-Bihar county published by the Agricultural Research Institution the when determining specific outputs. It can be seen in the second table.

Regarding sales prices I have taken the 5 years average prices per cultures of the data published by Budapest Értéktőzsde and FAOSTAT as a basis.

Between 2012 and 2016 the average sales prices of wheat were fluctuating between 40.631 and 60.383 Ft/tons which resulted in 49.702 Ft/tons in 5-years average. During the same period the average sales prices of corn were between 43.672 and 59.811 Ft/tons, which resulted in 49.591 in 5-years average. Despite this, the average sales prices of sunflower during 2012-2016 were fluctuating between 91.593 and 129.612 Ft/tons, thus its 5-years average sales was 109.852 Ft/tons. In case of green peas based on the data of FAOSTAT in the years of 2011-2015 the average sales prices were between 71.910 and 91.686 Ft/tons, which resulted in a 5-years average price of 84-063 Ft/tons.

Table 2 Yields of Hajdú-Bihar County (kg/ha)

Culture	**Hajdú-Bihar county**					
	2011	**2012**	**2013**	**2014**	**2015**	**Average**
Wheat	4 400	4 080	4 700	5 040	5 150	4 674
Maize	6 910	5 190	6 080	6 920	6 070	6 234
Sunflower	2 710	2 640	2 990	2 870	3 390	2 920
Peas	7 280	6 740	5 210	5 040	5 800	6 014

Source: Own editing based on AKI (2017)

I have used one of the methods of operation research with the help of Excel program for the optimization of income and seeding – structure of certain cultures – this method is the linear programming. Linear programming makes it possible for us to determine the minimum and maximum of the objective function within the conglomeration of certain activities besides the resources of certain activities and their restriction. Its basic scheme can be found in the 3rd table.

Table 3 The basic scheme of the linear programming model

	x_1	x_2	x_3	**Applying**	**Relation**	**Capacity**
u_1				$*\underline{x}$	<=	
u_2				$*\underline{x}$	<=	
u_3				$*\underline{x}$	<=	
CF				$\underline{p}*\underline{x}$	MAX!	
Solution	$\underline{x}$					

Sources: Own editing, 2017

To the setup of linear programming model the first step is to identify certain activities, alias variables (x_1, x_2, x_3, etc.) based on which we want to optimize the objective function. In my model the0 cultures (wheat, corn, sunflower, green peas), the fallow and the available support pretences were determined as varieties.

We have to determine the necessary resources to certain activities (u_1, u_2, u_3, etc.) and those quantities that are necessary to be placed in technological matrix.

The row of model objective function can contain those values of certain variables (i.e. p_1, p_2, p_3) based on which we want to optimize the model also. In most cases this is some kind of cost or income category. In case of my model this is the covering amount of certain cultures per hectare, as well as the subsidies per one hectare.

In the capacity column (b_1, b_2, b_3, etc.) it is necessary to determine available quantity of certain resources where we can determine not only upper value but minimally usable value. When forming acreage the capacity value indicates the available and usable size of territories. The quantity of amount to be used from the available capacity can be read in the usage. The optimization of model is possible with the Excel program's adjunct.

Results

In my research I have carried out the seeding-structure and income optimization of wheat (W), corn (C), sunflower (S) and green peas (G). Besides these, fallow was introduced as a possible greening condition. In my calculations I have determined the expenditures of certain cultures per hectare (input materials, machine and personal expenses) and also their measure and unit expense.

In case on expected outputs of certain cultures I relied on the average of the production of Hajdú-Bihar county btw. 2011-2015 which eliminates the extreme rates caused by weather-change. In case of wheat the crop average is 4 555 kg/ha, in case of corn it is 6234 kg/ha, in case of sunflower it is 2920 kg/ha while in case of green peas it is 6 014 kg/ha which can be seen in table 4. In case of fallow there is no substantive output so it is not mentioned in the table.

Table 4 Crop yields of arable crops in Hajdú-Bihar County (kg/ha)

Culture	2011	2012	2013	2014	2015	Average
Wheat	4 400	4 080	4 700	5 040	5 150	**4 555**
Maize	6 910	5 190	6 080	6 920	6 070	**6 234**
Sunflower	2 710	2 640	2 990	2 870	3 390	**2 920**
Green peas	7 280	6 740	5 210	5 040	5 800	**6 014**

Sources: Own editing based on AKI (2017)

When determining the sales price of certain cultures I took data from previous years as a basis which rates can see in table 5. In case of wheat it is 49.702 Ft/tons, in case of corn it is 49.591 Ft/t, in case of sunflower it is 109.852 ft/t while in case of green peas it is 84.063 Ft/t.

Table 5 Average prices of arable crops (Ft/tonna)

Culture	2011	2012	2013	2014	2015	2016	Average
Wheat	-	60 383	53 912	47 197	46 385	40 631	**49 702**
Maize	-	59 810	52 478	46 296	45 700	43 671	**49 591**
Sunflower	-	129 612	109 804	91 592	110 377	107 876	**109 852**
Green peas	71 909	84 151	86 666	91 686	85 904	-	**84 063**

Sources: Own editing based on BÉT (2017) and FAOSTAT (2016)

To grow the 4 culture there are 150 hectares field which will be completely used. In the 6th table we can see the amounts of indirect supports and the income from selling certain cultures. The area-based support is available without production condition so it does not require determined crop culture production. Its amount per one hectare is 44 208 Ft (using 309,15 Ft/euro exchange rate in case of subsidies).

Within greening we have to fit to different conditions regarding diversification and formation of ecological target area. My model fulfils these expectations and by it we can reach 25.041 ft support since with the application of area left on fallow the minimal area has one-time multiplier-factor.

In case of green peas it is possible to get subsidy connected to the raising of industrial vegetable crop which measure is equal to the available source of money and to the quotient of raising countrywide area of industrial vegetable corps. In 2015 it was 50.701 per acres, so I took this as a basis of my calculations.

Table 6 The level of direct subsidies

Support schemes	The amount of aid (Ft/ha)
Funding based on area	44 208
Greening with fallow (1x multiplier factor)	25 041
Raising of industrial vegetable corp	50 701

Sources: Palakovics et al., 2016

In order to get the amount of indirect subsidies regarding the areas entitled to the whole SAPS subsidy it is needed to obey the criteria of greening which can be seen in table 7.

Table 7 Greening support conditions

Arable area size	Diversification	Ecological target area	Lawn preservation
<10 hectares	-	-	conservation of permanent grassland
10-15 hectares	at least two crops (up to 75 percent of the area)	-	
15-30 hectares		arable land area of at least 5% organic target design	
>30 hectares	at least three crops (first crop up to 75 percent of the area; first and second crops up to 95% of the area)		

Sources: Palakovics et al., 2016

It is necessary to fit to the diversification and the formation of ecological target area since the arable land (150 hectares) exceeds in this model the 30 hectares. Since in the present case there is no available constant lawn area therefore I ignored the influencing effect of it. Regarding diversification it is compulsory to raise at least 3 different crop cultures in a way that the crop raised in the biggest area can cover maximum 75% of the arable land, while the first and second cultures can cover maximum 95% of the arable field.

The formation of ecological target area is compulsory in at least 5% of the arable field. In this case I applied fallow, therefore for the territories entitled to SAPS support there is greening subsidy with one-time multiplier-factor.

It is important to note that the culture applied at ecological target area or other cultivation satisfies simultaneously the criteria of ecological target area and diversification. This way fallow is appropriate as an ecological target area and diversifications third element.

Before making this model I have done a task description, which is the following: "Determine that optimal seeding-structure which results in the biggest possible income in 150 hectares, besides using subsidies and besides fulfilling criteria."

Before preparing the linear model I have determined the direct expenses of certain cultures and fallow (by using sum product function) and also their cover amount per hectares and the certain support amounts.

Basic model construction

When making the model 8 different variables were introduced. These are wheat, corn, sunflower, green peas, fallow and certain subsidies like SAPS, subsidy bound to production and greening.

In case of all the areas the rate was 150 hectares which I have used fully. In the fields you can grow wheat, corn, sunflower and fallow.

The next resource was the area-based support which size equals to all of the other areas, and this support is regardless of production.

To make the model appropriate to the greening support's conditions an ecological target area was formed, fallow was formed, which has to be at least 5% of the whole area. Moreover the fallow area is acceptable to the third culture determined through diversification.

Since the model fulfils diversification and ecological area thus the greening support can be obtained after all territories.

The subsidy for industrial vegetables is valid only for those territories where green pea is raised. This way its territorial limit is based on the green pea's territorial resource.

According to diversification the crop raised at the biggest area can be raised at maximum 75% of the territory, thus we can raise wheat, corn, sunflower and green peas in 75% of the whole territory. Further condition is that the rate of culture raised at the two biggest areas cannot exceed together 95%.

The relations are determined by these conditions and the area capacities were introduced dynamically regarding all the fields.

As an objective function in case of 4 cultures and fallow-area the cover amount per hectare was determined while in case of certain supports the amount per hectares of them was determined. I have got the result of the program with the help of Excel program Solver adjunct.

The amount of target rate with the program is 24 531 659 Ft, so this is the income in 150 hectares besides the optimal seeding-structure. Based on the optimal seeding-structure we can say that it is necessary to form green peas on 112.5 hectares, sunflowers on 30.0 hectares and fallow on 7.5 hectares.

The measure of territories entitled to greening and area-based support is 150 hectares, while the territory entitled to support depending on production is 112.5 hectares, which can be obtained through the seeding territory of green peas. The amount of 4 cultures and fallow is exactly 150 hectares. Within this green pea represents 75%, sunflower 20% and territories left on fallow represent 5%.

Sensitivity Report interpretation

With the solution of linear program I have also done a Report of sensitivity at the same time, which has two parts: the tables of altering cells and the restricting conditions. The table of altering cells gives us information about certain variables which can be seen in table 8.

Those variables that have no final rate did not become part of the model, therefore they have reduced cost. As you can see wheat did not get into the optimal solution. The value of 34 611.54 Ft/hectares of the affordable growth and the reduced cost means that increasing the objective function of wheat to 76.108.89 Ft/hectare with these value results in the fact that wheat will be in the optimal solution.

Corn also does not have final rate, soit is not in the optimal solution either. Simultaneously with this, it does not have reduced cost which tells us that if the wheat's objective function rate is to be grown with the rate of reduced cost then the objective function rate of wheat and corn will be the same. Therefore an alternative optimum will be formed. In case of alternative optimum endless amount of optimal solution can be induced with the help of distributional ratios.

Since sunflower, green peas and area left on fallow has final rates they will be in optimal solution. Their affordable and decrease rate tells us how much we should increase or decrease their rate of objective function so that their role in optimal solution would change. The 1E+30 rate also means that their role in optimal solution will not be modified no matter how much I change their rate.

Table 8 Variable Cells of Sensitivity Report of basic model

Name	Final Value	Reduced Cost	Objective Coefficient	Allowable Increase	Allowable Decrease
Wheat	0	-34611,54	41497,35	34611,54	1E+30
Maize	0	0	76108,89	7925,63	34611,54
Sunflower	30	0	84034,52	21347,66	7925,63
Green peas	112,5	0	54681,58	1E+30	21347,66
Fallowing	7,5	0	-30975,00	107083,89	1E+30
Funding based on area	150	0	44208,45	1E+30	1E+30
Production base support	112,5	0	50700,60	1E+30	21347,66
ecological subsidy	150	0	25041,15	1E+30	1E+30

Sources: Own editing, 2017

In case of area-based and greening support the affordable increase and decrease have taken up endless rate since the modification of the objective function rate of these variables has no effect on other variables and their role in the model.

In case of subsidy depending on production the rate of affordable increase and decrease is equal with green peas since those rates of solution have to be concurrent. Based on this, if the objection function rate of green peas or the subsidy depending on production decreases by 21 347.66 Ft/hectares then their role in the model will be changed.

In case if the final rate of resource and the rate of restrictive condition are equal then we get bottleneck, thus it will have shadow price. Shadow price shows that with the modification of the capacity rate of resource by one unit how much the rate of objective function will change,

It can be seen that in case of wheat, corn and sunflower the area of 112.5 hectares (maximum 75% area) has not been used, therefore by increasing the capacity rate of these crops the objective function will not change since it does not have shadow price.

In case of green peas the area of 112.5 hectares has been used thus by modifying with one unit the area capacity rate of this culture within the interval of affordable growth and decrease (+30 and -82.5 hectares) the target values of model has been changed by 21 347,66 Ft without modifying the role in green peas model (Table 9).

In cases where the area capacity of 2 plant cultures are being restricted (wheat-corn, wheat-sunflower, wheat-green peas and corn-green peas) it can be seen that the determined capacity of area will not be used fully, therefore the rate of objective function will not change if we increase the rate of capacity.

In cases of sunflower and green peas the territory capacity has been fully used thus it has shadow price. By modifying its rate of capacity within the interval of affordable increase and decrease (+0 and -30 hectares) the objective function rate of the model will change with a unit change to 7 925.63 Ft without changing the role in the given resource model.

All of the area, like resource has been used fully so by changing the capacity rate within the interval of affordable increase and decrease (+30 and -0 hectares) the objective function rate will be changed by 76 108.89 Ft.

The area of certain subsidy pretences (SAPS, subsidy of greening and dependent on production) has been used at full extent since the first two can be obtained by using all of the area while the last one can be obtained by using the area of green peas.

Table 9 Constraints of Sensitivity Report of basic model

Name	Final Value	Shadow Price	Constraint R.H. Side	Allowable Increase	Allowable Decrease
Wheat and Maize	0	0	142,5	1E+30	142,5
Wheat and Sunflower	30	0	142,5	1E+30	112,5
Wheat and Green peas	112,5	0	142,5	1E+30	30
Wheat and Sunflower	30	0	142,5	1E+30	112,5

Wheat and Green peas	112,5	0	142,5	1E+30	30
Sunflower and Green peas	142,5	7925,63	142,5	0	30
All area	150	76108,89	150	30	0
Funding based on area	150	44208,45	150	1E+30	150
ecological subsidy - fallowing	7,5	-107083,89	7,5	0	7,5
ecological subsidy	150	25041,15	150	1E+30	150
Production base support	112,5	50700,6	0	1E+30	225
Wheat	0	0	112,5	1E+30	112,5
Maize	0	0	112,5	1E+30	112,5
Sunflower	30	0	112,5	1E+30	82,5
Green peas	112,5	21347,66	112,5	30	82,5

Sources: Own editing, 2017

The minimum 5% area of fallow (7.5hectares) has been also exploited so this resource also has shadow price. By modifying the capacity rate within the rate of affordable increase and decrease, the objective function rate of the model will change (+0 and -7,5 hectares) by - 107 803.89 Ft.

Summary

In my material I have examined the roles of indirect subsidies regarding the seeding-structure and income optimization of 4 field cultures. Throughout my model seeding area of 4 cultures has been optimized in150 hectares area based on their specific cover amount which complies with the criteria of the rules made by greening, diversification and by the formation of ecological target area. Furthermore the area-based support and the subsidy of the raising of industrial vegetable crop depending on production have also participated in my model.

In case of basic model based on the optimal solution in 112.5 hectares (75%) green peas and in 30 hectares (20%) sunflower have been raised from 150 hectares and 7.5 hectares (5%) was the area left on fallow. The wheat and corn did not participate in the optimal solution due to the lack of subsidy of cover amount and subsidy depending on production. With this seeding-structure and with taking subsidies the rate of the objective function is 24 531 659 Ft.

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GENDER AND IMPRESSION MANAGEMENT IN THE WORKPLACE

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Abstract

Proficiency in managing one's impressions and discerning those of others has attained further importance in contemporary organizational conditions. Women and men require several equivalent skills like social presentability, noticeability, organizational conduct and political skills, plus capable job performances for career success. However, women require abilities that men don't, to handle the prejudices they countenance just for being women. They require skills to handle the understated and obvious gender jabs. This paper examines gender disparities in the use of impression management tactics in organizational milieu, why these skills are necessitated and what women must do to begin employing them. The findings offer improved grasp of organizational behaviour and specify that constant impression management ends in identity reformation.

Key words: *Gender, Impression, Management, Workplace*

JEL Classification: L2, M12, M54, J16

Introduction

In any characteristic gender-diverse industry circumstance, irrespective of the intention of a gathering, everybody there including both the women and the men, work certain labels or stereotypes. One is the belief that the men will be resolute, insistent, self-assured, autonomous and forceful, in other words "agentic ". In addition, the women will be anticipated to exhibit generous, pleasant, empathetic and affectionate tendencies specifically to be "communal," Moreover, there will be anticipation that anyone directing the gathering will be agentic. Arising from the stereotypes, a woman attempting to take on a leadership position either endeavours to assume responsibility devoid of communing gentic characteristics (which may consequence in her being disregarded) or she may seek a management responsibility by employing gentic qualities, (which could consequence her being considered as "masculine) and, thus, communally awkward and not likeable. Besides, there may be complexities in implementing leadership in addition to experiencing economic punishments and professional and social segregation since she will be perceived to have dishonoured conventional gender roles. The realistic truth is that irrespective of the method a woman chooses, she meets impediments that a man does not face when gunning for

management functions in a gender-diverse company environment. Experiencing this several times could result in a striving woman being irritated by the injustice of the business world and considering that she may never be able to make it unless the world develops into a gender-neutral world devoid of which she is apt to withdraw totally from the aggressive fight for professional achievement or patch up with a professional reality of disappointment, fury, and frustration. While the male-subjugated business culture of developing counties like Nigeria necessitates correction, women desiring progress in there also require correction. The Nigerian business culture is deeply prejudiced against women and has the prospects of being remarkably more fruitful provided basic modifications are made, to ensure that long-term thriving professions become more reachable and salient for women. These cultural transformations however, do not seem apparent in the predictable future, and it is abominable to recommend that brilliant and striving women desiring flourishing careers currently wait for things to change. Again, rather than career women having the necessity to develop masculine characteristics, accept the status quo or make more efforts; the need arises for them to gain knowledge of methods that will enable them to work smarter inside the gender-prejudiced economic system to ensure that they are not hindered by those prejudices.

To participate in the career progression competition with men and have genuine struggling prospects of succeeding; women must foresee the prejudices they will countenance and obtain the necessary expertise to handle them. While women who demonstrate merely agentic characteristics or simply communal features have prospects of countenancing the complete power of gender prejudice and biased repercussions, by suitably employing both attributes together there is the tendency for her to evade or reduce the harmful corollaries of performing in opposition to conventional anticipations. This paper examines those tactics how they can be utilized, and when they are suitable. It offers tangible, shrewd, and sensible suggestions to enable women steer through the gendered obstacles they will meet in their quest for career advancement.

Theoretical Framework

Social Role Theory

All individuals, whether male or female absorb various functions in the society and through these functions; they train in different skills and lifestyles that connect to collective behaviour. Both males and females are jointly exposed to diverse normative prospects for behaviour. Consistent with shared role, this theory results in diverse behaviours by men and women. Men are predicted to be more energetic, aggressive, organizing, self-governing while women are anticipated to be more communal and sympathetic, anxious for the wellbeing of others, interpersonally insightful, emotionally communicative. The connotation of this hypothesis for impression management in organizations is that, in a workplace, men and women could both present in diverse manners and be predicted to act in different ways Consequently, gender role viewpoints extend to the kinds of careers believed appropriate for men and women in addition to the discernment of behaviour of men and women in organizational circumstances. For instance, teaching or care related jobs are perceived as feminine-branded jobs, while engineering is perceived as a mannish-natured job. Additionally, strength in a man is viewed as a gender 'fitting' behaviour,

while the same trait in a woman is viewed as a contravention of gender-founded anticipations for behaviour which could reflect of as a distasteful conduct.

Impression Management is affected by social roles since they institute normative prospects for personal behaviour. Accordingly, one would expect that normative prospects for behaviour ought to differ both according to the organizational conditions as well as the features of the communication. For example, while self-promotion may be deemed appropriate for a job interview, it may possibly be distinguished as contravention of feminine gender role-tradition given that self-promotion is not a feminine attribute. This then brings a 'backlash consequence' for women.

Impression Management

Impression Management is delineated as a sort of mindful or unmindful effort to manage images that are anticipated in any kind of social interaction. Impression management constitutes a widespread occurrence in organizations and employees could employ such behaviours to build a positive personality. People discern that by developing their performances; they will be perceived as competent and committed employees and will be deemed as talents to the organization subsequently they will have opportunity to impress others, their direct managers inclusive. Jones & Pittman (1982) affirms that there are two sides of a representation to all impression management tactics. One is the beneficial and the other is the detrimental representation. Lau (2003) observes that Weinstein (1969) offers a theory of impression management which advocates that most of human behaviours are modified to achieve a positive response from their object. Burgoon, Buller & Woodall (1996) suggests that impression management clearly involves how people stimulate affirmative opinions of themselves in others at the same time as circumventing harmful opinions. In addition, impression management is complex because it includes deliberate or accidental behaviours and employs both verbal and nonverbal methods.

Guadagno & Cialdini (2007) identifies several of the wider objectives of impression management to comprise generating a picture of oneself which one desires to portray, deciding how that picture will be exhibited, and guarding the picture if intimidated. As Tedeschi & Melburg (1984) points out, these objectives are accomplished through methods and strategies with assertive and defensive methods. They elucidate that tactical impression management is carried out taking into consideration obvious and pretty short-term goals. Strategic impression management centres on fabricating reputational attributes that fulfill the long-term concerns of the individual like integrity and dependability.

Impression management is of various forms. Bolino & Turnley (1999) identifies five types consisting of self-promotion which involves persons drawing attention to their capabilities or achievements to facilitate being perceived as proficient by onlookers. Next is ingratiation in which individuals execute favours or employ sycophancy to extract an ascription of lovability from onlookers. There is also exemplification where people demonstrate selflessness or surpass the demands of duty so as to achieve ascription of commitment from onlookers. Furthermore there is intimidation which entails people indicating their power or prospective to punish in order to be seen as menacing by onlookers. Finally, we have supplication in which persons broadcast their faults or inadequacies with the aim of extracting ascriptions of being disadvantaged from onlookers.

Stereotypes and Impression Management

In characteristic gender- diverse organizations women are impacted by the existing stereotypes and label in undeviating ratios to how they converse with, comprehend the responses of and amend their behaviours in reaction to the message of other group members. This constitutes the centre of adjusted gender communication which involves controlling people's reactions by controlling the impressions they make on them. Research studies like Bozeman and Kacmar (1997), Rosanna and Robert (2007), Vickers (2012), Gardner and Martinko, (1988) and Bolino & Turnley (1999) establish that a woman who is able to deliberately manage the nature and substance of her communication has better prospects of surmounting or neutralizing unfavourable gender typecasts than one who is unable to do so. Consequently, the fundamental basis of adjusted gender communication is that by controlling the impression one makes, one can control the prejudices encountered. These studies also agree that people who are excellent at self-monitoring are more victorious in the area of career development compared to those who are not. Furthermore women who are efficient self-monitors handle gender prejudices much better compared to women who are not. Singh et al (2001) asserts that high self-monitors always and determinedly hammer out low self-monitors for career promotions. Where the decisions of better job performance were founded solely on the proficiency of performance of definite assignments or ventures, then, there is no rational or observed explanation for the situation being the way it is. However where the conclusion is founded on successfully collaborating with others, the value of interpersonal communication, a capability to execute an array of diverse roles, and ability to promptly react to the requirements and stipulations of a great number of different personalities and dispositions, in that case, high self-monitors would obviously have a considerable lead in playing the advancement game.

Besides, Allen et al (2009) suggests that the gains amplify as the high self-monitors hoist the career ladder and the tasks to be executed swing away from particular ones in the direction of leadership, stimulus, and synchronization. O'Neill and Chatman (2006) observes that the knowledge that the triumphant manager is the one that controls excellent views of other people stops the surprise of various studies revealing that high self-monitors occupy more superior positions in all types of organizations as opposed to low self-monitors. Singh et al (2001) adds that managers especially women managers could boast the correct initiatives and abilities, however except their reputations, or others' opinions of their capabilities is appreciated, bought and employed by those in power, their management capital becomes valueless for their career advancement. While there is undoubtedly no definite recipe for career achievement; since there are numerous features required in numerous situations for a specific group of procedures to offer a perfect plan to the peak, however, women who are determined will not discover their careers hindered arising from gender prejudices if they are equipped to study and exploit impression management and adjusted gender communication.

Women and Impression Management

The incidences of impression management have been investigated in diverse circumstances on human resources. Singh et al (2001) observes that the principal motivation for impression management endeavours has to do with the belief that by building 'attractive' social personalities, one's public character moves toward the model self. People try to manipulate how they are distinguished, and, consequently,

how others relate to them. Accordingly, impression management could openly affect material results. Edwards & Wajcman (2005) affirms that a clear contention on this issue involves the position that the capability of employees to take on successful impression management is prone to being influenced both by their gender and in addition by the reality that their managers are typically men. Deshpande, Schoderbek & Satish (1996) recognizes that women display greater sincerity compared to men in the workplace. Their study established a considerable gender disparity in impression management ploys being utilized by male and female managers of a non-profit organization and also that women are more inclined to manage impressions in the workplace.

However, Singh et al (2001) ascertain that women are considerably less motivated to undertake self-monitoring as opposed to men, although when women self-monitor, they achieve a significant promotional benefit over both men and other women. Furthermore O'Neill and O'Reilly (2010) found that high self-monitor women were at ease employing traditionally male (agentic) behaviours or cultivating either traditionally female behaviours or a combination of both as it appeared suitable in specific circumstances. They also observe that high self-monitor women demonstrated an obvious consciousness of when agentic communication was required and when nurturing or collective communication was desirable. The high self-monitoring women got additional job promotions compared to the low self-monitor females and all of the males. The findings of O'Neill and O'Reilly (2010) present a powerful argument for women training in standardized impression management and gender communication. These results are significant because they confirm that high self-monitor women wield added authority, are distinguished as more important, and maintain additional resources compared both to men or other women. Flynn and Ames (2006) asserts that when the role is non-traditional to gender, self-monitoring could be principally vital for women and could constitute a valuable means for women to evade the repercussions arising from the dual connection, specifically the social and economic 'penalty' commonly faced by agentic women when they endeavour to demonstrate leadership skills. Guadagno & Cialdini (2007) in their study on gender and role expectations in relation to impression management found a significant disparity in the utilization of impression management strategies by both genders. The study also affirms that as they employ such impression management strategies, which are anticipated with their role, masculinity or femininity; it sometimes hinders the women from attaining higher positions.

Justifications for Women's Resistance to Impression Management

Times have changed and nowadays aside from engaging enthusiastically in their personal development, women are playing huge innings for the success of their organizations and countries. Remarkably women manipulate their impression nevertheless hesitate to acknowledge it. O'Neill and O'Reilly (2010) affirms that bearing in mind the remarkable career benefits for high self monitor women one wonders why they are very frequently disinclined to utilize it. Singh (2001) indicates that despite distinguishing that impression management is capable of absolutely influencing their occupations, women display reduced probability of utilizing these methods when compared to men. Singh also suggests that even women, who realize that they are in similar competition for promotion as men and that their professions may face drawbacks if they fail to participate in the impression management match, frequently oppose assuming impression management strategies. Wayne and Liden (1995) affirms that women managers enthusiastically assume task-focused techniques like high

quality work and commitment, however as opposed to their male colleagues, they are prone to censure, yet frankly deride, impression management methods like ingratiation and self-promotion. Flynn and Ames (2006) observes that merely advising women on the possibility of impression management portending a persisting affirmative effect on their occupations appears to be an inadequate motivation for them to implement it. A prime explanation for women's opposition to impression management is that they neither desire to be nor seem to be fake or phony. Nevertheless, for women who aim to advance in their professions, this type of mind-set may be counterproductive because playing the career game necessitates distinguishing that achievement in it is largely a function of ingratiation selling, self-promotion and networking and as a woman, failure to understand those imperatives, may imply improbability of ever succeeding.

Material and Methods

The study employed the survey method. Questionnaires were administered in a field survey between in January and March 2017. Both primary and secondary data sources were employed. The data was collected from organizations in Lagos. Nigeria. A sample size of 400 made up of 200 each of men and women was employed for the study consisting of all levels of staff across different departments of the organizations. However, only 383 of the questionnaires were returned in usable conditions and this consisted of 194 males and 189 females. Interviews and focus group discussions were also conducted. Fourty (40) questionnaires were administered in the pilot study. Two null hypotheses were tested. The study adopted the impression management scale of Bolino & Turnley (1999) which has 25 items based on a likert scale and five subscales namely: self-promotion, ingratiation, exemplification, intimidation and supplication.

Alpha Cronbach was used to determine the reliability of the scale and the alpha coefficient of .85 result was quite acceptable. Independent sample-t test was used to determine the mean both in terms of gender and marital status.

Hypotheses

Two hypotheses stated for the study were:

H0. There are no significant gender differences in the employment of impression management in the work place.

H1. There are no significant differences in the employment of impression management by single and married women in the work place.

Results and Debate

Table 1 Mean, standard deviation and t values for gender and Impression management (n =383) df =58

Scale	**Men**		**Women**			
	(n = 194)		(n=189)			
IM	M	SD	M	SD	P	T
	72.86	12.54	93.12	13.12	2.0	.046

Source: researcher's field survey

The study explores possible the correlation between gender and impression management in the workplace. Table 1 demonstrates the outcomes of computed mean values of both male and female respondents. The results point to significant disparities in both genders with respect to impression control and management. It portrays a higher tendency on the part of women to be visibly engaged and more apprehensive about their self presentation when compared to men. They also tend to possess greater capability to shape themselves based on organization requirements. This results are heart warming because for women to join effectively in the career development contest in the company of men and demonstrate valid struggling hopes of accomplish something; the need arises for them to anticipate the discriminations they will put up with and acquire the essential proficiencies to handle them. Despite the fact that women who exhibit purely agentic characteristics or purely communal ones have vistas of countenancing the absolute control of gender prejudice and biased repercussions, by properly making use of both attributes together there is the inclination of escaping or shrinking the detrimental corollaries of acting in disagreement with conformist anticipations.

As earlier noted, one primary justification for women's opposition to impression management is the fear of becoming or being labelled as fake or phony. Nonetheless, this sort of mind-set is counterproductive for women who aspire to press forward in their professions, for the reason that playing the career game demands discerning that career accomplishment is basically a determinant of ingratiation selling, self-promotion and networking and as a woman, inability to comprehend this very important idea, may mean unlikelihood of ever succeeding.

Table 2 Means, standard deviations and t values for marital status and Impression management (n =194) df =28

Scale	**Married**		**Single**			
	(n = 102)		(n=92)			
IM	M	SD	M	SD	P	T
	86.95	6.24	103.13	12.53	3.93	.001

Source: researcher's field survey

The study was also concerned about female employees' marital status and its possible influence on impression management. Table 2 illustrates the results of calculated Mean values of women respondents by marital status. The results designate considerable disparities in differing status of women. In contrast to the married women, the single women tend to have greater exposure to impression management probably arising from the fact that they often carry reduced load of duties and they lack spouses, which consequently permits them greater exercise of their lack of restrictions and offers them greater tendencies to accept alterations around them. Previous research like Liu, Liu & Wu (2010), Kacmar, Delery, & Ferris, (1992), Schoderbek, & Deshpande (1996), Guadagno & Cialdini (2007), Watts (2008) and Edwards & Wajcman (2005) confirm that women now exhibit added tendencies to manage impressions at the work place. This could be as a result of the current necessity for financial independence by women. Again, it could be that women are now being more agentic by demonstrating more assertiveness, not minding their role expectations. Wajcman et. al (2005) confirms that the impression which women will manage constitutes a function of the setting, the male - female ratio, as well as the sex of the supervisors.

This implies that while women have the ability to engage in impression management, arising from the reality that society is male oriented the woman becomes compliant. This study concludes that the impression management methods being utilized by the respondents in this study are encouraged by the organizational climate. The results of this study also affirm that marital status of the women affects their employment of impression management. In sum, this study affirms a significant relationship between gender and impression management as well as between marital status of women and impression management. The marital status of the women impacted their aptitude for manipulating their behaviours in the workplace. Impressions play a principal role in modern organizational situations, as a result; expertise in managing one's impressions and detecting those of others has achieved further value. Gender-based barriers to women's career progress are real, widespread, and demonstrate no propensities to become extinct in the nearby future. It constitutes fundamentally a certainty of business and professional life that women visage rougher times ascending the leadership ladder in contrast to likewise eligible and motivated men. In addition to numerous corresponding skills required by both women and men, in order to tackle the prejudices they put up with just for being women, women have need of abilities that men do not. Women could do with a set of skills like impression management that are of no magnitude for men to take care of the several played down and perceptible gender digs.

Impression management requires behaviours in the course of which people endeavour to generate and uphold an assortment of striking feelings. Impression management behaviours can be made use of by all individuals or groups in the organization to accomplish both long term and short term goals and achieve career advancement in the organization pecking order. Tedeschi & Beard (2009) affirms that through impression management tactics, assistants aspire to make an impact on their bosses and correspond the point to the management that the employee is hard working, agreeable and a consummate worker. Basically, the motivation to undertake impression management behaviours derives from the same motivational bases as all behaviours aimed at enhancing projected compensations and diminishing anticipated retributions. At the same time as work place competition swells especially in an unstable and depressed economy such as currently obtains, in Nigeria, employees are obliged to locate alternative ways of augmenting their supposed advantages to the organization and achieve a number of potential short term and long term advantages.

Conclusion

This paper contends that women are perhaps short changing their occupation development prospects in organizations by discounting the possible gains impression management actions are capable of providing for them, rather than depending on meritocracy standards alone. While both male and female employees have inclinations towards impression management, women are more disposed to impression management to control their behaviours in the workplace. To participate in the career progression competition with men and have genuine struggling prospects of succeeding; women must foresee the prejudices they will countenance and obtain the necessary expertise to handle them. While women who demonstrate merely agentic characteristics or simply communal features have prospects of countenancing the complete power of gender prejudice and biased repercussions, by suitably employing both attributes together there is the tendency for them to evade or reduce

the harmful corollaries of performing in opposition to conventional anticipations. A prime explanation for women's opposition to impression management is that they neither desire to be nor seem to be fake or phony. Nevertheless, for women who aim to advance in their professions, this type of mind-set is counterproductive because playing the career game necessitates distinguishing that achievement in it is largely a function of ingratiation selling, self-promotion and networking and as a woman, failure to understand those imperatives, may imply improbability of ever succeeding.

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TRADE MISSIONS AS THE INSTRUMENT FOR SUPPORTING INTERNATIONAL TECHNOLOGICAL COOPERATION OF ENTERPRISES - CASE STUDY OF POLAND, SLOVAKIA AND CZECH REPUBLIC

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Abstract

The paper discusses the subject of trade missions of enterprises as an instrument to support the implementation of their business processes, especially those aimed at establishing international technological cooperation. The aim of the study is quantitative and qualitative analysis of trade missions organized between January 2016 and April 2017 by the Enterprise Europe Network (EEN). The objective of the paper is to identify the directions of enterprises' activity in the field of international technological cooperation.

Key words: *company mission, innovation, SMEs, network*

JEL Classification: O14, O11

Introduction

The need for international cooperation between enterprises and diffusion of innovation is necessary in an environment characterized by the complexity and dynamics of technological development (Acs et al., 1996; Chęcińska-Zaucha and Gródek-Szostak, 2016; Das and Teng, 2002; Duysters and de Man, 2003; Kajrunajtys 2016). Due to scarce financial resources, micro- and medium enterprises (SMEs) are experiencing difficulties in accessing high-quality commercial liaison services for advanced technology. However, companies building their competitive advantage based on innovative solutions are increasingly eager to use the extensive catalog of support tools offered by the Enterprise Europe Network (Nesterak, Gródek-Szostak, 2016a, Nesterak, Gródek-Szostak, 2016b). Business support institutions (BSIs) that are a part of the EEN are committed to support international technological cooperation (Gródek-Szostak, et al., 2017, Gródek-Szostak, Nesterak, Luc, 2017). One of the instruments of the EEN network supporting the establishment and development of business cooperation is trade missions, understood as convention meetings of enterprises operating in a given industry, which are aimed at establishing business contacts as well as the finalization of a contract.

The aim of the study is quantitative and qualitative analysis of trade missions organized between January 2016 and April 2017 by the Enterprise Europe Network (EEN). The objective of the paper is to identify the directions of enterprises' activity in the area of trade missions organized by the EEN and to learn the effects and benefits of the established cooperation for the technological development of the enterprise. In terms of territory, analyzed were the experiences of Poland, Czech Republic and Slovak due to the close geographical proximity of the countries.

The following research questions were posed:

1. What were the most frequent destinations of trade missions of enterprises from Poland, Slovakia and the Czech Republic?
2. Which technological profile of trade missions was of the greatest interest to the participants?
3. What quantitative and qualitative effects have been achieved by companies participating in the trade missions?

Material and Methods

The literature shows that entrepreneurial orientation is an important function of the enterprise's survival (Covina, Slevin, 1991; Anand, 2015; Wu, Wang, Hong et al. 2016). An important variable determining the international technological cooperation of enterprises is the possibility of using public instruments to support their innovative development.

Table 1 Trade missions in literature

Author	Definition
Operational Program Innovative Economy 2007 -2013 (PO IG 2007-2013)	A trade mission is a business trip abroad taken by the company representatives, among others to learn about the trade habits of other countries, their preferences and requirements, to visit selected fairs or exhibitions and to participate in organized trade or direct meetings.
Project "Promotion of the economy of the Kujawsko-Pomorskie Voivodship", among others through foreign economic missions No of project RPKP.05.05.00-04-006/13	Business trip meeting, aimed at intensifying the economic promotion (e.g. of a region), in particular to strengthen economic relations between entrepreneurs and foreign partners, and to increase the level of export.

Saner R., Yiu, L.; 2003	An element of trade diplomacy, which includes: opening of foreign markets to domestic companies, participation in the implementation of national economic development programs (including especially foreign economic cooperation), ensuring effective promotion and competent information about the possibilities of developing economic cooperation with individual countries and groups; influencing the influx of foreign investments, as well as intervening at the level of governmental administration in support of domestic companies and institutions.

Source: Own study based on literature overview.

Therefore, trade missions not only enable the improvement of direct contacts, but are also a unique platform for exchanging innovative technologies and initiating and establishing new business partnerships specializing in similar industries. Trade missions are the most cost-effective way to reach the right prospective business partner in their natural place of operation and allow getting acquainted not only with their capabilities but also with their immediate business and legal background.

The dynamics of the changing world forces all organizations to act in terms of designing and implementing changes that lead to balance with the environment. These changes must be systemic, compliant with specific technological, economic and social criteria. Changes bearing these characteristics take the form of innovations which target products or services, processes, the organization itself (in terms of structure and processes), or marketing (Task for Meeting, 2004). The need for systemic use of innovation, considered as a key factor in the development of organizations, regions, economies as well as their competitiveness, is becoming more and more important in managers' minds (Sandberg et al., 2013). Creation and methodical implementation of innovations leading to the development of the enterprise is necessary (Baruk, 2016). The driving force behind economic development in the entire European Union (EU) is innovativeness (Urbancíková, Burger, 2009; Žižek, 2012). Hence, the European Commission is undertaking a number of initiatives to support the innovative development of the SME sector by creating instruments to support the development of business tourism (Ochoa Siguencia et.el, 2017a, Ochoa Siguencia et.el, 2017b). On the regional level (Tab.1), the support in the area of trade missions is offered by the European Commission via the Enterprise Europe Network (EEN).

Table 2 EEN centers in Poland, Slovakia and Czech Republic

Country	EEN Network Center
Poland	• Enterprise Europe Network - Central Poland. 6 centers in 4 voivodships (Mazowieckie, Łódzkie, Kujawsko-pomorskie and Pomorskie) Coordinator: Polish Agency for Enterprise Development • Enterprise Europe Network - East Poland. 6 centers in 3 voivodships (Podlaskie, Warmińsko-mazurskie and Lubelskie). Coordinator: Lublin Foundation for Development (Lubelska Fundacja Rozwoju) • Enterprise Europe Network - Western Poland. 9 centers in 5 voivodships (Zachodniopomorskie, Lubuskie, Wielkopolskie, Dolnośląskie and Opolskie). Coordinator: Wroclaw Center for Technology Transfer - Wroclaw University of Technology • Enterprise Europe Network - Southern Poland. 9 centers in 4 voivodships (Podlaskie, Warmińsko-mazurskie and Lubelskie). Coordinator: Wroclaw Center for Technology Transfer - Wroclaw University of Technology
Slovakia	• BIC Bratislava (Business and Innovation Centre - BIC Bratislava Ltd.) • Slovenska Obchodna a Priemyselna Komora • Slovak Business Agency (SBA) • Regionalne Poradenske a Informacne Centrum Presov
Czech Republic	• Regionalni Hospodarska Komora Brno • JIC, Zajmove Sdruzeni Pravnickch Osob • Krajska Hospodarska Komora Moravskoslezskeho Kraje • BIC Plzen Spolecnost s Rucenim Omezenym • Centrum Pro Regionalni Rozvoj Ceske Republiky • Technologicke Centrum Akademie Ved Ceske Republiky

Source: Own study based on http://www.een.org.pl

It is the largest European network of business and innovation support, providing high quality integrated services to SMEs. The idea of the EEN is to provide integrated information, business cooperation, innovation and technology transfer in support of small businesses and innovative SMEs.

The study is based the authors' research in the form of empirical data analysis and participant observation as an EEN consultant providing information and advisory services. The subject of the research was trade missions organized by EEN centers supporting the establishment of technological cooperation between innovative enterprises in Poland, Slovakia and the Czech Republic between Jan 2016 and Apr 2017. The study uses a descriptive method and the results are presented in tabular and graphic form, combined with a verbal description.

Results and Debate

Analysis of the source material indicates that between Jan 2016 and Apr 2017 the EEN network offered entrepreneurs an opportunity to participate in trade missions organized in nearly 30 countries of the world, on 5 continents. The technological profile of the trade missions was determined by the theme of the event or by the adopted national or regional events calendar.

Table 3 Trade missions Jan 2016 - Apr 2017 in Poland, Slovakia Czech Republic

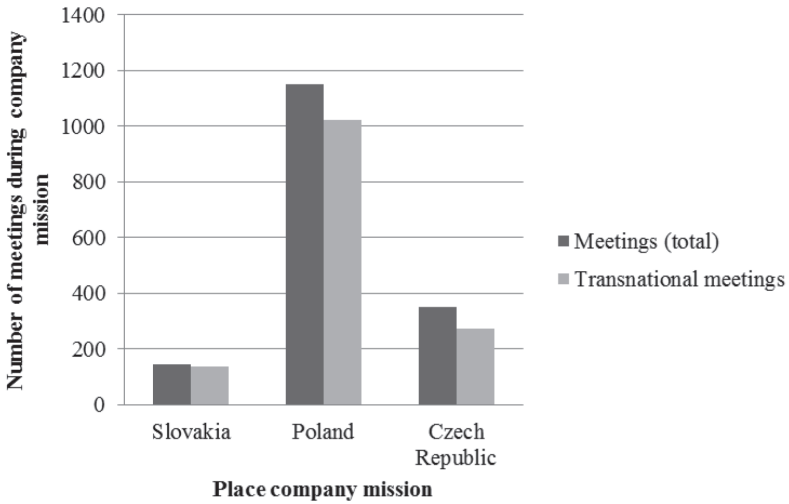
Trade missions to Poland		**Trade missions to Poland**	
Title	**City**	**Title**	**City**
Taiwan Fasteners Trade Mission to Poland	Warsaw	Astrakhan company mission to Slovakia	Nitra
Taiwan ICT Industry Trade Mission to Poland	Warsaw	Austrian trade mission of wood industry and wood building companies to Slovakia	Žilina
Taiwan Fasteners Trade Mission to Poland	Krakow	Biotech Company Mission and Immunohistochemistry Training Course	Kosice
A Chinese big business delegation visit Poland and hold a B2B Meeting	Warsaw	Company mission of Russian companies from the Republic of Mari El to Slovakia, Austria and Italy	Bratislava, Vienna, Trieste
B2B Meetings with Spanish representatives of Eriakune Cluster and Polish Companies from Kuyavian-Pomeranian Province	Torun	Trade missions to Bratislava	Bratislava
B2B mission of Flemish companies to Poland	Warsaw	French trade mission of the agriculture, HoReCa and ICT sector to Slovakia	Bratislava
Trade Mission - Bilateral meetings between French and Polish companies with the agricultural sector	Krakow	Hungarian business delegation at Agrosalón Nitra	Nitra
Company Mission for increased cooperation between Saxony-Anhalt and Kłodzko Region	Klodzko	Integration of key automotive suppliers in PSA Peugeot - Citroen, Slovakia	Trnava
Company mission from the “Greek triangle”: Epirus-Crete-Kavala to Warsaw-Poland.	Warsaw	**Trade missions to the Czech Republic**	
Trade mission Klodzko/Poland	Klodzko	**Title**	**City**
Matchmaking trade mission of 60 Chinese companies to Poland	Warsaw	Mini-trade mission for partners in IT hardware services to Czech Republic	Brno

Trade mission to Magdeburg and Hanover on the occasion of the Hanover Fair	Magdeburg	Taiwan ICT Industry Trade Mission to the Czech Republic	Prague
Food and Drink Trade Mission to Poland	Poznan & Krakow	A major Chinese business delegation visiting Poland to hold a B2B meeting	Prague
ICT trade mission from Berlin-Brandenburg, Germany to Krakow, Poland	Krakow	Trade mission during the Cesty Dreva fair	Prague
Multi-branch Trade Mission to Krakow from Burgenland Region, Austria	Krakow	Trade mission of 60 Chinese companies (Hubei Province) to the Czech Republic	Prague
Close neighbors - broad horizons	Gdansk	Trade mission of German woodwork industry representatives to Czech Republic	Decin
Norwegian trade mission to Poland	Jasionka	Trade mission of Polish companies from recycling sector.	Prague
Quebec/Canada Aerospace Trade Mission To Poland	Rzeszow	Trade mission of the funeral industry	Decin
Self-luminous cycling paths as an environmentally-friendly and sustainable solution for tourism	Olsztyn	Smart textiles trade mission from Thueringen to Pilzen region	Pilzen
Sustainable transport solutions along the Via Regia and beyond	Wroclaw	Cross-border trade mission of Bavarian companies to a Czech material R&D centre	Dobřany
Swedish companies visiting companies in northern Poland	Gdansk/Elblag Olsztyn	Czech-Hungarian Engineering Workshop in Ostrava	Ostrava
Taiwan Trade Mission to Poland	Warsaw	Trade mission of Taiwanese companies to the Czech Republic	Prague
Norwegian trade mission to Poland	Gdansk/ Warsaw	A Polish trade mission at the Bread Basket - International Agricultural Fair 2017, České Budějovice	České Budějovice
Turkish houseware and kitchenware sector's trade mission to Poland	Warsaw		

Own study based on the data from the ENTERPRISE EUROPE NETWORK

In the analyzed period, 24 missions took place in Poland, 8 in Slovakia and 13 in the Czech Republic (Tab. 2). At the events, a total of 1649 individual meetings was held; 69.80% of them took place in Poland, 21.41% in the Czech Republic and 8.79% in Slovakia. International business meetings amounted to 1436, 71.17% of which were held in Poland, 19.15% in the Czech Republic and 9.68% in Slovakia (Fig. 1).

Figure 1 Structure of meetings during EEN trade missions



Own study based on the data from the ENTERPRISE EUROPE NETWORK

The international nature of the contacts was appreciated by the missions' participants, as it provided an opportunity not only to experience contact with a different business culture, but also to finalize business contacts in the form of a technology/commercial/research/development contract. It is significant that the organized missions were related to meetings of companies with a specific technological profile (Tab. 4)

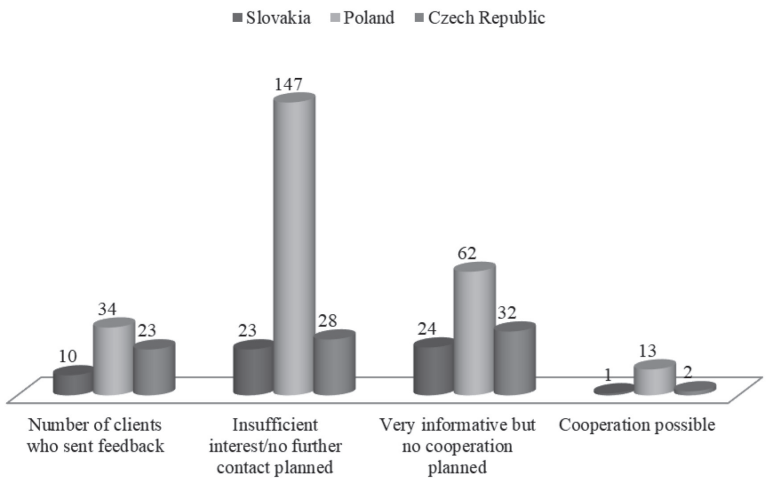
Table 4 Key technologies presented during the EEN trade missions

	Technology Keywords
Czech Republic	Electronic circuits, components and equipment; Information Processing; Telecommunications; Networking; Renewable Sources of Energy; Materials Technology; Construction Technology; Design and Modelling/Prototypes; Advanced Textile Materials; Textiles Technology; Micro- and Nanotechnology; Machining, fine (grinding, lapping); Machining (turning, drilling, moulding, planing, cutting); Technologies for the food industry.
Poland	Industrial Manufacture; Construction Technology; Materials, components and systems for construction; Installations related to construction (energy, lighting, …); Joining techniques (riveting, screw driving, gluing); Electronic circuits, components and equipment; Information Processing; Systems, Workflow; Telecommunications, Networking; Construction engineering (design, simulation); Agriculture Machinery / Technology; Agriculture; Information and media, society; Socio-economic models, economic aspects; Creative services; Education and Training; Creative products; Sports and Leisure; Socio-economic models, economic aspects; Citizens participation; Aeronautical technology / Avionics; Guidance and control; Helicopter; Propulsion; Aircraft; Aerospace Technology.
Slovakia	Agrofood industry; Construction Technology; Wood Products; Cellular and Molecular Biology; Medical Research; In vitro Testing, Trials; Diagnostics, Diagnosis; Clinical Research, Trials; Cytology, Cancerology, Oncology; Telecommunications, Networking; Machining (turning, drilling, moulding, planing, cutting); Engineering; Industrial Manufacture.

Own study based on the data from the ENTERPRISE EUROPE NETWORK

It should be emphasized that the EEN network organizes regular trade missions to countries with which cooperation agreements have also been signed for the representatives of SMEs operating in clusters. The missions aim at the internationalization of companies through clusters and provide an opportunity for European SMEs to find technology and business partners as well as to enter foreign markets. The established international cooperation is expected to contribute to increasing the innovativeness and competitiveness of clusters and companies on a global scale.

Figure 2 Trade missions in the opinion of participants of trade missions during the period of Jan 2016 - Apr 2017



Own study based on the data from the ENTERPRISE EUROPE NETWORK

Participants of trade missions appreciate the opportunities that are involved in industry meetings (Fig. 2). Even if they do not plan to finalize business contracts directly after the mission, they emphasize the educational nature of the meeting.

Conclusion

The objective of the paper was to identify the directions of enterprises' activity in the area of trade missions organized by the EEN and to learn the effects and benefits of the established cooperation for the technological development of the enterprise. The following research questions were posed:

1. What were the most frequent destinations of trade missions of enterprises from Poland, Slovakia and the Czech Republic?
2. Which technological profile of trade missions was of the greatest interest to the participants?
3. What quantitative and qualitative effects have been achieved by companies participating in the trade missions?

Based on the conducted analyzes, it was found that the most common directions of technological cooperation were those related to the development of intelligent specialization (bio-; info-; nano-; techno-). It should be emphasized that entrepreneurs are open to cooperation beyond the borders of a given continent, as evidenced by, e.g. participation in meetings with Asian partners.

The results of the trade missions undertaken in Poland, Slovakia, Czech Republic show that 24 missions were organized in Poland, 8 in Slovakia and 13 in the Czech Republic. During these events, held were 1649 meetings of individual representatives of domestic companies (an average of 37 meetings per one mission) and 1436 international business meetings (an average of 32 meetings per mission).

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MANAGER'S DATA IN HUMAN RESOURCE MANAGEMENT FROM THE PERSPECTIVE OF THE WORK POSITION

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Abstract

The aim of the research is to determine whether statistical significant differences exist in employee motivation in Slovak enterprises depending on the work position. The questionnaire method was used to recognize the level of motivation. The survey was conducted in 2016. The hierarchy of motivation factors was defined by using the arithmetic mean of each motivation factor. The dependence between two categorical variables was verified based on the chi-square test. Following the results, we can conclude that, motivation factors related to finance and mutual relationship were preferred by Slovak employees regardless of their belonging to the work position. The base salary dominated in all work categories. Same motivation factors (atmosphere in the workplace, good work team, base salary) were preferred by managers and white collar workers with slight differences in order.

Key words: *employee motivation, managers, white collar workers, blue collar workers, the Chi-square test*

JEL Classification: O15, J28

Introduction

Motivation of employees is an essential part of human resources management (Dar et al., 2014). Managers have to always have knowledge and have a factor effect on the motivation of their employees. The enterprise expects them to achieve good results in the organization, especially in terms of organizing their employees (Dobre, 2013). Managers who perceive the expectations of their subordinates become human resources professionals (Vetráková et al., 2016; Seková, 2008). A manager should prefer to motivate employees with a well-designed education and training system (Sherif et al., 2014). Motivation system focuses on an employee within three categories. The first category consists of the inner strength of each person. The second category consists of the choice the individual chooses to take and the attitude that leads them to a certain direction. The last category deals with how to individually maintain an employee's

behaviour in a way that is consistent with the goals they want to achieve (Saleem, Saleem, 2014). For senior managers, it is important to know what motivates employees. Motivated individuals have a higher performance. Motivation must be balanced to avoid excessive stress, which may be both short-term and long-term (Huang, 2010). In most cases, motivation comes from the need of a person. This need leads to a person's behaviour.

Employees who are motivated make a lot of effort and strive to achieve organizational goals. An employee who is satisfied with the terms of remuneration and working environment, does not feel the need to leave the company. However, it is unlikely that an employee will contribute beyond the parameters of his assigned tasks. The optimum situation is when the employee feels satisfied with the conditions and the working environment but at the same time feels long-term motivated (Dolobac et al., 2016; Smolková et al., 2016; Nadanyiová, 2014; Huang, 2010). Positive motivation aims to increase the efforts and direct contribution of employees to achieving the organization's goals in order to increase their satisfaction. The goal of negative motivation is to increase employees' efforts and contributions to achieve the goals. Its tools are eliminating, reducing or threatening by reducing satisfaction in the process of their work if the tasks and goals are not met. These motivational tools often create a decline in income, morale, employee satisfaction in relation to their expectations (Hauser, 2014).

It is generally recognized that motivation is primarily two-dimensional, with reference to internal and external (Berumen, 2016). Internally motivated individuals perform their work for themselves because they like it and identify themselves with the type and specific features of the tasks performed. By contrast, external motivated employees work for useful reasons such as earning money or securing their professional standing (Giauque et al., 2015). Internal motivation involves individuals doing business because they meet their own implementation needs. Their behaviour is driven by curiosity, an effort to gain knowledge and skills, even without rewards. On the other hand, external motivation is the connection between performance and sudden remuneration, such as financial reward or verbal rewards. Satisfaction does not come from the activity itself but from external rewards related to an activity. In addition to these types of motivation, it should be taken into account that individuals may also feel demotivated (Berumen, 2016).

It is clear from this that external rewards improve performance without an internal motivation and people are not internally motivated due to routines in most activities. Satisfaction comes from reward rather than the activity itself. There are two recognized goals that are focused on access and avoidance. In motivating access, behaviour is driven by a positive or desirable event. In contrast, in avoiding motivation, behaviours are driven by a negative or undesirable event (Berumen, 2016).

Material and Methods

Learning relationships between variables is a prerequisite for advancing science disciplines. This knowledge is important not only in the field of science but in marketing research and corporate management, too. The aim of the research is to determine whether statistical significant differences exist in employee motivation in Slovak enterprises depending on the work position. We have used the questionnaire to determine the level of motivation. The questionnaire consisted of closed questions.

The first part of the questionnaire examined the socio-demographic and qualification characteristics of the employees in the enterprises compared. Through this section, we have obtained basic data on respondents about their age, gender, seniority, completed education and work position. The second part of the questionnaire was focused on the preferences of individual motivation factors.

The research was conducted in 2016. The selection of respondents was in view of the selection of the sample throughout the territory of Slovakia. The distribution of the questionnaires was secured in all areas of business and government in terms of enterprise focus, size of enterprises and gender, age, and employee education. Motivation factors related to finance (base salary, fringe benefits, fair appraisal system), to social security (social benefits, mission of the company, name of the company, region's development, relation to the environment, free time), to work conditions (physical effort at work, occupational safety, job security, workload and type of work, information about performance result, working hours, work environment, job performance, mental effort, stress), to career aspiration (opportunity to apply one's own ability, career advancement, competences, prestige, individual decision-making, self-actualization, personal growth, recognition), and to mutual relationships (atmosphere in the workplace, good work team, communication in the workplace, supervisor's approach), were analysed (Hitka, 2009). For reasons of not influencing the respondents, we organized the motivation factors in the alphabet. We have defined the order of importance of motivation factors by using the arithmetic mean of individual motivation factors. The dependence between the two categorical variables within inductive statistics was verified by the chi-square test (Pacáková et al., 2009). Based on actually found and theoretical abilities, we can define a working hypothesis that we verify by the test characteristic by a square contingency. For categorical characters, we have confirmed a statistically significant dependence and provide a table of residual abilities to determine where the dependence is most pronounced (Schmidtová, Vacek, 2013).

WH1: We assume that there are significant differences in motivation between employees in different work positions.

In the analysis, we distinguish three working categories – managers, blue collar workers and white collar workers. As part of our research, 426 managers, 2,793 blue collar workers and 1,225 white collar workers expressed their views on the importance of motivation factors in the Likert scale, from 1 irrelevant to 5 very important (Table 1). We used the statistical software STATISTICA 12.0 to process data (Dell, Oklahoma City, Oklahoma). The Chi-square test of good match was used.

Table 1 Characteristics of the research sample

Identification data		**Absolute frequency**	**Relative frequency**
Gender	Men	2,207	0.50
	Women	2,237	0.50
Age	Up to 30 years	1,054	23.72
	31 – 40 years	1,396	31.41
	41 – 50 years	1,217	27.39
	50 years and older	777	17.48

Completed education	Primary	126	2.84
	Lower secondary	865	19.46
	Upper secondary	2,414	54.32
	Higher	1,039	23.38
Seniority	Less than 1 year	434	9.77
	1 – 3 years	890	20.03
	4 – 6 years	920	20.70
	7 – 9 years	733	16.49
	10 years and more	1,467	33.01

Source: own research

Results and Discussion

We have defined the most important motivation factors by using descriptive statistics. Consequently, we have selected three motivation factors with the highest average value of each working category (managers, white collar workers, blue collar workers). Table 2 shows the arithmetic average of importance, the standard deviation, and the 95% confidence interval of selected motivation factors for each work category (Table 2).

For managers, the most preferred motivation factor is a good work team and then an atmosphere in the workplace. Motivation factors, the base salary has a high preference, too. White collar workers preferred the motivation factor – an atmosphere in the workplace. A good work team was in second place and a base salary in third place. Blue collar workers preferred other motivation factors like white collar workers and managers. For this category, the base salary is clearly the dominant motivation factor. Consequently, they prefer the superior's approach followed by fair appraisal system. In the investigated sample of respondents, we can state that the motivation factors of white collar workers and managers are the same, while these factors are different for blue collar workers. All the working categories examined are motivated by the base salary.

Table 2 The most important motivation factors

Managers					
	Number	**Weighted arithmetic average**	**Standard deviation**	**Confidence interval 95% low limit**	**Confidence interval 95% top limit**
Good work team	426	4.51	0.72	4.44	4.58
Atmosphere in the workplace	426	4.50	0.73	4.43	4.57
Base salary	426	4.49	0.83	4.41	4.56

White collar workers					
Atmosphere in the workplace	1,225	4.49	0.66	4.45	4.52
Good work team	1,225	4.49	0.70	4.45	4.53
Base salary	1,225	4.49	0.78	4.44	4.53
Blue collar workers					
Base salary	2,793	4.42	0.92	4.39	4.46
Supervisor's approach	2,793	4.35	0.85	4.32	4.39
Fair appraisal system	2,793	4.34	0.89	4.31	4.37

Source: own research

Atmosphere in the workplace

The majority of employees of all working categories evaluated the motivation factor atmosphere in the workplace as very important. The results of the dependency testing, between work positon and atmosphere in the workplace, are presented in Table 3.

Table 3 Frequency of motivation factor – Atmosphere in the workplace

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	0.47%	1.41%	7.04%	30.28%	60.80%
Blue collar workers	1.00%	2.08%	12.61%	32.99%	51.33%
White collar workers	0.24%	0.08%	7.67%	34.69%	57.31%

Source: own research

Table 4 Chi-square test for motivation factor – Atmosphere in the workplace

	Calculated value	Degrees of freedom	p-level
Pearson's chi-square test	67.31	8	**0.000**
Contiguous coefficient	0.12		
Cramer´s V	0.09		

Source: own research

Based on p-level, we confirmed the statistically significant contingency between factors analysed at a significance level of 5%. Job position affects the employee's view of the importance of motivation factor the atmosphere in the workplace. We will assess the magnitude of dependence according to the Contingent coefficient or Cramer's V. Dependency is evaluated as weak (V=0.09). While managers and white collar workers prefer atmosphere in the workplace as important or very important motivation factor, blue collar workers value this factor as a neutral or slightly important factor (Table 5).

Table 5 Residual frequencies for motivation factor – Atmosphere in the workplace

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	-1.16	-0.23	-15.64	-12.42	**29.46**
Blue collar workers	7.26	**17.15**	**52.88**	-5.90	-71.40
White collar workers	-6.10	-16.92	-37.24	**18.32**	**41.94**

Source: own research

Good work team

The relationship between the work positon and the motivation factor of the good work team is the second test relationship. Table 6 presents the observed relative frequency. Most employees have identified a good work team as very important motivation factor. In Table 7, we present the results of testing the dependency between work position and motivation factor a good work team.

Table 6 Frequency of motivation factor – Good work team

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	0.47%	1.17%	7.04%	29.81%	61.50%
Blue collar workers	1.29%	2.69%	9.74%	33.62%	52.67%
White collar workers	0.08%	1.31%	7.59%	31.84%	59.18%

Source: own research

Table 7 Chi-square test for motivation factor – Good work team

	Calculated value	Degrees of freedom	p-level
Pearson's chi-square test	42.76	8	0.000
Contiguous coefficient	0.10		
Cramer´s V	0.07		

Source: own research

P-level is less than 0.05 for motivation factor – good work team. Within this motivation factor, there is confirmed a statistically significant dependence. The work position affects the opinion of employees on the motivation factor a good work team. The Cramer V value is 0.069, which confirms the weak contingency between the characters. Table 8 shows values of residual frequencies. Managers and white collar workers perceive the factor of a good work team as very important. The blue collar workers evaluate this motivation factor on a scale from important to unimportant.

Table 8 Residual frequencies for motivation factor – Good work team

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	-1.74	-4.20	-7.86	-12.57	26.38
Blue collar workers	11.49	14.67	23.75	23.92	-73.82
White collar workers	-9.75	-10.46	-15.88	-11.35	47.45

Source: own research

Base salary

The motivation factor base salary was tested as third. Table 9 shows the relationship between the work position and the base salary. Most employees rated the base salary as very important motivation factor. We interpret the results of the test of dependency between the work position and the motivation factor of the base salary in Table 10.

Table 9 Frequency of motivation factor – Base salary

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	1.17%	2.35%	7.75%	24.18%	64.55%
Blue collar workers	2.01%	3.22%	8.74%	22.71%	63.32%
White collar workers	0.90%	1.39%	8.57%	26.53%	62.61%

Source: own research

Table 10 Chi-square test for motivation factor – Base salary

	Calculated value	Degrees of freedom	p-level
Pearson's chi-square test	23.91	8	0.002
Contiguous coefficient	0.07		
Cramer´s V	0.05		

Source: own research

We have confirmed a statistically significant dependence on the 5% significance level, between the work position and the base salary. Work position affects employee opinion on the evaluation of the importance of the motivation factor base salary. The Cramer V value is in the range 0 - 0.3, so the dependence is weak (V=0.05). In Table 11, we can see that while managers and blue collar workers assessed this factor as important, to very important, white collar workers considered it important. Blue collar workers considered the factor as neutral to unimportant, but some respondents have evaluated this factor as very important.

Table 11 Residual frequencies for motivation factor – Base salary

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	-1.90	-1.22	-3.63	**1.17**	**5.57**
Blue collar workers	**10.75**	**16.48**	**3.95**	-33.37	**2.18**
White collar workers	-8.85	-15.26	-0.32	**32.19**	-7.76

Source: own research

Supervisor's approach

The relationship between the work position and the motivation factor, the supervisor´s approach is the fourth examining dependency. This relationship is shown in Table 12. An over-majority of employees considered the motivation factor – the superior's approach as very important. It has the greatest value for managers.

Table 12 Frequency of motivation factor – Supervisor's approach

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	0.47%	1.64%	10.56%	27.93%	59.39%
Blue collar workers	0.86%	3.19%	10.03%	31.54%	54.39%
White collar workers	0.49%	3.35%	8.00%	30.12%	58.04%

Source: own research

We did not confirm the statistically significant relationship between the work position and the motivation factor of the supervisor's approach by testing the contingency. The relevance to the individual work position does not affect the views of the employees on how they perceive the importance of the motivation factor of the superior's approach (Table 13). Residual frequencies for the motivation factor of a supervisor's approach is presented in Table 14.

Table 13 Chi-square test for motivation factor – Supervisor's approach

	Calculated value	Degrees of freedom	p-level
Pearson's chi-square test	14.37	8	0.073
Contiguous coefficient	0.06		
Cramer´s V	0.04		

Source: own research

Table 14 Residual frequencies for motivation factor – Supervisor's approach

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	-1.07	-6.13	**4.45**	-12.23	**14.98**
Blue collar workers	**3.89**	**2.90**	**14.15**	**20.60**	-41.54
White collar workers	-2.82	**3.24**	-18.60	-8.37	**26.55**

Source: own research

Table 14 shows that managers rated the motivation factor as very important or neutral. Blue collar workers considered this factor from unimportant to important. Most white collar workers have given great importance to supervisor's approach. But, some of them consider it to be a slightly important factor.

Fair appraisal system

The dependence between work position and motivation factor – the fair appraisal system is the last, fifth examining relationship. The importance assessment is shown in Table 15. The majority of employees rated the fair appraisal system as very important. We present the results of testing the contingency between the work positon and the motivation factor, a fair appraisal system in Table 16.

Table 15 Frequency of motivation factor – Fair appraisal system

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	0.47%	1.88%	8.92%	30.28%	58.45%
Blue collar workers	1.40%	2.94%	10.88%	29.86%	54.92%
White collar workers	0.73%	1.14%	9.88%	33.47%	54.78%

Source: own research

Table 16 Chi-square test for motivation factor – Fair appraisal system

	Calculated value	Degrees of freedom	p-level
Pearson's chi-square test	23.63	8	0.003
Contiguous coefficient	0.07		
Cramer´s V	0.05		

Source: own research

Based on the p-level (p-level = 0.003), we confirmed the statistically significant contingency at the significance level of 5%. The work position affects the employee's opinion on the evaluation of the importance of the fair appraisal system. We have evaluated Cramer's V dependency as a weak dependence (V=0.05). In Table 17, there are shown residual frequency the fair appraisal system. The white collar workers considered the factor as important, but the managers see this factor as very important. The blue collar workers rated this factor from unimportant to neutral.

Table 17 Residual frequencies for motivation factor – Fair appraisal system

	Unimportant	Slightly important	Neutral	Important	Very important
Managers	-2.80	-1.97	-6.38	-2.62	**13.76**
Blue collar workers	**7.58**	**16.64**	**13.01**	-28.91	-8.31
White collar workers	-4.78	-14.67	-6.63	**31.53**	-5.45

Source: own research

Conclusion

At present, advanced information technologies, statistical analyses are not only part of science and research (Bileviciene et al., 2015). Valuable information acquired through statistical surveys of the amount of data and their subsequent analysis forms the basis for decision-making in all areas of economic and managerial practice.

Based on our analyses, we have come to the following conclusions. Regardless to the work position, motivation factors related to the finance and mutual relationship were considered as the most important motivation factors by the employees of Slovak enterprises. The base salary is the strongest motivation factor for all work categories. Managers and white collar workers prefer the same motivation factors – atmosphere in the workplace, good work team and base salary, with slight differences in their ranking. Motivation factors related to mutual relationship (atmosphere in the workplace and good work team) are very important for managers and white collar workers. The reason may be that employees must be able to communicate with each other, not only within the hierarchy. It is always better to work in a friendly collective that

communicates in a family spirit than in a collective where there is a bad and stressful atmosphere. Base salary and fair appraisal system were considered as important by blue collar workers. The blue collar workers place great emphasis on the motivation factor of the superior's approach. Managers have not reacted to the factor – the superior´s approach. The acquired knowledge can be used in the preparation of motivation programs by human resource department in company. These motivation programs would be similar to the work categories of managers and white collar workers. Diversification is needed when creation of motivation programs for blue collar workers.

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INNOVATION POTENTIAL OF THE REGIONS IN THE SLOVAK REPUBLIC

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Abstract

Innovations represent a significant factor of the competitiveness of regions. Their representatives are mainly the universities and research organisations. They are represented in the regions with varying intensity depending on the presence of good quality human resources. In article, we selected some factors that represent the innovation potential of the region. At the moment, economic efficiency is being examined, which is also represented by the group of factors. We focused on the Slovak region (NUTS3). Based on innovation potential assessment and economic efficiency evaluation, we set up their order. We applied point method. We used the Pearson correlation coefficient to examine the relation between the values of the total sum of points of both evaluations. It is shown that the innovation potential is closely linked to the economic performance of regions.

Key words: *innovation, research and development, economic performance, knowledge, region*

JEL Classification: R11, R12, J21

Introduction

Innovations have been studied through diverse terminologies and research streams, including the following:

- Sustainability-oriented (or related, driven, led) innovation (Hall and Vredenburg, 2003; Seebode et al., 2012; Wagner and Llerena, 2008)
- Sustainable (development) innovation (Bos-Brouwers, 2010, Hall, 2002)
- Eco (or green, environmental) innovation (Fussler and James, 1996)
- Environmental or green (new) product development, (Dangelico and Pujari, 2010; de Medeiros et al., 2014).

One of the types of innovation is sustainable innovation. Sustainability innovation is about defining economic development as the creation of private and social wealth to ultimately eliminate harmful impacts on ecological systems, human health, and communities (Larson, 2011). Many studies point to company resources and capabilities as key factors influencing sustainable innovation activities of firms (e.g., Dangelico, 2016; van Kleef and Roome, 2007).

The countries need competitive dynamic regions in order to achieve their economic, social and environmental goals. Regional development is primarily performed through regional policy.

There are several discussions maintained focused on regional competitiveness. The basic problem is whether the individual territories compete with each other, or whether competitiveness is an inadequate name for evaluating the health and successfulness of the economy. On the other hand, the term competitiveness more often appears in the evaluation of prosperity, welfare or the achieved level of living of regions and towns.

According to the World Economic Forum, competitiveness may be defined as a set of institutions, policies and factors determining the level of productivity of the country (World Economic Forum, 2014). Regional competitiveness expresses the ability of regions to generate income and maintain unemployment level within the framework of national and international competition.

Competitiveness is significantly affected by the establishment and spread of innovations being the main source of socio-economic development (Hudec, 2007; Klímová 2013). One of the ways to maintain competitiveness of the economy is modernisation towards knowledge-based economy (Horký, Kouba, 2013). The importance of this information about knowledge-based economy or new global economy is also supported by (Straková, J., Pártlová, P. Váchal, J. 2017).

The term "knowledge-based economy" or "economy based on knowledge and innovations" has appeared more and more often recently. According to OECD (2005), knowledge-based economy is a term used for description of the trends typical for developed economies heading for higher dependency on knowledge, information and high level of skills, as well as the growing need of access to them from the corporate and public sector as well. There is no doubt that education, research, development and innovations play a major role here. The possibility of creating and implementing innovations depends on the innovation potential of the country. The economic literature pays substantial attention to innovation potential. However, it is rather a technical potential that is interpreted as a set of factors and conditions necessary in the innovation process. The innovation potential may also be understood as description of the existing innovation environment, where innovations are created, developed and implemented (Žižlavský, 2011). The innovation potential of the country may also be described through the innovation efficiency of the regions. System of innovations is described also by (Fenyvesi, E. 2015).

Goal and methods

The innovation environment in the regions clearly changes in time and we can say that it changes in a positive direction. Some of the regions, which not long ago had weak prerequisites for creating and spreading innovation, are currently in a situation when these conditions have markedly improved. The aim of the article is to find out whether the innovation environment in the Slovak regions (NUTS3) reflects their economic situation. If we want to fulfil the goal of the article, we must select such indicators, which may be considered as suitable representatives of the innovation potential and economic efficiency of the regions. We consider as factors of the innovation environment mainly characteristics of the knowledge and research base of the region. The factors of economic development evaluation are mainly the macroeconomic aggregates and characteristics of the labour market. With regards to

the fact that some of the indicators may report random fluctuations in one year, we used the indicators determined as five-year averages for the period of years 2012-2016. For the purpose of standardising the selected factors, we used the point method that is based on finding the region with the maximum (and/or minimum) value, according to the relevance of the desired value (whether it is more or less better). The point value of the respective indicator will be determined in case of maximum according to the equation:

$$y_{ij} = \frac{x_{ij}}{x_{imax}} * 100$$

in case of minimum according to the equation:

$$y_{ij} = \frac{x_{imin}}{x_{ij}} * 100$$

where
y_{ij} is the point value of indicator "i" of region "j",
x_{ij} is the value of indicator "i" of region "j",
x_{imax} represents the maximum value of indicator "i" and
x_{imin} represents the minimum value of indicator "i".

The individual factor gains values in the interval of <0; 100>.

The totalised values of the point method results for each factor determine the order of regions and serve as a default matrix for evaluation of the correlation between innovation potential and economic efficiency. For its determination, we will use the Person correlation coefficient:

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

Which may gain values in the interval of <-1; +1>. The values of the correlation coefficient may be interpreted as: 0.10-0.39 weak correlation; 0.4-0.59 medium correlation; 0.70-0.89 strong correlation; 0.90-1.00 very strong correlation.

Results and Discussion

If we want to achieve the set goal, it is necessary to select suitable indicators by the virtue of which we can evaluate the innovation potential and economic efficiency of the regions of Slovakia. We emerged from the available statistical data monitored by the Statistical Office of the Slovak Republic. We selected the ones we consider relevant and excludes that ones that relate to both types of evaluation, e.g. science research costs as a percentage from GDP.
We selected five indicators for evaluation of the innovation potential:

- Number of workplaces in science and research (NWP)
- Number of research employees (NRE)
- Number of patents granted (NPG)
- Number of students of doctoral studies (NDS)
- Number of faculties (NFA)

The number of workplaces includes all the entities in the public and private sector, where research activities are performed. The number of research employees represents the participation of human resources in research and development as a key factor of research performance. The number of patents granted represents one of the types of science and research results. The significant role of universities is represented by the number of students of doctoral studies. Another characteristic of the university environment is the number of faculties.

For the measurement of economic efficiency, we selected the following indicators:

- Level of regional GDP per capita (GDP)
- Unemployment rate in % (UR)
- Total equivalent available household income (HI)

GDP is considered to be the basic characteristic of efficiency of the region; it symbolises is overall welfare and development potential. Unemployment rate characterises the situation on the labour market; its values are based on labour force sample survey. The available income of households evaluates the welfare of households living in the region.

Table 1 The factors of innovation potential of the Slovak republic average values 2012-2016

Region – NUTS III	NWP	NRE	NPG	NDS	NFA
Bratislava Region	12194,50	150,31	10,40	2309,40	33,00
Trnava Region	2372,68	28,59	5,60	266,80	10,00
Trenčín Region	1520,95	18,33	5,60	47,20	4,00
Nitra Region	2068,49	24,93	25,80	438,60	14,00
Žilina Region	2737,71	32,99	2,60	692,60	7,00
Banská Bystrica Region	2251,00	27,13	19,00	374,20	14,00
Prešov Region	2649,95	31,57	5,40	213,60	8,00
Košice Region	3711,11	44,72	22,80	826,20	15,00

Source: Statistical Office, own calculation (2017)

Table 1 shows the factors of innovation potential of the Slovak regions, average values for the period of 2012-2016. The highest values in all indicators, apart from the number of patents granted, are achieves by Bratislava region. It is well visible in Table 2, where the values of the monitored indicators are standardised using the point method.

Table 2 Evaluation of the innovation potential of Slovak regions (NUTS3)

Region – NUTS III	NWP	NRE	NPG	NDS	NFA	Amount of points
Bratislava Region	100,00	100,00	40,31	100,00	100,00	440,31
Trnava Region	19,46	19,02	21,71	11,55	30,30	102,04
Trenčín Region	12,47	12,20	21,71	2,04	12,12	60,54

Nitra Region	16,96	16,59	100,00	18,99	42,42	194,96
Žilina Region	22,45	21,95	10,08	29,99	21,21	105,68
Banská Bystrica Region	18,46	18,05	73,64	16,20	42,42	168,78
Prešov Region	21,73	21,01	20,93	9,25	24,24	97,16
Košice Region	30,43	29,76	88,37	35,78	45,45	229,79

Source: Statistical Office, own calculation (2017)

Bratislava region gets the most points in innovation potential evaluation, namely 440.31. The second in row in Košice region with almost half as less points. It got 229.79 points. Then after a bit of a distance, Nitra region follows with 194.96 points. Košice and Nitra regions achieved above-average number of points. They are followed with below-average points by Banská Bystrica region with 168.78 points, Žilina region 105.68 points, Trnava region 102.04 points, Prešov region 97.16 points and finally Trenčín region with 60.54 points.

Table 3 The factor of economic efficiency of the Slovak republic average values 2012-2016

Region – NUTS III	GDP	UR	HI
Bratislava Region	33933,76	5,84	9144,88
Trnava Region	15348,17	8,33	7496,88
Trenčín Region	12131,62	9,73	7922,37
Nitra Region	12136,04	11,88	7065,41
Žilina Region	11984,89	11,27	7490,90
Banská Bystrica Region	9995,14	17,81	6957,54
Prešov Region	8238,33	18,24	6538,06
Košice Region	10969,83	16,78	7089,39

Source: Statistical Office, own calculation (2017)

Table 3 shows, the overall evaluation of economic efficiency, similarly as in case of innovation potential, is led by Bratislava region. It reports higher GDP per capita, the lowest unemployment rate and the highest available household income. As show table 4, hereby it achieved a full amount of points, namely 300. However, in this case the second place belongs to Trnava region with 197.30 points, followed by Trenčín region with 182.43 points. Trnava and Trenčín regions achieved above-average number of points. They are followed with below-average points by Žilina region with 169.06 points, Nitra region 162.18 points, Košice region 144.65 points, Banská Bystrica region 138.33 points and finally Prešov region with 127.79 points.

Table 4 Evaluation of the economic efficiency of Slovak regions (NUTS3)

Region – NUTS III	GDP	UR	HI	Amount of points
Bratislava Region	100,00	100,00	100,00	300,00
Trnava Region	45,23	70,09	81,98	197,30
Trenčín Region	35,75	60,05	86,63	182,43
Nitra Region	35,76	49,16	77,26	162,18
Žilina Region	35,32	51,83	81,91	169,06
Banská Bystrica Region	29,45	32,80	76,08	138,33
Prešov Region	24,28	32,02	71,49	127,79
Košice Region	32,33	34,80	77,52	144,65

Source: Statistical Office, own calculation (2017)

Based on the above innovation potential assessment and economic efficiency evaluation of the Slovak regions, we can deal with the question of correlation of the results of both evaluations at the level of individual regions. The result is determination of the Pearson correlation coefficient value, which reached the level of 0.714. With regards to the fact that it is in the interval from 0.7 to 0.89, there is a strong correlation dependency between these variables. Therefore, we can observe that from the aspect of innovation potential assessment, the economic development is substantially predetermining and in this sense also limiting for the Slovak regions.

Similar research carried out in the regions of the Czech Republic has also strong correlation dependence (0,887) between similar variables (Winklerová, Žítek, 2017).

Conclusion

The article addresses the innovation potential of regions as a source of their competitiveness. The aim of the article is to find out whether the innovation environment in the Slovak regions reflects their economic situation. In order to be able to prove this correlation, we performed separate evaluation of the innovation potential and of the economic efficiency of individual regions. We performed it based on selected indicators, which we standardised and consequently synthesised using the point method.

The results of innovation potential assessment are led by Bratislava region, followed by Košice region and Nitra region. The economic efficiency evaluation is led again by Bratislava region, followed by Trnava and Trenčín regions. A strong correlation dependency between the results of both evaluations is proved using the Pearson correlation coefficient.

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INCLUDING LABOUR MARKET PROPOSALS IN HIGHER EDUCATION OFFERS

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Abstract

Higher education institutions are facing serious challenges all over Europe. These challenges have a greater effect on post-socialist countries since it is completely new to them that educational institutions are players on the open market and are competitors.

The results of the study show that besides theoretical knowledge universities need to offer a lot more practical examples and situations where students can gain some valid and real-life business experience during their studies. Universities need to make some effort to promote and develop their partnerships with different companies in order to achieve cooperative education and to be able to offer dual courses – where students can learn the practical terms in a company.

Key words: *higher education, marketing, educational management, labor market*

JEL Classification: I21, I23, M31

Introduction

The higher education sector has experienced a lot of changes during the last couple of years, thus we can speak about a dynamically developing field. It has become clear for higher education institution leaders that the time of the ivory tower (environment of intellectual pursuit disconnected from the practical concerns) has gone. (Çetin, 2003) And education should be regarded as a service, therefore it should constantly be adjusted to the needs of its consumers in order to be and stay competitive (Deés, 2010). With the expansion of higher education enrolments, changes in the societal needs and the rapid development of technology it has become obvious that marketing strategies and solutions should also be used in the higher education sector (Jacob et al., 2003). There is a need to identify the market, customers, and the product and there is a need to build proper sales channels (Duga, 2013). According to Ivy J. (2008) diplomas and certificates should be considered as products rather than the graduate students, since employers do not pay directly for the students, as if they were products. Nevertheless, Fojtik J. (2010) argues that the product universities make is the quality of knowledge students possess, as the biggest demand for universities comes from employers. Generally speaking, those institutions can be

considered competitive, which issue diplomas and certificates that help graduates to easily find a job on the market (Vargo, et al, 2004) and become competitive employees on the national and international job market. (Powers, et al., 2005) This can be achieved by offering practical knowledge and developing practical skills, besides theory and declarative knowledge or doing research (Náray – Szabó, 2011).

The higher education market in Romania has also experienced some significant changes in the last few years. New institutions have appeared which lead to an increase in supply, and due to the Bologna process the structure of the higher education has also changed (www.edu.ro, 2017). There were 92 accredited higher education institutions registered in 2014, out of which 56 state universities and 37 private institutions – for 21.33 million people (www.insse.ro, 2017).

Similarly, the economy has also experienced several changes – prosperity, economic crisis and changes in structure are the three key concepts that characterize the Transylvanian entrepreneurial environment, too in the last years.

The present research aims to find out what aspects should be taken into account by higher education institutions in order to develop a competitive training structure and curriculum. As I had to narrow down the topic, I focused primarily on the Transylvanian Hungarian higher education institutions and business environment. The objective of the study is to arrive at useful findings and results that would help universities to adopt a marketing perspective and to become the driving force behind the economic development of the region. As Florida (1999) said, there must be cooperation between higher education and the economic sector.

Material and Methods

Maringe and Gibs (2009) give a clear explanation of the factors which contributed to the need of adopting marketing strategies in the higher education sector: firstly, they mention the massification of higher education, but expansion and diversification are also considered as important factors, along with the growth of heterogeneity and the growth of competition in higher education. Education is to be regarded as a service that improves and develops human knowledge. (Brookes, 2003) In order to develop real and adequate marketing strategies it is important to know the characteristics and features of non-business services and the specificities of informational goods (Kuráth, 2007).

Following the secondary data analysis, primary research has been carried out by employing quantitative and qualitative analysis. The qualitative research was based on two methods, namely focus-group discussion and interviews. The quantitative part of the research involves the use of an online questionnaire distributed using the most popular social media sites.

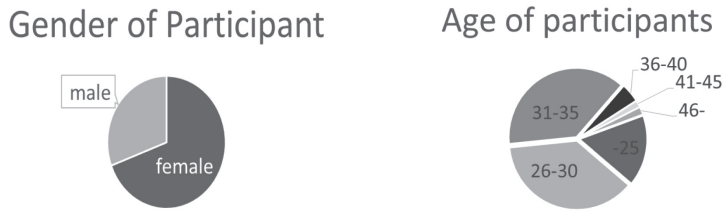
The online questionnaire was designed for Hungarians from Transylvania who graduated university between 2005 and 2015. Participants were asked to fill in the questionnaire in order for us to get a more in-depth picture about how they could use their knowledge on the job market and thus contribute to the adjustment of university courses and training to the needs of the labour market. A total of 375 valid questionnaires have been received.

The reason for choosing participants who graduated between 2005 and 2015 was that 2005 was the first year of university graduation at the Sapientia University in Transylvania. This institution has greatly changed the existing structure and educational offers. This University, thanks to its educational offer and geographical

location, provides education for those Transylvanian young people who encounter financial and cultural or language difficulties. These young people have the opportunity to study cheaper in their mother tongue, close to their homes. I chose 2015 as the last year when participants graduated because I believe that those people who have at least one or two years' experience on the labor market are the ones who can bring meaningful contribution to the present research.

Results and Debate

Graph 1 Demographic characteristics of participants



Source: own elaboration

The chart above shows the age distribution of the research participants, and as it has been expected, the majority of the sample is between 26 and 35 years old. However, it is a pleasant surprize that there are 63 participants (nearly 17% of the total number of participants) under the age of 25 who could successfully find a job in their field of studies. There are a few people (n=13) above 41 who met the selection criteria (to obtain a university degree between 2005 and 2015), and although they represent only a small percentage of the total number of participants they deserve special attention, as they belong to a separate category on the labour market. In this category are those people who were already working in a specific field, but due to the changes and the requirements of the job market, they had to obtain a university degree. In most cases no higher education was required when they started their work, but requirements have changed during the years and they were forced to obtain a degree in order to keep their jobs.

Quantitative methods

One of the most important aims of the present study is to define segments within the target population and to analyse their characteristics in detail. Homogeneous groups were identified by using cluster analysis, then comparing the result with the other questions of the questionnaire I tried to give a detailed description of the characteristics of each group. Cluster analysis can be understood as a way of grouping as its aim is to identify homogeneous groups based on the variables of the research (Sajtos – Mitev, 2007). I chose K-centre clustering because I already had a predetermined idea about the types of people that form the base population.

Based on the following question – "To what extent did you take into consideration the followings when you chose the university" – I identified 4 clusters (I also tried dividing the population into three clusters, but based on my previous expectations and the iterative procedures it seemed that the group of indifferent people does not separate clearly enough from the rest of the population). Performing cluster analysis is useful from marketing perspectives as well; market segmentation and the market structure analysis become easier by using this method. Using cluster analysis based on the question above was considered important as later it could help in the development of a marketing model, already being familiar with the decisive factors marking each of the clusters.

Participants were asked to rate from 1 to 6 the statements below according to their importance in choosing a university:

1. Quality of education
2. Further education possibilities at the given university
3. The ability to study in my hometown or close to it
4. The university should be far from my hometown
5. Gaining practical knowledge (classes based on practice, internships, etc.)
6. Being easy to get the degree (it is not necessary to study hard)
7. Networking
8. The university has a good reputation
9. The ability to study in one's mother tongue
10. High earning potentials after graduating in that field of study
11. Possibilities to study abroad with the help of the university
12. Being easy to find a job in the chosen field of study

Table 1 The rating of each clusters

	take it easy	**stay at home**	**definite career path**	**career in your mother tongue**
	1	2	3	4
1. Quality of education	3.93	4.73	5.21	5.5
2. Further education possibilities at the given university	1.9	3.09	3.4	4.09
3. The ability to study in my hometown or close to it	2.09	5.52	2.45	2.3
4. The university should be far from my hometown	1.87	1.21	1.86	2.49
5. Gaining practical knowledge (classes based on practice, internships, etc.)	2.97	4.42	4.53	4.73
6. Being easy to get the degree (it is not necessary to study hard)	1.55	1.86	1.92	1.98
7. Networking	2.48	3.3	3.76	4.41
8. The university has a good reputation	3.48	3.64	4.76	5.03
9. The ability to study in one's mother tongue	3.51	5.28	1.57	5.16

10. High earning potentials after graduating in that field of study	2.12	3.49	4.28	3.99
11. Possibilities to study abroad with the help of the university	1.78	1.96	2.53	3.21
12. Being easy to find a job in the chosen field of study	2.75	4.4	4.77	4.84

Source: own elaboration

In what follows each cluster will be presented – the names of the clusters represent their most important characteristics.

Take it easy – this cluster includes people who "just" apply to a university and they are indifferent regarding their preferences when choosing a university and their attitudes during university is also characterized by this indifference. As teachers we are familiar with this type of students – they would be capable of studying and having good results but they are not in the mood. They realize whether they like their chosen profession or not only when they are at university. The participants who belong to this cluster must have liked their profession during their university years as they could successfully find a job in their profession. In the case of this cluster the university's reputation (3.48), the ability to study in their mother tongue (3.51) and the quality of education (3.93) are not important aspects when choosing a university.

The majority of participants belonging to the "take it easy" cluster graduated the Babes – Bolyai University, followed by participants who graduated the Sapientia University. However, the proportion of those coming from other universities is also significant (n=18). 65% of the members of this cluster learnt in Hungarian – they did not look for any challenge, not even in the language of their education; 75% came from towns. This lets us think, that small rural communities might raise more responsible individuals.

The fact that these people, with laissez-faire attitude, got to like their profession during their university years is proven by the fact that 73% of this cluster continued their study after graduation, while only 65% of the total population opted for further education. Choosing further education might also be a result of either their avoidance to meet the severe requirements of the labour market or that they did not find a job and decided to continue studying.

Most members of this cluster graduated in social sciences, human sciences or natural sciences.

Based on the data analysis and my previous experiences it can be stated that members of this cluster are those individuals, who although do not take life seriously, are docile and able to prevail through their open-mindedness. It is also notable that people in this group rated their Romanian and foreign language knowledge much higher than the average. Half of the group said to have worked abroad and 77% claimed that they worked during their university years – experiences that might have helped them in finding a good job. The cluster is made up of 69 people and 5 of these said to be self-employed. Looking at their position and status at work it can be said that 58% marked the status of employee, while 3 worked in top management and 15 people in middle management positions. 50% of the members of this cluster are between 31 and 35 years old.

Another argument that these people belong to the "take it easy" group, and they had a rather indifferent attitude when choosing university or studying at

university, is that when I asked them about their lack of knowledge in their profession, 55% stated that these deficiencies are the result of their ignorance.

Stay at home – this cluster includes people for whom it was important to study in their hometown or close to it (5.52) and that they preferred studying in their mother tongue (5.28).

75% of this cluster learnt at the Sapientia University and 92% learnt in Hungarian which seems logical if we take into account their preferences to study in their mother tongue – and the Sapientia University was founded with the aim to provide higher education in Hungarian for young people in the Szekler region who do not prefer to step out of their comfort zone, or have limited financial possibilities to continue their studies. 38% come from rural areas and 34% still live in a village.

After graduating university, only 54% of the members continued their education and only four enrolled doctoral schools. This low rate of further education might be explained by the fact that until the Sapientia University was fully accredited it could not offer master degrees, therefore graduates would have needed to apply to other universities, and in most cases they gave up. Taking a closer look at their further studies, results show that a number of 20 people chose to continue their studies in Romanian language, while the rest (n=33) in Hungarian. 47% of the people in this cluster rated their Romanian language competence as intermediate at the time of their graduation and only 17% said they were on an advanced level in Romanian – however this percentage increased to 27% by now. 42% spoke some other foreign language on an intermediate level and only 11% said they were on advanced level – these values have also increased by now to 48 and 19%. It can be seen that the lack of language competences obviously meant a problem in their work, but those who took their jobs seriously have overcome these problems. 44% of the people in this cluster had experience in working abroad and 45.5% took part in field trips, applied for student exchange scholarships and internships. Knowing that the majority of this cluster graduated at the Sapientia University it becomes clearer why internships and exchange student programmes are frequently mentioned. The university has built fruitful partnerships and collaborates with several universities from Hungary and students are usually encouraged and helped by the teachers to apply for scholarships and programmes to gain experience abroad. The majority of the members in this cluster (75%) obtained some professional experience during their university years. Six people said that such experience helped them to set up their own business and 25% stated that they gained the necessary competences to work in their profession.

Looking at their position at work, 5% works in top management, 20% in middle management and 66.7% marked to be an employee. I believe these results are a good feedback for the Sapientia University – the cluster including mostly graduates from the university contains a large number of managers. It is also a pride that 22.4% of these people claimed to earn above 3500 RON/month, a sum that slightly exceeds the average value of the total population.

Definite career path – this cluster includes people for whom it is important that their profession offers the possibility of potential high salaries (4.28), the most important factor when choosing the university is the quality of education (5.21) and it is not important for them to study in their mother tongue (1.57).

This cluster includes mostly individuals who studied in a more special field; 46.5% learnt at „other" universities – other than the Babes-Bolyai and the Sapientia. There is a high number of respondents who studied engineering, technical sciences, mechanical engineering or construction (10.6%) but the field of healthcare and welfare was also represented by 5.9%. 57% of these people studied in Romanian language and

only 30% learnt in Hungarian. 86% of the members come from towns and the same proportion of people still lives in urban settlements. 32.9% of them did not choose to continue their studies. It is interesting to mention that there is a relatively high proportion of people here who enrolled other majors, and attended other BA courses as well (7.1%). The majority of the people continued their studies mainly in Romanian language (49.2%) and in English language (28.8%).

72.1% of the members of this cluster gained some work experience during their university years and gathered experiences that later helped them in their career. Fewer people belonging to this cluster claimed to have experiences in working abroad (40%) and 17.1% of these people worked in other fields than their profession. 51% of the cluster found a job in their profession already in the first three months after graduation. 91.7% stated that their first or second job was connected to their field of expertise. 23.3% of the group works in middle management position, which is the highest value compared to the other clusters. Again compared to the other clusters, there is a high proportion of self-employed individuals in this group (10.5%). When asked about their lack of knowledge or deficiencies 58.1% blame themselves for not learning enough, while 16.3% think that teachers at the university do have some responsibility for their deficient knowledge. Taking a look at their language competences it becomes clear that this group is the most prepared for the job market – 59.3% spoke Romanian at an advanced level at the time of their graduation and 36% on an intermediate level. We get a positive picture regarding their foreign language competences as well, 35% said that they were on advanced level and 43% intermediate level. These values have significantly increased by the time of the research.

The members of this cluster chose their professions deliberately and when they realized what other qualifications they needed for their career they took up other BA courses and enrolled other majors. Another important aspect is their language competence, language was not a barrier for them in their career path (it is though for a lot of students) – they learnt, they considered improving their skills as important; they were ready to take up new challenges and put effort into learning. 67% of the cluster continued their studies after graduating university and now they have a career – or they are currently building a career – that satisfies them and meets their expectations. 50% of these people claim that their life is close to what they had imagined. The majority of these people (90%) say that they would not work abroad and 74.5% of them wouldn't even consider working abroad in his/her profession. 73% of these people are so satisfied with their current job that they do not even follow or look at job advertisements and only 18% say that they are not fully satisfied with their current job. 89% marked that they tried to learn everything at the university and 23.5% stated that they put maximum effort in learning the subjects taught at university. In spite of the fact that this cluster put a lot of effort in learning the university subjects, half of them thinks they learnt a lot of useless subjects, 54% claim that university courses do not match the requirements of the job and 60% say that the things he/she learnt at the university are essential for their job.

Building a career in your mother tongue – this cluster includes people who also made a deliberate choice and had clear-cut goals in mind. The university's good reputation (5.03), the quality of education (5.5), further education possibilities at the given university (4.09) are all important for them, but they would prefer all these in their mother tongue (5.03).

This cluster includes people for whom it was important to learn in their mother tongue, therefore it was predictable that they learnt either at the Hungarian sections, faculties of the Babes-Bolyai university (51%) or at the Sapientia University

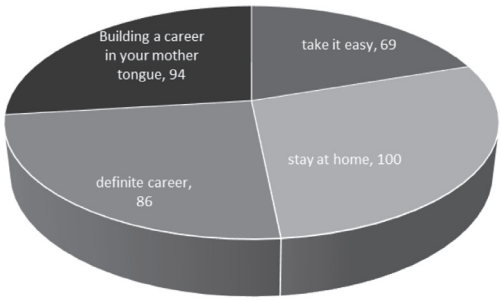
(37%). 93.6 % of these people actually learnt in Hungarian language. They mostly majored in social sciences, economics/business studies and law.

82% of the members of this group come from towns and 81% still lives in urban areas. Building a career was important for this group as well; therefore it is not a surprise that only 33% of the members did not choose to continue their studies. The majority of these people had a job during their university years, only 9 people said they did not have a job while they were at university, so they tried to gain some work experience and practical knowledge. Compared to other clusters, a smaller number of people went abroad to work or study (52%), probably due to their low language proficiency – 46.8% spoke a foreign language at an intermediate level and only 16% at an advanced level at the time of their graduation. However, it is interesting to mention that these people did not prefer to learn in their mother tongue because they had weak or no Romanian language competence but because they considered it important to learn in their mother tongue. Half of the members of this group had intermediate level of proficiency in Romanian and 20% spoke the language at an advanced level at the time of graduation.

We get a more varied picture when looking at these people's jobs. Results show that 57% of these people managed to find a job related to their field of expertise in the first three month after obtaining a university degree. 11% of these people waited even two years to find a job in their profession even if more than 90% of them had already worked and gained some experience during the university. There are only 2 people in top management positions, 17% (n=16) are in middle management positions and the majority marked themselves as being employees 67% (n=63). Analysing the salaries, the results show that 29% of the group earns a minimum wage and only 17.2% said that earn salaries above 3500 RON/month.

Asking about their knowledge deficiencies, their answers reveal that they mostly (42.1%) blame themselves for not learning enough, but some of them (27.9%) blame the higher education system and the changing professional environment and job market (19.3%).

Graph 2 Number of cases is clusters



Source: own elaboration

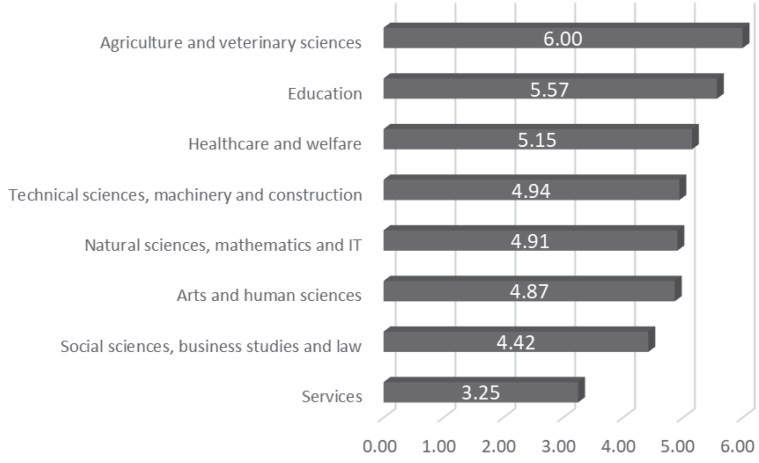
In what follows the paper discusses the relations between clusters and other variables. I believe this analysis is of utmost importance also with regard to the practical utilization of the research. I firmly believe that universities will be able to develop efficient marketing strategies only if they are aware of the motivations behind students' choices. It needs to be highlighted, that the present study presents and describes the motivation of people who have already succeeded in finding a job, thus we are dealing here with the most successful students (Kádár et al., 2016).

Firstly, I analysed whether there is a significant correlation between the clusters and the specific fields of specializations. The results show that 60% of students majoring in technical sciences, machinery and construction are part of the "definite career path" cluster (Adj.R=3,3), 45.4% of people majoring in Arts and human sciences belong to the "take it easy" cluster (Adj.R=4.1) and 43.5% of those majoring in natural sciences, mathematics and informatics are included in the "stay at home" cluster (Adj. R=60%).

Using crosstabs I analysed the language of education and the results bring further arguments to sustain my hypothesis. It is obvious, that the majority (92%) of those respondents who are included in the "stay at home" cluster learnt in Hungarian, similarly those who belong to the "building a career in your mother tongue" also learnt in Hungarian (93.6%). On the other hand, 57% of participants included in the "definite career path" cluster learnt in Romanian and in other foreign languages (12.8%).

Significant correlation was found between the current position of a person and his/her qualifications. Results show that the field of education (5.57), healthcare (5.15) and veterinary sciences (6) are the fields where, according to our expectations, current position and job matches the university specialization. It is hardly possible to match these in case of services (3.25 average), as this is a broader field and thus there are a great number of different job opportunities.

Graph 3 Correlation between the clusters and the specific fields of specializations



Source: own elaboration

Qualitative research

Opinions formulated during focus-group discussions are consistent with the results of the online questionnaire survey. In what follows the paper presents the most frequent and representative examples:

The most important problem: "I believe students get insufficient practical training. Theory is a good thing, but what can a fresh graduate do with it, if he/she cannot put it into practice. There is a need for at least one year (serious) practical training (coordinated by teachers) and not just done in the paperwork, but students should actually work in the field. Of course, here we can also blame the labour market, as no company wishes to train students. Each and every company wants an experienced and well-prepared employee. Useless subjects should be cut down to the minimum (they should be excluded, but anyway)."

"University courses do not match real-life expectations on the job market, or at least they have very little in common. Most teachers at the universities, whom I talked to, say that university provides elite, theoretical knowledge during those 3 to 5 years. I don't agree with this. I am absolutely sure, that job market expectations and higher education courses and trainings do not match. Even if teachers at the university were aware of the needs of the market and methods how to train students, they are limited and constrained by the old-fashioned and out-dated higher education system and curricula. Universities should put more effort into creating more possibilities for students and making practical training more accessible for them."

The cause of the problem: "I believe there is a huge difference between job market expectations and university curricula and this is true for most of the specializations, I think. I also worked in higher education, but standing on the other side of the door, as an employee, I experienced that unfortunately there is a huge gap between what students learn at the university and the actual, real-life requirements. On the one hand, this is a result of neglecting and ignoring the actual demands of the market and, on the other hand, the lack of communication between higher education system and the business sector. It is also sad, that there are teachers at the university who lack actual work experience in the subject they teach. This should be the responsibility of the higher education system to provide university teachers with the possibility to work for at least one year at a company. It is necessary and important to identify real market demands and to focus on developing and improving skills that are indispensable in many jobs in the 21st century: vast language knowledge, high level of computer skills, communication skills, time management etc."

Suggestions and recommendations: "First of all, students have to be taught how to think critically, to be curious about the subject, to maintain students' interest in the field and to focus on practical training. Focus should be on reading, group work and discussing readings by adopting a critical perspective."

Conclusion

Based on the results and the focus-group discussions it can be stated that there is a need for universities to rethink and adjust the curricula of each specialization, to focus on useful and practical knowledge that can be applied in real life. There is a need for more practical training, to involve experts, companies and institutions in order to provide competitive knowledge and competences. In collaboration with experts in the field real life situations and tasks should be created which help students to be more prepared for the job market.

Research results also reveal that the actual consumers of the services provided by universities cannot formulate their expectations regarding the education. However, it is also clear that those who already have some experience in the given profession know what changes should be brought about, to fulfil the needs of its consumers on the long run. Therefore, my suggestion would be that universities should keep in contact with those who already graduated and based on their experience universities should ask for feedback regarding the efficiency of the courses provided. These students who are already active participants of the job market are the ones who can truly form an opinion about what they got from the university, and what should be changed so that students in the future could be more competitive and efficient in their job.

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INNOVATION MANAGEMENT AND INFORMATION ACQUISITION

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Abstract

The paper focuses on the innovation management and the role of information in the process of innovation. The information management (gaining the information and its further analysis) is crucial when managing the innovation since the enterprises need to have qualitatively and quantitatively appropriate information about innovation for further decision making. The main aim of the paper is to confirm the importance of information in the management of innovation, with focus on information sources and the types of analyses performed by the innovating enterprises. By using selected mathematical and statistical methods, the results of a questionnaire survey focused on information sources and the types of information analyses within Slovak enterprises are analysed and described. The information as a part of innovation management in the enterprises is investigated to help the enterprises manage the innovation performance.

Key words: *innovation, information, innovation management, information analyses*

JEL Classification: O31, L26, M15

Introduction

The innovation has always been important topic for enterprises striving to achieve excellence. Working with appropriate information is one of the main presumptions for making proper decisions on the way to long-term success. It is necessary for the enterprises to manage the innovations in a systematic and coordinated manner, and the management of information (including its acquisition and analysing) should be incorporated into it.

Being innovative is relevant, but the integration of information technologies with the innovation activities is much more acute. Trantopoulos et al. (2017) highlight the vital role of information technology for innovation in the enterprises. Also, Biktimirov & Syuntyurenko (2016) state the increase in problems of information support of research, development, and innovation activities of the enterprises. The question is how innovation capability can be developed within an enterprise and how information capability and knowledge management are integrated into the innovation process (McEvily & Chakravarthy, 2002; Prajogo & Ahmed, 2006, in Jaca et al., 2016). The information is important in the innovation management since the enterprises need to

understand their customers, fulfil their needs and expectations, so they should acquire the right amount of appropriate information about the markets (customers, competitors, potential partners etc.). According to Keszey & Biemans (2016), for several decades, the innovation literature emphasizes that successful innovation requires a clear marketing focus and a superior understanding of customer needs. Both marketing and sales have information about customers and may contribute to a customer focused innovation process. The use and efficient management of information is a critical success factor that enables enterprises to improve their results, and consequently a source of competitive advantage (Zárraga-Rodríguez & Alvarez, 2013, in Jaca et al., 2016).

In current era, the enterprises and their innovation activities depend on various complementary (internal and external) sources. The importance of information sources for innovation is apparent and available studies explore the statistical relationships between certain sources of information and innovation performance, supporting the positive link between various sources of information and innovation performance (Bach et al., 2015). On the other hand, Gómez et al. (2016) mention the lack of literature sources focusing on the extent to which various kinds of innovation rely on diverse sources of knowledge. The authors found out that the six sources (internal, suppliers, customers, competitors, consultants, and universities) play a role in producing innovation and confirmed the previous papers finding that innovations are developed by using knowledge from a diverse set of internal and external sources of information and not just from that generated by R & D investments. They also investigated, each source influences the innovation differently, depending on the type of innovation: to obtain product innovations, firms rely on customers and internal sources, although information from competitors and universities is also important; to obtain process innovations, internal sources and suppliers are the main contributors as well as consultants and universities. In the process of generating innovating ideas and planning the innovation, these sources, and the information support, are undoubtedly important. However, the small and medium-sized enterprises (researched in Slovak Republic, but also in UK, Portugal and Spain) might face the size-related issues such as lack of the access to information about markets and customers (poor information about market, poor market knowledge, lack of market information), technologies (low information on technology), new potential partners, institutional support – perceived and called barriers of knowledge (e.g. Horvátová et al., 2012; Mutula, 2010; Segarra-Blasco, Garcia-Quevedo & Teruel-Carrizosa, 2008, Tovstiga & Birschall, 2007, Silva et al., 2007, Vieira, 2007, in Cordeiro & Vieira, 2012), so that they have different starting point when managing the innovation than the large-sized enterprises.

Material and Methods

The main aim of the paper is to confirm the importance of information in the management of innovation, with focus on information sources and the types of analyses performed by the innovating enterprises. Without using the appropriate and analysed information for proper decision making about innovation, the innovation management is ineffective. We used selected mathematical and statistical methods to analyse and describe the results of the questionnaire survey within 189 Slovak enterprises, so that we can confirm the hypotheses. The hypotheses were set according to previous literature review as well as the expert experience: H1: The innovating enterprises do not use the information sources to the same degree and they do prefer some types of sources over the other ones. H2: There is a positive and statistically

significant association between the size of the enterprise and the types of the information analyses performed by the innovating enterprises.

Considering the hypotheses set above, we defined null (H_0) and alternative hypothesis (H1) in the following way:

- $H1_0$: The population of the frequency is uniformly distributed (which means the innovating enterprises do use the information sources to the same degree and they do prefer some types of sources over the other ones), versus $H1_1$: The population of the frequency is not uniformly distributed (which means that the innovating enterprises do not use the information sources to the same degree and they do prefer some types of sources over the other ones).
- $H2_0$: The size of the enterprise and the type of information analyses performed by the innovating enterprises are mutually independent (There is no statistically significant association between the size of the enterprise and the types of information analyses performed by the innovating enterprises), versus $H2_1$: The size of the enterprise and the type of the information analyses performed by the innovating enterprises are mutually dependent (There is positive and statistically significant association between the size of the enterprise and the types of information analyses performed by the innovating enterprises).

To confirm or reject the null hypotheses, we applied various statistical methods and procedures, mainly because the extent of our selected sample was relatively small (189 enterprises).

To identify the frequency distribution of the population, we used goodness-of-fit test, determining the likelihood that the frequencies observed for a categorical variable could have been drawn from a hypothesized population. The chi-square statistic is defined as follows:

$$\chi^2 = \sum_{i=1}^{k} \frac{(f_{io} - f_{ie})^2}{f_{ie}} \quad (1),$$

where f_o stands for observed frequency, f_e stands for expected frequency for every i assigned from i = 1 up to maximum number of items k (in our case k = 9).

If the null hypothesis were true, the test value calculated by the equation (1) would conform to the chi-square distribution. In the next step, we compared the calculated test value with the chi-square quantile assigned to the degree of freedom (v) and the level of significance (α). A larger test statistics $\chi 2$ than the chi-square quantile $\chi 2(v, \alpha)$ leads to rejection of the null hypothesis, and vice versa. The same result can be obtained by using the p-value. If the p-value were smaller than the level of significance α, the null hypothesis would be rejected.

To identify the association between two variables, we used the contingency table test. This test is designed to determine whether or not two categorical variables are related. The chi-square statistic is defined as follows:

$$\chi^2 = \sum_{j=1}^{r} \sum_{i=1}^{c} \frac{(f_{ijo} - f_{ije})^2}{f_{ije}} \quad (2),$$

where the meaning of f symbols is the same as in the equation (1) and r stands for number of rows and c number of columns. In our case we have r = 5 and c equals to 7.

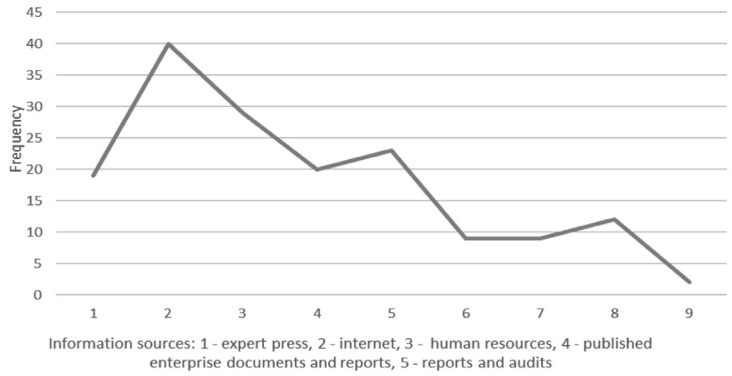
If the null hypothesis were true, the test value calculated by the equation (2) would conform to the chi-square distribution. In the next step we compared the calculated test value with the chi-square quantile assigned to the degree of freedom (v) and the level of significance (α). A larger test statistics $\chi 2$ than the chi-square quantile $\chi 2(v, \alpha)$ leads to rejection of the null hypothesis, and vice versa. The same result can be obtained by using the p-value. If the p-value were smaller than the level of significance α, the null hypothesis would be rejected.

To answer the research questions, we examined specific items of qualitative character from the questionnaire, thus chosen methods used to process the answers are based on the analysis of qualitative statistical variables (such as the size of the enterprise, the types of the analyses, the types of the information sources). Statistical variables of multinomial character were taken into consideration. When finding the statistical association (dependence) between two statistical variables, the significance level of 1 %, 5 % and 10 % was used (α = 0.01; 0.05, and 0.1). Following variables were utilised when researching the associations: the size of the enterprise and the types of the analyses proceeded by the innovating enterprises; the uniformity of the frequency distribution of the population (information sources for the innovations).

Results and Debate

Processing the answers from the questionnaire survey, the hypotheses can be confirmed or rejected. The first hypothesis to be verified ($H1_0$) was focused on the usage of various information sources and the uniformity of their distribution among the innovating enterprises. We assumed that the innovating enterprises do not use the information sources to the same degree and they do prefer some types of sources over the other ones. We proceeded from the assumption, that the innovating enterprises are more likely to use the human resources and professional documents than other sources (such as TV news, e-communication or reports and audits). Elaborating the data (answers) from this question, we obtained following frequency distribution of the items expressing the information sources (as shown in the graph 1).

Graph 1 Frequency distribution for the information sources



Source: Own processing.

The enterprises could have chosen from following information sources (with the possibility to pick multiple answers): expert press, books and journals, internet, human resources (internal or external), published enterprise documents and reports, reports and audits, TV or radio news, electronically broadcasted messages or emails, e-communication (ICQ, Skype, videoconferences), news prepared by outsourcing enterprises, other.

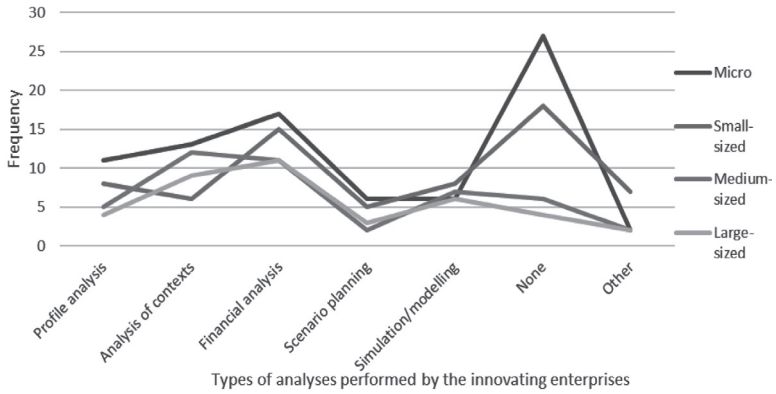
As it is obvious from the graph 1, the innovating enterprises use the internet as an information source for innovations most often. The other most frequent answers were human resources, reports and audits, enterprise documents and reports and expert press. We used goodness-of-fit test and we calculated the p-value to test the hypothesis. The hypothesized population was a uniform frequency distribution with the expected frequency of 18.1. the p-value was equal 4.10- 10 indicating the acceptance of the alternative hypothesis. Based on the calculations, we do accept the hypothesis that the population of the frequency is not uniformly distributed, thus the innovating enterprises do not use the information sources to the same degree and they do prefer some specific types of information sources over the other ones. The results show that the sources such as internet and human resources are vital source of information for innovation. The results of the survey comply with the theory (Cornell, 2012; Bickart & Schindler, 2001), saying that internet is one of the most used information sources (not only) for the innovations. This is supported also by, nowadays very popular, open innovation strategy, which is the opposite of the closed innovation strategy (claiming that innovation activities are pushed by and information is gathered from the internal environment of the enterprise, mostly research and development department). As this innovation strategy is open, it means the sharing of the innovation activities outputs for other enterprises or connecting with other enterprises for their fully-fledged usage. Also, the results of experiments with consumers show that the internet (e.g. internet forums, discussions etc.) is powerful tool to properly handle the consumers and to acquire the appropriate information about their needs. Based on the work of Wang et al. (2016), previous research indicated that internal resources (besides others human resources) play a critical role in enhancing innovation performance and contributing to innovation performance (Caloghirou et al., 2004; Huang & Lin, 2006; Lu et al., 2015, in Wang et al., 2016).

The second hypothesis ($H2_0$) came out from the assumption that the size of the enterprise and the type of information analyses performed by the innovating enterprises are mutually independent variables. Both researched variables were considered categorial ones even though the size of the enterprise is expressed quantitatively. We worked with the assumption that the bigger the enterprise, the more likely it uses sophisticated analyses rather than just simple (financial) analyses (and vice versa, the smaller the enterprises, the more likely it does not analyse the information at all or uses just simple analyses such as few financial indicators). This assumption goes hand in hand with the theory (e.g. Welsh & White, 1981, in Laukkanen, Sarpola & Hallikainen, 2007) that compared to the large-sized enterprises, smaller enterprises typically exhibit limited access to resources such as time, skills and money as well as smaller enterprises allocate more time to adjusting to, rather than predicting and controlling, the turbulence they are faced with (d'Amboise & Muldowney, 1988, in Laukkanen, Sarpola & Hallikainen, 2007). As Laukkanen, Sarpola & Hallikainen (2007) claim, although information technology is getting cheaper and more ubiquitous all the time, it represents a major investment and commitment to smaller enterprises

We considered following types of information analyses: profile analysis, analysis of contexts, financial analysis, scenario planning, simulation and modelling, no analysis, and other types of analyses.

Even though some of the cells in the table contain the values smaller than 5 (which is the presumption for contingency table test usage), we used the contingency table test to identify the association between the variables. In the table, the rows were assigned to the size of enterprise and the columns were assigned to the items expressing the information analysis used in the enterprise. Because of one enterprise can use more than one analysis, we obtained 233 values spread into the cells of the contingency table. The graph 2 describes the results.

Graph 2 Association between the size of the enterprise and the analyses performed by the innovating enterprises



Source: Own processing.

The results in the graph 2 indicate, that most of micro and small-sized enterprises do not perform analyses at all or perform financial analysis to analyse the information about innovation. Almost 24% of respondents do not perform any of the analyses at all. On the other hand, medium-sized and large-sized enterprises do perform analysis of context most often as well as financial analysis in order to analyse the information about innovation. By using the contingency table test to identify the association between the size of the enterprise and the types of information analyses performed by the innovating enterprises, we calculated the p-value equal 0.125, which means that we must accept the null hypothesis (the size of the enterprise and the types of the information analyses are not statistically associated at all). Our assumption that the size of the enterprise and the type of information analyses performed by the innovating enterprises are in mutual dependency was rejected, even though the graph shows that some types of enterprises (micro and small-sized) mostly do not perform analyses and vice versa, the bigger the enterprise, the more likely it performs more sophisticated analyses such as analysis of contexts and profile analysis. However, there is no statistically significant association between these two variables. We assume, the results could have been influenced by the fact that the condition of minimum value 5 in each cell of the table was not abided by.

The appropriate amount of appropriate information is enabler as well as the result of the proper innovation strategy in the enterprises.

Conclusion

The main aim of the paper was to research the importance of information in the process of managing the innovations, with focus on information sources and the types of information analyses performed by the innovating enterprises. We used various mathematical and statistical methods to achieve the results of what is the relationship between the size of the enterprise and the types of information analyses performed by the innovating enterprises (second hypothesis) as well as how is the population of information sources distributed in the sample (second hypothesis). Based on the calculations, we do accept the hypothesis that the population of the frequency is not uniformly distributed, thus the innovating enterprises do not use the information sources to the same degree and they do prefer some specific types of information sources over the other ones (internet, human resources and internal documents and reports). The second hypothesis was not confirmed; thus, we do accept the statement that there is no association between the size of the enterprise and the type of the information analyses performed by innovating enterprises. We came to conclusion that these findings should be incorporated in the innovation strategy (or management of innovations) of the enterprise in the form of open innovation concept (this is supported mostly by the finding that internet is one of the most used information sources about innovations as well as the tool for sharing the innovative ideas in the open innovation concept). The appropriate information is not only the result of enterprise's openness but also the enabler which allows (mainly small- and medium-sized) enterprises to collaborate and overcome the size-related challenges to manage for the long-term success. It is very important that the enterprises are aware of the information which can be critical for new innovative ideas and the prerequisite for their long-term success.

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ADVANTAGES OF USING LMS IN TRAINING FOR AGRICULTURAL ADVISORS

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Abstract

Our research aims to examine the spread of e-learning applications for the further training of agricultural professionals, particularly in the human development of agro-technical administrative staff and experts. In addition to traditional forms of training, there was a need to establish a distance learning system (e-learning platform), which was an extensive multimedia-based solution for the staff of the Central Agricultural Office (CAO), working in different parts of the country and responsible for different areas. The e-learning (distance learning) pilot training of CAO professionals started at the end of 2009. This fact reinforced our intention to carry out our research among them. Our research started in 2011 when we administered a questionnaire among the advisors. We repeated this in 2015 and 2017. This article features a comparison of the results.

Key words: *e-learning, agricultural advisors, Learning Management System*

JEL Classification: C83, C88, I21

Introduction

After the turn of the millennium, the opportunities offered by e-learning were recognized by several organizations operating in the agricultural sector, including the National Food Chain Safety Office (NFCSO) and the National Institute for Agricultural Advice, Training and Rural Development (formerly the Rural Development, Training and Consultancy Institute (TCI) of the Rural Development Ministry).

NFCSO was established in 2012, by merging the Hungarian Agricultural Food Office (HAFO) with the Hungarian Food Safety Office (HFSO), in order to be able to further strengthen the traditions of the specialist sectors and overall food chain security via the merger, and to provide more effective capabilities in the supervision of the entire food chain. NFCSO has been designated by the Government as a food chain monitoring-, plant production-, soil conservation-, animal breeding-, forestry-, hunting-, fisheries-, wine-making-, and brandy-supervising authority and an organ of agricultural administration (Oravecz, 2016).

TCI was a background institution of the Ministry of Rural Development. In cooperation with the Ministry in the field of educational activities, as a central

development service provider, it performed operational tasks and activities in the field of agriculture.

Only well-trained staff were able to carry out the multitude of tasks performed by one of the predecessor organizations, the HAFO. The agency's staff working at the central and regional level were continuously trained. Due to the scarcity of resources this had to be achieved efficiently, and with limited expenditure.

The aim of our research is to examine the spread of e-learning in the training of agricultural experts, with special regard to the development of human resources for agri-professional practitioners and advisors. This goal was formulated in 2011 when we conducted a questionnaire survey among the consultants. The survey was repeated in 2015 and 2017 too. The results of the two surveys will be published later on, after we summarize the features of e-learning systems and the introduction of the Moodle course for specialist advisors.

Learning management system

The e-learning info-communication environment is called a framework. The task of the framework is to provide a technical background for the development, storage, and use of e-learning materials, and the provision of organizational tasks related to course progression, students and courseware. A framework provides tasks related to the content and administrative direction of the teaching-learning process, i.e., learning content management and learning management functions. They can work independently of each other, but in the highly organized e-learning environment the two functions are implemented in an organic way (Hutter et al, 2005).

E-learning systems are integrated systems that make all administrative and communication activities related to education organization achievable on a unified basis. Its task is to display the curriculum and administer the students (Kőfalvi, 2006). Frameworks provide an opportunity to map an organization's structure using a tree structure. This is useful because, for example, we can handle the subgroups we define uniquely and do not need to manage hundreds of people individually. These systems work on the triple logic of curriculum-course-training. When organizing education, we have the opportunity to define a number of administrative aspects of a particular course. The framework gives users access to all these features. If we operate an educational framework with a business intent, it should also be able to cover the related administrative activities (Al-Balushi, Al-Abdali, 2015).

The system records students and payments, logs user activity, and generates statistics. An essential feature of the framework is to serve as a communication platform for users of the system, which is indispensable during a training course. Communication options can be grouped according to whether the communication takes place in real-time (synchronous) or at a time interval (asynchronous).

With the help of the framework exam module, you can create queries that can be open and closed questions. Closed questions are those whose evaluation and improvement can be carried out by the exam module itself. For example, a multiple choice test. Open questions are those that the tutor must evaluate in person, such as an essay, for example.

The content management system is not primarily involved in the implementation of education itself, but in the production of educational content. The link between the two main components in the e-learning framework is the curriculum itself. This is sometimes stored in a separate system, in a curriculum database (Harman, Koohang, 2007).

Blended learning does not have a unanimous single definition (Jonas, Burns, 2010; Marsh et al, 2008; Stacey, Gerbic, 2008). However, it is generally defined as learning which "combines face-to-face instruction with computer mediated instruction" (Graham, 2006) or the thoughtful fusion of face-to-face and online learning experience (Garrison, Vaughan, 2008). It encompasses both in-class instruction and Internet-based teaching, as various teaching and learning methods (e.g., lecture, discussion, guided practice), modes of delivery (face-to-face vs. computer mediated), and modalities (e.g., synchronous vs. asynchronous) come together to improve teaching and learning.

The Modular Object Oriented Dynamic Learning Environment (Moodle) is believed to be the world's most popular Learning Management System (LMS) for both learning and training in various disciplines, probably because it is user-friendly, open source, and free to download (Lambda Solutions, 2017). Moodle fosters traditional instruction through the provision of opportunities for further learning and teacher feedback outside the boundaries of the classroom (Al-Busaidi, Al-Shihi, 2010; Brandl, 2005; Cole, Foster, 2007; Coskun, Arslan, 2014; El-Seoud et al, 2007; Soliman, 2014). Moodle also helps teachers better manage their courses and communicate, both synchronously and asynchronously, with their students (Wu, 2008). Furthermore, it potentially enables learners not only to acquire knowledge and skills but also to transfer what they learn to other contexts (Nedeva et al, 2010; Bataineh, Mayyas, 2017).

Material and Methods

In addition to, or based on, traditional forms of training (live training, guides, circulars, conferences, etc.), a distance learning system (e-learning framework) was needed to provide a broad, multimedia-based solution for all HAFO colleagues – working in different areas and providing a service for different sectors all over the country.

The implementation of e-learning was introduced in the framework of two projects: project no.2006/018-176.01.03, "Strengthening the service capacity of border inspection posts in veterinary and plant-health, and the development of the County Animal Health Information System", and project no. 2004/016-689.06.01-11, "Improving the administrative capacity of animal health". On December 27, 2009, the training of HAFO specialists in an e-learning form was started.

The purpose of the training was to test the usability of the e-learning system and its suitability for the training system, which in this sense could be considered a pilot course. However, independently of this the course material and the examinations themselves did not operate as pilots but as real elements. At least two weeks were available to become acquainted with and to learn each course. In addition to the specific curriculum, additional related materials, document samples, legislation, guides, and video materials were added to the knowledge base of the course (Lengyel et al, 2016).

In order to fulfil the examination requirements, the experts had one week for each course, and it was possible to take one exam at one time. Exam tests consisted of 20 questions each, with 45 minutes available to complete them. The pass mark was 50%.

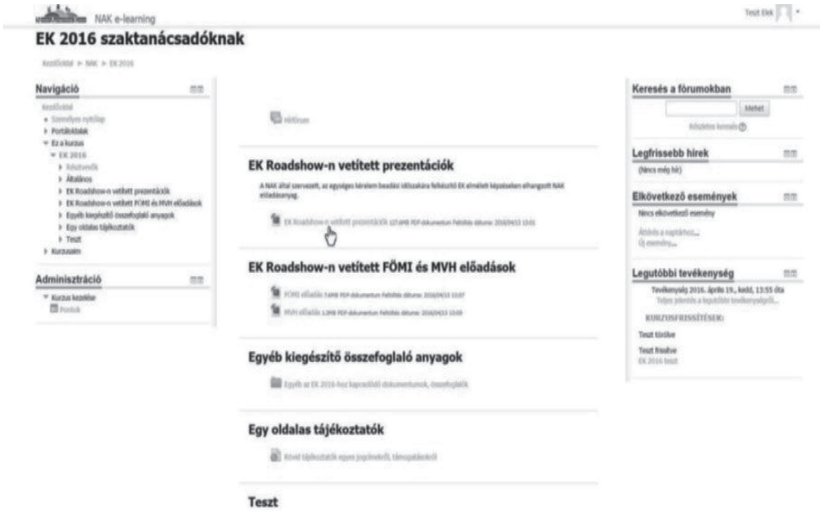
The training of HAFO specialists in e-learning on the basis of the pilot course was successful. Colleagues acquired new knowledge and refreshed their old knowledge. Participants in the pilot course reacted positively to the course in the Distance Learning Framework and made efforts to benefit from it. From 2010, the system was used as a real course.

The compulsory further training of consultants with the use of the computer began in 1995. At that time, the Computer Examination Program was introduced. The program produced three types of randomly numbered test questions (short answer, multiple-choice, ordering). It could also be used for practice and examinations. At the time of the introduction, the evaluation was not strict - the candidates could get points for semi-correct answers. After its positive reception, evaluation in the following years became more rigorous. The program was used until 2009 to test expert advisors.

Increasing internet usage among expert advisors and the reduced amount of funding available for compulsory courses required an efficient, less costly way of training. This is how the HCA e-learning system was created and started in 2010.

The full curriculum for further training is available to all consultants in electronic format through the e-learning system. Preparing the consultants for the exams is done individually, but the Regional Advisory Centres provide them with a consultation opportunity. The exams were organized and administered by HCA as a National Advisory Centre. Everyone on the web interface can take an exam using their own sign-in. Advisors are provided with their contact number and in accordance with Decree 90/2009 (VII.24), they enter the system with the password they received when registering for the consultation session, and are also able to complete the practice tests. In accordance with the Ministry of Agriculture and Rural Development Decree 73/2015. (XI.6), the new registration and re-registration of agricultural and rural development advisors is under way since the tasks of the National Advisory Centre have been performed by the National Chamber of Agriculture (HCA) since October 1 2014, and so this body will also handle the register of advisors. Figure 1 shows the user interface of the e-learning system operated by HCA.

Figure 1 The HCA e-learning system user interface



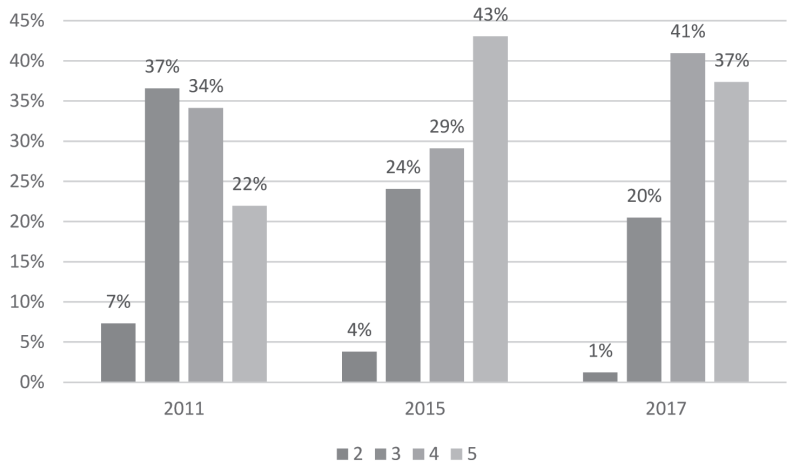
Source: http://kepzes.nak.hu/

The questions of the advisors' questionnaire were drawn up based on the answers of the in-depth interview. The questionnaire was made available electronically via the Limesurvey system (http://nodes.agr.unideb.hu/limesurvey/index.php?sid=13987&lang=en). In 2011, based on the register of advisors, access to the questionnaire, together with an associated request form was sent to approximately 450 individuals with valid email addresses, out of the nearly 600 registered advisors. The number of completed questionnaires was 88, which is nearly 19.6% of the questionnaires sent. This sample was the basis for the comparison used in our research. In 2017, the same survey was repeated, with 74 completed questionnaires returned out of the 590 sent via e-mail, representing a completion rate of 12.6%.

Results and Debate

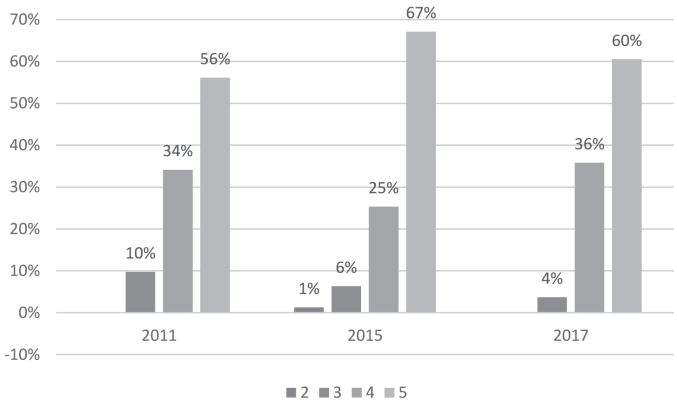
The basic condition of an electronic examination is that users, in this case the advisors, can use the computer independently, i.e. they have some level of IT skills. On this issue, respondents could evaluate their IT skills according to their own judgment on a range of 1-5. Figure 2 shows that in 2011, 37% of respondents evaluated themselves as 3, 34% as 4 and 22% as 5, with only 7% reporting an evaluation of 2. Compared to this, there was already a significant improvement in 2017, i.e. 41% evaluated their IT skills as 4 and 37% evaluated their IT skills as 5. This, along with the upward trend, shows that advisors have a level of computer-based knowledge that is sufficient to take an electronic test on a distance learning system and to satisfy their emerging need for information using information resources available on the Internet.

Figure 2 Levels of IT expertise from 2011 to 2017 (1-none, … , 5-excellent)



Source: author

Figure 3 Evaluation of the role of the Internet in acquiring information from 2011 to 2017 (1-not important, … , 5-very important)



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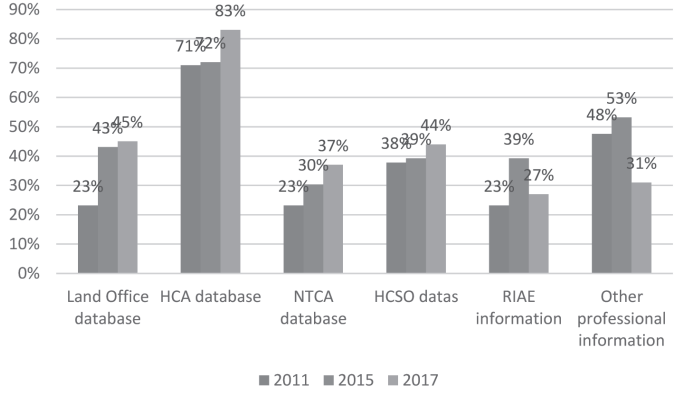
The role of the Internet in evaluating new concepts and knowledge was evaluated as very important by 56% in 2011, and by 60% in 2017 (Figure 3). From this it can be seen that the Internet plays an increasingly important role among the advisors in gathering information and gaining knowledge.

The development of the use of information sources is shown in Figure 4. There is a significant increase in the use of information published by the Land Office, National Taxes and Customs Administration (NTCA) and the Research Institute of Agricultural Economics (RIAE). The highest use is shown in the Agricultural and Rural Development Agency (HCA) databases. All in all, the information sources of consultants are wide-ranging and take advantage of online databases.

Figure 4 Use of information sources in the specialist area



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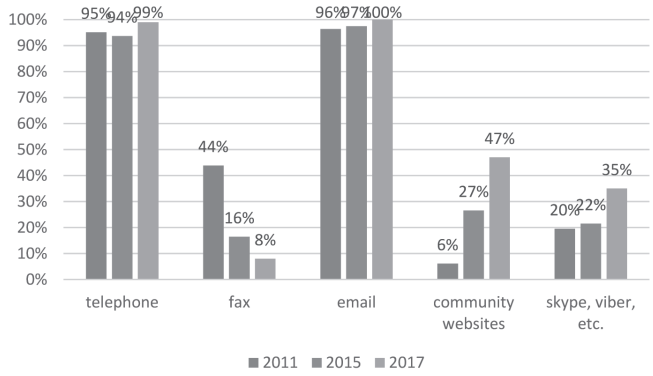
In the field of information technology, it can be stated that, in addition to the phone, the use of email in day-to-day contact plays an unambiguous role (Figure 5). Skype or other Internet communication options have not yet been used sufficiently, and statistics also show that the increase in the use of community sites in recent years has been accompanied by a similar increase in their use among advisors.

Figure 5 Use of IT in the specialist area



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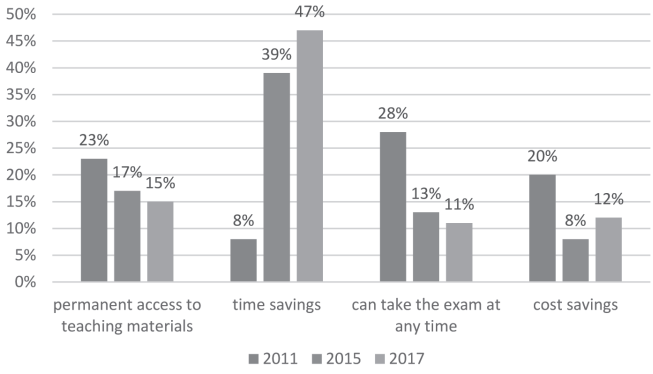
For the advisors the most important benefit of the system in 2011 was the fact that the test could be taken at any time (36%), while in 2015 and 2017, 39% and 49% reported that the time savings were the biggest advantage of using the e-learning system (Figure 6).

Figure 6 Evaluation of the most important advantages of the e-learning system



Source: author

Conclusion

The research clearly shows that the introduction of the e-learning system was positively received by the experts and that they recognized the benefits of using it. Based on the "good practice" presented in the agricultural administration sector, the use of e-learning is becoming more and more important in the training of agricultural sector experts, and in human resource development. Based on the results of the surveys, we can conclude that there has been a clear increase in IT skills over the last 5 years. This can also be the reason for the increase in the use data sources and in the use of information technologies which we have observed. Consequently, the use of e-learning in this area, too, when accompanied by an improvement in the requirements, can produce more successful and effective results in the future.

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MULTIPLIER EFFECTS AND ECONOMIC IMPACT OF UNIVERSITY SPENDING – CASE STUDY OF SECTORAL AND SPATIAL ASPECTS OF EXPENDITURES OF SLOVAK UNIVERSITY OF AGRICULTURE IN NITRA

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Abstract

Many empirical studies focus on quantifying the side effects of universities' location in a local economy, argumenting with the fact that today, universities are one of key players of the local economy since they create jobs, boost tax revenues and stimulate local economic entities through their spending. In this case study, we analyse direct, indirect and induced economic effects of the Slovak University of Agriculture in Nitra via its expenditures on goods and services provision on local and regional economy. We adopted a GIS-based approach to demonstrate the spatial aspects of university spending and its suppliers and regionalised input-output multipliers to estimate the multiplier effect of the university on the local economy, which allows for sectoral disaggregation of indirect and induced effects.

Key words: *university, input-output analysis, multiplier effects, regional multiplier*

JEL Classification: R15, R12, O15

Introduction

Economic impact studies are nowadays broadly considered as useful tools for higher education institutions for examining their effects within local economies, in which they are located (Kotosz et al. 2015; Garrido-Yserte, Gallo-Rivera, 2010; Steinacker, 2005). While the economic impacts of a college or a university are varied and far-reaching, we can consider them as either effects of knowledge creation, research and development, or as effects of the direct and indirect expenditures flowing into the local or regional economy (Stokes, Coomes, 1998). Felsenstein (1996) recognizes two basic groups of university effects on local economy – effects through forward and backward linkages. Backward linkages refer to the spending effects of students, visitors

and employees of university in the local economy, while the forward linkages refer to output of research activities of university and distribution of knowledge in local economy.

From the backward linkages point of view, the university has a positive impact on the flow of money in the local economy through its current and capital expenditures, the expenditures of its employees and expenditures of the students (Garrido-Yserte, Gallo-Rivera, 2010). Newlands (2003) distinguishes three types of backward linkages – to local households, to local businesses and also to the local government. University impact on local households are generally positive, through direct and induced effects on income and employment. Effects on local government may be mixed – on the first hand, university location in a city, or a region can widen the tax base, on the other hand university might make considerable demands upon the provision of services by local government. Local enterprises can also benefit from university's demand for goods and services, but university may operate on such a scale as to compete with local enterprises in labour and property markets, leading to some displacement effects. Luger et al. (2001) observe three basic forward linkages effects of university location – effect on production of innovations and thus new technology development, production and distribution of educated human capital as carrier of university knowledge and business stimulation effects that together significantly influence the formation of regional environment. Universities raise the level of high-quality human capital in local area but only to the extent that graduates stay in the local area after completing their studies. Universities contribute to the knowledge base of the local economy through a whole series of university-business links including technology licensing, contract research, consultancy and many other ways of direct knowledge transfer. Literature on these spill-over effects came to be extensive in recent two decades (Jaffe, 1989; Acs et. al, Magioni et. al. 2006; Douglas, 2015; Calcagnini et. al. 2016, Zivkovic et al., 2017).

There is a well-established procedure for estimation of the spending effects of university, as these studies became abundant. Reason behind this is the fact that such studies in addition to other types of university impact studies (Vass, Szikora, 2016; Stifter, Racz, 2017) can prove to be a valuable asset to an institution's profile and reputation (National Association of State Universities and Land-Grant Colleges, 2001). The basic expenditure flow to the local economy consists of expenditure of employees, students and university visitors and constitutes the direct effect. In addition, there are indirect effects (changes in output, income or jobs in sectors within the region that supply goods and services to the university) and induced effects (increased output within the region from households spending of the income earned at the university and supporting sectors). The ratio of the sum of direct, indirect and induced effects to the direct effect is a measure of the multiplier value of university spending impact on income and employment in the local area. During last decades, several models for estimation of university impact on local economy were developed. Stokes and Coomes (1998) speculate that the most often used method across the higher education institutions is the Caffrey-Isaacs model (ACE) using indicators of spending within an economic region (1998). Applying the ACE method, an institution calculates its direct purchasing from local vendors. The institution must also determine the local spending of its students, employees, and visitors, making sure not to include student payments to the institution for tuition, room and board. A regional economic multiplier is then applied to the total expenditures to determine the overall economic impact. This approach is considered as direct method of university economic effects estimation (Garrido-Yserte, Gallo-Rivera, 2010). Indirect methods of estimation are represented by input-output models, in particular, by REMI and RIMS II models. The REMI method is

a dynamic input-output model for estimating economic development forecasts, using a combination of time series analysis and general market equilibrium modeling. This tool is used to estimate the performance of regional or local economy in case that the university were not located there (counterfactual). Evaluation of difference between estimation and the real data measures the impact created by the university (Allgurn, 2010). Probably the most significant of these models is the input-output model called the RIMS II model. Within this model, it is possible to assess the direct and indirect impact of the university on the local economy, however model is very challenging in the sense of information collection. It requires detailed information about structure of expenses of university, employees and students (their permanent and temporary residence, decisions in case of absence of their current university in the city are required).

Impact studies do have their uses. Universities in conditions of Eastern Europe countries are also very labour-intensive organizations and in many Slovak cities belong to the major employers. In this paper we conduct analysis of backward linkages of Slovak University of Agriculture in Nitra.

Material and Methods

Gravino (2012) posits that in practice of evaluation of impact of initial autonomous change (in our case university spending) on the economy, the multiplier calculation is one of the more useful analytical techniques. To assess the effect of university spending in comparable setting in Slovakia, Rehák et al. (2015) used the aggregate keynesian multiplier. Both authors, however, agree that there are several drawbacks of this approach, most important being the inability to describe how multiplier effects work through the economy, advocating the alternative approach of using input-output analysis, which allows for sectoral disaggregation of impacts.

In case of Slovakia, input-output tables needed to quantify sectoral multipliers are available only on the national level, so the first step towards their quantification is to derive regional input-output table for Nitra region from its national counterpart. The methodological approach to this step was adopted from the works of Džupka and Šebová (2016) and Rehák et al. (2015), who used adjusted location quotient (specifically intersectoral Flegg's location quotient) calculated from employment data, but accounting for relative size of the region in the national economy, thus approximating the propensity to import.

The starting point was the symmetric matrix (IO) derived from national I-O table with 66x66 matrix elements (x_{ij}), 65 of which are comprised of NACE rev.2 economic sectors, while the last row of the matrix indicates income of employees in national I-O table and the last column of the matrix indicates final consumption of households in national I-O table. Next step is to calculate the matrix of technical coefficients A(aij) that represent the amount of output of production of sector i needed for production of one unit of output of sector j, as follows:

$$a_{i,j} = \frac{x_{ij}}{x_j}$$

Matrix of technical coefficients for Nitra region R(r_{ij}) were derived from the A(a_{ij}) matrix by multiplying it with the values of intersectoral Flegg's location quotients for each pair of sectors calculated for Nitra region (Rekák et al., 2015), in case the quotient is smaller than 1 (indicating that the region imports in the corresponding sector, and the impact of increase in demand for its output generated by the initial

impulse of interest would be lower than its impact at the national scale. Otherwise, the regional technical coefficients are identical to elements of matrix A(aij), i.e. to national technical coefficients, jointly described by equation:

$$r_{ij} = \begin{cases} a_{ij}, & FLQ_{ij} \geq 1 \\ FLQ_{ij} * a_{ij}, & FLQ_{ij} < 1 \end{cases}$$

The final step of calculation of regional output multiplier for Nitra region is calculation of regional Leontief model (in our case the model is closed, or single-region model). Using operations from matrix algebra (Isard et al., 2017) each row of the matrix of regional I-O table can be written as:

$$x_i = r_{i1}\, x_1 + r_{i2}\, x_2 + \ldots + r_{i65}\, x_{65} + y_i$$

This can be compactly rewritten as:

$$x = Rx + y$$

where x is the vector of volume of total production of regional sectors and y is a vector of final consumption. After some rearranging, we get:

$$y = (I - R)x \;\rightarrow\; x = (I - R)^{-1}\, y$$

where I is an *nxn* identity matrix of 1s and the matrix $(I - R)^{-1}$ in latter equation is our regional output multiplier. This multiplier can be further used to derive other types of multipliers. Isard et al. (2017) claim that usefulness of output multipliers is limited by the fact that they add up outputs over all sectors in the regional economy, effectively treating a monetary unit's worth of output from different sectors as equally "important", whereas it could be argued that additional unit of output in euros of automobile industry is not of equal value to the regional economy as additional unit of output in euros of agricultural production industry. Authors further state that more interesting measures of economic impact are income, employment and value-added multipliers. Rehák et al. (2015) provide a way for calculation of these types of multipliers. Income multiplier is derived by weighing elements of matrix R^{-1} by vector of households' coefficients h for sectors (this vector represents labour input in terms of wages needed for one euro of output of respective sectors):

$$h * (I - R)^{-1}$$

Employment multiplier is derived analogously by weighing elements of matrix R^{-1} by vector of employment coefficients e for sectors (representing labour input coefficients not in monetary terms, but rather in physical measures of employment, such as employment-to-output ratio for respective sectors):

$$e * (I - R)^{-1}$$

Value-added multiplier is derived by weighing of matrix R^{-1} by vector of value-added coefficients va calculated as a ratio of value-added for each sector and its total output:

$$va * (I - R)^{-1}$$

Since these vectors are quantified from the initial I-O table at the national level, we have to assume that they are not significantly different at national and at regional level (Rehák et al., 2015). Since this type of multiplier is essentially the ratio of the total effect to the initial effect, the total multiplication effect of university expenditures on the national economy is calculated as the sum of product of regional sectoral multipliers (as calculated above) and the initial regional expenditures of university in respective sectors. To further clarify the spatial aspects of this impact in more detail, we decided to use GIS as a tool for descriptive analysis of spatial aspect of spending of Slovak agricultural university in Nitra. Data presented in this paper were obtained through analysis of all invoices of SUA in Nitra in 2015 by pairing each invoice with respective supplier and their subsequent georeferencing.

Results and Discussion

The next section of paper presents results of analysis of both spatial and sectoral distribution and composition of SUA in Nitra expenditures. Overall number of invoices for goods and services supplied to the university in 2015 was 31,570, out of which 31,185 invoices were issued to suppliers located in the country. Pairing these invoices with specific supplier allowed for analysing both spatial dimension and sectoral aspect of university's impact.

Spatial aspects of SUA in Nitra suppliers and expenditures

Table 1 General distribution of suppliers and expenditures of SUA in 2015

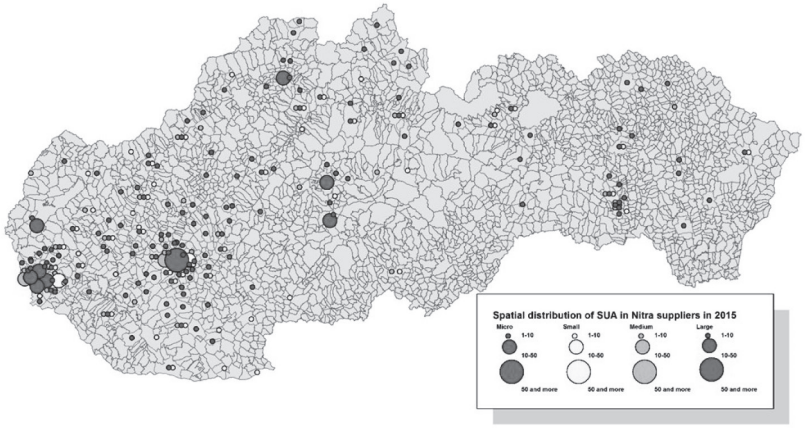
Territorial level	Number of invoices	Share (in %)	Number of suppliers	Share (in %)	Volume of expenditures in €	Share (in %)
City of Nitra	2,250	7.22	228	25.91	1,306,658.79	16.74
Nitra district	3,543	11.36	293	33.3	2,472,783.19	31.69
Nitra region	3,758	12.05	358	40.68	2,570,839.46	32.95
Slovak Republic	31,185	100	880	100	7,803,366.62	100.00

Source: own elaboration

As a result of expenditures on goods and services, the overall direct economic impact of all operations of Slovak University of Agriculture in Nitra in territory of Slovak Republic reached 7,8 million € in year in question. Funds were paid to 880 domestic suppliers, out of which more than a third were located in Nitra region and more than a quarter are local suppliers operating in Nitra City. However, only 16.74% (1.3 million €) was spent in local economy of university's home city and only approximately third of the expenditures was realized in regional economy.

Based on findings we can presume that direct economic impact of Slovak University of Agriculture in Nitra on Nitra region is smaller than it could potentially be, since majority of its expenditures are realized outside of Nitra region, and that its regional impact is strongly concentrated and localized in city of Nitra and its immediate surroundings. To further analyse impact of university on other entities of the economy, we analysed in more detail the characteristics and spatial distribution of its suppliers. The following map depicts detailed spatial distribution of university's suppliers and their count according to four size categories.

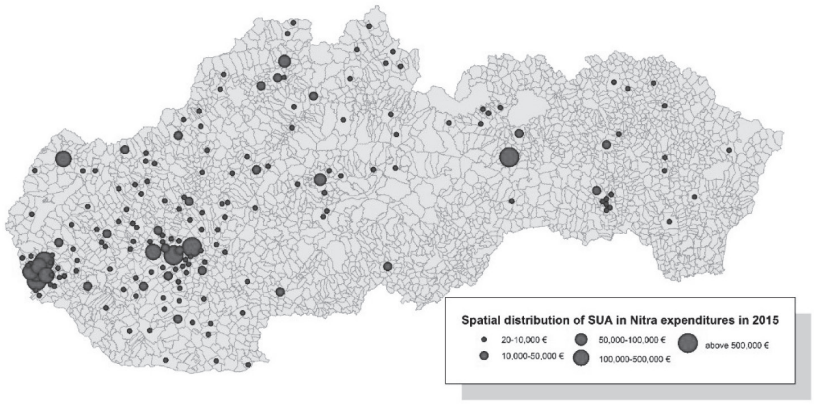
Figure 1 Spatial distribution and size characteristics of suppliers of SUA in Nitra in 2015



Source: own elaboration

The lowest frequency of business exchange from actors' size point of view was recorded between the SUA and large suppliers. On the country level, university traded with 56 large-sized entities, while in this size category of enterprises it spent little over 9% of total expenses. Impact on large-sized entities on local level is minimal, since university purchased goods and services from 5 large enterprises in Nitra and spent there only 52,066.9€ (3.98% of total local expenditures). Highest number of large suppliers of the university is located in Bratislava and its nodal area. Micro-sized suppliers are more concentrated in Nitra, SMEs and large firms are more numerous in Bratislava city. Further we analysed the composition of suppliers from the ownership perspective. Overall 79.2% of university expenditures goes to the private sector entities, 9.35% to state-own entities and also a relatively large share (approximately 8%) to foreign-owned entities on the territory of Slovak Republic. On regional level and the level of the Nitra district SUA trades mainly with private sector firms (71.5% on the level of region and 71.2% on the level of district in terms of the share of the volume), while total share of private entities on university's expenditures on the local level is even higher, reaching an amount of 92.79% in 2015. Highest share of total expenditures paid to state-owned entities was recorded on the district and regional level, in both cases reaching approximately a quarter of all expenditures realized at these levels.

Figure 2 Spatial distribution and volume of expenditures of SUA in Nitra in 2015



Source: own elaboration

Spatial distribution of SUA expenditures depicted in figure no. 3 shows that expenditures of the university are significantly concentrated in local economy of capital city Bratislava and Bratislava nodal region (3,87 million € spent in Bratislava in comparison with 1.3 million € spent in Nitra). However, there are only sparse cases of purchases from entities located in municipalities in Bratislava region outside the nodal region of Bratislava. On the other hand, expenditures of SUA are more symmetrically distributed in regional economy of Nitra region (university has supplier-consumer relations with economic actors from 56 regional municipalities), but these expenditures mostly ranged between 20 and 50,000 € and thus their significance for regional economic growth is questionable. Despite the fact that SUA is the only agricultural university in the country, spending in other regions was relatively infrequent. The only case of significant contribution to local economy of municipality from middle or eastern parts of the country is 611,122.8 € spent in local economy of Spišská Nová Ves on experimental sampling and specialized analysis of biological samples. The most remote supplier of SUA in Slovakia is located in the seat of Snina district, 406 kilometres from Nitra.

Sectoral aspects of SUA in Nitra expenditures and its multiplication effects

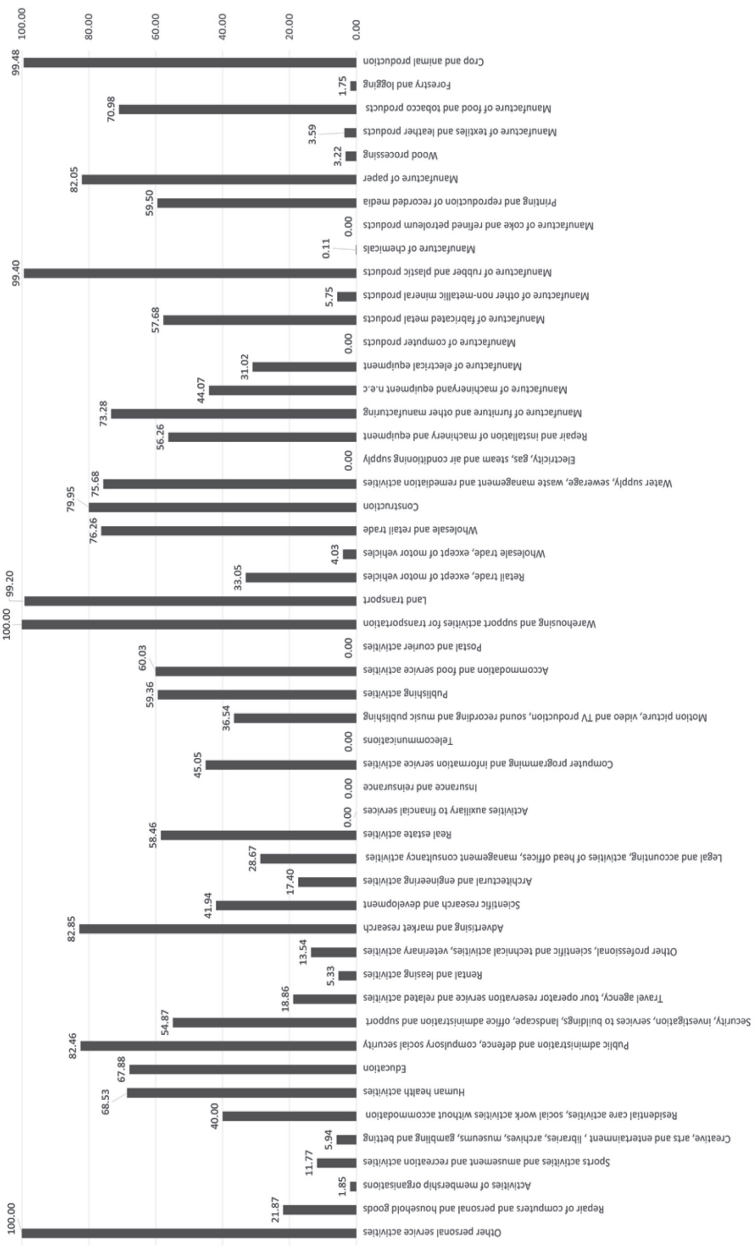
In the following section of the paper we present detailed sectoral decomposition of the university's expenditures on goods and services on three distinct levels of space, as well the final calculation of indirect and induced multiplier effects (total impact on output, income, value-added and employment in Nitra and its immediate surrounding) with specific focus on identifying sectors which are affected mostly by the increased demand of the university in 2015.

As shown in the figure no. 3, there are several industries that the university supplies from either exclusively or mostly on regional level, namely warehousing and support activities for transport, land transport and other personal services activities. This is an expected finding since these economic activities, along with water supply,

sewerage and waste management, wholesale and retail trade, construction, most activities falling under sector of advertising and market research, public administration and social services activities, that also show a relatively high proportion of increased demand on the regional level, can be jointly labelled as local services, or economic activities of non-basic sectors. Much more crucial is the finding that the university bought almost exclusively from regional suppliers in sectors of crop and animal production, manufacture of rubber and plastic products and to a lesser extent but still significantly from regional suppliers in sectors of paper manufacturing, food manufacturing and furniture manufacturing, making these the sectors of special interest in terms of identifying the "added value" of this specific university being located in Nitra region. However, we have to be careful with this statement when it comes to crop and animal production sector, which supplies to the university mostly biological material for research purposes, but also joint education and training activities. Nitra region being the Slovak region with the highest share of agricultural land as well as agricultural enterprises and employment incidentally conditioned the localization of the Slovak University of Agriculture in this region in the first place. When it comes to manufacture of rubber and plastic products, the most frequent and expensive item is laboratory equipment.

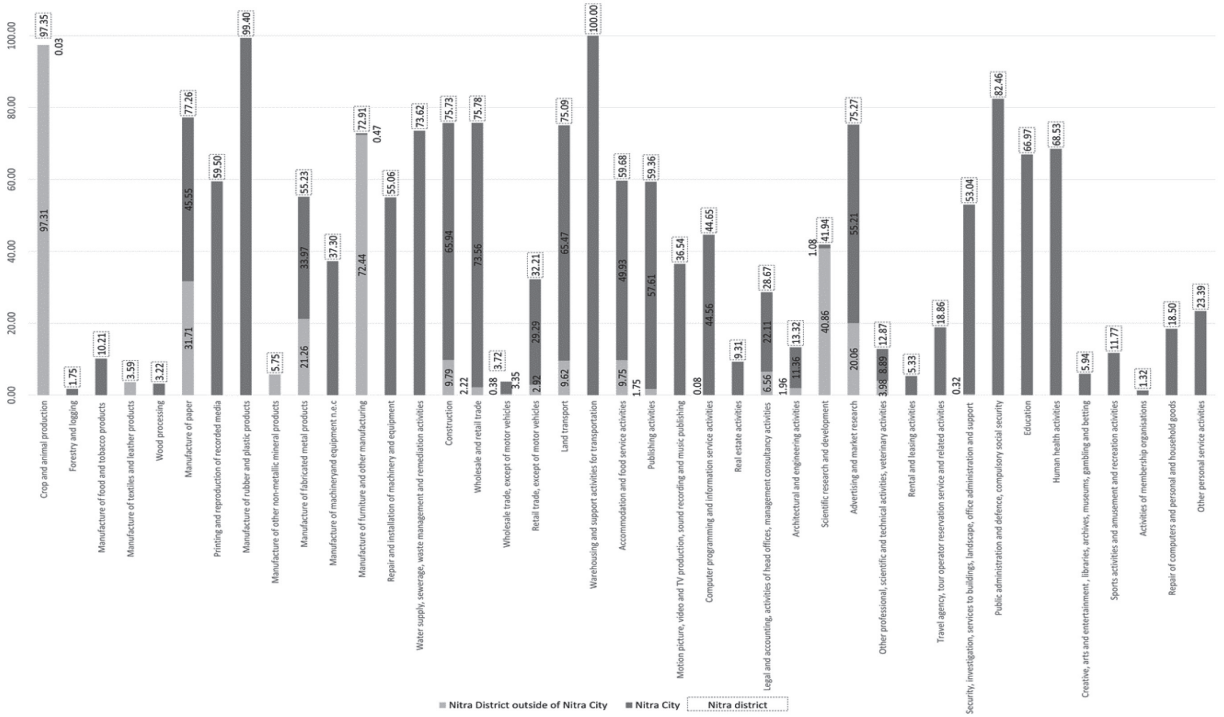
That the majority of expenditures in crop and animal production sector (figure no. 4) is realized outside of Nitra city limits is not surprising, what we find surprising, however, is the fact that the university supplies mostly from closest agroindustry enterprises (they are concentrated in Nitra district). Based on the figure no. 4 we can conclude that expenditures on goods and services of most sectors realized within Nitra district are concentrated in the university's hometown of Nitra, some local services almost exclusively. More even, or balanced, distribution of expenditures within Nitra district from sectoral aspect we see in case of paper, textiles, and leather products manufacturing, non-metallic mineral and metal products manufacturing, furniture manufacturing and advertising, market research, scientific research and development and other scientific and technical activities sectors. The latter of these being considerably dispersed within the Nitra district is confounding, since scientific and technical activities and research and development activities tend to strongly concentrate in urban centres.

Figure 3 Share of SUA in Nitra expenditures realized in Nitra region according to sector



Source: own elaboration

Figure 4 Share of SUA in Nitra expenditures realised in Nitra District and Nitra City according to sector



Source: own elaboration

In the final section of the paper, we analyse (aside from the eventual calculation of total multiplier effects) also the sectoral composition of the university's expenditures on the level of Nitra district, since this was the level we decided to use for the calculation of local impact of the university. This decision was guided by the fact that most of the empirical studies covering this topic (e.g. analysis of local economic impacts of universities located in other Slovak cities like Košice and Bratislava) were carried out on the city level. It is of great importance to achieve the best possible comparability of the results in case of the Nitra city, were there are a lot of municipalities falling outside of the city limits administratively, but in reality could be considered as a part of the local economy of Nitra city. In our case, the results on the district and regional level would not differ greatly since the volume of expenditures is on the similar level (2.47 and 2.57 million euros respectively) in addition to the size, ownership and sectoral composition of the suppliers.

Table 2 Sectoral composition of SUA in Nitra expenditures in Nitra district in 2015

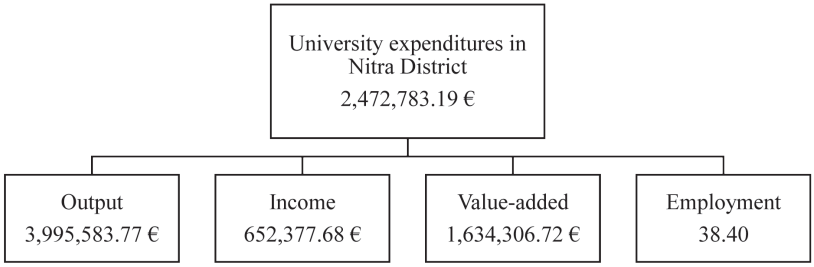
Sector	Volume of expenditures (in €)	Sector	Volume of expenditures (in €)
Crop and animal production	601,879.4	Publishing activities	36,437.2
Forestry and logging	35.7	Motion picture, video and television programme production, sound recording and music publishing activities	1,290.0
Manufacture of food and tobacco products	538.8	Computer programming and information service activities	375,592.8
Manufacture of textiles and leather products	221.7	Real estate activities	1,388.4
Wood processing	236.4	Legal and accounting activities, activities of head offices, management consultancy activities	54,468.9
Manufacture of paper	1,583.6	Architectural and engineering activities	46,677.3
Printing and reproduction of recorded media	24,092.0	Scientific research and development	19,728.3
Manufacture of rubber and plastic products	25,060.1	Advertising and market research	25,744.4
Manufacture of other non-metallic mineral products	25.0	Other professional, scientific and technical activities, veterinary activities	13,514.7

Manufacture of fabricated metal products	5,360.6	Rental and leasing activities	120.0
Manufacture of machinery and equipment n.e.c	2,498.8	Travel agency, tour operator reservation service and related activities	36,065.5
Manufacture of furniture and other manufacturing	441,227.1	Security and investigation activities, services to buildings and landscape activities, office administrative and support activities	48,525.3
Repair and installation of machinery and equipment	25,460.5	Public administration and defence, compulsory social security	42,517.4
Water supply, sewerage, waste management and remediation activities	7,497.6	Education	22,203.2
Construction	305,056.9	Human health activities	7,134.3
Wholesale and retail trade	21,688.9	Creative, arts and entertainment activities, libraries, archives, museums, gambling and betting activities	1,875.0
Wholesale trade, except of motor vehicles	126,299.5	Sports activities and amusement and recreation activities	160.0
Retail trade, except of motor vehicles	63,241.3	Activities of membership organisations	995.0
Land transport	16,287.1	Repair of computers and personal and household goods	384.0
Warehousing and support activities for transportation	379.5	Other personal service activities	3,053.3
Accommodation and food service activities	66,237.7		

Source: own elaboration

The highest nominal amount of expenditures of the university in 2015 realized in the Nitra district (as is evident from the table no. 2) was allocated on the purchase of crop and animal production sector products and services; more than half a million euros constituting almost a quarter off all local expenditures (24.34%). The second largest share of expenditures (17.84) can be attributed to the furniture manufacturing sector, while relatively large proportion was also allocated on supplying and services and products of construction industry (12.34% of total expenditures in Nitra district) and although lower share, but considerable amount on products from wholesale industry (5.11%). Suppliers from all above mentioned sectors, per results from the previous analyses, can be considered typically local. However, relatively high amount of expenditures (specifically 375,592.82 €, or 15.19% of total local expenditures) in Nitra district were spent on computer programming and information activities. We can expect that the greatest multiplier effects of the university spending would be precisely on these sectors of the local economy, since in all other sectors individually the university spent less than 3% of overall 2015 budget on purchase of goods and services.

Figure 5 Total multiplier effects of Slovak University of Agriculture in Nitra on Nitra district in 2015



Source: own elaboration

The figure above (no. 5) summarizes the total multiplier effect of the university throughout all sectors of the local economy of Nitra district, encompassing both indirect and induced effects initiated by the university's initial expenditures. Table no. 3 shows multiplier effects induced in individual sectors of the local economy (by multiplying the amount of university's expenditures in each sector with the corresponding regional multiplier for that sector), while their sum is depicted above. Initial university expenditures of 2.5 million euros in local economy caused an increase in total output of the local economy reaching almost 4 million euros. This increase in total output of the local economy induced by the university spending subsequently caused a creation of 38.4 new full time jobs in Nitra. When measured by the total increase of households' income in local economy, the cumulative economic impact of the university's expenditures was estimated to have reach more than a half a million euros, while the total additional increase of value-added attributable to the university's spending was 1.6 million euros. Lower economic impact on value-added and income provides additional credence to the assertion of Isard (2017) about the overestimation of economic impact of initial impulse measured via the total output multiplier. Crop and animal production sector experiences the greatest number of new jobs created (9

full time new jobs), while furniture manufacturing and computer programming and information service activities are just behind with 5 new jobs created in each, and relatively significant growth of employment can be seen in construction industry as well. However in terms of additional value-added and increase of households' income, the grates economic impact was experienced by the computer programming and information service activities. The most probable explanation is the difference between labour productivity within economic activities in question, but also other industry and region specific factors can play a role. When we compare the total economic impact of Slovak University of Agriculture in Nitra and total economic impact of University of Žilina in the same year presented in the work of Gašperová et al. (2017), we see that local impact of SUA expenditures is considerably lower, however, since the total regional expenditures of the University of Žilina reached 19.81 million euros, we have to compare the impact measured as an additional increase of either total output, income, value-added or employment induced by 1 additional euro of these two universities' expenditure. When we compare the results, we can see that although SUA induced 2 more jobs per each million of euros spent in the local economy, the impact on total output of the economy as well as income was lower although not considerably. Considerably smaller impact of SUA in relation to the impact University of Žilina can be seen in the additional value-added. Different methodology was used by Hudec et al. (s.a.) who estimated the local economic impact of Technical University in Košice, specifically the authors used aggregated information from the university's annual report from 2012, as opposed to specific invoices. Included in the regional expenditures were the expenditures on material, energy consumption, repairs and maintenance, transport and representation. The initial expenditures of the Technical university in Košice reached 11.2 million euros and induced the increase of 1.69 euros of total output of the local economy per each euro spent (while SUA in Nitra induced 1.62 euros of total output per each euro spent), increase of 0.22 euros of additional income per each euro spent (SUA in Nitra induces 0.26 euros of additional income per each spent euro) and increase of 0.61 euros in value-added per each spent euro (while SUA's impact in this sense was estimated to be 0.66 euros per each initial euro of local expenditures). The greatest differences were observed in impact on job creation, with SUA in Nitra generating three more jobs per each million of its initial expenditures.

Table 3 Multiplier effect of SUA in Nitra expenditures on value-added output, income and employment in Nitra district in 2015

Sector	Value-added (in €)	Income (in €)	Output (in €)	Employment (person)
Crop and animal production	318,466.9	105,797.6	807,568.6	9.38810
Forestry and logging	28.0	8.1	65.2	0.00036
Manufacture of food and tobacco products	252.7	110.1	812.0	0.00643
Manufacture of textiles and leather products	133.9	59.7	285.2	0.00441
Wood processing	136.3	40.8	336.8	0.00163

Manufacture of paper	757.9	303.1	2,744.7	0.01497
Printing and reproduction of recorded media	16,253.8	8,347.4	49,947.2	0.55082
Manufacture of rubber and plastic products	9,254.2	4,405.8	34,876.0	0.26724
Manufacture of other non-metallic mineral products	13.4	5.9	40.3	0.00033
Manufacture of fabricated metal products	2,681.4	859.4	7,108.9	0.05155
Manufacture of machinery and equipment n.e.c	1,119.9	607.3	3,752.8	0.03504
Manufacture of furniture and other manufacturing	219,170.3	92,242.1	559,847.7	5.84516
Repair and installation of machinery and equipment	16,278.8	7,293.0	44,806.2	0.35182
Water supply, sewerage, waste management and remediation activities	5,591.4	2,443.2	11,642.5	0.14578
Construction	193,876.3	53,270.8	505,075.3	3.88067
Wholesale and retail trade	15,670.3	5,079.5	32,463.9	0.33074
Wholesale trade, except of motor vehicles	95,187.5	38,102.6	216,882.9	1.70144
Retail trade, except of motor vehicles	49,720.5	22,169.8	110,544.6	1.23770
Land transport	10,353.0	4,312.5	29,137.1	0.20910
Warehousing and support activities for transportation	183.0	120.5	760.9	0.00827
Accommodation and food service activities	58,151.5	28,468.9	145,484.2	1.36910
Publishing activities	22,604.7	8,822.0	59,532.1	0.32774
Motion picture, video and TV production, recording	834.3	290.3	2,228.0	0.01383
Computer programming and information service activities	337,578.6	141,549.9	748,600.3	5.55014
Real estate activities	1,183.2	186.6	2,228.3	0.00915
Legal and accounting, activities of head offices, management consultancy activities	48,782.7	18,345.5	102,279.8	0.69685
Architectural and engineering activities	33,345.4	11,607.2	80,307.8	0.85944

Scientific research and development	19,304.2	12,559.4	40,901.8	0.82365
Advertising and market research	20,177.8	9,874.7	60,851.0	0.28199
Other professional, scientific and technical activities, veterinary activities	11,033.9	3,662.3	25,542.7	0.13276
Rental and leasing activities	93.5	20.6	193.1	0.00085
Travel agency, tour operator reservation service and related activities	10,489.9	3,808.5	49,961.7	0.38060
Security, investigation, services to buildings, landscape	44,546.2	23,115.8	107,819.3	1.38310
Public administration, defence, social security	37,559.1	22,664.9	80,186.4	1.03079
Education	22,224.2	16,761.9	47,380.6	1.16670
Human health activities	6,186.8	3,804.4	14,215.0	0.24937
Creative, arts and entertainment	1,693.0	317.5	2,578.1	0.02545
Sports activities and amusement and recreation activities	82.7	40.4	236.3	0.00287
Activities of membership organisations	449.0	318.3	1,701.7	0.04207
Repair of computers and personal and household goods	316.4	118.8	768.4	0.00341
Other personal service activities	2,540.2	460.6	3,888.0	0.01781

Source: own elaboration

Conclusion

The paper focused on analysis of direct, indirect and induces impact of Slovak University of Agriculture in Nitra on different sectors of the economy and also, by adopting a GIS-based approach, we demonstrated the spatial distribution of SUA in Nitra expenditures on different territorial levels. From the spatial point of view, very interesting is the finding that there are more direct expenditures realized in the local economy of the capital city of Bratislava then in the seat of the university, the city of Nitra. However this is to be expected given the size of the city and its position in the settlement hierarchy of the country. Higher absolute concentration of expenditures in Bratislava region could be also explained by the fact that many services are only provided by entities localized in the capital city. However we cannot discard the impact of university on the economy of Nitra and its immediate surrounding, given that the largest share of micro and small suppliers are concentrated close to the geographical location of the university. This indicates that the university has important impact on local sector in city of Nitra and we could expect a sizable multiplier effect. Initial university expenditures of 2.5 million euros in local economy caused an increase of almost 4 million euros of total output of the local economy, creating additional 38.4 full time jobs, and increased households' income by 652,377.68 euros and value-added of the local economy by 1.6 million euros. Of these, the university had largest impact on sectors of crop and animal production, furniture manufacturing, construction and computer programming and information service activities. Described impact (specifically in sectors of construction and furniture manufacturing) could however reflect the undergoing reconstruction of several buildings and indoor spaces of the university in the year that was analysed in the paper. Direct, indirect and induced impacts described in this paper constitute just the impact of the university itself on the local economy. To encompass other avenues through which university boosts the local economy, we will further study the local expenditures of university employees as well as its students.

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