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Role of employee training and experience on the adaption of computerized maintenance management system

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Abstract
The study attempted to examine the user training and experience on user acceptance of a computerized maintenance management system (CMMS) in a continuously progressing industry where maintenance management is extremely vital for the smooth functioning. A cross-sectional study design was used in this research. The study population comprised of users of CMMS. The analysis was mainly carried out using structured equation modeling techniques. The results reveal that perceived usefulness was the most significant determinant of adoption of a complex system than all the other variables, underscoring the importance of incorporating the appropriate functional capabilities in new systems. The findings affirm that a system will be adopted if it is regarded as useful, irrespective of attitude, provided that the use of the system is perceived to offer direct benefits to the user. All the relationships existing between perceived ease of use, perceived usefulness, attitude towards using, and behavioral intention were tested and found to be significant and positive. Further analysis revealed that experience helps in ease of use but not in usefulness while training impacts on both usefulness and ease of use. Based on the analysis results recommendations were made to track the value of user training and experience accordingly.

Keywords
computerized maintenance management system, employee training, experience, behavioral intention, coal-based power plants

Introduction

Due to the risen role of operational support, acceptance and use of Information Technology (IT) have received the attention of many industries for over a decade. On the other hand, with the emergence of new materials, new communication and data processing technologies, changes in industrial functions are greatly experienced by today's society (Ciutacu & Chivu, 2015). The implementation of the Information Systems (IS) correspondingly prompts changes in attitudes and behaviours within the organization's internal structures through these IS-related acquisitions are mostly identified as strategic investments for the many firms (Amadi-Echendu & De Wit, 2015). On the other hand, successful investment in IT can lead to productivity enhancement, while some of it leads to undesirable consequences such as financial losses and employees' dissatisfaction. Consequently, understanding the way of employees' acceptance of IS vital for those industries though their decisions are likely to vary with the system, the individual perceptions and the context. This study focuses on the coal power generating industry, where maintenance management is extremely vital for the smooth functioning of a Coal Power

Plant (CPP) since the operations in a CPP are identified as a continuous process.

Computerized Maintenance Management Systems (CMMS) come up with comprehensive modules which enhance operational requirements of recording, analysing and reporting and increase the effectiveness and efficiency of its employees. These are used instead of the manual (paper-based) work maintenance systems that have been used for many years. The use of computers in maintenance can provide ease of access to precise data and allow users to search and find details effectively. Further, these IS offer the opportunity to manage and provide a broader scope of summarized information with greater quality than a manual system could ever provide (Wienker, Henderson, & Volkerts, 2016; Weir, 2015).

Maintenance management systems have also been evolved with the changes in maintenance over the time. Also, these systems are equipped with advanced computational tools to manipulate a large amount of information. This meant an evolution in how to manage the maintenance both in the general concept and in each stage. Companies are using these software programs under various maintenance conditions to perform costs or expenses, to control of stock, to keep the historical record of equipment or machinery, to make planning and work order releases, and to monitor variables (Lemma, 2012; Dedrick, Gurbaxani & Kraemer, 2003).

CMMS programs typically interface with users through customizable modules chosen based on the maintenance data requirements. Some of the most common CMMS modules perform data analysis related to preventive maintenance, parts inventory, parts procurement, work-order management, labour costs, material costs and contracting cost (Wireman, 2009). As recorded in previous studies, specialized maintenance management is not only concerned with controlling, but also with managing all tasks associated with maintenance and pays more attention to managing the asset's lifespan. It develops preventive maintenance to predictive maintenance, which strives to detect emerging faults (Lemma, 2012; Fumagalli, Macchi, & Rapaccini, 2009).

However, employees' reluctance and low utilization of a newly adopted computerized IS and their preference to follow familiar operational methods will be caused not to make a significant contribution to the purpose of implementing a new system. This can be evidenced by the factors revealed in the Technology Acceptance Model (TAM). Thus, understanding the way those employees see the new system will be an interesting investigation.

When discussing acceptance and usage of newly implemented technologies, the most influential and accepted model which represents important theoretical contribution is TAM (Malhotra & Galletta, 1999). Though associations of several external variables on TAM have been discussed by Davis, Bagozzi, & Warshaw (1989), empirical research on the effect of those variables has been limited. Thus, this paper targets to provide an insight into the implication of employees' training and experience on the acceptance of CMMS after it has been implemented and to examine the post-implementation perception of employees in the coal power generating industry. Due to drastic changes in the IS developments in the recent years, understanding the employees' acceptance of such advanced technology in a complex maintenance environment would be an interesting investigation in both from an academic and an administrative perspective.

1. Literature review

1.1. CMMS in Operations

CMMS is computer software designed to simplify maintenance management operations which schedules, tracks and monitors maintenance activities to provide a range of reports and information on cost, component items, and personnel activities. Simply, it acts as a database which contains information about the company, workers, warehouse, equipment and maintenance. Thus, the data inputs play a key role in CMMS.

Most of these systems include basic modules for the identification of assets, work orders, preventive maintenance, and for keeping histories of material and equipment purchases, as well as tools for analysing information. These basic modules can provide the foundation for an effective system of maintenance administration (Cato & Mobley, 2001; Faiz & Edirisinghe, 2009; Labib, 2008; Lee et al., 2013; Lemma, 2012; Lopes et al., 2016; O'Donoghue & Prendergast, 2004; O'Hanlon, 2005; Vilarinho, Lopes, & Oliveira, 2017; Wienker et al., 2016; Zhang, Li, & Huo, 2006). These are done by organizing and tracking a lot of data which required running maintenance operations.

In the operations perspective, maintenance costs are growing faster than production costs. Hidden costs impact of maintenance are much higher than just the direct costs associated with traditional maintenance (Wienker et al., 2016). Some studies have shown that maintenance has tended to be viewed as a "black hole" where too much money goes with little measurable return (Lopes et al., 2016; Munyensanga, Widyanto, Aziz, Rusnaldy, & Paryanto, 2018; Wienker et al., 2016). Other than cost-effectiveness, there are many other factors to consider in determining whether a CMMS can benefit the firm operation. It also needs to consider such results as better organizational methods, reduced paperwork, and improved communications (Lemma, 2012). On the other hand, most maintenance organizations using a CMMS have been able to increase the labour productivity rates in several ways (Lemma, 2012; Lopes et al., 2016; Mather, 2002). Moreover, most computerized maintenance systems with a good preventive maintenance system will also lead to improvement of equipment or asset availability and product quality through the better planning, less firefighting, and better analysis of repair histories (Lemma, 2012; Lopes et al., 2016).

1.2. Importance of employee training and experience in CMMS operations

There are many reasons for the failure of CMMS. The major failures are associated with human errors, but not with the CMMS itself. A large percentage of failures occur due to the partial implementation of CMMS. Most companies lack the expertise required to implement a CMMS fully. Since their employees do not have a working knowledge of these programs or fail to understand the capabilities of the system fully, they fail to recognize all of the tasks that are required to directly or indirectly support the installed system (Amadi-Echendu & De Wit, 2015; Lee et al., 2013; Lemma, 2012; Wienker et al., 2016). Moreover, since employees form their attitudes and perceptions on the basis of their prior experience, employees with a higher high level of experience may be highly positive towards acceptance of a newly implemented IS than others due to less susceptible (Irani, 2000).

On the other hand, training can be identified as an important human resource management practice which positively enhances the organization's performance (Pham, Phan, Tučková, Vo, & Nguyen, 2018). Also, training has an impact on the way that the user perceives the technology implementation (Sternad & Bobek; 2006; Alkhaldi, Yusof, & Aziz, 2012). When implementing, a CMMS often requires several man-years of effort. However, many organizations do not have such staff with the experience and expertise to properly implement an effective CMMS (Amadi-Echendu & De Wit, 2015; Wienker et al., 2016). Without having adequate manpower, in most cases, employees become frustrated with the slow progress being made and feel that the system is not meeting expectations. Also, expecting all employees to embrace the new CMMS system automatically can cause various issues. Proper training for workers is essential to achieve high rates of success. Without a radical change in the human factor, a CMMS system cannot provide the expected benefits (Ben-Daya, Duffuaa, & Raouf, 2001; Lemma, 2012; Sherwin, 2000; Wienker et al., 2016).

1.3. Adoption of computerized system: technology acceptance model (TAM)

There have been lots of techniques on assessing learner to study the level of acceptance of users towards adoption in IT over the last twenty years (Chen, Li, & Li, 2011; Chuttur, 2009; Dasgupta, Granger, & McCarty, 2002, Davis, Bagozzi, & Warshaw, 1989; Venkatesh & Davis, 1996; Selamat & Jaffar, 2011). TAM is the common selection among all of the theories which focus on the attitudinal explanations of individual intentions. TAM has been applied to different technologies under different situations with different control factors and different subjects, leading its proponents to believe in its robustness. Currently, researchers in the IS field consider TAM as one of the information systems fields' own theories and still put much effort into the study of research using the theory (Bagozzi, Davis, & Warshaw, 1992; Lee, Kosar, & Larsen, 2003).

TAM was introduced by Davis, Bagozzi, and Warshaw (1989), and is used to examine the impact of external variable towards the behavioural intention whenever people use the new system, because it explains the casual links between belief, the usefulness and ease of use of the system towards their attitude, intentions and actual usage of the system (Amadi-Echendu & Wit, 2015; Davis et al., 1989; Malhotra & Galletta, 1999; Musa, Othman, Zakaria, Khalid, & Sokman, 2018).

According to Davis et al. (1989) and

Venkatesh (1999), TAM shows acceptance of an IS by an individual is determined by two major variables namely; perceived usefulness and perceived ease of use. Together, these factors determine the attitude toward using technology. This, in turn, affects the behavioural intention to use, which then leads to actual system use.

1.3.1. Perceived Usefulness

User perception of ability to complete a task effectively with the support of technology is denoted by the perceived usefulness. With such perceptions, users tend to accept the new technologies to have better performance in their workplaces. This means that the user has a perception of how useful the technology is in performing his job tasks. This includes decreasing the time for doing the job, more efficiency and accuracy (Davis et al., 1989). Many studies have been noted its' importance and due recognition has been made in many theoretical models including TAM. With that remark, perceived usefulness can be defined as the degree to which a person believes that using a particular technology will enhance his or her job performance (Sumak, Hericko, Pusnik, & Polancic, 2011; Huang & Li, 2009; Thong et al., 2004; Venkatesh & Davis, 2000; Davis et al., 1989). In other words, perceived usefulness refers to perceptions of a consumer regarding the outcome of an experience (Davis, Bagozzi, & Warshaw, 1992).

1.3.2. Perceived Ease of Use

The user's perception of the amount of effort required to use the new system is denoted by the term perceived ease of use (Davis et al., 1989). From a technological perspective, the user belief on simplicity to use, read and understand of new technologies when enabling effortless adoption can be identified as key aspects of perceived ease of use. On the other hand, Venkatesh (2000) has reported perceived ease of use as the individual's perception of how easy the innovation is to learn and to use.

1.3.3. Attitude toward Using

The general favourable or unfavourable feeling of a person to work with the system and spreadsheets is referred as the attitude toward using the system (Fishbein & Ajzen, 1975; Mokhsin, Shaffiei, Hamidi, & Yusof, 2011; Mykytyn & Harrison, 2003). Also, attitude involves judgment whether the behaviour is good or bad and whether the user is in favour or against performing it (Leonard, Clonah, & Kreie, 2004). In TAM, users' related beliefs on the consequences of a given behaviour and their evaluation of those consequences are usually explained by this factor. Further, the attitude has been identified as a partial mediator of the perceived usefulness and the intention to use variables (Davis et al., 1989). Users with favourable perception towards new technologies and related benefits of using them tend to have positive attitudes. As per the previous findings, perceived usefulness has a stronger positive direct effect on attitudes toward using, while the perceived ease of use has a small indirect effect on attitude via usefulness (Chen, Gillenson, & Sherrell, 2002; Davis et al., 1989; Davis, 1993; Igbaria, 1993; Igbaria & Chakrabarti, 1990; Sally, 2006; Weng, Yang, Ho, & Su, 2018; Wua & Wang 2005). Compared to usefulness, the total effect of ease of use on attitude exceeds the total effect of usefulness on attitude (Mokhsin et al., 2011).

1.3.4. Behavioural intention

The extent to which a person has realized his or her plans to perform or not to perform a specified future behaviour has denoted by the term behavioural intention (Sumak et al., 2011). If the users find the system incompatible or do not like to use the system, the system should be reshuffled or replaced with a new one. According to Lean, Zailani, Rumayah, & Fernando, (2010), behavioural intention is a measure of the strength of one's intention to perform a specified behaviour as his or her desire. The same result is also demonstrated in Sumak et al. (2011), where the intentions of people to use the system are reflected by their understanding on how easy the system is, as one of the individual's indicators of the readiness to perform a given behaviour.

1.3.5. Actual system use

It is stated that attitude towards using a new information system is determined by the users' perception of usefulness and that attitude is, in turn, a key determinant of actual usage of the new information system (Davis et al., 1989). According to Fishbein and Ajzen (1975), attitude towards actual usage is determined by an expectancy of how easy the user thinks he can use the system.

2. Methodology

2.1. Research model

This paper aims to provide an insight into the implication of employees' training and experience on the adoption of CMMS in the coal power generating industry. Due to continuous operational behaviour, maintenance management plays a vital role in the smooth functioning of the plant. Though firms have identified the strategic importance of the usage of CMMS, its effectiveness fully depends on the employees in that firm. Thus, identification of employees' acceptance of such a system would be an interesting investigation in the firms' perspective. In a lower acceptance scenario, by empowering employees through training and recruiting experience workforce are the two options available for the management to get maximum out of CMMS implementation. Hence, understanding the implication of employees' experience and training on the adoption of newly implemented IS would be an interesting investigation in both from a theoretical and a managerial perspective. Furthermore, the assessment of the above two vital factors will enable firms to rethink on implemented strategies for the smooth functioning of the plant.

The study was conducted in December 2019. This denotes that as technology proliferation continues, empirical evidence of this study may as well change. Figure 1 shows the conceptual model of this study and relationships among selected variables. This study mainly focuses on employees' behavioural intention, attitudes towards using CMMS and actual system use with reference to gained training and experience levels.

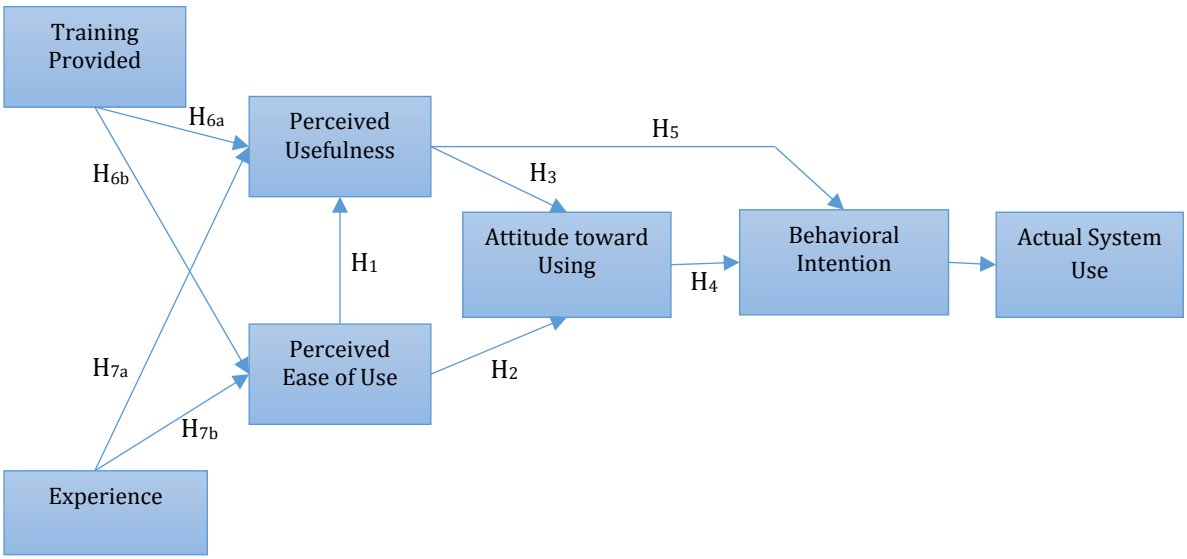

Figure 1 Model of the Study
Source: The authors

2.2. Development of hypotheses

Concerning the above-discussed literature on customer adoption on CMMS and TAM, the following hypotheses were formulated. The study carried out considering employees' perceptions towards studying variables. Therefore throughout the study, employees' age, gender and education levels were controlled when testing the developed hypothesis in this study.

Ease of use of the CMMS is having the ability to strengthen the relationship over time. Igbaria and Chakrabarti (1990) found that ease of use is an important determinant of system usage operating through perceived usefulness. It is thought that the easier to use technology, the greater the expected benefits from the technology with regard to performance enhancements. Several studies have noted a direct effect of perceived ease of use on perceived usefulness (Davis et al., 1989; Teo, 2001). In other words, between two systems offering identical functionality, a user may find the one that is easier to use as more useful. In other words, the complexity of one particular system will become

the inhibitor that discourages the adoption of an innovation (Rogers, 1993). On the other hand, the effective functionality of a system depends on its usability (Goodwin, 1987). With that, the following H1 was designed to identify changes in the relationship among ease of use and the usefulness of the CMMS.

H_1: Perceived ease of use positively influences the usefulness of the CMMS

The existing studies suggest that perceived ease of use is a major attribute in determining the attitude of an individual towards system usage. Besides, perceived ease of use has been identified as a significant factor persuading user acceptance and usage behaviour of information technologies (Igbaria & Livari, 1995). Users would be concerned with the effort required to use that application and the complexity of the process involved (Lee, 2010; Mokhsin et al., 2011; Ngai, Poon, & Chan, 2007; Sumak et al., 2011). Further, according to Fishbein and Ajzen (1975), attitude towards actual usage is determined by an expectancy of how easy the user thinks he can use the system. Technology acceptance model states that perceived ease of use has a direct positive effect on attitude towards using the system. Thus, the following H2 was designed to identify changes in the relationship among ease of use and the attitude towards using the CMMS.

H_2: Perceived ease of use positively affects the CMMS users' attitude

As in the past technology acceptance model studies, the first underlying relationship is that perceived ease of use and perceived usefulness will have a possible impact on enhancing user's attitude towards usage (Sumak et al., 2011; Ngai et al., 2007). It is believed that perceived usefulness was affected by the level of an individual's trust (Lee, 2010). Thus, H3 was designed to identify changes in the relationship among usefulness and the attitude towards using the CMMS.

H_3: Perceived usefulness positively influences the users' attitude

The attitude has been found to be a significant determinant of behavioural intention (Psouni, Hassandra, & Theodorakis, 2016; Fishbein & Ajzen, 1975; Liu, Liao, & Pratt, 2009; Weng et al., 2018; Wua & Wang, 2005). Davis (1993) has noted implications of determinants of users' attitude, has identified a strong, direct and positive effect on their intention to actually use the technology. On the other hand, a direct effect of attitude on the intention to use has also been empirically tested as a strong component for motivational variables to predict the behavioral intention of using computer technology (Taylor & Todd, 1995). Also, a similar type of relationship was identified by Liu et al. (2009). However, this result can be negative as stated in recent research result by Sumak et al. (2011). Thus, H4 was designed to identify changes in the relationship between behavioural intention and the attitude towards using the CMMS.

H_4: Attitude towards using the CMMS positively influences the behavioural intention to use the CMMS

Perceived usefulness of an information system has been identified as the most influential factor in determining its usage. Several studies state that perceived usefulness has a significant and strong impact in determining behavioural intention to computer technology use, although perceived ease of use does not have any significant effect (Davis & Venkatesh, 2004; Davis et al., 1989; Ma, Andersson, & Streith, 2005; Legris, Ingham, & Collerette, 2003). It was found that usefulness had a significantly strong relation with usage, greater than that between perceived ease of use and usage (Davis et al., 1989; Guriting & Ndubisi, 2006; Pikkarainen, 2004). With that, H5 was designed to identify changes in the relationship among behavioural intention and the perceived usefulness in using the CMMS.

H_5: Perceived usefulness positively influences the behavioural intention to use the CMMS

Implications of external variables on TAM were initially discussed by Davis et al. (1989) and they noted those external variables' effects on perceived usefulness and ease of use of new technologies. By referring that development in TAM, hypothesis H6 and H7 were mainly constructed.

Many studies have revealed the importance of the employees' training when adopting newly implemented IS. Amadi-Echendu and De Wit (2015) have noted a very strong influence on how a user not only perceives and accepts a technology system and the way they utilize the technology with training. With that, implications of employee training on perceived usefulness and ease of use were examined by testing below hypotheses.

H_{6a}: Provided related training positively influences the users' perceived Ease of use of the CMMS

H_{6b}: Provided related training positively influences the perceived usefulness of the CMMS

In a user experience perspective, many studies have also exposed the experience as a major determinant of the intention to make use of newly implemented IS. According to Horst, Kuttschreuter and Gutteling (2007), the significant direct causal influence of experience on the perceived usefulness has been identified and has noted personal experiences as one of the predictors of the perceived usefulness of e-services. Further, Irani (2000) had noted the relationship between experience and perceived usefulness and relevant prior experience was identified as the most favourable perceptions of the perceived usefulness in her study. On the other hand, employees with prior experience may identify new technologies as easy and beneficial to use and they may more positive to accept new technological implementations (Irani, 2000). Based on that, the following hypotheses were developed to measure the implications through employees' experience.

H_{7a}: Employee prior experience positively influences the perceived ease of use of the CMMS

H_{7b}: Employee prior experience positively influences the perceived usefulness of the CMMS

2.3. Variables and measurement scales

A multiple-item measurement scale adopted by referring to previously validated questionnaires was used to measure the identified constructs of this study. For this purpose, five-point Likert-point scale ranging from "strongly agree" to "strongly disagree" was employed for all items.

With reference to the TAM, perceived usefulness was measured using a four-item scale which was adapted from previous studies. Operational measures used in the scale of perceived usefulness are benefits received to job performance, quick completion, easiness, and productivity (Malhotra & Galletta, 1999). For the purpose of measuring Perceived Ease of Use, a four-item scale was utilized mainly referring to Selamat and Jaffar (2011). Individuals were asked to indicate the extent of agreement and operational measures used in the scale of perceived ease of use are easiness to learn, easiness to use, flexibility, clarity and comprehensibility. Attitude to using CMMS was also measured using a four-item scale which was adopted from Weng et al. (2018). Operational measures used in the scale of attitude towards using are goodness, positive influence of using, valuableness and trend to use. For the development of behavioural intention measurement scale past studies of Malhotra and Galletta (1999) was referred. Four-item scale was developed for this purpose and operational measures used in the scale are using for communication, frequency of using, using to do the job and using to plan meetings. Three-item scale was used to measure the actual system usage. It is measured in terms of frequency of system use ('how often') and the volume of system use ('how much') by the user (Malhotra & Galletta, 1999). The employee experience and training gained were measured placing direct questions related to both constructs. Further, before proceeding with the analysis, several statistical tests were followed to verify the reliability and validity of selected scales.

2.4. Data collection

For this study, the primary data was collected by steering a survey using offline questionnaires and the data collection process lasted for three weeks. A self-administered questionnaire was used to collect data which contained instrument scales to measure the study variables. The designed English language questionnaire was professionally translated into the local language (Sinhala) to make it easy for respondents to understand the measurements. Users of the CMMS in the CPP were the target group for this study and participants were selected randomly. A total of 200 structured off-line questionnaires were distributed with a letter requesting their participation in the study. The respondents had been given sufficient time to fill up the questionnaire. By excluding those with omissions or with randomly repeated answers, 164 valid responses were identified and considered for the analysis. The secondary data was used from various reports, internet sources, literature review and documents written on the subject. This was used to compare and contrast the study variables. Validity and reliability analyses were performed using Statistical Package for the Social Sciences (SPSS) and Analysis of Moment Structures (AMOS), and the research hypotheses were tested using structured equation modelling.

3. Analysis of data

3.1. Sample Profile

Many statistical techniques were used for the data analysis purpose. The initial part of the

questionnaire contained several socio-demographic questions to get a basic idea on the sample profile. For this purpose, descriptive statistics were basically used. According to the descriptive, the sample consists of 62.2% executives and 37.8% non-executives. Among these, 89% were males while the rest were females. Further, in the context of age category, 34.1 % of the sample comprises the over-40-year-old employees. On the other hand, 46.3 % have received training on CMMS while 50% respondents of the sample have experience with CMMS usage.

3.2. Measuring validity and reliability of study variables

As an initial step, a series of exploratory factor analysis was followed for all the constructs which measured by using more-than-one-item scale to examine the internal consistency of the sample since the constructs were adopted by referring several past studies in different industries. By employing Maximum Likelihood factoring estimation, four dimensions of TAM were identified in line with the design. Promax rotation was applied as the orthogonal rotation method in factoring estimation. To verify sampling adequacy, Kaiser-Meyer-Olkin (KMO) result was obtained and the test result indicates commendable sample adequacy (0.913) to carry out the study. Further, the model explained 69.34% of the total variance.

Then, to measure the reliability of each categorized factor, Cronbach's Alpha test followed and a sound reliability level was identified by getting over 0.7 values for all examined factors (Perceived usefulness = 0.926, Ease of use = 0.884, Attitude = 0.885, Behavioral intention = 0.872).

3.3. Validating measurement model

For this purpose, confirmatory factor analysis (CFA) was performed with the measurement model. CFA is a useful way to approach construct validation (Bagozzi & Foxall, 1996) and through the analysis, satisfying validity evaluation standards were identified for the construct fitness (Chi-Square = 347.24; df =147; P =.000; CMIN/DF = 2.362; GFI =.839; AGFI = .770; NFI =.861; CFI = .914; RMSEA = .091).

3.4. Structural model

By following Structural Equation Modelling technique, the statistical significance of the proposed relationships concerning employees' training and experience level was assessed. Path diagram of the empirical casual model is shown below in Figure 1.

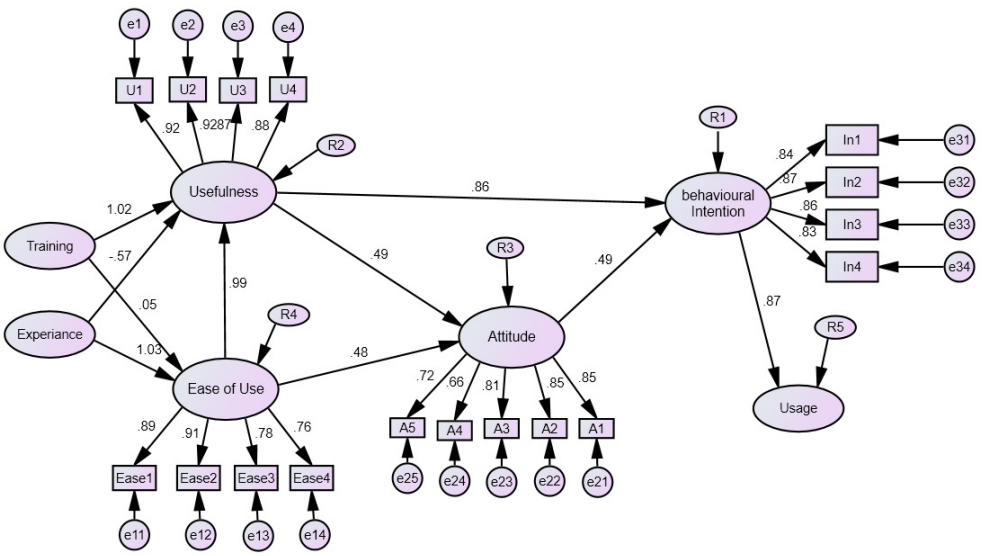

Figure 2 The output of the empirical causal model (SEM)
Source: Authors' own research findings

Common model fit criteria were used to measure the acceptance of the Structural model. As per analysis results, acceptable level of model fit measures was achieved (Chi-square = 472.071; p = .000; CMIN/DF = 2.950, GFI = 0.816; AGFI = 0.759; RMR = 0.48; NFI = 0.812; CFI = 0.865; RMSEA = 0.109).

3.5. Hypothesis testing

The hypothesized relationships were investigated by the following path analysis technique in AMOS.

H1: Perceived ease of use positively influences the usefulness of the CMMS

Following the parameter estimates, results of the path analysis show that ease of use was positively and significantly related to usefulness ($p > 0.01$). In other words, according to the test results, the regression weight for ease of use in the prediction of usefulness is significantly different from zero at the 0.001 level (two-tailed). Thus, the null hypothesis of no positive relationship between ease of use and usefulness was rejected as the significant level is less than 0.05. Furthermore, the model shows a higher level of explanatory power with ease of use and perceived usefulness having squared multiple correlation (SMC) value of 0.99. It implies that when perceived ease of use goes up by 1 standard deviation, perceived usefulness goes up by almost equal level.

H2: Perceived ease of use positively affects the CMMS users' attitude

Results of the path analysis show that perceived ease of use was positively and significantly related to attitude ($p > 0.01$). Thus, the null hypothesis of no positive relationship between ease of use and attitude was rejected as the significant level is less than 0.05. Furthermore, the model shows a moderate level of explanatory power having squared multiple correlation (SMC) value of 0.48.

H3: Perceived usefulness positively influences the users' attitude

Test results indicate that perceived usefulness was positively and significantly related to attitude ($p > 0.01$). According to the test results, the regression weight for usefulness in the prediction of attitude is significantly different (0.49) from zero at the 0.001 level (two-tailed). Thus, the null hypothesis of no positive relationship between perceived usefulness and attitude was rejected as the significant level is less than 0.05.

H4: Attitude towards using the CMMS positively influences the behavioural intention to use the CMMS

According to with the parameter estimates, results indicate a significant difference with a moderate level of explanatory power (SMC=0.49). Therefore, the null hypothesis of no positive relationship between behavioural intention and attitude was rejected as the significant level is less than 0.05.

H5: Perceived usefulness positively influences the behavioural intention to use the CMMS

According to the parameter estimates, results of the path analysis show that perceived usefulness was positively and significantly related to behavioural intention ($p > 0.01$). Therefore, the null hypothesis of no positive relationship between usefulness and the behavioral intention was rejected as the significant level is less than 0.05. Further, a higher level of explanatory power with perceived usefulness and the behavioral intention was identified with the squared multiple correlation (SMC) value of 0.86.

H6a: Provided related training positively influences the users' perceived ease of use of the CMMS

Findings from the study revealed a significant positive correlation between perceived ease of use and provided training on the system (SMC = 0.83). Therefore, the null hypothesis of no positive relationship between ease of use and employee training was rejected. This implies that training provided to the employees influences the perceived usefulness of the system significantly.

H6b: Provided related training positively influences the perceived usefulness of the CMMS

According to the findings of study training provided to the employees has a significant positive effect on perceived ease of use ($p > 0.01$). Thus, the null hypothesis was rejected. The model shows a higher level of explanatory power with perceived usefulness and training provided (SMC = 1.02).

H7a: Employee prior experience positively influences the perceived Ease of use of the CMMS

A positive significant effect on perceived ease of use and employees' experience was identified through the analysis ($p > 0.01$). Therefore, the null hypothesis of no positive relationship between ease of use and employee experience was rejected as the significant level is less than 0.05. The model shows a higher level of explanatory

power with ease of use and employee experience by giving SMC value of 1.03.

H7b: Employee prior experience positively influences the perceived usefulness of the CMMS

The results of the study show a negative correlation between perceived usefulness and employees' experiences with CMMS (SMC = 0.57). Therefore, not enough evidence was found in this study to reject the null hypothesis at the 95% confidence level.

4. Discussion

In this study, the main objective was to analyze and examine the role of employees' training and their experience on the adoption of the maintenance management system and thereby to assess the actual usage of CMMS in the industry where continuous process going on.

The findings of the study revealed that there was a significant positive relationship between perceived ease of use and perceived usefulness which implies that the more users perceive CMMS to be easy to use, the more they will see it as useful. This finding is consistent with previous scholarly studies which revealed that firms which have a strong and favourable perception of the usefulness of the systems, use more than those with a weak or unfavourable perception of the usefulness of the systems (Venkatesh, 2000; Teo, 2001; Davis et al., 1989).

Furthermore, there was a significant positive correlation between perceived ease of use and attitudes towards using the CMMS. This implies that the perceived ease of use by the employees influences to change their attitudes towards using the system significantly. In other words, users intend to use the system more frequently as the system becomes easy to use. Thus, by making the system more friendly, system usage can be increased with employees' attitudinal change which ultimately impacts their job performance. Moreover, the findings of the study revealed that there was a significant positive correlation between perceived usefulness and attitudes towards using CMMS. This meant that users are likely to form a positive attitude toward using the system when it is proven as a useful utility to the practice.

The result for the relationship between attitude and behavioural intention to use contradicts with the previous study of Sumak et al. (2011), where there was no stronger relationship between them. According to the present study result, there was a significant positive correlation between attitude towards using the system and behavioural intention. This implies that if employees have a positive attitude towards using the CMMS, then they intend to use it. This has further verified the findings of Psouni et al. (2016); Fishbein and Ajzen, (1975); Liu et al, (2009); Weng et al, (2018); Wua and Wang (2005).

One of the biggest obstacles to an effective CMMS installation is the lack of initial training on the system. Many organizations never take the time upfront to properly train their people on the system. People must gain confidence in using the system for reporting work order information and knowing how to look up parts information. However, analysis results indicate that there is a positive effect of gained training in perceived usefulness and ease of use.

The CMMS implementation plan should include an adequate level of actual hands-on experience on the system for all maintenance employees prior to the "go live" date. According to analysis results, there is a larger impact of experience on ease of use while a negative impact on usefulness. It gives an indication that previous experiences in using maintenance systems make them to use it easily. But with that experience, employees do not recognize the usefulness of the particular investment.

Conclusions and implications

The study examined the relationship between perceived ease of use, perceived usefulness, attitude towards using, behavioural intention, user experience, provided training and actual usage of CMMS. Through the analysis, except the implications of experience on usefulness, all the other relationships were found to be significant and positive.

Many designers believe that the key barrier to user acceptance is the lack of user-friendliness of the systems and adding user interfaces that increase usability is the key to overcome such barriers. However, this study results indicate that although the ease of use is clearly important, the usefulness of a system is even more important, and should not be overlooked. Users may be willing to tolerate a difficult interface in order to access functionality that helps them on their job, while no amount of ease of use can compensate for a system that does not do a useful task. As a result, from the user's perspective, the ease of use may be identified as part of the cost of using the system when the system does not provide

productive performance. On the other hand, users may recognize the productive performances of the system as benefits through the usefulness construct.

On the other hand, through this study, the importance of employee training and experience were identified to enhance their perceptions towards perceived ease of use and usefulness. User training has greatly affected the perceived usefulness though they didn't get much familiar with such a complex IS. Nevertheless, the employees' previous experience with such systems has enabled them to get familiar with the newly implemented system which ultimately enables them to understand the usefulness. Moreover, though the several respondents had experience with IS, not all of them were perfectly comfortable with the CMMS which affect their perceptions. Less experienced and less trained users find the technology difficult to use and less enjoyable, which might have led to a negative attitude.

The conclusion can therefore be made that factors that motivate individual users in different societies to accept technology should be conducted prior to introducing the complex IS. User training and their experience with working such complex modules will greatly affect the usage of the system which ultimately affects the whole organization's performance. These studies could enable organizations to determine the factors that are likely to lead to high outcomes in a complex industrial scenario rather than simply copying what has worked elsewhere; due to the differences in settings and perceptions.

Recommendations

The findings of the study posit that perceived usefulness and ease of use were found to be more important in influencing CMMS acceptance. Therefore the designers need to focus on enhancing its' usefulness and familiarity. Usefulness can be simply enhanced by including missing functionalities, and at the same time, designers can focus more on replacing complex procedures into simple functions to make things easy for the user to adopt.

The findings of this study also revealed the importance of the user training and experience on their acceptance. Training should be focused not only on educating about related benefits but also on enhancing its familiarity due to system complexity in these types of industries. Thus, due to systems' complexity, staff training, the financial benefits of a new system, system simplified manuals, trial usage, persuasion for usefulness, etc. can be incorporated to motivate individual users in different societies to accept technology.

Fostering a higher level of commitment of end-users by educating them about the need and relevance of the chosen information system for individual and organizational performance is also required. Moreover, training given to employees and prior experience of using IS improve the usefulness and ease of use respectively. There should be a fit between the task, job and technology since the technology is accepted and utilized because of its usefulness to the job or task being performed.SM

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Comparison of organizational cultures from a transitional economy and a knowledge economy: empirical study from Serbia and Southern California

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Abstract
In this paper the authors discuss organizational culture with focus on differences between characteristics of organizational culture in traditional economy and knowledge economy. In the literature, knowledge economy is considered to be a platform on which Industry 4.0 is based. In the knowledge economy, knowledge is the key resource while innovation capacity of employees is the key competitive advantage. That places people at the centre of research relating to the success of organizations in the knowledge economy. People are carriers of both; the key resource – knowledge, and the key capacity - innovation.Human capital is usually divided into three categories in scientific literature: 'traditional', 'convertible' and 'creative'. Creative human capital implies the ability to set the tasks independently, the ability to switch between various activities, high professional autonomy, continuing education, and knowledge sharing. Creative human capital is the accelerator of transition from developing economy to knowledge economy. The importance of human capital and the aforementioned key characteristics of the knowledge economy, and its specific aspects relating to knowledge sharing and autonomy of knowledge workers, place the organizational culture at the centre of our research. The main research question in this paper is:
Is it possible to identify and measure perception of organizational culture and its various dimensions in Serbia and Southern California using Pareek's OCTAPACE instrument?
From the main research question the research hypothesis emerged. In order to answer the research question and to support research hypothesis, the survey was conducted in which the organizations from Serbia were considered to be from transitional economy, and organizations from Southern California were considered to be the standard for the knowledge economy. This paper presents the results of survey conducted on a sample of 383 executives and employees from organizations in Serbia and Southern California, using Pareek's instrument for the OCTAPACE model of organizational culture. Given that Industry 4.0 concept requires continuous innovation, education and knowledge sharing that not only depends on the people's skills and attitudes, but also on organizational culture, results from this research should be useful to organizations in transitional economy as they attempt to keep pace with organizations from knowledge economies.

Keywords
organizational culture, knowledge economy, Industry 4.0

Introduction

The environment of the knowledge economy is a highly competitive and volatile environment that is characterized by phenomena such as globalization, high complexity, rapid development of new technologies, economic and political instability. There is a strong interest in the scientific and professional public for the concept of innovation, organizational learning and knowledge management in the knowledge organization, and for characteristics that affect the performance of such an organization. A successful knowledge organization is designed in such a way to:

- have infrastructure of a knowledge organization with a serial entrepreneurship mentality (Antonaras & Dekoulou, 2016; Senge, 2006; Chivu, L, 2019);
- treat knowledge as the most important resource and practice generative learning as a process (Sveiby, 1997; Teece, 2000);
- enable that organizational culture (Denison, 1990; DDenison, Lief, & Ward, 2004; Denison & Mishra, 1995; Fey & Denison, 2003) and
- collaborative climate (Sveiby & Simons, 2002) act as mediators to ensure the efficiency of knowledge flows and assist the organization in engaging in change and experimentation, as well as in utilizing the capabilities and resources embedded in different types of
- organizational value networks (Allee, 2002).

The aforementioned building blocks linked to a dynamic value network constitute a construction that could answer to contemporary challenges, and enable sustainable development of organizations in the knowledge economy.

It is generally accepted that at the end of the twentieth century the developed economies of the world evolved from an industrial paradigm based on tangible assets, to a so-called knowledge economy - based on intangible assets (knowledge-based assets) (Andrews & Serres, 2012; Asiaei & Bontis, 2019; Millar, Lockett, & Mahon, 2016; Shakina, Molodchik, & Barajas, 2017). Not only is the economic environment exposed to this transition, but the concepts of the evolution of society into a knowledge society and the evolution of cities into knowledge cities are very present in the literature (Carrillo, 2015; Metaxiotis, Carrillo, & Yigitcanlar, 2010). Peter Drucker first mentioned the term "knowledge work" in his 1959 book "Landmarks of Tomorrow".

The greatest challenge for the 21st-century management is to (as it did in the 20th century for tangible resources) develop methods and techniques for the efficient and effective management of an organization's most important resource, intellectual capital, which is not tangible and mostly not owned by an organization. Knowledge and ideas can be multiplied infinitely while material resources cannot; knowledge increases when used while material resources are consumed. Such traits of the most important resource in knowledge economy imply that significantly different economic equations (than those from industrial economy) must be introduced. Replacing 'industrial' perspectives with new paradigms in the knowledge economy (Hadad, S. 2018) is necessary because of constant and radical changes and a high degree of uncertainty and risk.

Knowledge organizations need new types of managers and leaders, able to manage the invisible assets of the organization. The leader is responsible for building organizational culture and collaborative climate in the organization, which develop organization's capability to learn faster than the competition; continuously collects and shares knowledge, enhances it, and employs it to shape organization's future, i.e. the leader is responsible for learning (Senge, 2006).

Managers in the knowledge economy do not manage people nor knowledge, but the space in which knowledge is created, i.e. they manage the flow of knowledge (Petrov, Ćelić, Uzelac, & Drašković, 2020a). This space is made up of both the invisible culture of the organization and the tangible environment.

The aim of this paper is to identify the OCTAPACE profile of the organizational culture of organizations in Serbia and Southern California, i.e. the subject of the research is the verification of the adequacy of the OCTAPACE model of organizational culture on the sample of economy in transition (Republic of Serbia) (Petrov, Ćelić, Uzelac, & Drašković, 2020b) and on the sample of economy that is the standard for knowledge economy (Southern California).

1. Organizational culture and OCTAPACE model

Understanding organizational culture is important for managers because it affects productivity at all

levels (Gray & Densten, 2005). Terms such as values, beliefs, ethos, climate, environment and atmosphere are used in the context of organizational culture. Pareek (Pareek, 1994) defines the concept of the eight dimensions of organizational culture, called OCTAPACE (Pareek, 1994, 1997). OCTAPACE symbolizes the eight (OCTA) steps (PACE) that are necessary to create a functional ethos in an organization. The eight dimensions of the OCTAPACE organizational culture model are explained below.

Openness - the spontaneous expression of feelings and thoughts and willingness to accept information and other people's opinions without being offended. Organization encourages risk taking, experimenting with new ideas and new ways of working.

Confrontation - facing the problems and challenges, not running away from them; deeper analysis of interpersonal issues. Employees face problems and work together to find a solution. They face problems directly without concealing or avoiding them for fear of hurting others' feelings.

Trust - safeguarding information received from others and not misusing it; a sense of security that others will come to their aid when needed, and that everybody will honour their obligations and promises. Department employees trust each other and can rely on the past agreements.

Authenticity - harmony between what one feels, speaks and does; acceptance of one's actions and mistakes, uninhibited sharing of feelings. Authenticity is the value that is the origin of trust. Authenticity is a person's willingness to acknowledge the feelings he has, and to accept the feelings of others who relate to him or her as a person.

Proactivity - initiative, planning in advance, preventative measures, consideration of consequences before taking action. Employees are action oriented, ready to take the initiative and show a high degree of proactivity. They anticipate outcomes, and act toward anticipated needs.

Autonomy - accepting and giving freedom to plan and act in one's own field of work; respect and encouragement of individual and work autonomy. Autonomy is the willingness to use power without fear, and to help others do the same. Employees have a degree of freedom to act independently within the authority defined by their workplace or position.

Collaboration - helping others and seeking help from others; team spirit; individuals and groups working together to solve problems. Collaboration implies working together and using the strength of each member for a common purpose. Instead of solving problems alone, individuals share their problems with others and prepare strategies, make action plans, and implement them together.

Experimenting - employing and encouraging use of inventive methods in problem solving; using feedback to improve those methods; a new way of looking at things; stimulating creativity. Experimenting as a value emphasizes the importance of innovation, and willingness to try new ways of solving problems in an organization.

2. Research method

In order to understand research problem related to organizational culture, as the key characteristic affecting the performance of an organization in the knowledge economy, and to reach defined goals related to that research problem, a quantitative survey was conducted during November and December of 2016, simultaneously in Serbia and Southern California. Research in Southern California was conducted in cooperation with the College of Business Administration, California State University, San Marcos.

2.1. Data collection and sample

The sample for organizational culture research consisted of 383 subjects, of which 242 were part of a survey conducted in Serbia, and 141 were part of a survey conducted in Southern California.

In the total sample from Serbia, male respondents make up 48.3%, while female respondents make up 51.7%. In the total sample from Southern California, male respondents make up 55.3%, while female respondents make up 44.7%. The most numerous age group in the sample from Southern California are respondents younger than 26, who make up 39.7% of the total sample, while the most numerous age group in the sample from Serbia are respondents older than 40 who make up 34.7% of the total sample. Respondents from 26 to 30 years of age and respondents from 31 to 40 years of age, were represented in both samples with about 20%.

Education-wise, high school or college graduates in the sample from Southern California were represented approximately equally as bachelor or master graduates; 46.8% and 45.4% respectively. In the sample from Serbia, the most numerous group consists of respondents with a bachelor's or master's degree, which make up 51.3% of the total sample. The least represented is

the group of respondents with a doctorate, which makes 3.7% of the entire sample from Serbia, 7.8% of the total sample from Southern California, and that was expected.

The roles of managers and employees are defined so that the manager means: owner, director, executive level manager, senior level manager, middle level manager; while the employee means an employee that is not a manager in an organization. In the samples from Southern California and Serbia, respondents who are in the managerial position are less represented than those that do not hold the position of manager. In the sample from Southern California, 44.0% of respondents are in the managerial position and 56.0% in the position of employees. In the sample from Serbia, there is a similar ratio, 35.1% of respondents in the managerial position and 64.9% in the position of employee.

The research included organizations from 23 industries. In the sample from Southern California, the most represented organizations are from the sector of professional, scientific and technical services as well as accommodation and food services, with 11% of the total sample. In the sample from Serbia, the most represented organizations are from the sector of professional, scientific and technical services with 19%, and production with 17%.

A detailed sample structure, in terms of demographic characteristics, is given in Figure 1.

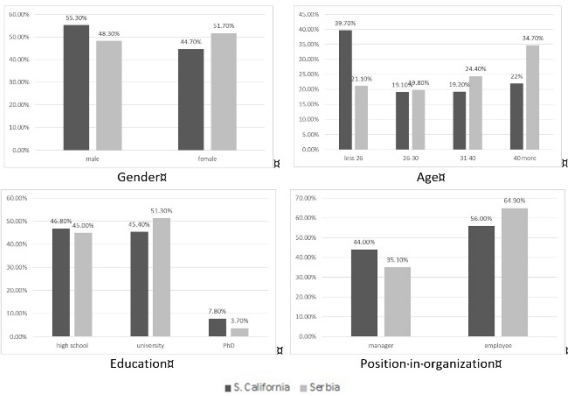

Figure 1 Demographic characteristics of survey respondents
Source: The authors

2.2. Instrument

Within organizational culture research, a structured three-part questionnaire was used to collect as relevant data as possible. The first part of our questionnaire consisted of Pareek's (Pareek, 1994) questionnaire with 40 statements. Pareek's questionnaire measures components (dimensions) of the OCTAPACE model of organizational culture. The research questionnaire in Serbia was adapted to the Serbian language context. For each of the eight dimensions of organizational culture, there is a part of the instrument that relates to it. The original questionnaire consists of 40 questions that are conceptualized in the form of statements and respondents were expected to define their relationship to the statements according to the four-point scale offered: 1-only a couple of people or no one shares this belief; 2-only few people in the organization share this belief; 3-relatively widespread belief; 4-widespread belief. Of the 40 questions, 11 were negatively worded. The second part of the questionnaire consists of the demographic characteristics of the respondents pertaining to: the gender of the respondents, the highest level of education, work experience, the position the respondent has in the organization, and the age group to which the respondent belongs. The third part of the questionnaire contains information pertaining to the organization in which the respondent is employed and relates to: affiliation of the organization to the private or public sector, and affiliation to a particular industry.

3. Hypotheses and results

The research question of this paper is to what extent is the OCTAPACE model of organizational culture developed by Pareek (Pareek, 1994) applicable in a transitional economic environment such as Serbia and in a knowledge economy environment such as Southern California. Is it possible to identify and measure perceptions of organizational culture in Serbia and Southern California and its various dimensions using Pareek's instrument for evaluating the OCTAPACE model of organizational culture? Hypothesis H1 follows from the main research question:

H1: It is possible to identify and measure perceptions of dimensions (influencing factors) of organizational culture in organizations from Serbia and Southern California using the modified Pareek's OCTAPACE instrument for assessing organizational culture.

Psychometric characteristics of the dimensions of the OCTAPACE model of organizational culture were evaluated using principal components analysis. The analyses were conducted on an individual level, which means that the analysis was conducted on a sample of 383 respondents. To assess the one-

dimensionality of each of the eight OCTAPACE subscales of the organizational culture model, a principal component factor analysis was conducted on five items of each subscale. One factor was extracted for each five-item scale (using the Kaiser's criterion that the eigenvalues of the component are greater than 1, and 'Scree' plot criterion) which confirms that the subscales measuring eight OCTAPACE dimensions are one-dimensional. Items with factorial loadings less than 0.5 were excluded. The results of the reliability analyses for the subscales defined according to their original key had lower values than compared to previous studies. In order to increase the reliability of the instrument, a modification was performed by removing certain items from the instrument subscale, after which the reliability increased.

Table 1 provides an overview of psychometric characteristics of a modified Pareek instrument for measuring dimensions of the OCTAPACE model of organizational culture. The table shows the original key for each of the eight dimensions of the OCTAPACE model, as well as a modification of the key that was performed in order to increase the reliability of the instrument in our study. Due to the unacceptably low value of the Cronbach's alpha, subscale Autonomy was excluded from the OCTAPACE instrument, while other subscales were modified.

4. Discussion

Some of the basic principles of an organization designed to be efficient and effective in the environment of the knowledge economy are:

- employees are treated as assets, as a generator of income;
- information does not flow in a controlled way through the organizational hierarchy but freely through networks;
- the basic task of management becomes to support and promote cooperation, fostering a climate that will encourage learning and innovation as a way to ensure competitive advantage;
- building a partnership with customers and suppliers in which solutions are created jointly and knowledge flows in both directions (*customer knowledge management*; *supplier knowledge management*).

The main goal of this approach is science based development of structural procedures for the integration of knowledge of both customers and suppliers in the product development process, with efficient and sustainable use of all resources within the value networks of organizations.

Table 1 Psychometric characteristics of a modified OCTAPACE instrument for organizational culture assessment

Items	Factorial loadings
Subscale 1-Openness (KMO = 0,753; Cronbach's α = 0,763; % = 58,856%; Λ = 2,354)	
OK01 - Free interaction among employees, each respecting others' feelings, competence and sense of judgment.	0,775
OK09 - Genuine sharing of information, feelings and thoughts in meetings.	0,681
OK17 - Free discussion and communication between seniors and subordinates.	0,804
OK33 - Free and frank communication between various levels helps in solving problems.	0,803
OK25* - Effective managers put a lid on their feelings.	-
Subscale 2: Confrontation (KMO = 0,740; Cronbach's α = 0,747; % = 57,627%; Λ = 2,305)	
OK02 - Facing and not shying away from problems.	0,842
OK10 - Going deeper rather than doing only surface analysis of interpersonal problems.	0,672
OK18 - Facing challenges inherent in the work situation.	0,793
OK34 - Identifying problems is not enough; we should find the solutions.	0,718
OK26* - Pass the buck tactfully whenever there is a problem.	-
Subscale 3: Trust (KMO = 0,761; Cronbach's α = 0,733; % = 56,034%; Λ = 2,241)	
OK03 - Offering moral support and help to employees and colleagues in a crisis.	0,791
OK11 - Interpersonal contact and support among employees.	0,762
OK19 - Confiding in seniors without fear that they will misuse the trust.	0,721
OK27 - Trust begets trust.	0,718
OK35* - In times of crisis you have to fend for yourself (you can't rely on others).	-
Subscale 4: Authenticity (KMO = 0,607; Cronbach's α = 0,516; % = 41,266%; Λ = 1,651)	
OK04 - Congruity between feelings and expressed behaviour (minimal gap between what people say and do).	0,670
OK20 - Owning up to mistakes.	0,661
OK28* - Telling polite lie is preferable to telling the unpleasant truth.	0,691

OK36 - People generally are what they appear to be.	0,536
OK12* - Tactfulness, smartness, and even a little manipulation are needed to get things done.	-
Subscale 5: Proactivity (KMO = 0,662; Cronbach's α = 0,569; % = 44,296%; Λ = 1,772)	
OK05 - Preventive actions on most matters.	0,733
OK13 - Seniors encouraging their subordinates to think about their development and take action in that direction.	0,569
OK21 - Considering both positive and negative aspects before taking actions.	0,754
OK29 - Prevention is better than cure.	0,584
OK37 - A stich in time saves nine (If you fix a small problem right away, it will not become a bigger problem later.)	-
Subscale 6: Cooperation (KMO = 0,619; Cronbach's α = 0,569; % = 45,242%; Λ = 1,81)	
OK07 - Team work and team spirit.	0,783
OK15 - Accepting and appreciating help offered by others.	0,809
OK31* - Usually, emphasis on team work dilutes individual accountability.	0,500
OK39 - Employees' involvement in developing an organization's mission and goals contributes to productivity.	0,542
OK23* - Performing immediate tasks rather than being concerned about large organizational goals.	-
Subscale 7: Experimentation (KMO = 0,767; Cronbach's α = 0,767; % = 59,289%; Λ = 2,372)	
OK08 - Trying out innovative ways of solving problems.	0,806
OK16 - Encouraging employees to take fresh look at how things are done.	0,830
OK24 - Making genuine attempts to change behaviour on the basis of feedback.	0,641
OK32 - Thinking out and doing new things tones up the organization's vitality.	0,788
OK40* - In today's competitive situations, consolidation and stability are more important than experimentation.	-
Cronbach's α for the entire modified questionnaire is 0,917	

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 6 iterations.

Source: The authors

Conclusion

Based on the performed analysis, the research question has been answered, which leads to the conclusion that hypothesis H1 isn't rejected; it is possible to identify and measure perceptions of dimensions (influencing factors) of organizational culture in organizations from Serbia and Southern California using the modified Pareek's OCTAPACE instrument for assessing organizational culture.

In the paper (Mitrović, Grubić-Nešić, Milisavljević, Melović, & Babinková, 2014) the authors modified Pareek's OCTAPACE instrument to measure the dimensions of organizational culture in organizations from Serbia. They analysed managers' assessment of dimensions of organizational culture.

In our research we determined that it was necessary to further modify Pareek's OCTAPACE instrument for measuring organizational culture in order to measure assessments of dimensions (influential factors) of organizational culture in organizations from both Serbia and Southern California.

Such modified Pareek's instrument could be further used in comparative analyses, and for identification of the key differences between the organizational cultures of organizations from Serbia (a transitional economy) and Southern California (considered to be the standard for developed or knowledge economy).

Furthermore, the key differences that would be identified could serve as guidelines for the development of organizational culture (considered one of the key characteristics of an organization that affects its performance) in organizations from Serbia (and similar transitional economies). That would contribute to the efficient and effective use of already scarce resources in transitional economies.SM

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Evaluation of corporate success using synergistic CPA and CPR corporate citizenship

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Abstract
Corporate Political Activities (CPA) and Corporate Public Relations (CPR) are both non-market communication strategies that effect market positioning, brand strength and the business success of a company. In this study, the use of CPA and CPR by several companies are analyzed based on their economic and brand strength metrics, which confirms the hypothesis that use of these strategies has a positive impact on their market position and brand stability. Using the Multi-Value Comparative Quality Analysis (mvCQA), the research strives to measure the synergistic influence of CPA and CPR on a company's performance. Building on the existing literature for the uses and implementation of mvCQA, this research reinforces the role mvCQA plays in delivering quality and comparative findings of correlation between CPR and CPA toward market strength. This study confirms that the synergy between CPR and CPA improves corporate strategic development. It is inferred that CPR and CPA maintain non-linear correlation with industry and market niches, specific cultural and business environments, as well as overall corporate strategy goals.

Keywords
strategic communication, corporative political activity, corporative social responsibility, lobbying, Comparative Quality Analyses (CQA), Multiple Variable Model.

Introduction

The use of strategic corporate management to develop the methods needed to achieve or expand the specific goals of a corporation's success, necessitates the application of an integrated strategic communications (Mitrović, 2019). The modern globalized business environment is complex with dynamic set of factors including but not exclusive to political, economy, business, ethic, and other social science multidisciplinary interaction that can influence the success or failure of a corporation. The contemporary strategies of corporate communication has evolved quite a bit from its origins in the works of the "Father of PR", Edward Bernays (Bernays, 1928, 1951). Furthermore, the complexity of the business environment indicates that a comprehensive communications strategy, utilizing analytical and project-based approaches to the planning and implementation of applied PR in the management context is a vital necessity to addressing each target audience. When viewed conjunctively, this illustrates that the contemporary theory behind strategic management; which in self-compiling theories of relationship, cognition, behavior, and mass communication; strongly relate to organizational culture.

A review of scholarly literature by Oliver (Oliver, 2007), details that there are three main scopes of research into this field of study: 1) Business and political communication strategy, which includes both public and government affairs which shapes corporate reputation and influence over external operating environment; 2)

Governance and leadership communication strategy involving employees, managers, directors, and shareholders; and 3) Integrated marketing communication strategy. In this article, the roles of corporate public relations (CPR) and corporate political activity (CPA) are analyzed through their produced synergistic effects specifically within non-market strategies that are used to support overall corporate success. This is only a part of the total public communications strategy, supporting a comprehensive corporate strategic management, through which CPR and CPA are analyzed using comparative quality analysis (CQA) (Taillard, 2014). The findings in this analysis are elaborated upon in the form of conclusion wherein CPR and CPA contributions are recognized as conditions for sustainable brand development. Alone, these things have little long-term positive returns, but by implementing a cohesive strategy that incorporates both active engagement in lobbying/policymaking and in public perceptions of active community involvement the data indicates better overall performance.

1. CPR and CPA: overall corporate strategic support

The contemporary business environment is recognized as complex system that consists of both market and non-market components (Baron, 1995; Boddewyn, 2003; Doh, Lawton, & Rajwani, 2012). At first glance, CPR and CPA are different business functions, but when used in conjunction they have synergistic effects on an organization's efficiency and competitive advantages (Taillard, 2013). The business environment of today includes not just basic economic principles but also contain social and political roles for each company, regardless of whether they are included in the plans of the company (Donaldson & Preston, 1995; Wicks, Gilbert, & Freeman, 1994). An organizations' corporate public relations (CPR) and corporate political activity (CPA), as part of non-market strategies, tend to contribute to a corporate advantage in communication toward a wide public audience that can shape ideas, opinions, beliefs, cultural associations, and public policy; proactively shaping the external environment (Taillard, 2013). Each of these public factors are directly or indirectly influential on corporate activities. An organization's CPR and CPA can significantly contribute toward improving a firm's public position and overall company strength (Bonardi, Holburn & Bergh, 2006; Lawton, Mcguire, & Rajwani, 2012; Schuler, Rehbein, & Cramer, 2002). More closely, an organization's use of CPR and CPA is recognized as a form of nonverbal communication strategy expressed through other methods such as those described in signal theory, through imagery and actions, with the aim to facilitate the development of the trust between company and policymakers: mostly government institutions (Rajwani & Liedong, 2014; Taillard, 2013). Companies may use several different tactics for influence on government: through the development and cooperation of political action committees (PACs), political lobbying, and engaging in grassroots activism as well as developing relationships with key segments of the public (Doh et al., 2012). While there is some research that indicates CPA can have conditional effects on a firm's efficiency (Hadani, Bonardi, & Dahan, 2017), the impact and indicated results should be considered for further study in future research.

Primarily, CPA is recognized as a non-market strategy that 'attempts to shape government policy in ways favorable to the firm' (Hillman, Keim, & Schuler, 2004, p.838). When used as a communication strategy, CPA is recognized as a corporate information-related strategy, which aims 'to affect public policy by providing policymakers specific information about preferences for policy or policy positions and may involve providing information on the costs and benefits of different issue outcomes' (Hillman & Hitt, 1999, p.834). The variety of CPA activities, and strategic approaches are wide and diverse, and could be recognized in the form of electoral campaigns, policy analysis and development, law and regulation contributions, expert involvement, or even entrance in foreign policy (Mitrovic, 2017a, pp.31-105). The relationship between non-market influence and direct market expansion, or overlap between market and non-market strategies, can be found in the influential use of CPA on a government's foreign policy (Mitrovic, 2017b). It is an observable fact that many companies contribute to social wide welfare, especially if they are considered to be 'corporate citizens' (Matten & Crane, 2005; Moon, Crane, & Matten, 2005; Wood & Logsdon, 2008; Taillard, 2012). This form of corporate activity has previously, and at the present, taken place in political circles as social and policy engagement (Alzola, 2013). The use of CPR by companies, including corporate philanthropy as per Hadani &

Coombes (2015), has a strongly synergistic connection when used in conjunction with CPA which gives support to a firm's market results. Besides philanthropy, CPR also expresses the ethical, legal, and fair conditions for all stakeholders of a business. When corporations apply CPR tactics to politics as a form of "political CPR", it functions as a strategic corporate-centric view utilizing society-centric efforts and messages to build sociological value within a productive corporate growth strategy (Morsing & Roepstorff, 2015). In regard to governmental relations, a corporation's use of CPR has a mission to develop trust between the company and government (Lock & Seele, 2016). Moreover, CPR activities send a signal to a company's institutional environment that it stands apart from its competition (Werner, 2011), but even if we consider this approach as political CPR with the aim to affect policy outcomes by influencing political constituencies the results of the influence are modest (Fooks & Gilmore, 2013). Specifically, government institutions, lawmakers, and regulatory proposition agencies could not recognize the ability or skills of firms in policy issues, because they are not exclusively presented, or expressed; although shaping policy through active political manipulation has had greater results than developing goodwill among policymakers (Taillard, 2012).

According to Liedong et al. (Liedong, Ghobadian, Rajwani, & O'Regan, 2015), the 'CPR contains two dimensions of trust—benevolence, and integrity—but does not convince on the third dimension—policy ability/skill. Similarly, CPA contains two dimensions of trust—integrity and policy ability/skill—but is not perceived as a benevolent activity. Consequently, CPR and CPA separately create moderate trust, with the former only granting access to policymakers, and the latter influencing only narrow and low salience policy issues.

Combining both overcomes the limitations of each' (Liedong et.al, 2015, pp.13-14). Regarding all the above, it could be concluded that CPA and CPR have a supporting influence on company strength. This is particularly pronounced in conditions where the corporation is operating in conditions of an externally directed crisis, such as the global economic crisis (Ciutacu, Chivu, & Iorgulescu, 2009). The combination of the influence of CPA and CSR is particularly reflected in the corporation's activities on specific social issues of general importance, such as environmental relations or 'green culture' (Pham, Phan, Tučková, Vo, & Nguyen, 2018). It is also possible to observe the interaction of CPA and CSR through the general impact of commercial and tourism developments on the local community. In this case, the local community is a generator of positive odium, thus creating an environment of support from the local population due to the positive economic and brand effects (Milićević, Podovac, & Đorđević, 2020). The synergy of CPA and CPR could be recognized in deliberative lobbying strategy (Lock & Seele, 2016) which compiles both activities in a manner of non-market communications approach, with favorable market and policy results.

Furthermore, this implies that the use of CPA and CPR together complements each other in the creation of strong trust between companies and the policy-makers. Of course, this position enables a company to influence on broad and relevant policy issues. This elaborated role and interaction between CPA and CPR in strategic support of a corporation, suggests the following hypothesis:

A systematic and organized approach to the CPA and CPR actions of a corporation create a more favorable operating environment and improved overall business stability.

In the present research, which is based on a comparative quality analysis approach, the described synergistic impact of corporate CPR and CPA on sustainable brand strength is profiled upon several variables generated from the described literature, which demonstrate great potential for positive results.

2. Methodology

The methodology of Comparative Quality Analysis (CQA) has been characterized as a modern way to conduct social science research that combines the strengths of traditional quantitative and qualitative methods. It was first presented in the work of Ragin, Mayer, and Drass (1984), Ragin's continued work then fine-tuned the methods of comparative qualitative analysis (Ragin, 1987, 2000, 2008, 2009), and has had the contributions elaborated in further work by Rihoux and Ragin (2009). The use of multi-value comparative quality analysis (mvCQA), which is one of the versions of comparative quality analysis (CQA), aims to compare cases systematically while still preserving a strong focus on individual cases (Ragin 1987; Rihoux &

Ragin 2009). The goal of most CQA is thus to explain all cases as comprehensively as possible by taking into account a set of explanatory factors and their complex combinations.

In general, the case orientation of CQA fits well with the wide spectra of social science research. Most of them inquire about the factors causing a given phenomenon, such as law-making outputs (Christmann & Danaci, 2012), government spending (Vis, 2011), coalition formation and policy change (Fischer 2014), or the success of policy projects (Ney & Verweij, 2014). Some of the research considers welfare states (Avdagic, 2010), social movements (Wright, & Schaffer-Boudet, 2012), labour markets (Dixon, Roscigno, & Hodson 2004), and corporate governance (Bell, Filatotchev, & Aguilera, 2014). The following research implemented mvCQA and considers the usage of multi-value variables (Cronquist & Berg-Schlosser, 2009, pp.69-85). This method includes a review of variable structure, with the purpose of preventing information loss, which is considered a large number of contradictory configurations. Namely, the loss of some values is possible in the case of basic CQA, or Crisp-set Comparative Quality analysis (csCQA) (Rihoux & De Meur, 2009, pp.33-67) because it considers metalogic created notation (Cronquist & Berg-Schlosser, 2009). In general, mvCQA is more suitable for value comparative analysis. The mvCQA was developed to meet limitations of csCQA and prevent simplifies dichotomous approach in multivalued, aggregated variable usage. The following research has used software application TOSMANA 1.54 (Tosmana, 2017), which is most appropriate for mvCQA cases.

2.1. Variables setting

Besides the differences in social and political impacts of various industries, the research literature considers absolute values of strengthening capacities of the ten highest ranked CPR companies, indexing in 2017 by the Reputation Institute. In variable settings, the following variables were defined:

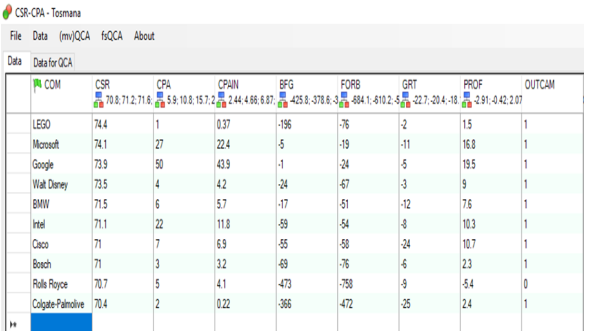
- CPR retrieved from ‘2017 Global CPR RepTrak 100: Most Socially Reputable Companies', an annual report of Reputation Institute (CPR, 2017);
- CPA, which are a preset number of CPA offices engaged for presenting of companies interests in USA and EU. Data were delivered by databases analysis of the Center for Responsive Politics (CRP, 2017) and Transparency register of the EU (TR-Transparency register, 2017);
- CPAIN present a total of financial spending on CPA in millions of US dollars. Data were delivered upon databases analysis of the Center for Responsive Politics (CRP, 2017) and Transparency register of EU (Transparency register, 2017);
- BFG retrieved from the ‘Global 500/2017- The annual report on the world's most valuable brands' of Brand Finance (BFG, 2017);
- FORB retrieved from a database of Internet edition of Forbes (FORB-Forbes, 2017);
- GRT retrieved from ‘Global RepTrak 100 Report 2017’ of Reputation Institute (GRT-Reputation Institute, 2017). For Lego Systems (Lego, 2016) and Bosh (Bosch, 2016), there aren’t records in Forbes’ summary, and data were taken from companies annual reports for 2016, with consideration of projection for stable financial flow and exception of financial crises in both companies' through 2017;
- PROF, upon Forbes’ The World’s Biggest Public register (FORB-Forbes, 2017).

2.2. Logic frame and variable set’s interaction

In research, the foundry-based theory indicates sets of variables that are observed.

Case descriptions indicate that observed subjects are presented in a random set of companies (COM), chosen by a rank of highest-indexed CPR activities in 2017: LEGO, Microsoft, Google, Walt Disney, BMW, Intel, Cisco, Bosch, Rolls Royce, and Colgate-Palmolive. For the purpose of validation of logic (‘low-high'), some original values of variables are marked with ‘-' on purpose to meet the necessity of value unification and merger of calculation in a logic frame of a difference of variable expression. Namely, the variables for, BFG, FORB, and GRT scaling numbers are marked with ‘-’ on purpose to follow the logic condition that lowest values amplify criteria closes to a dedicated logic system of values. In this particular research, mvCQA allows that multinomial categorical data could be used (from 0 to 9). As a result of this analysis, the indicators of numeric values are set by logic criteria that lowest ranged company has the lowest influence thought CPR and CPA on policy

creation that results with success and strong position on the global market. According to the criteria, the data table was created using the TOSMANA application and is presented in Figure 1.



COM	CSR	CPA	CPAIN	BFG	FORB	GRT	PROF	OUTCAM
	70.8;71.2;71.6;	5.9;10.8;15.7;2	2.44;4.66;6.87;	-425.8;-378.6;-3	-684.1;-610.2;-5	-22.7;-20.4;-18;	-2.91;-0.42;2.07	
LEGO	74.4	1	0.37	-196	-76	-2	1.5	1
Microsoft	74.1	27	22.4	-5	-19	-11	16.8	1
Google	73.9	50	43.9	-1	-24	-5	19.5	1
Walt Disney	73.5	4	4.2	-24	-67	-3	9	1
BMW	71.5	6	5.7	-17	-51	-12	7.6	1
Intel	71.1	22	11.8	-59	-54	-8	10.3	1
Cisco	71	7	6.9	-55	-58	-24	10.7	1
Bosch	71	3	3.2	-69	-76	-6	2.3	1
Rolls Royce	70.7	5	4.1	-473	-758	-9	-5.4	0
Colgate-Palmolive	70.4	2	0.22	-366	-472	-25	2.4	1

Figure 1 Designed table for mvCQA with variables and data
Source: The authors

Furthermore, in order to indicate areas of variable criteria influence, nine valuation levels thresholds were used. After applying the mvCQA calculation in TOSMANA, results of the analysis are expressed in following Table 1.

Table 1 Results of the calculation process in TOSMANA upon criteria for mvQCA

COM	CPR	CPA	CPAIN	BFG	FORB	GRT	PROF	OUT.
ColPalm	0	0	0	2	3	0	3	1
RollsRoy.	0	0	1	0	0	6	0	0
Bosch	1	0	1	8	9	8	3	1
Cisco	1	1	3	8	9	0	6	1
Intel	1	4	5	8	9	7	6	1
BMW	2	1	2	9	9	5	5	1
Walt D.	7	0	1	9	9	9	5	1
Google	8	9	9	9	9	8	9	1
LEGO	9	0	0	5	9	9	2	1
Microsoft	9	5	9	9	9	6	8	1

Source: The authors

The data which is used to test the hypothesis was introduced upon the assessment of drivers that contribute to the company's overall corporate success, while the main indicators of success used aggregate databases. Weighted factors are used to specify the degree of value of a single-branded business, as well as the total economic benefits derived by a business from its brand, trademarks, marketing investment, and brand equity. These are expressed in the good responsiveness accrued with customers, staff and other stakeholders, and the impact of those factors on the business performance of the company. The databases which were used in this research in the above-listed performance overlap and interfere with each other in some generic variables, particularly differences in analytical methodology approach. Using various databases contributes to the variable dynamism of the findings. In addition, this approach contributes to objectivity in the conclusions, with multi-valuated solving data cross-reference.

Furthermore, this principle prevents possible subjective or linear conclusions. The calculation settings of mvCQA were used to exclude results with a '0' value in the profit area (PROF), as a basic criteria for company success for that reason. After calculation, the results that were produced are given in equations of logic expression for an mvCQA process:

CPR{8}*CPA{9}*CPAIN{9}*BFG{9}*FORB{9}*GRT{8}*PROF{9}=Google (1)

CPR{9}*CPA{5}*CPAIN{9}*BFG{9}*FORB{9}*GRT{6}*PROF{8}=Microsoft (2)

CPR{1}*CPA{1}*CPAIN{3}*BFG{8}*FORB{9}*GRT{0}*PROF{6}=Cisco (3)

CPR{1}*CPA{4}*CPAIN{5}*BFG{8}*FORB{9}*GRT{7}*PROF{6}=Intel (4)

CPR{7}*CPA{0}*CPAIN{1}*BFG{9}*FORB{9}*GRT{9}*PROF{5}=Walt Disney (5)

CPR{2}*CPA{1}*CPAIN{2}*BFG{9}*FORB{9}*GRT{5}*PROF{5}=BMW (6)

CPR{0}*CPA{0}*CPAIN{0}*BFG{2}*FORB{3}*GRT{0}* PROF{3}=Colgate-Palmolive (7)

CPR{1}*CPA{0}*CPAIN{1}*BFG{8}*FORB{9}*GRT{8}*PROF{3}=Bosch (8)

CPR{9}*CPA{0}*CPAIN{0}*BFG{5}*FORB{9}*GRT{9}*PROF{2}=LEGO. (9)

The scaling for the mvCQA of business performance influence for CPR and CPA are listed as follows: '0'- extreme low, '1'- very low, '2'- strongly low, '3'- slightly low, '4'- moderate, '5'- slightly high, '6'- strongly high, '7'- very high, '8'- significant high and '9'- dominantly high.

The results of the data conclude that all companies in the sample which have results

higher than '0' in either CPR or CPA have a positive score in the final result. In addition, these companies are the same companies which are successful, proactive, and profitable independently, holding constant variables related to the type of industry, market, or nature of the business. The exception to this is Colgate-Palmolive, with '0' in CPR and CPA variables, which has positive results in profits. The case of Rolls Royce is clear: '0' marks for CPR and CPA indicate the presence of an unsuccessful business strategy, profit failure, and strategic brand problems.

3. Results and discussion

The outcomes that are produced by TOSMANA in the mvCQA calculation processed and generated from databases indicate the following characteristic findings:

- The most successful company in the presented case is Google, with a significant and dominant high presence in CPR and CPA, but also in all other case covered issues (equation 1). The synergy of CPR and CPA influence could be an indicator for a balanced business strategy approach, which has positive results in all other variables, sets, and areas. The conclusion is that strategic orientation for the balanced development of CPR and CPA is related to overall brand strength and profit effects.
- LEGO has the biggest absolute value of CPR variable index, but still, their profit is an area of '2' (equation 9). Indicators of actual weakness could be recognized in extreme low CPA presence and investments in CPA engagement. In addition, the profit result has been analyzed in the scope of market characteristics and specification of the industry to which LEGO belongs, or that PROF results could not be linearly recognized. Of course, further analysis of variable interaction and the gradient influence could be made in some further research.
- In the most inverse position to the results is Colgate-Palmolive (equation 7). Namely, extreme low absolute involvement in CPR and CPA in the observed case group still got modest, but significant profit. Moreover, Colgate-Palmolive is in a higher profit position than Bosch (equation 8). It is noticeable that Bosch has higher CPR and CPA presence, as well as significantly higher positions in global brand strength (BFG, FORB, and GRT) than Colgate-Palmolive, but still lower absolute profit result. The reason for that could be found in different industries, the nature of brands, and marketing approach. In conclusion, Colgate-Palmolive and Bosch deserved to be analyzed as separated cases, in order to deliver findings for the improvement of an overall corporate strategy.

Regarding the results testing the hypothesis, it is concluded that: *CPR and CPA have a synergistic and supporting role in the overall communication strategy of the company*.

Both of these could significantly support the comparative performance of a company, taking into account the necessity for specifying the unique characteristics for each market, policy environment, industry, and the company's strategic culture and goals.

The findings indicate that the hypothesis is confirmed, with the condition of separating industry niches. Also, the findings specify that a synergistic approach in different markets (US and EU) contribute to the maximization of all effects related to the overall corporate success.

Conclusion

The synergistic actions of corporate CPR and CPA strategies have a significant positive influence on financial and operational business results. The planning process of CPR and CPA should incorporate characteristics of company and industry, policy arena, cultural marketing environment, projected company aims, and goals.

An insufficiently expressed orientation for the planning and implementation of CPR and CPA could be indicators that a company will fail to live up to its potential via brand and marketing capacities. In addition, brand strength is conducted with both strategic communication activities, CPR and CPA. Namely, through CPR and CPA, public recognition of the company through policy actions as a socially responsible, credible, proactive, and accountable corporate "citizen". The planning and implementation of CPR and CPA have to be conducted with the strategic planning process, modelling by practice-based and aim orientated models. Research

indicates that most the effective brands which have significant profit effects have a balanced approach to the CPR and CPA.SM

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Implication of TNCs in agri-food sector - challenges, constraints and limits - profit or CSR?

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Abstract
The paper evaluates the impacts of the transformation of agri-food sector under the influence of foreign capital and the CSR implication in sector having into consideration the TNCs actions. The main aim of the paper is to provide a synoptic and integrative analysis of the implication of TNCs in agri-food sector by highlight the challenges, constraints and limits. The results outline the general framework of the main transformation of agri-food sector under the influence of foreign capital and present ways in which the CSR could be applied in agri-food sector for reducing discrepancies and poverty.

Keywords
transnational corporations, foreign direct investment, CSR, agri-food.

Introduction

In highly completive economies, agriculture has redesigned its traditional role and become a vital sector not only by generating economic growth and providing significant employment for the rural population, but also has increased the awareness of population for a more responsible consumption and environmental protection. In this context, agriculture has imposed and triggered significant contributions in achieving sustainable development goals, an important role being played by companies with foreign capital that have the financial strength and know-how necessary not only in terms of production activity, but also in terms of management and marketing strategy, including by promoting Corporate Social Responsibility (CSR) actions. Still, nowadays the recent transformations of the agriculture have generated massive debates on the implication of TNCs in providing sustainability and wellbeing for rural communities.

Agriculture ensures a special role in providing ecosystem services starting with ensuring global food production for the population, storing organic carbon in the soil, mitigating climate change and last but not least strengthening rural communities. Implications of TNCs in agri-food sector are much complex and needs a broader approach in understanding the general agricultural framework in balancing the needs, restrictions and challenges in a competitive sector as agriculture. In order to develop applicability in agriculture, CSR needs a favourable environment and a

greater involvement from companies as well as from society in general and from rural communities in particular, allowing them a sustainable access to sources of financing and information.

In the predefined context of the transformations of the global economy and of the orientation and readjustment of the classical economic structures, TNCs has emerged as a determinant factor in drawing the new future trends. As already argued in literature (Andrei et al., 2015; Anghel et al., 2017) agriculture has becoming a lucrative economic factor with an extensive role in the domestic economies, not only limited in providing food for population but also it contributes to eradicating poverty in the rural communities, given the fact that a large number of people is living in poverty and suffering from hunger. Although it is predominantly rural, agriculture incorporates into current practice the results of the technological and digital revolution by promoting and applying agricultural business models and innovative agronomic practices with a high degree of efficiency and productivity.

In contemporary economies, agriculture generates numerous public services and positive externalities, which, although difficult to identify and evaluate in the free market, act as a catalyst for rural economies, significantly contributing to the economic potential of rural communities. The variety of CSR measures is an opportunity not only to address the agriculture in all its complexity, but also to improve and adapt the role of this economic branch in the global economy as a whole. Specific and targeted policies are not enough to generate positive CSR effects, but require highlighting important and long-term progress in the field.

For numerous countries, agriculture continues to represent the basic economic branch capable to generate revenues for population in rural communities and the agricultural sector ensures the absorption of an important share of the local labor force. In this context, agriculture has become a vector in promoting sustainability and welfare in the rural communities. In addition, the quantity and quality of agricultural products have effects on the health of the population and trade.

As remarked in the literature (Vasile & Ungureanu, 2014; Schwarz et al., 2015; Heijman et al., 2019; Bowers & Cheshire, 2019; Balogh & Jámbor, 2020), agriculture has to face new challenges imposed by the implementation of new production systems, climate change, price volatility, development of international trade with agricultural products, changing diets, urbanization or depopulation of rural areas At the same time, new technologies are imposed by the need for sectorial adaptation as part of either maintaining the competitiveness of the agricultural sector or reducing dependence on migrant labor in these areas. Also, as (Neumayer & De Soysa, 2005; Deblonde et al., 2007; Pandey et al., 2019; Borsellino et al., 2020; Jiang & Chen, 2020; Yao et al., 2020; Zaman et al., 2020) highlight the unsustainable or unethical practices of agri-food corporations such as inhumane treatment of livestock, use of pesticides and fertilizers with consequences on environmental and food contamination, genetically modified crops, water usage and recycling, questionable practices (such as misleading or double standard offers on product quality sold in developed and developing countries), environmental pollution, monopolistic practices, small farm exclusion, improper working conditions, exacerbation of child labour, land use change and land grabbing.

Starting from the heterogeneous nature of agriculture, the implication effects of TNCs in the agri-food sector may be different, especially as the reaction of farmers is focused on ensuring the economic sustainability of their farms and less on CSR. In this context, the main aim of the article focuses on the activity of companies in the agri-food sector, constrained by the interests of shareholders, seeking to maximize profits and not being interested in long-term sustainable economy and the need for sustainable development principles fulfilment promoted by other categories of stakeholders. The novelty of this scientific approach is based on the analysis of the chameleon behavior of companies in the agri-food sector.

The paper is structured in two main sections. In the first section, it presents and analyzes the transformation of the agri-food sector from the perspective of foreign capital involvement, which completes and supports the national efforts in financing the agricultural sector. The second section is dedicated to the analysis of the CSR strategies used by companies in the agri-food sector. Given the negative impact that companies in this sector have on the environment, the promotion of CSR programs is therefore a necessity.

1. Transformation of agri-food sector under the influence of foreign capital

In contemporary economies with high levels of competitiveness and need for development, the foreign capital has become a major financing support in numerous economic activities including in agricultural sector. Not always, the farmers have the financing support for developing their local business and farms and they had to resort to alternative or foreigner capital sources. The foreign capital has brought not only the much needed financing of the agriculture, but imposed dramatic sectorial changes from economic, social, technological and environmental points of view.

Foreign capital is attracted by the possibilities of increasing economic performance and could not always be considered social responsible factor for increasing the wellbeing of rural communities and environmental protection. In this context, as (Borsellino et al., 2020) remarks, the agri-food sector is in a complex process of transformation, under the action of several economic, social and environmental determinants, with convergent or divergent action (Borsellino et al., 2020). According to (Reardon et al., 2009), the agri-food sector went through several restructuring stages that targeted specific areas, namely (1) wholesaling, mainly in the 1960s – early 1990s; (2) processing, mainly in the 1970s – 1990s; (3) and retailing, mainly in the 1990s – 2000s. Often, as it is presented in literature (Ciutacu & Chivu, 2014) the sectorial reforms in the field weakened the agricultural sector and the immediately visible result, the subsistence agriculture was a facilitator of the outflow of value added abroad.

The changes that the agri-food sector is going through, generated by the technical progress, do not only concern the production process, but also the way in which the products are marketed and consumed. On one hand, the activity in the agri-food sector has captured new values that are fueled by the transition from meeting basic food needs to pursuing by consumers, companies and other categories of stakeholders on issues related to human health or preservation of the environment (Grubor & Đokić, 2015; Sodano, 2019) considering the impact of food production and consumption**.** On the other hand (Da Silva, 2009; Grubor et al., 2018; Sima & Gheorghe, 2018) show that the increase in the population's income determines a considerable development and diversification of the demand for agri-food products, being able to identify new consumer behaviors that are oriented towards organic products, dietary products, green products, non-traditional fruits and vegetables or ethnic foods.

In literature (Ene, 2009; Jan, 2009; Stancu, 2012) globalization is considered as another factor that contributes to the remodelling of the agri-food sector, with positive contributions to food safety, but also negative effects such as standardization of dietary patterns that could influence health, segmentation, relocation of different stages of production, the existence of global chains that could affect traceability of food products, dependence of the agro-food sector on the distribution sector.

As it is highlighted in Jan, 2008; Aschemann-Witzel et al., 2015; Zaman et al., 2020, in developed countries, high living standards generate food waste, while in developing countries, much of the population is on the brink of poverty and lives in rural areas, where agriculture is a major source of livelihood. The increase in the demand for agri-food products has also favoured the development of agro-industrial enterprises, a phenomenon observed mainly in developing countries. Process of agro-industrialization as already analysed by Henson and Cranfield, 2009; Maertens and Fabry, 2019 is generated by consumer requirements, technical progress, liberalization of trade in agricultural products as it is argued by numerous literature in the field (Radulescu & Dumbravescu, 2008; Matkovski et al., 2017; Voica & Panait, 2017; Borsellino et al., 2019) or liberalization capital movements (Matei, 2004). But often, like Chivu et al., 2015, they argue the household income level is representing a challenge to economic and social cohesion increasing the resistance to the CSR policies in the field.

The drivers' framework of economic agents involved in feeding foreign capital flows from the agricultural sector has diversified considerably. In addition to transnational companies that make their presence felt, other actors can be observed, like investment funds and regional or international financial institutions that support the food security policy of governments. These entities finance agriculture or consider investment in this sector an opportunity that not to be missed given the need to diversify the portfolio to reduce risk (Matei, 2004; UNCTAD, 2009; Panait et al., 2016).

The main ways of implantation specific to foreign direct investment (FDI) are green field investment and international acquisitions. Considering the specifics of the activities carried out in the agricultural field, foreign investors have

nuanced their way of implantation in the sector over time, in the sense that in recent decades there has been a trend of land acquisition in developing countries (FDI in land) and less involvement in the activities like production and processing of agricultural products. This situation, observed in both African and Central and Eastern European countries, is generated by the weak capacity of public authorities to guarantee the right to food of the local population, paints a new profile of foreign investors who are considered land grabbers and which causes negative spillovers on local development and food security (Constantin et al., 2017; Santangelo, 2018).

The interest of foreign investors for certain host countries has faded over time and is no longer generated by the existence of fertile land, but by the availability of water resources that support the irrigation process. The lack of water and fertile land in some countries thus generates not only the intensification of trade in agri-food products (from countries that have a much better endowment with natural factors) but also the emergence of virtual water trade and virtual land trade (Qiang et al., 2013; Schwarz et al., 2015; Da Silva et al., 2016; Miglietta & Morrone, 2018), as well as the reconfiguration of foreign capital flows. International trade in agricultural products generates exploitation and redistribution of water and land resources. So, the liberalisations of trade and capital movements have direct effects on the use of natural resources especially from developing countries.

Numerous studies in the field (Chaudhuri & Banerjee, 2010; Slimane et al., 2016; Santangelo, 2018; Martin, 2019) notice the negative effects that companies with foreign capital could generate on developing or transition countries in which they make investment. Adherents of the dependency theory emphasize the potential destructive effects that foreign investors could cause on host countries, fuelled by bureaucracy, corruption and the weak involvement of public authorities in promoting the national interest. Thus, multinational companies present in the agri-food sector sometimes behave unethically by manipulating the price of products sold on the local market, using the transfer price mechanism, distorting costs or revenues in order to avoid taxes, repatriating profit to origin country, offering improper working conditions for employees, using child labor and polluting the environment.

According to the followers of the modernization theory, multinational companies have become important actors on the agri-food market, and the foreign direct investments not only finances the agriculture from the developing countries, but have also ensured the transfer of technology, know-how, quality standards, direct implications on food safety, sales markets for finished products and local employment (Matei, 2004; Reardon et al., 2009). However, the generation of these positive spillovers in the economies of the host countries is particularly influenced by the ability of these countries to absorb the tangible and intangible resources offered by transnational companies, which depends on the reaction and involvement of the workforce and public authorities in the host country (Slimane et al., 2016).

As it is shown in literature (Santangelo, 2018; Hughes, 2019) foreign direct investment in the agricultural sector is generated by natural conditions (soil, water and climate conditions), provided by the host country. This type of investment is resource-oriented investment, and the different endowment of countries has direct consequences on the production, trade and financing process of agricultural activities. In fact, as (Gow & Swinnen, 1998; Matei, 2004; UNCTAD, 2009) describes, the first foreign investment made worldwide on the colonial era were generated by the expansion of European companies to the colonies, the motivation being the search for natural resources that were processed with cheap labor in the host countries, the main sectors being agriculture and extractive industry. Also, as Bolling and Somwaru, 2001 and Matei, 2004 argue, over time, the motivation of foreign investors has faded, with investment being made that seek access to a local or regional market or that generate products that are not sold for the local market but are exported. In fact, in agri-food sector, FDI is a cost-effective way to reach local markets, so this investment is efficiency seeking.

As (Bolling & Somwaru, 2001; Voica & Panait, 2017) state, the expansion of FDI in the field of agri-food was also generated by the emergence and consolidation of free trade areas and customs unions (NAFTA, MERCOSUR, EU) which led to a reorientation of the interest of foreign investors with free access to the regional market (facilitated by free movement of goods by signing trade agreements) focused on other countries in more remote regions. At the level of

the European Union, the existence of the Common Agricultural Policy has essential impact not only on the production activity and the trade, but also on the price of the land, the migration of the labor force, the financial flows and the innovation of eco technologies.

Moreover, the interest of foreign investors has shifted from the production of agricultural products to upstream or supporting industries or downstream industries. So, TNCs are present in all segments of the global value chain – GVC as (Rueda et al., 2017; Maertens & Fabry, 2019) present in their researches. Moreover, the emergence and development of the biofuels segment attracted new transnational companies that initially had nothing to do with the production of agricultural products. However, the production of biofuels is a rather controversial topic considering that agricultural lands are no longer used to meet the food needs of the population, but to generate products used for energy as it is argued by Dusmanescu (2013) or Ene et al. (2017).

The liberalization of capital movements internationally was also reflected in the increase in FDI flows concentrated in the agricultural sector, the maximum being reached in 2007. After this peak, the overlap of the international financial crisis and the food crisis of 2008 dramatically affected foreign capital inflows until year 2011, after which FDI flows remain on ascending trend. FDI flows oriented towards the industrial processing sector of agricultural products (food, beverage and tobacco) have experienced, since 2008, a less dramatic decrease compared to those in agriculture and later an evolution of the saw tooth type (FAO, 2020).

In addition, national policies contribute to improve the spillover effect of foreign investment on host economies deepening or improving these differences. According to FAO statistics, the countries were divided into net exporting countries of agricultural products, net importing countries, and there is a group of countries that have natural resources, but the lack of proper use of natural resources and low involvement of public authorities in supporting the process of investing and financing them makes these countries import large quantities of agricultural products to meet the needs of the population (UNTAD, 2009). The best example in this sense is Romania, which, despite its special agricultural potential, is listed as a net importer of agricultural products. These countries need massive investments, technology transfer and knowledge to increase labor productivity and improve the share of arable land used.

At the top of the most attractive countries for foreign investors are those countries that have fertile agricultural land, generally developing countries such as China, Argentina and Indonesia. Romania ranks 10th in the top of foreign direct investment attracted to agriculture, but imports large quantities of agricultural products, which demonstrates the speculative nature of attracted investments in the sense that those investors bought agricultural land but do not use it for agricultural production but as an asset financially necessary to diversify and reduce portfolio risk (FAO, 2020). From the point of view of the countries that attracted the most important FDI flows in agri-food sector, the top 10 is ruled by developed economies, with a strong industrial sector (SUA, Netherlands, UK, Spain, Italy, and France).

The problem of budgetary constraints specific to developing countries and poor financing of the agricultural sector could be solved by attracting foreign direct investment. But also in this field, the attitude of public authorities towards foreign direct investment is nuanced; there are countries that allow access to foreign investors but also countries that restrict the presence of foreign capital for strategic reasons related to food security. Unfortunately, worldwide, experts believe that agriculture is a neglected engine for development (UNCTAD, 2009).

Foreign direct investment in agriculture is mainly concentrated in the countries of Asia and the Americas, given both the existence of fertile arable land and a certain economic, social and political stability conditions specific to the countries in the region compared to the mainland Africa (Rjoub et al., 2017).

From the point of view of foreign investment in the agro-industrial sector, European countries are the main recipients of the capitals of transnational companies. Mergers and acquisitions or greenfield investment are fueled, in the case of these countries, by the existence of a large number of consumers with purchasing power, with food preferences for both traditional and eco products, access to the entire European market for products made, and economic, social and political stability.

Mergers and acquisitions are a way to make foreign direct investment in a host country, which has the advantage of rapid deployment. The use of this method of implementation is generated by

factors such as initiation and development of privatization programs or the onset of financial crises that favor the emergence of a large number of private companies that can be taken over at low prices due to financial difficulties (Matei, 2004). The statistical data published by UNCTAD show the reduced use of this method of implantation in the agricultural sector, it being more used in the agri-food sector, where there are companies that have been the subject of international take overs (Figure 1)

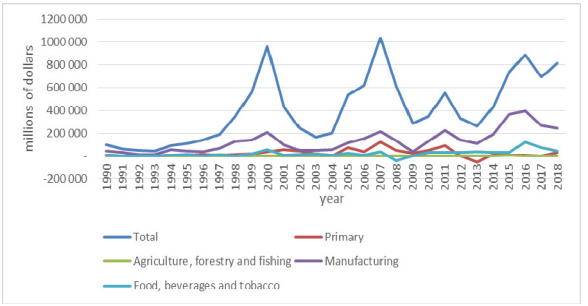

Figure 1 Value of cross-border M&A purchases, by sector/industry, 1990-2018
Source: The authors based on UNCTAD, 2019

The food, beverage and tobacco sector also stands out through a higher number of mergers and acquisitions, compared to the agriculture sector. Statistical data show the dynamism of this sector, which in certain years has registered more mergers and acquisitions projects and higher values even than the entire primary sector, which in addition to agriculture also includes mining, quarrying and petroleum (Figure 2).

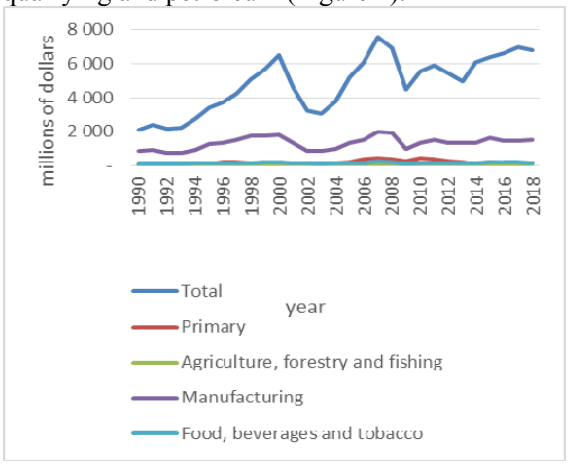

Figure 2 Number of net cross-border M&A purchases, by sector/industry, 1990-2018
Source: The authors based on UNCTAD, 2019

Greenfield investment (figures 3 and 4) is a preferred way of implantation by certain investors because it has an advantage that the new business is properly sized and developed from the beginning, no longer staff or technology restructuring being needed. The main disadvantage is the longer period of implementation of the investment.

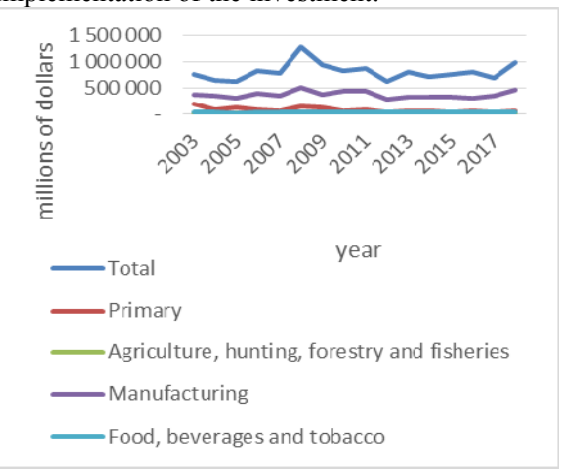

Figure 3 Value of announced Greenfield FDI projects, by sector/industry, 2003-2018
Source: The authors based on UNCTAD, 2019

The analysis of statistical data published by UNCTAD demonstrates the concentration of greenfield projects in the secondary and tertiary sector. The annual data place the Agriculture, hunting, forestry and fisheries sector on the last places in terms of the number of greenfield investment. Although the presence of foreign capital in the agri-food sector is modest compared to the services sector, the strength of TNCs has fuelled the agro-industrialization process that has led to increased food production and partial resolution of food security investment.

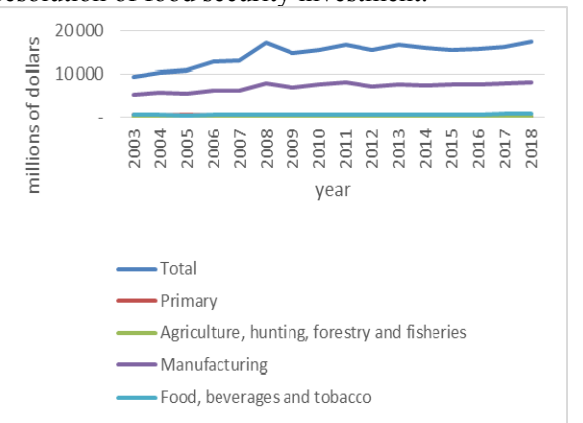

Figure 4: Number of announced greenfield FDI projects, by sector/industry, 2003-2018
Source: The authors based on UNCTAD, 2019

The agro-industrialization process and the existence of the global supply chains created in the food industry also have beneficial consequences on the spread of the concept of CSR on an international level, the transnational

corporations being the main promoters. In addition to their own CSR programs that transnational companies initiate and carry out, they could impose codes of conduct on subcontractors or raw material suppliers and promote codes that apply at the level of the field (Matei, 2013; Rueda et al., 2017).

Foreign capital attracted to the agri-food sector has a complex impact on host countries, in the sense that in addition to the recognized effects of foreign direct investment, certain specificities can be observed. Rural communities develop both under the direct action of production processes carried out by transnational companies but also through their involvement as beneficiaries of CSR programs carried out by these companies. So, CSR programs run by TNCs are drivers for rural development. Although the presence of foreign capital in the agri-food sector is modest compared to the services sector, the strength of TNCs can generate important changes in the economies of host countries regarding food security and health of the population or consumer awareness of food waste.

2. CSR implication in agri-food sector

The agricultural sector can generate a negative impact on the environment through various mechanisms such as soil degradation, deforestation, greenhouse gas (GHG) emissions, soil and water pollution through the use of fertilizers or pesticides (UNCTAD, 2009; Zaman et al., 2020). The degradation of the environment that threatens food security and safety has led to an increase in the concerns of economic agents in agriculture to promote the principles of sustainable development through various mechanisms and instruments, at national, regional and international levels.

Climate change generated by environmental pollution has direct consequences on agricultural production, because even small variations in temperature or precipitation can cause considerable losses to agricultural producers. For this reason, local farmers and TNCs have adapted their activities to the new challenges and achieve better water management, use of renewable energy sources in farms and production process, promote pest management. In fact, the relationship between agriculture and the environment is bidirectional, in the sense that, on the one hand, agricultural activities generate environmental pollution, and on the other hand, environmental quality is essential for agricultural production efficiency and quality of finished goods. For these reasons, agriculture plays an important role in promoting the principles of sustainable development and achieving the sustainable development goals (SDGs).

One of the tools of involvement in promoting sustainable development is CSR which reshapes the activities of companies in various fields, especially those that have a negative impact on the environment or local communities (Siano et al., 2010; Palazzo et al., 2016; Deight et al., 2016; Barić et al., 2020). The concept of CSR emerged as a response of companies that realized that maximizing shareholder profit is no longer a strategic goal in a complex world, with multiple interdependencies, shaken by scandals and crises such as food contamination, financial frauds, practicing deceptive techniques to promote products or services (Ciutacu et al., 2005; Matei, 2013; Brezoi, 2018; Martos-Pedrero et al., 2019; Stancu, 2019).

More and more companies have become aware of their role in the economy, of the negative externalities they generate, which is why they try to enhance their positive impact on society and even contribute to the harmonious development of the communities in which they operate, protect the environment, respect the rights of employees and fight corruption. Socially responsible companies must comply with legal regulations and make additional investment in human capital and the environment and improve their relationships with stakeholders (Siano et al., 2010; Matei, 2013; Siminica et al., 2015; Siminica & Sichigea, 2018; Sima & Gheorghe, 2019; Nazzaro et al., 2020). In this way, companies are very attentive to the requirements of different categories of stakeholders, given their involvement which are no longer mere spectators of the economic phenomenon, but sanction the inappropriate actions of companies such as those in highly polluting industries or those whose activity has an impact on public health, encouraging the activity of companies that have adopted the principles of sustainable development. Thus, consumers base their product purchasing decisions on issues related to the behaviour of manufacturing companies towards the environment, public health or local communities, and portfolio investors consider additional criteria for selling and buying financial securities such as corporate social responsibility, thus fuelling the process of divestment from polluting companies and the process of investing

in environmentally friendly companies (Panait et al., 2014; Lombardi et al., 2015; Palazzo et al., 2016; Cristea et al., 2020).

Reality has shown that CSR is not a simple tool for involving companies in society or in the community; it is not a marketing technique but a component of the management strategy that fuels the company's long-term competitive advantage (Genier et al., 2009; Matei, 2013) by generating favourable attitudes from stakeholders, by creating a business opportunity, by the emergence and integration of new tools through which we witness business reengineering (for example, social investment).

However, researchers (Panait et al., 2014; Lombardi et al., 2015; Raimi et al., 2015; Palazzo et al., 2016) draw attention to the use of CSR programs as a tool to improve the company's image, without a real involvement of the company in promoting sustainable development principles, in response to pressure from certain stakeholders, mainly NGOs or as a tool to improve consumer loyalty. The chameleon attitude of some companies goes so far as to practice green washing techniques, trying to promote a favourable but unrealistic image among consumers, only out of the desire to join the greening trend specific to recent decades, especially in some sectors of activity with a negative impact on the environment.

The agri-food sector has a huge potential for CSR given the large number of stakeholders who are affected by the actions of agri-food companies as buyers, suppliers, employees and rural communities in which they operate In addition, the impact of these companies on the environment is significant both by the negative externalities it can generate and by the positive externalities it achieves (Zaman et al., 2020) and the public goods it provides (Zekić & Matkovski, 2017) in the form of achievement of food security and food safety, environmental protection of agricultural land, establishment of viable rural communities; biodiversity conservation, preservation of landscape and cultural and historical heritage of rural areas. Therefore, CRS must be a long-term, permanent and proactive strategy in the agri-food sector (Martos-Pedrero et al., 2019) to ensure the reduction of risks related to future events.

Local communities are a very important category of stakeholders as a target for CSR programs (Deigh et al., 2016). In the case of the agricultural sector, the local communities become even more important considering that they are not only areas that host the development of production activities characteristic of this economic fields, but they also fulfil specific functions such as providing recreation, sports facilities for urban population, preservation of traditional, cultural and historical values. This situation could generate the transformation of small farms, into a new multifunctional production-service "enterprise" promoting agricultural and non-agricultural activities. In this way, the farms could move away towards secondary and tertiary activities, generate employment and greater economic self-reliance of rural areas. Therefore, CSR is considered a feasible driver for rural development (Arato et al., 2015) given that through the liberalization of international trade and capital movements local communities have access to new development opportunities but will also be affected by new threats as a result reducing the role of the state in the economy and dominating the agri-food system by transnational companies and small and medium enterprises (Borsellino et al., 2020).

Conclusions

Despite numerous transformations, agriculture continues to be perceived as strategic economic sector in contemporary economies. Analysing the implication of TNCs in agri-food sector has reviled the existence of a determinant divergence between the CSR approaches and the need for profit. The capital movements could be considered a feasible vector in identifying the most profit rewarding activity, and the agri-food sector has managed to attract significant amount of investment.

The lack of natural resources has generated a reconfiguration of trade and capital flows at international level, and new forms of trade have emerged, namely virtual water and land or new forms of implantation of foreign direct investment in trade culture, namely land acquisition, sometimes this phenomenon acquires extreme valence in the form of land grabbing.

Promoting the principles of sustainable development is not the prerogative of public institutions. Private companies and consumers can contribute to supporting the efforts of public authorities through specific measures. Companies could reduce their negative externalities, and consumers must sanction the inappropriate behavior of companies towards different categories of stakeholders through acquisitions. So, consumers have become a force that reshapes

the behavior of companies in the agri-food sector because they sanction the actions of those companies that do not prove real concerns for the promotion of CSR and the principles of sustainable development. It can also discuss the responsibility of consumers who need to improve their level of food education and to promote sustainable food consumption.

Overall, the current research is consistent with previous studies in the field and generates a more visible approach by highlighting both the challenges and effects generated in the process of creating a more responsible agri-food sector. It therefore requires a complex approach to the concepts of CSR and sustainable development in the agri-food sector given the implications of economic activities in the field on food safety and security. The latest trends specific to the agri-food sector, namely the liberalization of international trade and capital movements, must not turn into threats to food security and safety, given the imbalance of forces between developing and developed countries. Food safety standards in developed countries can generate considerable costs that may not be met or covered by companies in developing countries. In addition, the practice of different quality standards can lead to disputes over the unethical behaviour of manufacturing companies in developing countries. Therefore, the practice of unitary standards in the agri-food field should not become an obstacle in business development or generate costs, but should be seen as an opportunity by both companies and consumers.

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Evaluating the effectiveness of employment assistance measures: case of Russian state employment centers

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Abstract
Russia is currently implementing the national project "Labor productivity and employment support", which is a set of measures aimed at developing employment infrastructure and introducing organizational and technological innovations to support employment, including standard solutions aimed at improving the efficiency of state employment centers. This project defines the strategic directions of state regulation of the Russian labor market.
This article deals with the issues of the population's demand for the services of employment centers, including not only registering as unemployed but also receiving public services to assist in finding a suitable job, vocational training, psychological support, etc. The study is based on the Russian labor force survey and microdata of employment centers for 2019 (more than 24,000 observations). Based on the data from the labor force survey, conclusions are drawn about the demand for the state employment centers' services among various groups of the population and about typical combinations of applying to the employment service with other job search channels. The analysis of regional microdata made it possible to evaluate the performance of employment centers based on information about the socio-demographic characteristics of the unemployed, the duration of the unemployment status, the fact of receiving benefits, the services received and the reasons for de-registration. Based on the results of the analysis, conclusions are made about the ways to improve the work of the state employment centers.

Keywords
active labor market policies, state employment centers

Introduction

Development priorities of the Russian Federation until 2024 are defined by a series of national projects, one of which is the national project "Labor productivity and employment support". An integral part of this project is the modernization of employment centers, improving the efficiency of their work and the quality of services they provide to the population.

By the legislation of the Russian Federation, employment centers are assigned the following main functions:

- informing citizens about the situation on the labor market, rights and guarantees in the field of employment, and protection from unemployment;
- development and implementation of programs that provide for measures to promote employment;
- assistance to citizens in finding a suitable job, and to employers in selecting the necessary employees;
- organization of measures of active employment policy of the population;
- implementation of social allowances to

citizens recognized as unemployed following the established procedure (Employment of the population in the Russian Federation, 1991).

Employment centers pay special attention to the implementation of active labor market policy (ALMP). These measures usually include training for the unemployed, subsidized employment, assistance in finding work, including referrals to employers, and free access to the job database (Martin, 2015; Mušikić, Marčetić, Đurović, 2017). Training of the unemployed is becoming important in the context of the knowledge economy and has a major impact on the labor market and the economy in general (Hadad, 2018).

In accordance with Russian legislation, within the framework of ALMP, employment centers provide a wide range of services: informing about the situation on the labor market, assistance in finding a job, temporary employment, organization of public works, professional guidance, vocational training and additional professional education, psychological support and social adaptation services for the unemployed, conducting job fairs, assistance in self-employment, assistance in moving to another area, support for the employment of disabled people.

Considering the role of employment centers in the Russian labor market, it is important to note several features.

1. There is a large gap between the overall unemployment rate, which is recorded by statistical agencies in accordance with international standards, and the unemployment rate recorded by employment centers. So, at the end of 2019 on average, total unemployment in Russia exceeded the registered unemployment rate by more than 4 times.

2. The low rate of replacement of wages with unemployment benefits reduces the demand for employment centers' services. Until 2020 the amount of unemployment benefits varied in the range of 15.1-87.1$ with an average salary of 544.8$ in terms of the official exchange rate of the Central Bank of Russia (the authors' calculations). In particular, the minimum benefit is available to unemployed people who have no work experience, have been dismissed for culpable actions, are long-term unemployed, have been informally employed by a previous employer and, for this reason, are not able to submit a certificate of average salary.

3. Perception of employment centers by labor market agents as generally ineffective bureaucratic structures. Applying to an employment center is not the most popular way to find a job (Gruznykh, 2015).

4. There is no real alternative to applying to employment centers in case of a difficult life situation and economic crisis. Only citizens who have applied to employment centers can claim unemployment benefits, free vocational training and assistance in organizing their own business. In addition, an early retirement pension may be issued for persons of pre-retirement age who cannot find a job.

Priorities of state policy, combined with significant financial resources, actualize the need to assess the effectiveness of employment centers. In Russia there is a task to develop employment infrastructure and introduce organizational and technological innovations using digital and platform solutions to support the employment level of population. In particular, it means the development of common requirements for the activities of employment centers, including standard solutions and recommendations for improving the efficiency of employment centers, the standard of the model employment center, regulations for the work of employment centers, the implementation and organizational and methodological support of information systems. As part of the implementation of national projects and tasks aimed at supporting employment, the Russian government plans to allocate 12.7 billion rubles (Passport of the national project (program) "Productivity and employment support", 2018).

1. Literature review

Assessment of the effectiveness of employment centers can be carried out at the macro and micro levels.

In the first case, the effect of individuals' participation in employment center programs is estimated, which can be expressed, for example, in changes in the probability of getting a job, the onset of a repeated period of unemployment, its duration of unemployment, etc. (Vooren et al., 2019). Many researchers have recorded a small positive effect from the implementation of active employment policy measures (Crépon, van den Berg, 2016; Card et al., 2018). At the same time, it is noted that different programs of employment centers have different microeconomic efficiency. For example, it is shown that assistance in finding a job has the greatest impact on improving the

position of labor market participants (Kluve, 2010; Vooren et al., 2019).

The macroeconomic effects of employment center programs are analyzed in the context of the unemployment rate and are usually based on cross-country (inter-regional) comparisons. Thus, based on an analysis of data from 21 EU countries, A. Bánociová et al. (2017) found that increases in spending on active employment policy programs were not significantly reflected in changes in the unemployment rate. In the work of L. Benda et al. (2019) it was revealed that the effectiveness of an active employment policy depends on institutional factors, namely, the strictness of employment protection legislation and the "generosity" of unemployment benefits. Programs aimed at helping people start their own businesses are highly dependent on providing high-quality social infrastructure, which has a positive impact on both employment and local entrepreneurship (Chivu, 2019). Active employment programs have different effects on long-term unemployment, depending on the institutional configuration of the labor market. Government employment and training programs help reduce long-term unemployment with stricter employment protection laws. Employment programs become more effective when the "generosity" of unemployment benefits decreases.

2. Research methods

Currently, Russian regions are evaluating the activities of employment centers. However, the analysis of used indicators and criteria shows that often, the focus in the evaluation is more on internal processes than on the effects for beneficiaries and the labor market in general. Here are some indicators for evaluating the performance of Russian employment centers:

- indicators for core business: performance of the state task on the provision of public services, the achievement of established performance indicator
- indicators of financial and economic activity: the volume of changes in the budget estimates, the share of unfulfilled budget funds;
- indicators of personnel performance: staffing; turnover rate of the staff of the employment centers.

This list shows that the evaluation of employment centers is largely aimed at solving internal problems and performing discipline. The assessment of the main activity of employment centers is also formalized, taking into account the number of completed works, but not their results. This assessment does not make it possible to understand which measures and for which groups of the unemployed are most effective, and how, with data on the use of measures in previous periods, to build measures to promote employment in relation to new unemployed.

It is obvious that to answer these questions, it is necessary to assess the effectiveness of ALMP measures in relation to various socio-demographic groups of the unemployed.

In this paper, an attempt is made to evaluate the activity of the employment service from the perspective of service recipients on the example of one of the 85 Russian regions based on data available in employment centers and state statistics bodies. This region can be called a typical region of the country based on its total population, share of urban population, education level, employment structure, and unemployment rate. Its indicators approximately correspond to the national average, or deviate from the national average within one standard deviation. The characteristics of employment centers may reflect the situation in other Russian regions, both because of the typical nature of this region, and because of the existence of national formal rules governing their work.

The purpose of this study is to evaluate the effectiveness of employment centers at the micro level using statistical data, as well as to determine on this basis the directions for improving the activities of employment centers.

It is important to note that such an assessment objectively faces several difficulties.

In the microeconomic assessment of the effectiveness of employment centers, it is important to have an information base with the characteristics of individuals who have applied to employment centers, containing information about the services they receive and the reasons for de-registration. The quality of the assessment is largely determined by the quality of the information base.

Qualitative analysis involves not only an assessment of what services the employment centers provided to the individual and for what reasons he was removed from the register in the employment center, but also how his position in the labor market changed after a certain period. For example, the effectiveness of the employment center, all other things being equal, will be evidenced by the presence of stable paid

employment, while job loss and long-term repeated unemployment, on the contrary, will reduce the effectiveness estimates. However, the analysis of an individual's position in the labor market after being deregistered in an employment center is difficult both because of the legislation on personal data protection, which requires the individual's prior consent to collect information, and because the individual may refuse to answer questions or change their contact information, etc.

This is why in this study, the tasks of evaluating the effectiveness of employment centers are adjusted to take into account the available information. We have two microdata databases at our disposal that are used to build estimates.

1. Database of the 2017-2018 monthly sample survey of the labor force, representative for each of the Russian regions. It contains information about the socio-demographic characteristics of the population (gender, age, education, place of residence, classification as unemployed), methods of job search. This research is carried out by state statistics bodies. A sub-sample of people living in the region and classified as unemployed by international standards amounted to 129.4 thousand observations.

2. Microdata of regional employment centers containing information about the socio-demographic characteristics of individuals registered as unemployed (gender, age, education, place of residence), the date of registration and deregistration (if available), the list of services used by the unemployed, the reasons for deregistration. This database includes individuals who applied to employment centers in the region in 2019 (this is the general population, more than 24.0 thousand observations).

The available data allow us to evaluate the effectiveness of employment centers for individuals in the following areas:

1. Availability of employment centers services for the population. The location of employment centers and the list of documents required to register an individual as unemployed and to assign benefits may create certain barriers, especially for people with low education levels and living in rural areas with low population density. In the latter case, the unemployed are forced to bear additional time and money costs associated with trips to the employment center located in another locality.

2. Reasons for deregistration of the unemployed, which may characterize the usefulness of the services received for individuals. For example, the reasons that can characterize a positive impact on the position of an individual in the labor market include various employment options, vocational training (following Russian legislation, vocational training is the basis for deregistration of an unemployed person), as well as the organization of their own business (business activity). Negative assessments of the employment service's performance may be related to such reasons for deregistration as refusal of employment center services, or long-term absence from the employment center without a valid reason. The difference between these reasons is that in the first case, the person receives unemployment benefits, and in the second case does not.

3. The list and number of activities carried out by employment centers concerning the unemployed and their impact on the reasons for deregistration. It is especially important in this context to understand which of the measures have a positive impact on the fact of employment of an unemployed person.

The following analysis methods are used: descriptive statistics, as well as regression analysis (logistic regression).

3. Research results

Left without a job, individuals usually try to use several channels of job search (searching for vacancies via the Internet, contacting friends, relatives and acquaintances, directly contacting the employer, contacting the state employment center, or a commercial company that provides employment assistance services). The average unemployed person uses 2.45 job search channels. Just under a third of the unemployed – 32.4% - apply to state employment centers. However, there are certain correlations of the selected job search channels. Factor analysis (extraction method: principal component analysis, rotation method: varimax with Kaiser normalization) identifies two components, the first of which is correlated with access to friends, relatives and acquaintances, access to the media, the Internet (0.804 and 0.746, respectively, 32.8% of variation). The second component is correlated with applying to the state employment center (0.798, 22.4% of variation).

For analysis of accessibility of services of employment centers, we used data from the labor force survey. The frequency of calls to

employment centers by socio-demographic characteristics is shown in table 1.

Table 1 Using the services of employment centers when searching for a job (% of the number of unemployed in the corresponding group)

Factor	Searching for a job with the help of an employment center	Searching for a job without the help of an employment center
Residence		
city	25,8	74,2
rural area	46,5	53,5
Gender		
male	32,7	67,3
female	32,1	67,9
Age		
under 30 years old	25,8	74,2
from 30 to 50 years old	39,9	60,2
From 50 to 60 years old	37,0	63,0
Level of education		
no professional education	29,4	70,6
secondary professional education	35,5	64,5
higher education	32,1	67,9
Total	32,4	67,6

Source: The authors

According to the table, it can be concluded that rural residents use the services of employment centers more often than urban residents. This may be due to limited opportunities to find work in rural areas and lower-income levels of rural residents, which makes the services of employment centers more attractive. We also note that the services of employment centers are much less attractive to young people. With no work experience, young people can often only rely on the minimum amount of unemployment benefits. At the same time, the table does not confirm the widespread opinion that employment centers are mainly used by low-skilled workers. It is employees without professional education who are less likely to become clients of employment centers. This fact requires further study. The reasons for this situation may be, for example, lower awareness of this group of unemployed, a high prevalence of informal employment, the complexity of bureaucratic procedures, etc.

A more accurate assessment of the availability of employment centers services for unemployed individuals was performed using a binary logistic regression, which also included variables that characterize the individual's marital status, the reasons for the loss of previous work and the group of occupations at the last job, and the duration of unemployment. The results of the research generally confirmed the data of descriptive statistics. All other things being equal, urban residents are less likely to apply to employment centers, and those who are married, have children, those who are over 30 years old, and those who have lost their jobs due to staff cuts and the end of the contract are more likely to apply to employment centers (in all cases $p<0.01$).

Employment centers have the most complete statistics for the unemployed, which allows us to analyze the reasons for their deregistration (table 2).professional education are more likely to apply to employment centers than those without professional education ($p<0.01$). Individuals who have held positions of managers and mid-level specialists apply to employment centers less often than people who previously worked in the jobs of skilled and unskilled workers ($p<0.01$). However, all other things being equal, highly qualified specialists apply to employment centers more often than skilled and unskilled workers ($p<0.01$). This may probably be due to the specifics of the labor market and the oversupply of highly qualified specialists.

Unexpected results were obtained when analyzing the impact of applying to the employment service and the duration of unemployment. It is logical to assume that the need for employment center services should increase as the duration of unemployment increases. However, no such link was found. On the contrary, the need for employment center services decreases with increasing duration of unemployment ($p<0.01$). One of the reasons for this may be the declining size of the already low unemployment benefit, up to its complete cancellation.

The socio-demographic structure of the unemployed registered in employment centers is shifted towards a larger proportion of people who are particularly in need of social protection. For example, among the registered unemployed, 5.5% have a disability, and 15.9% are of pre-retirement age (less than five years before the pension is granted). Of course, this feature has a significant impact on the work with clients of employment centers and on its effectiveness.

Let us look at the reasons for deregistration of the unemployed.

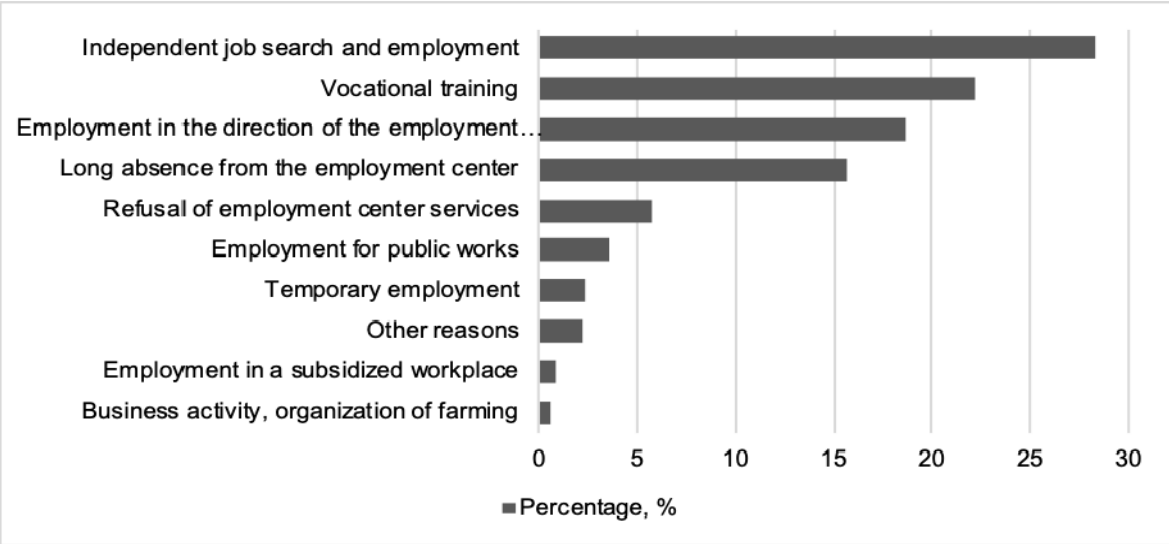

Figure 1 Distribution of reasons for deregistration of the unemployed in employment centers (% of the number of cases)
Source: The authors

More than half of the unemployed (53.53%) are deregistered for employment reasons. However, a significant part of employment is not directly related to employment centers' activities. Independent job search and employment accounts for more than half of all employment (52.8%). However, this does not indicate the inefficient work of employment centers, since a number of provided services are aimed at improving the competitiveness of the unemployed. Unemployed people are taught to make a resume and given recommendations for interviewing and self-presentation.

Obtaining a professional education in accordance with Russian law, although it is the basis for the deregistration of an unemployed person, does not indicate that the unemployed person will find a job in a new profession or any other job. According to our data, a significant part of the unemployed who were deregistered after completing vocational training are re-registered in the employment centers, but the subsequent registration does not always record the cases of previous appeals, but only in relation to certain categories of citizens who are particularly in need of social protection (for example, the disabled, persons of pre-retirement age, released workers, and some other groups).

According to the data, every fifth unemployed person is deregistered either by writing an application to refuse the services of the employment center or because of a long absence from the employment center for no valid reason. Despite the negative nature of such reasons for de-registration, the actual situation may be somewhat more complicated. For example, a long absence may be related to the fact that an unemployed person who does not receive benefits is employed. In this situation, the unemployed person is not obliged to inform the employment center about their employment.

Unfortunately, employment centers do not have the necessary resources to track the further trajectories of the unemployed in the labor market, which would allow us to more accurately determine the effect of provided services after a certain period, for example, a year.

It should be noted that other reasons for deregistration include such as conscription into the armed forces, the appointment of a pension, moving to another area, detection of attempts to obtain fraudulently, death, etc.

To assess the effectiveness of employment centers, it is important to analyze the services provided to clients by employment centers and identify their relationship to the reasons for deregistration. Available information shows that the frequency of service provision is uneven. For example, almost all unemployed people receive services related to informing about the situation on the labor market and assistance in finding a suitable job (more than 95%), professional guidance (more than 80%). At the same time, other services are provided much less frequently (figure 2). The average number of services received by one unemployed person is 4.2.

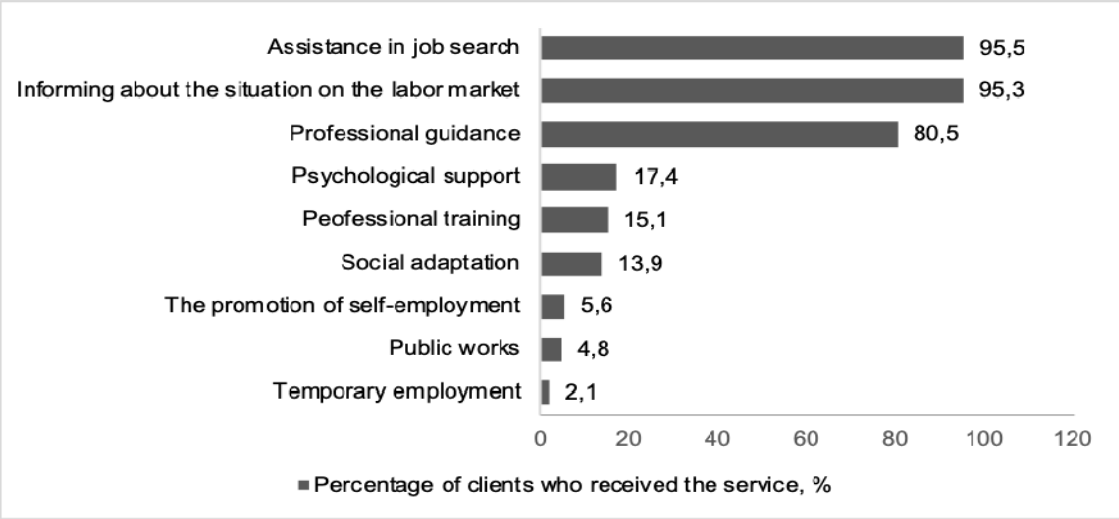

Figure 2 Distribution of employment centers' services by frequency of their provision (% of clients who received the corresponding service)
Source: The authors

The frequency of reasons for deregistration of citizens in need of special social protection differs significantly from the average. Thus, 9.8 times more often than other categories of the unemployed, they are employed in subsidized jobs, 3.4 times more often receive temporary employment. They find a permanent job almost 4 times less often and 3 times less often undergo vocational training. People of pre-retirement age are almost 10 times more likely than others to get temporary work. At the same time, they are 1.3 times more likely to find a job in the direction of the employment service compared to the average indicators, slightly higher than the average to complete vocational training (1.1 times). At the same time, it should be noted that for both groups of the population, the services of employment centers are less attractive compared to the average indicators, since the refusal of employment centers is 1.3 times more common for disabled people and 4.1 times more common for people of pre-retirement age.

To analyze the impact of services received on the reasons for deregistration, we used logistic regression models. The main reasons for deregistration were consistently used as dependent variables:

1. Independent job search or employment in the direction of the employment service. Both options can characterize the clients of the employment center as having sufficient competitiveness in the labor market (model 1).

2. Employment in subsidized jobs, public works (for some groups of the unemployed, such work is appropriate under Russian law), temporary employment of people who are experiencing difficulties in finding a job. Such employment is less stable and less preferable for the individual (model 2).

3. Professional training. Following Russian legislation, employment centers send to professional training those citizens who do not have a profession, cannot find a job in their existing profession or qualification or have lost the ability to perform work in their existing profession, qualification (model 3).

We have divided the factors that influence the reasons for deregistration into two groups. The first category includes characteristics of individuals. They include place of residence (a large city that is the administrative center of the region, or other localities), gender of the respondent (male, female), age (under 25 years, 25-40 years, from 40 years to pre-retirement age; pre-retirement age (according to Russian legislation, it includes the age corresponding to five or fewer years before the age of retirement); level of education (higher, secondary professional, no professional education); duration of the unemployment period (up to 1 month, 1-3 months, 3-6 months, more than 6 months), experience in the labor market (up to 1 year or more), health status (presence or absence of disability), repeated application to the employment center. The second group includes

the services of employment centers provided to the unemployed, with the exception of those that, for certain reasons, are either mandatory or cannot be provided. These services include self-employment promotion (for all models), referral to vocational training (for all models), temporary employment (for all models), and participation in public works for model 2.

Table 2 Influence of various factors on the probability of deregistration of the unemployed by reason

Independent variables (factors)	Model 1	Model 2	Model 3
Services of employment centers:			
Social adaptation	0.14 ***	0.34 ***	0.59 ***
Public works	-1.04***		- 1.09***
Assistance in job search	0.26***	-0.31 ***	
Psychological support	-0.05	-0.06	0.81 ***
Professional guidance	- 0.49***	- 0.48***	1.34***
Characteristics of respondents:			
Place of residence (regional center - ref.)	- 0.59***	- 1.16***	-0.29
Gender (female - ref.)	- 0.06*	- 0.17***	0.33***
Education (no professional education - ref.):			
Higher	0.62 ***	- 1.02***	- 0.61***
Secondary professional education	0.17***	- 0.27***	- 0.28***
Age (40-50 for women, 40-55 for men - ref.):			
Age up to 25 years	-0.10	- 0.90***	0.39***
Age from 25 to 40 years	-0.03	-0.18	0.08
Pre-retirement age (51-55 for women, 56-60 for men)	- 0.77***	1.12***	- 0.56***
Disability (absence - ref.)	- 0.85***	1.28***	- 0.83***
Work experience in the labor market for a year or less (more than 1 year - ref.)	- 0.60***	0.37 ***	0.26 ***
Repeated application to the employment center (primary - ref.)	0.08	0.17	0.28 ***
Duration of the unemployment period (more than 6 months - ref.):			
up to 1 month	1.67***	1.83 ***	1.93 ***
from 1 to 3 months	1.36 ***	1.66 ***	1.53 ***
from 3 to 6 months	1.70 ***	1.79 ***	1.18 ***
Nagelkerke R-square	0.35	0.20	0,49

***** p<0.01, ** p<0.05, *p<0.1**
Source: The authors

Let us look at the main results. For convenience, table 2 shows only statistically significant estimates of regression parameters and the direction of the variable's influence on the result. According to the data, in all the models considered, the provision of social adaptation services in the labor market, which allows the unemployed to learn how to make a resume, search for a job independently, prepare for an interview, etc., has a positive effect on the deregistration of the unemployed. The other services considered also have a certain effect, but not in all cases. For example, providing professional guidance is effective only if the unemployed person then agrees to take the professional training. Probably, the individual's awareness of the need to change the type of activity leads to the fact that the psychological support service, in this case, has a statistically significant positive impact. Assistance in searching for a job has an effect if the unemployed person has sufficient competitiveness to allow him to apply for a job on an equal basis with other individuals.

Let us also draw attention to the results obtained with regard to the participation of the unemployed in public works. The negative impact on deregistration in the first and third models may be due to the fact that participation in public works distracts the unemployed from participating in other programs.

As for the socio-demographic characteristics of the respondents, their estimates were generally expected. Lower employment rates in the regional center indicate that in a large city that has more opportunities in the labor market; individuals have more opportunities to find work without applying to employment centers. In other words, in the regional center, when applying to the employment center, there is a self-selection effect, while in small localities it is much weaker. The effect of self-selection, in our opinion, can be explained by the higher rates of employment in the regional center of women compared to men.

Despite a number of measures taken by the state, disabled people and people of pre-retirement age remain the problem group, who have less chance of employment and training. Their more active employment in temporary jobs and participation in public works partially compensates for the objectively lower competitiveness of this group of unemployed, as well as discrimination in the Russian labor market, including age discrimination.

Conclusion

The analysis makes it possible to conclude that the services of employment centers are available to the population, regardless of the place of residence. At the same time, it is important to pay attention to the availability and attractiveness of services for young people and people with low levels of education – groups that traditionally have higher than average unemployment rates.

The majority of the unemployed are de-registered in employment centers in connection with employment. However, the quality of employment varies significantly. Almost 47% of the unemployed find work either on their own or

in the direction of employment centers. The remaining part of the employed (6.6%) is employed in less stable jobs - temporary work, subsidized jobs, and public works. More often than other groups of unemployed, this reason is typical for people of pre-retirement age who do not have work experience, and disabled people – groups that are particularly in need of assistance from the state.

A positive characteristic of the activity of the employment service can also serve as professional training for 15% of unemployed citizens. Most often, this service is used by young people and people who have repeatedly applied to the employment center. The data also shows that the indicators of employment and professional training are statistically significantly lower for the unemployed, whose duration of job search exceeds six months. A more in-depth analysis of this group is required, including their motivation to find work and the specifics of local labor markets.

We should also note the problems associated with the fact that the activity of employment centers does not fully meet the expectations of citizens. Among the indicators of these problems, it can be noted that every fifth unemployed person stops using the services of the employment center before reaching the goal of applying. Thus, improving the efficiency of employment centers can be associated with the following actions.

First, it is necessary to improve the quality of information support for the activities of employment centers in terms of recording information about persons registered as unemployed. It is important to record not only current requests, but also establish links with records of requests from earlier periods.

Second, some of the information related to job search and participation in activities conducted by employment centers remains unformalized, and, as a result, is lost in the analysis. Perhaps it is necessary to briefly record the results of participation in events, or the reasons for refusing to participate in them.

Third, it is important to set up feedback channels with the unemployed, since the high percentage of refusals from employment centers' services and long absences of the unemployed to employment centers require study. Their analysis can provide important information for improving the performance of the employment centers.

Fourth, it is important to regularly conduct research on the situation in the labor market of persons who have been deregistered from the employment center. This is how you can evaluate the subsequent trajectories of individuals related to job search, employment, job changes, salary levels, job satisfaction, etc. By recording these data and correlating it with active employment policy measures, it is possible to understand which of the measures ultimately contributed to the construction of more or less successful trajectories in the labor market.

Fifth, having these data, it is possible to predict the effectiveness of certain measures for the success of employment of persons belonging to specific socio-demographic groups. The availability of such information can significantly reduce the resources associated with the construction of a job search plan, increase the effectiveness of employment centers and use modern methods of data analysis.

Sixth, changes in technologies for working with the unemployed, in particular through the use of online technologies that reduce the time and financial costs of rural residents and thus increase the availability of services, would help to improve the performance of employment centers.

The implementation of the proposed measures will make it possible to contribute to the solution of the strategic task of creating highly effective employment centers.SM

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An examination of the relationship between experimental climate and dimensions of the creative organization

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Abstract
Today's business environment imposes the need to continuously generate creative ideas not only for companies to grow, but also to survive in a hypercompetitive environment. Forming a creative model of organization and stimulating employees' creative behavior is one of the priorities, which can be achieved by establishing a parallel organizational culture and a creative climate. So far, some authors have identified these two terms as equal, while others emphasize the need for their separation. The paper indicates the differences in understanding of organizational culture on the one hand and climate on the other.
The subject of the research is reflected in the analysis of the factors of importance for the formation of a creative organization. The paper aims to determine whether or not there is a positive relationship between the experimental climate and the dimensions that describe a creative organization model with a focus on organizational culture.
The research hypotheses were generated and empirically analyzed based on a survey conducted on a sample of 145 employees in organizations in the territory of the Republic of Serbia. The survey was developed by combining two methodologies formulated by G. Ekwall, "Creative Climate Model," and T. Amabile, "Organizational Creativity Model." Statistical methods, such as correlation analysis and analysis of variance, ANOVA, were applied in the paper.
The obtained results indicate that there is a positive statistically significant relationship between all three dimensions of creative organizational culture, such as flexible management system, motivation for greater achievements and freedom to use resources to form an experimental climate in the organization. Furthermore, by applying ANOVA, it was found that there was a statistically significant difference in the degree of experimental climate prevailing in the organization depending on its size, while no statistically significant difference between the organizations depending on their legal form was confirmed.
Finally, the paper highlights management measures to encourage the creation of a creative work environment.

Keywords
experimental climate, creative organizational culture, correlation, ANOVA

Introduction

Innovations are based on knowledge and they lead to the greater market share and penetration on new markets (Veselinović & Veselinović, 2019), and overall growth and survival of the company (Janković & Golunović, 2019). Different perspectives in the analysis of innovations are increasingly preoccupying the scientific public in order to propose possible empirical relations and, based on those, set practical management tips. Great importance lies on the analysis of

innovations from the point of view of organizational effectiveness (Glisson, 2015), which is one of the ways to achieve sustainable competitive advantage in a hypercompetitive business environment.

Employees at all levels should be motivated to apply a creative mindset that needs to be transformed into tangible innovative outputs. The aforementioned is possible by designing a creative organizational culture that employees will perceive as open to new ideas, creative behavior and innovation, and perceive it as an experimental organizational climate. This statement arises from the proven influence of organizational culture on the behavior and performance of employees (Giri & Kumar, 2007) especially innovative ones (Glisson, 2015).

When analyzing the innovative potential of a company, it is not enough to take into account only organizational culture or organizational climate, but they should be analyzed together. The mentioned approach to the research of organizational variables will enable a concise and objective description of the organization's business. Research of the creative organizational culture as a separate concept can lead to blurred results if the employees do not perceive culture as creative and innovation-oriented, which means that they will resist certain procedures, so in the end, their innovative result will be absent. The aforementioned influenced the formulation of the research idea and the research framework aimed at the analysis of the elements of organizational culture and the characteristics of innovation oriented organizational climate. Thus, the subject of the research is the analysis of the relationship between creative organizational culture and experimental organizational climate that was perceived as such by the employees. Within the paper, the focus is set on the research of organizational procedures as inputs that encourage innovative behavior of employees, and not on the final result, i.e. achieving innovative performance, that is, an analysis of the organizational context that will enable creative and innovative results in the near future. This research focus arises from the assumption of the authors Schneider, Ehrhart & Macey (2013), who believe that employees who perceive an organization as an entity that promotes equality, trust, ethics, and diversity lead to the achievement of strategic results by the employees, who are of great value to the company. The research aims to analyze the relationship between characteristics of a flexible management system, a motivational system aimed at incremental or radical changes, and the level of freedom to use company's resources that form creative organizational culture on the one hand and employees' perceptions of the work environment on the other. Also, in addition to the primary goal of the research, the secondary goal was identified, reflecting in the analysis of whether there is a difference between employees' perception of the work environment from the point of view of creativity and innovation, i.e. the experimental climate on the one hand, or, on the other hand, whether the employees work in companies registered as limited liability companies, joint-stock companies or public companies.

1. Organizational culture and organizational climate in function of creativity and innovation

In most research papers until the end of the 1990s, the terms organizational culture and organizational climate were considered equal (Glisson, 2015), while in the period after their difference became evident and a separate research begins.

Organizational culture consists of basic assumptions, expectations, and norms on which the company's business is based, i.e. it indicates how activities are performed within the organization. Through the elements mentioned, organizational culture influences behavior of the employees and their perception of work environment (Ali & Patnaik, 2014, p. 7). A large number of authors in their studies emphasize the influence of organizational culture on the organizational climate (Aarons & Sawitzky, 2006a).

Organizational climate is the perception of employees about the company in which they work (Ali & Patnaik, 2014). It can be said that organizational climate is the perception of employees about their work environment depending on values, policies, procedures at the company level, management that defines, implements, and delegates those as well as practical tasks performed daily by each employee. Therefore, organizational climate is an individual's psychological vision of the work environment burdened with subjectivity and therefore it varies from employee to employee. Thus, the direct influence of the organizational climate on employee satisfaction and therefore on their performance is evident (Giri & Kumar,

2007). For this reason, it is very important to monitor employees' perceptions of the work environment in order to determine the positive or negative impact on business performance.

Based on previously highlighted key characteristics of both organizational variables, their differences can be summarized, and those are reflected in the fact that organizational culture is a long-term, very stable research construct while organizational climate as a construct is more susceptible to changes in a shorter period. (Denison, 1996).

Therefore, organizational culture together with organizational climate has a combined impact on creativity and innovation so that formulated basic assumptions and norms have a role in encouraging creativity, while their implementation which is dependent on employees has an impact on the innovation degree (Isaksen & Treffinger, 2004).

1.1. Dimensions of organizational culture

The term organizational culture has been explored as a construct consisting of different elements. Although there is a range of different research on this topic, there are many similarities and overlaps within the identified elements or factors. An overview of the elements of organizational culture used in the research by different authors in different periods is shown in the following table.

Table 1 Possible elements of organizational culture

Authors	Year	Different elements of organizational culture
Amabile, Conti, Coon, Lazenby & Herron	1996	encouraging creativity, freedom, resources, pressure, organizational barriers to creativity
Tesluk, Farr, & Klein	1997	highlighting goals, emphasizing purpose, reward orientation, task support, social-emotional support
Cameron & Quinn	1999	dominant characteristics, strategic focus, employee management, leadership style, success criterion
Glisson, Green & Williams	2012	professionalism (knowledge), rigidity, resistance
Sharifirad & Ataei	2012	involvement, consistency, adaptability, mission
Amiri, Haghgooyan, & Mohammadi	2014	contribution, emphasis on freedom, effective interaction
Iljins, Skvarciany, & Gaile-Sarkane	2015	adaptability, consistency, employee satisfaction, mission, involvement

Source: The authors

Observing previous research, we come across different ways of constructing the variable organizational culture. Thus, there is no single methodology when analyzing organizational culture (Schneider, Ehrhart & Macey, 2013). When defining the construct of creative organizational culture, we were guided by the guidelines of authors Schneider, Ehrhart & Macey (Schneider, Ehrhart & Macey, 2011), who emphasize that employees' perception of work environment is most influenced by policies, practices, and procedures that guide their behavior and expectations and rewards for their results. The research uses three elements important for employees' perception of the work environment, i.e. for forming opinions about the organizational climate. The first element of a creative organizational culture is a flexible management system that encompasses a sum of management policies, management practices, and procedures. Another element is the system of motivation, i.e. support and rewards for achieved innovative achievements. The third element of organizational culture is the freedom to use resources, i.e. the possibility to put creative ideas into action. A flexible management system as an element that describes a creative organizational culture is indispensable in order to keep pace with the change. Therefore, many researchers call on companies to implement an organizational culture that is flexible and adaptive (Sarros, Cooper & Santora, 2008) which is possible by establishing an appropriate management system that advocates the aforementioned principles. Emphasis is placed on the analysis of the appropriate leadership style which is a symbol of the formation of a new organizational culture (Bass, 1999; Giberson, Resick, Dickson, Mitchelson, Randall, & Clark, 2009). On the other hand, the appropriate leadership style greatly affects the level of employees' creativity and the degree of innovation at the company level. Through their power, leaders influence employees' behavior, direct the decision-making process and directly influence the choice of an optimal decision on the one hand, while on the other they have a great responsibility for the achieved business performance. Thus, one of the ways to implement a flexible management system is application of a transformational leadership style to motivate employees to be creative and innovative (Majeed, Ramaya, Mustamil, Nazri, & Jamshed, 2007). Many authors advocate the importance of openness of superiors for implementing

innovations suggested by everyone in the organization, which leads to innovative behavior and organizational innovation (Elenkov & Manev, 2005; Jung, Chow, & Wu, 2003). Such a leadership style, in order to be in the function of forming a creative organizational culture, should provide a guiding vision, intellectual stimulation, provide support to employees, have high expectations in terms of performance, be an appropriate role model and encourage acceptance (Sarros et al., 2008, p. 152). Furthermore, in addition to implementing a transformational leadership style, a flexible management system that should serve to reach a higher level of creativity and innovation should encourage leaders to the following patterns of behavior: stimulation to find new knowledge, further diffusion of tacit knowledge through multiple communication channels, creating the role of innovative leader as role models for all employees, providing an innovative and inspiring vision that motivates all employees to focus joint efforts on its joint implementation (De Jong & Den Hartog, 2007).

Today, creative organizational culture must be formed so that dissemination and implementation of new knowledge is not a challenge, but a necessity. In this process, there is a set of different factors that influence the creation of such a culture, in addition to a flexible management system that should enable and support this process, i.e. to set norms and values that indicate that employees can conduct experimental analyzes, take risks, and make mistakes (Amabile et al., 1996); the second factor is motivation and rewards (Dixit & Nanda, 2011) of employees to implement innovative activities. As part of motivation, emphasis is placed on rewards for employees' creative thinking and their creative performance, which indicates that they will continue to be creative in performing other business tasks (Eisenberger & Armeli, 1997). Therefore, within the work, the emphasis is placed on motivating employees to greater achievements that will have a creative and innovative nature. The last element within the organizational culture is the freedom to use resources necessary for successful and efficient implementation of new ideas through projects (Amabile et al., 1996). If it is not difficult to get the necessary resources, the perception of employees is that their idea is supported, delegated project task is important, which affects their satisfaction and sense of importance and strong belonging to the company, which directly leads to greater energy and commitment. Freedom to use resources implies the possibility of using financial funds and material resources for new projects (Moultrie & Young, 2009). Also, freedom to use resources implies flexibility and a multidisciplinary approach in human resources engagement. Furthermore, freedom to use resources implies flexibility and a multidisciplinary approach in the engagement of human resources. In order to have positive effects when engaging all resources, it is necessary to ensure a free and transparent flow of information, as one of the most important resources today.

1.2. Dimensions of organizational climate

The organizational climate or perception of employees about the work environment has a significant impact on creative and innovative output of employees (Glisson, 2015; Mayfield & Mayfield, 2010, p. 162). Therefore, the emphasis is on forming an innovative organizational climate with a focus on establishing a cooperative atmosphere that will lead to more frequent social interactions between employees (Chen & Huang, 2007) which will cause flow of a larger information base, different ideas and influence the transfer and formation of new knowledge. If the organizational climate is characterized as innovative and cooperative, it will give clear signals to employees that they need to network and establish new knowledge networks, while if the organizational climate is not characterized as such, the interaction between the employees will be sabotaged and the flow of new knowledge and ideas will stop (Chen & Huang, 2007) and that will lead to less creativity and lack of innovative results. Thus, individual elements of the organizational climate affect the establishment of differences between companies that are classified as innovative and promising on the one hand and non-innovative or stagnant companies on the other hand as measured by the nature of business strategy, success in transforming creative ideas into new products that are successfully commercialized in the market, the level of company's originality viewed through technical and market analysis as well as the number of implemented patents (Ekvall, 1996). The mentioned relation indicates the need of companies to create an experimental organizational climate that is creatively oriented and which employees perceive as open and easily accept it. In such a business ecosystem, the

creative commitment of employees and their innovative output would lead to growth of innovation at the company level, which is one of the preconditions for the survival of the company (Janjić & Rađenović, 2019) in a dynamic market environment.

The creative climate in a company is manifested through an organizational culture that leads to creative results of its employees (Ekvall, 1996). This author emphasizes ten factors that influence creation of a creative climate, and they are: challenge, freedom, support to ideas, openness, dynamism, humor, debate, conflict, risk acceptance and available time for ideas. Factors can be described as follows (Pörzse, Takacs, Csedo, Berta, Sara & Fejes, 2012):

1. Challenge means that employees are satisfied with their job, that they are fulfilled in the workplace and thus include maximum energy;
2. Freedom means the possibility of independent performance of tasks, free flow of information and independent decision-making;
3. Idea support means that the company's management supports implementation of great ideas while other employees are ready to listen to each other about new initiatives;
4. Openness is a kind of freedom and feeling of employees to be able to propose their ideas, to test them and if mistakes are made not to be punished;
5. Dynamism indicates a turbulent work environment in which something is constantly happening;
6. The humor factor means a relaxed work environment in which laughter and positive attitude are often heard;
7. Debate means accepting different views, opinions, and perspectives whose combinations lead to defiance of the status quo situation;
8. Conflicts are a factor that is inversely related to the creative organizational climate, so a work environment full of negative comments and conflicts is not desirable;
9. Risk acceptance is necessary if a new idea needs to be implemented for the first time in the organization;
10. The time available for ideas should be as long as possible so that employees can exchange ideas that are not planned in advance, but are the result of incoming, sudden impulses from the external environment.

2. Research methodology

Based on the studied theoretical base, research hypothesis H1 is set: *There is a positive statistically significant correlation between elements of creative organizational culture such as flexible management system, motivation for greater achievements, and freedom to use resources and experimental organizational climate.* The authors Iljins, Skvarciany & Gaile-Sarkane (Iljins et al., 2015) also emphasize the growing need for the analysis of the mentioned correlation in the modern business environment. Within the study conducted by these authors, they point out the existence of a statistically significant positive relationship between organizational culture and organizational climate, namely the following cultural factors: stability, reward system, job satisfaction, team orientation, support, key values and agreement (p. 949). These factors are components of the elements of organizational culture such as consistency, satisfaction, and involvement that most influence the organizational climate. The necessity of analyzing the relationship between the mentioned variables and their joint observation is also indicated by the results of a study that confirms that organizational culture through organizational climate influences employees' approach to work (Aarons & Sawitzky, 2006b). Also, a large number of authors in their research have proven the direct influence of either organizational culture or organizational climate on the achievement of creative and innovative performances (Halim, Ahmad, Ramayah, & Hanifah, 2014; Hogan & Coote, 2014; Yu, Yu & Yu, 2013). It is therefore necessary to determine which elements of organizational culture have the greatest impact on favorable perception of employees and thus form an experimental organizational climate that encourages creative behavior of employees and the achievement of innovative results. Since the experimental organizational climate influences the achievement of creative and innovative results, in the empirical research we tried to determine whether there is a difference in employees' perception in the following: whether the organizational climate is experimental or not depending on the legal structure of the company and the company's size. We took into account the parameter of the organization's size because there

is no unique opinion on innovativeness of large organizations. Nowadays it is important to encourage large companies, as the "national champions", which employ large numbers of workers (Ciutacu, & Chivu, 2015), to be innovatively oriented. While one group of authors believe that large companies have larger financial funds at their disposal and can take higher risk, which can lead to greater innovation (Aranda, Rata, & Duarte, 2001), other authors believe that large companies are problematic in implementing innovations (Dougherty, 1992) because they are less flexible and burdened with bureaucracy, unlike small and medium sized organizations. Furthermore, in the Republic of Serbia, public companies are often criticized for being non-innovative and as such do not have a represented or creative organizational culture, and therefore no experimental organizational climate. The degree of innovation of public organizations largely depends on institutional factors (Painter, 2005). Based on the highlighted assumptions, hypothesis H2 is set: *There is a statistically significant difference in the level of application of the experimental organizational climate depending on whether the company is large, medium, or small*. Hypothesis H3 reads: *There is a statistically significant difference in the level of application of the experimental organizational climate depending on the legal form of the company*.

To conduct empirical research, a combination of two proven and generally accepted methodologies was used. A questionnaire, "Model of organizational creativity" developed by Amabile (Amabile, 1996) was used, as well as a questionnaire set by Ekval (Ekvall, 1996) entitled "Model of creative climate". Modified questionnaire forms were used, their revised version consisting of 29 questions. The research was conducted on a sample of 145 employees in organizations on the territory of the Republic of Serbia.

Table 2 Descriptive statistics of respondents

	Frequency	Percent
Gender		
Male	69	47.6
Female	76	52.4
In total	145	100.0
Age		
Less than 30 years	37	25.5
30-50	73	50.3
Over 50 years	35	24.1
In total	145	100.0
Level of Education		
High school		
Higher education	15	10.3
High education/university	26	17.9
Missing	98	67.6
In total	6	4.1
	145	100.0

Source: The author's calculation

Using factor analysis, new factors have been identified that are in line with the tested sample in the territory of the Republic of Serbia (Strugar Jelača, Bjekić & Leković, 2018). New factors are elements of organizational culture and organizational climate. Organizational culture consists of three newly defined factors, namely *Flexible Management System*, which includes 8 questions, the element of *Motivation for Higher Achievement*, which includes 3 questions, and the element of *Freedom to Use Resources*, which also includes 3 questions. The dependent variable is the Experimental Organizational Climate, which consists of three factors that describe employees' perceptions of acceptance of diversity, experimental expression, and support for ideas. The dependent variable includes 15 questions.

3. Research results

Pearson's correlation analysis was used to analyze the hypothesis X1, which reads: *There is a positive statistically significant correlation between elements of creative organizational culture such as flexible management system (FMS), motivation for greater achievements (MGA) and freedom to use resources (FUR) and experimental organizational climate (EOC).* The results of the correlation analysis are shown in Table 3.

Table 3 Correlation analysis between elements of organizational culture and experimental organizational climate

Correlation analysis	FMS	MGA	FUR	EOC
FMS r	1			
Sig.				
MGA r	,226**	1		
Sig.	,006			
FUR r	,199*	,438**	1	
Sig.	,016	,000		
EOC r	**,501****	**,513****	**,526****	1
Sig.	**,000**	**,000**	**,000**	

Source: The author's calculation

The results of correlation analysis indicate that there is a statistically significant correlation between all the elements of creative

organizational culture and experimental organizational climate. Thus, there is a statistically significant positive correlation of high strength between flexible management system in the company and the perception of employees of the organizational climate as experimental (r = .501, p = .000); motivation of employees to implement greater achievements and perception of the work environment as experimentally oriented or experimental organizational climate (r = .513, p = .000); freedom to use resources during realization of the new ideas and tasks on the one hand and the experimental organizational climate on the other hand (r = .526, p = .000). In the end, it can be concluded that the set hypothesis H1 is proven.

The analysis of variance was done to test hypothesis H2, which reads: *There is a statistically significant difference in the level of application of experimental organizational climate depending on the size of the company.* During the analysis of variance, the Homogeneity Test was violated, so the Welch test was performed, shown in the following table.

Table 4 Welch test

	Statistic	df1	df2	Sig.
Welch	3,399	2	29,431	,047

Source: Author's calculation

Table 5 Evaluation of the experimental organizational climate depending on the size of the organization

	N	Mean	SD	Std. Error
Medium (M)	55	3,5018	,60748	,08191
Large (L)	78	3,2547	,84837	,09606
Small (S)	12	3,8944	,94984	,27419
Total	145	3,4014	,79242	,06581

Source: The author's calculation

Table 6 Multiple comparisons

I	J	Mean differen.	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
M	L	,24712	,13644	,170	-,0761	,5703
	S	-,39263	,24690	,253	-,9774	,1922
L	M	-,24712	,13644	,170	-,5703	,0761
	S	-,63974*	,24029	,023	-1,2089	-,0706
S	M	,39263	,24690	,253	-,1922	,9774
	L	,63974*	,24029	,023	,0706	1,2089

Source: The author's calculation

The conducted analysis of variance indicates that there is a statistically significant difference (F (4,626) = 5,112, p = .016) between the companies depending on the size and the degree of their experimental organizational climate. The application of the Tukey post hoc test indicates that the difference is statistically significant only between small and large organizations based on application of experimental organizational climate. Thus, small organizations (Mean = 3.8944; SD = .94984) have a higher level of experimental organizational climate compared to large organizations (Mean = 3.2547; SD = .84837). We can conclude that hypothesis H2 is accepted.

Table 7 presents an analysis of variance to test Hypothesis H3, which reads: *There is a statistically significant difference in the level of application of experimental organizational climate depending on the legal form of the company.*

Table 7 ANOVA

	Sum of squares	df	Mean square	F	Sig.
Between Groups	2,968	3	,989	1,595	,193
Within Groups	87,454	141	,620		
Total	90,422	144			

Source: The author's calculation

The presented model is not significant because the significance is greater than 0.05, which indicates that hypothesis H3 is not accepted and that there is no statistically significant difference in the level of experimental organizational climate depending on whether the employee works in a joint-stock company, limited liability company or a public company.

Conclusion

The results of the conducted empirical research indicate that in companies on the territory of the Republic of Serbia employees who want to emphasize their creative nature and thus contribute to greater innovation at the level of the entire company, give priority to a flexible management system, a motivation system that recognizes creative effort which leads to incremental and radical changes and free flow of necessary resources needed for implementation of innovative projects. If the organizational culture of the company is based on the mentioned business norms, the employees perceive such a working environment as innovative and creatively oriented, i.e. they evaluate it as an experimental organizational climate. Furthermore, in the companies on the territory of the Republic of Serbia there is a different perception of employees about the work environment from the point of view of creativity and innovation, depending on

whether they work in small or large companies. Employees working in small companies characterized the organizational climate as experimentally oriented, in contrast to the employees working in large ones, where they do not perceive organizational climate as experimentally oriented. These empirical results indicate that greater creative commitment can be expected, as well as the ultimate innovative results within small companies in the territory of the Republic of Serbia. On the other hand, in larger companies there is often a lack of creative engagement of employees and thus innovative results. The observed situation about the lack of innovative incentives within large companies should be taken into account and the definition of measures that will affect the change of organizational climate in large companies should begin. This statement is very important because within the economic environment of the Republic of Serbia there is a great number of large companies, whose encouragement of innovative activities would lead to better results at the level of the entire economy.

The obtained results indicate a proposal of business principles that companies (both small, medium, and large), should apply within their businesses for the employees to emphasize their creative behavior and achieve innovative performance. This makes it easier for companies to operate successfully in a highly turbulent and hypercompetitive market by offering innovation before the others.

The theoretical and empirical part of the paper leads to several contributions: in theoretical and research sense, the importance of separating two research variables, such as organizational climate and organizational culture, which are often identified, is emphasized; concerning further research on this topic, new research elements within the variable organizational climate have been identified; and further, a new research variable called experimental organizational climate was formed.

The shortcomings of the conducted research are reflected in the sample size, a territorial connection of the research, and one-time dimension. The proposal for future research is to conduct the same research within the economic environment of the bordering countries to the Republic of Serbia to conduct a comparative analysis. In that way, innovative potential of the company in the countries close to Serbia would be determined, which would enable the transfer of good practice in order to improve innovative activity of our companies. Also, the research could be conducted in two time periods, i.e. before changing the elements of organizational culture and after introduction of the proposed measures to establish an innovative oriented organizational culture and on that basis the newly formed perception of the organizational climate by the employees.SM

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Strakić, F., Mirković, D., Boškov, T., Ljubojević, K., Tanasijević, V., Dimitrijević, M., et al. (2003). Metadata in data warehouse. *Strategic Management, 11*, 122-132.

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➲ **Basic format for books**

Author, A. A. (Year of publication). *Title of work: Capital letter also for subtitle*. Location: Publisher.

Note: "Location" always refers to the town/city, but you should also include the state/country if the town/city could be mistaken for one in another country.

➲ **Book, one author**

Ljubojević, K. (2005). *Prototyping the interface design*. Subotica: Faculty of Economics.

➲ **Book, one author, new edition**

Dimitrijević, M. (2007). *Customer relationship management* (6th ed.). Subotica: Faculty of Economics.

➲ **Book, two authors**

Ljubojević, K., Dimitrijević, M. (2007). *The enterprise knowledge portal and its architecture*. Subotica: Faculty of Economics.

➲ **Book, three to six authors**

Ljubojević, K., Dimitrijević, M., Mirković, D., Tanasijević, V., & Perić, O. (2006). *Importance of software testing*. Subotica: Faculty of Economics.

➲ **Book, more than six authors**

Mirković, D., Tanasijević, V., Perić, O., Jovanov, N., Boškov, T., Strakić, F., et al. (2007). *Supply chain management*. Subotica: Faculty of Economics.

➲ **Book, no author or editor**

Web user interface (10th ed.). (2003). Subotica: Faculty of Economics.

➲ **Group, corporate, or government author**

Statistical office of the Republic of Serbia. (1978). *Statistical abstract of the Republic of Serbia*. Belgrade: Ministry of community and social services.

➲ **Edited book**

Dimitrijević, M., & Tanasijević, V. (Eds.). (2004). *Data warehouse architecture*. Subotica: Faculty of Economics.

➲ **Chapter in an edited book**

Boškov, T., & Strakić. F. (2008). Bridging the gap: Complex adaptive knowledge management. In T. Boškov & V. Tanasijević (Eds.), *The enterprise knowledge portal and its architecture* (pp. 55-89). Subotica: Faculty of Economics.

➲ **Encyclopedia entry**

Mirković, D. (2006). History and the world of mathematicians. In *The new mathematics encyclopedia* (Vol. 56, pp. 23-45). Subotica: Faculty of Economics.

C. UNPUBLISHED WORKS

➲ **Paper presented at a meeting or a conference**

Ljubojević, K., Tanasijević, V., Dimitrijević, M. (2003). *Designing a web form without tables*. Paper presented at the annual meeting of the Serbian computer alliance, Beograd.

➲ **Paper or manuscript**

Boškov, T., Strakić, F., Ljubojević, K., Dimitrijević, M., & Perić, O. (2007. May). *First steps in visual basic for applications*. Unpublished paper, Faculty of Economics Subotica, Subotica.

➲ **Doctoral dissertation**

Strakić, F. (2000). *Managing network services: Managing DNS servers*. Unpublished doctoral dissertation, Faculty of Economics Subotica, Subotica.

➲ **Master's thesis**

Dimitrijević, M. (2003). *Structural modeling: Class and object diagrams*. Unpublished master's thesis, Faculty of Economics Subotica, Subotica.

D. ELECTRONIC MEDIA

The same guidelines apply for online articles as for printed articles. All the information that the online host makes available must be listed, including an issue number in parentheses:

Author, A. A., & Author, B. B. (Publication date). Title of article. *Title of Online Periodical, volume number*(issue number if available). Retrieved from http://www.anyaddress.com/full/url/

➲ **Article in an internet-only journal**

Tanasijević, V. (2003, March). Putting the user at the center of software testing activity. *Strategic Management*, *8* (4). Retrieved October 7, 2004, from www.ef.uns.ac.rs/sm2003

➲ **Document from an organization**

Faculty of Economics. (2008, March 5). *A new approach to CRM*. Retrieved July 25, 2008, from http://www.ef.uns.ac.rs/papers/acrm.html

➲ **Article from an online periodical with DOI assigned**

Jovanov, N., & Boškov, T. A PHP project test-driven end to end. *Management Information Systems*, 2 (2), 45-54. doi: 10.1108/06070565717821898.

➲ **Article from an online periodical without DOI assigned**

Online journal articles without a DOI require a URL.

Author, A. A., & Author, B. B. (Publication date). Title of article. *Title of Journal, volume number*. Retrieved from http://www.anyaddress.com/full/url/

Jovanov, N., & Boškov, T. A PHP project test-driven end to end. *Management Information Systems*, 2 (2), 45-54. Retrieved from http://www.ef.uns.ac.rs/mis/TestDriven.html.

REFERENCE QUOTATIONS IN THE TEXT

➲ **Quotations**

If a work is directly quoted from, then the author, year of publication and the page reference (preceded by "p.") must be included. The quotation is introduced with an introductory phrase including the author's last name followed by publication date in parentheses.

According to Mirković (2001), "The use of data warehouses may be limited, especially if they contain confidential data" (p. 201).
Mirković (2001), found that "the use of data warehouses may be limited" (p. 201). What unexpected impact does this have on the range of availability?

If the author is not named in the introductory phrase, the author's last name, publication year, and the page number in parentheses must be placed at the end of the quotation, e.g.

He stated, "The use of data warehouses may be limited," but he did not fully explain the possible impact (Mirković, 2001, p. 201).

➲ **Summary or paraphrase**

According to Mirković (1991), limitations on the use of databases can be external and software-based, or temporary and even discretion-based. (p.201)

Limitations on the use of databases can be external and software-based, or temporary and even discretion-based (Mirković, 1991, p. 201).

➲ **One author**

Boškov (2005) compared the access range…

In an early study of access range (Boškov, 2005), it was found...

➲ When there are **two authors**, both names are always cited:

Another study (Mirković & Boškov, 2006) concluded that…

➲ If there are **three to five authors**, all authors must be cited the first time. For subsequent references, the first author's name will cited, followed by "et al.".

(Jovanov, Boškov, Perić, Boškov, & Strakić, 2004).

In subsequent citations, only the first author's name is used, followed by "et al." in the introductory phrase or in parentheses:

According to Jovanov et al. (2004), further occurences of the phenomenon tend to receive a much wider media coverage.

Further occurences of the phenomenon tend to receive a much wider media coverage (Jovanov et al., 2004).

In "et al.", "et" is not followed by a full stop.

➲ Six or more authors

The first author's last name followed by "et al." is used in the introductory phrase or in parentheses:

Yossarian et al. (2004) argued that…

… not relevant (Yossarian et al., 2001).

➲ Unknown author

If the work does not have an author, the source is cited by its title in the introductory phrase, or the first 1-2 words are placed in the parentheses. Book and report titles must be italicized or underlined, while titles of articles and chapters are placed in quotation marks:

A similar survey was conducted on a number of organizations employing database managers ("Limiting database access", 2005).

If work (such as a newspaper editorial) has no author, the first few words of the title are cited, followed by the year:

("The Objectives of Access Delegation," 2007)

Note: In the rare cases when the word "Anonymous" is used for the author, it is treated as the author's name (Anonymous, 2008). The name Anonymous must then be used as the author in the reference list.

➲ Organization as an Author

If the author is an organization or a government agency, the organization must be mentioned in the introductory phrase or in the parenthetical citation the first time the source is cited:

According to the Statistical Office of the Republic of Serbia (1978), …

Also, the full name of corporate authors must be listed in the first reference, with an abbreviation in brackets. The abbreviated name will then be used for subsequent references:

The overview is limited to towns with 10,000 inhabitants and up (Statistical Office of the Republic of Serbia [SORS], 1978).

The list does not include schools that were listed as closed down in the previous statistical overview (SORS, 1978).

➲ When citing **more than one reference from the same author**:

(Bezjak, 1999, 2002)

➲ When several **used works by the same author were published in the same year**, they must be cited adding a, b, c, and so on, to the publication date:

(Griffith, 2002a, 2002b, 2004)

➲ **Two or more works in the same parentheses**

When two or more works are cited parenthetically, they must be cited in the same order as they appear in the reference list, separated by a semicolon.

(Bezjak, 1999; Griffith, 2004)

➲ **Two or more works by the same author in the same year**

If two or more sources used in the submission were published by the same author in the same year, the entries in the reference list must be ordered using lower-case letters (a, b, c…) with the year. Lower-case letters will also be used with the year in the in-text citation as well:

Survey results published in Theissen (2004a) show that…

➲ To **credit an author for discovering a work**, when you have not read the original:

Bergson's research (as cited in Mirković & Boškov, 2006)…

Here, Mirković & Boškov (2006) will appear in the reference list, while Bergson will not.

➲ When **citing more than one author**, the authors must be listed alphabetically:

(Britten, 2001; Sturlasson, 2002; Wasserwandt, 1997)

➲ When there is **no publication date**:

(Hessenberg, n.d.)

➲ **Page numbers must always be given for quotations**:

(Mirković & Boškov, 2006, p.12)

Mirković & Boškov (2006, p. 12) propose the approach by which "the initial viewpoint…

➲ **Referring to a specific part of a work**:

(Theissen, 2004a, chap. 3)

(Keaton, 1997, pp. 85-94)

➲ **Personal communications, including interviews, letters, memos, e-mails, and telephone conversations**, are cited as below. (These are *not* included in the reference list.)

(K. Ljubojević, personal communication, May 5, 2008).

FOOTNOTES AND ENDNOTES

A few footnotes may be necessary when elaborating on an issue raised in the text, adding something that is in indirect connection, or providing supplementary technical information. Footnotes and endnotes are numbered with superscript Arabic numerals at the end of the sentence, like this.[1] Endnotes begin on a separate page, after the end of the text. However, Strategic Management journal **does not recommend the use of footnotes or endnotes.**

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