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DIGITAL PIRACY AMONG ADULTS IN SLOVENIA: AN APPLICATION OF THE THEORY OF INTERPERSONAL BEHAVIOR

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ABSTRACT: *In this study, we aim to address the phenomenon of digital piracy by utilizing the Theory of Interpersonal Behavior (TIB), and testing the model on a sample of adult Internet users. Following the basic premise of the TIB, we suggest an individual's piracy intention is influenced by perceived consequences (benefits and risk), affect, and norm susceptibility. Further, we hypothesize that piracy intention together with subjective knowledge leads to actual piracy behavior. Based on survey data from Slovenia, we show that piracy intention and subjective knowledge influence digital piracy behavior, while perceived positive consequences, affect, and norm susceptibility significantly shape an individual's piracy intention.*

Keywords: *Theory of interpersonal behavior, Digital piracy, Perceived consequences, Piracy intention, Piracy behavior*

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INTRODUCTION

Digital piracy or the consumer practice of illegally downloading files from the Internet continues to represent a growing phenomenon and one of particular concern to movie, software, and music industries as well as final consumers (Taylor, Ishida, & Wallace, 2009). According to BASCAP (2011), a platform that connects all business sectors worldwide, digitally pirated music, movies, and software were set to account for between US\$ 80 billion and US\$ 240 billion in 2015. As a result, companies from the aforementioned industries are allying themselves with governmental and policing circles to tackle the piracy problem.

Although a well-researched phenomenon, digital piracy still lacks effective measures to leverage its incidence (Bateman, Valentine, & Rittenburg, 2013). In general, two approaches have been employed to combat piracy: preventives and deterrents. The former refer to the provision of additional benefits to legitimate consumers, charging low prices, and/or the use of hardware and software technology to prevent digital piracy. Deterrents refer to the use of educational and legal campaigns and sanctions to reduce piracy. More specifically, activities disseminate litigious information about piracy to the public

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(Gopal & Sanders, 1997; Jeong & Khouja, 2013). Despite numerous attempts to curb digital piracy, it is still prevalent and is expected to increase (Steele, 2016). For example, several studies indicate that employing legal strategies (actions taken against pirates and antipiracy regulations or laws by the government) are not as effective as hoped for (e.g., Gray, 2012; Jeong & Khouja, 2013, Sinclair & Green, 2016). Instead, educational strategies seem more beneficial, especially in situations of consumer resistance to piracy control and limited budgets (Jeong & Khouja, 2013). Rojek (2005) even suggests straying away from prosecution and moving to a policy of participation.

As a result, scholars devote their efforts to studying the antecedents of digital piracy. More specifically, the majority of studies focus on the antecedents of digital piracy intentions or antecedents of actual behavior. Among the most commonly elucidated piracy intention determinants are attitudes to digital piracy (e.g., Yoon 2011), subjective norms (e.g., Cronan & Al-Rafee, 2008), perceived behavioral control (e.g., Phau, Lim, Liang, & Lwin, 2014; Taylor et al., 2009), ethically charged variables such as deontological orientations (e.g., Bateman et al., 2013) or variables from the cost-benefit framework in the form of perceived benefits (e.g., Yoon, 2011) and perceived risks (e.g., Sinha & Mandel, 2008). It is believed that cognizance of underlying motivations to pirate can greatly enhance future public policy and industries' actions (Cheng, Sims, & Teegen, 1997).

The purpose of this study is to gain insight into the factors of digital piracy among adult computer users by applying the Theory of Interpersonal Behavior. Hence, this research has two primary objectives. The first is to utilize a comprehensive model of choice behavior in determining some of the key factors influencing digital piracy. This theory has been relatively overlooked in the field of marketing, but has become more established in social psychology, informatics, and management studies (e.g., 1995; Cheng & Cheung, 2001; Moody & Siponen, 2013). As a result, calls for more empirical probing into this model in the consumer choice context have been voiced (Sheth, 1982). We thus hope to contribute to the existing marketing literature by applying the Theory of Interpersonal Behavior in a relevant research setting. In doing so, we aim to shed more light on the role of cognitive and affective measures of evaluation in their direct influence on future intention (Malhotra & McCort, 2001). The second objective is to empirically test the proposed model in the context of pirating digital content and ascertain which specific factors enable or impede individuals from engaging in digital piracy. We also intend to overcome a well-known limitation of previous studies, that is, we employ a sample of adult Internet users instead of relying solely on students (Jacobs, Heuvelman, Tan, & Peters, 2012; Williams, Nicholas, & Rowlands, 2010; Yoon, 2012). By extending our research to the general population, we obtain more comprehensive results yielding greater external validity (Jacobs et al., 2012).

The remainder of the paper is organized as follows. First, we briefly review the existing literature on some of the theoretical frameworks applied in studying digital piracy and counterfeiting behavior. Next, we present theoretical grounding for the hypotheses development and continue by presenting the methodology used in our study. In the section before making final conclusions, we analyze the data using structural equation modeling.

1. THEORETICAL FRAMEWORK

A vast majority of existing studies applies models of attitude-behavior relations, such as the Theory of Reasoned Action (TRA) (e.g., Aleassa, Pearson, & McClurg, 2011) and the Theory of Planned Behavior (TPB) (e.g., Cronan & Al-Rafee, 2008). Although prominent theories, they have been subjected to criticism that attitudes alone are often poor predictors of actual behavior (e.g., De Pelsmacker & Janssens, 2007). Moreover, a substantial amount of variance in buying behavior remains unexplained by these models, suggesting that other relevant variables should be included when studying various kinds of social behavior (Bamberg & Schmidt, 2003; Shaw et al., 2005). In addition, many piracy studies employ student samples and thus omit other relevant groups. Namely, students are often considered inadequate because of their poor representation of the general population (Yoo & Lee, 2012).

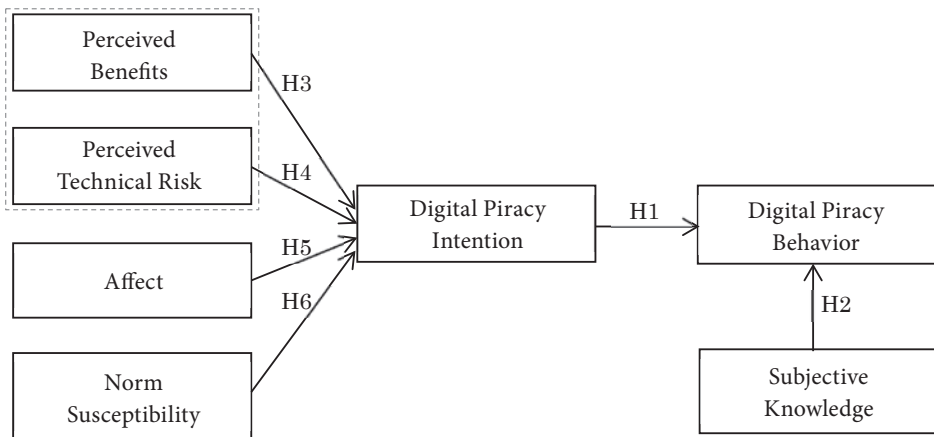
In this study, we seek theoretical grounding in the Theory of Interpersonal Behavior (Triandis, 1980). The TIB is recognized as a more comprehensive theory that extends upon the antecedents of behavior predicted by the two most widely used models of behavior: the TRA and TPB. Namely, the TIB has been shown to account for more variance in a model when compared to the TRA and TPB (Bamberg & Schmidt, 2003). This theory covers emotive as well as habitual dimensions and recognizes that the individual's behavior is not always rational (McDonald, 2014). Despite these strengths, there is a dearth of digital piracy studies that rely on Triandis's model as a conceptual framework. For example, Ramayah et al. (2009) use Triandis's theory to examine Internet piracy among university students, while Limayem, Khalifa, and Chin (2004) examine factors that influence software piracy.

According to the TIB, the individual's behavior is a function of intention to engage in this behavior, facilitating conditions, and the strength of habit in performing the behavior. Intention, in turn, depends on perceived consequences of the behavior, affect towards performing behavior and social factors (Pee, Woon, & Kankanhalli, 2008). While intention refers to the individual's motivation regarding the performance of the behavior, facilitating conditions refer to objective factors present in the environment that are instrumental in achieving a certain task. Habits are described as situation-behavior sequences that are or have become automatic and which occur without self-instruction. Further, each act of behavior may lead to positive or negative outcomes, thus consumers believe this act has certain perceived consequences. Affect refers to an individual's emotional feelings: the "feeling of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act" (Triandis, 1980). Social factors are described as those norms, roles, and values at the societal level that influence an individual's behavior (Limayem et al., 2004).

Against this theoretical background, a parsimonious conceptual model of digital piracy is proposed in which we focus on piracy behavior and intention, knowledge, perceived consequences, affect, and a social factor (Figure 1). We posit that digital piracy behavior depends on the individual's intention to engage in piracy and their subjective knowledge about where and how to reach digital content. In this case, subjective knowledge helps

an individual make certain behavior easy to perform and thus facilitates their behavior (facilitating condition). Moreover, facilitating conditions may be considered as factors in the individual's environment that make a behavior easy to perform, having either a situational (e.g., access to resources) or an internal dimension (e.g., knowledge) (Pee et al., 2008). Consistent with the TIB, we also posit that one's piracy intention depends on three factors: perceived consequences (benefits and risks), affect, and a social factor (norm susceptibility). When engaging in digital piracy, an individual anticipates certain consequences that can be either positive (benefits from pirating) or negative (risks of pirating). Not only the consequences, but also the feelings associated with illegal downloading are suggested to impinge upon one's future intent. Another driver of piracy intention is a social factor defined as norm susceptibility (i.e. conformity to reference group norms).

Figure 1. *Conceptual model of digital piracy based on Triandis's theory of interpersonal behavior*



2. HYPOTHESES DEVELOPMENT

2.1 Determinants of Digital Piracy Behavior

The first set of hypotheses examines potential antecedents of digital piracy behavior. More specifically, we look at two determinants of piracy behavior: digital piracy intention and subjective knowledge. Following the basic premise of the TIB, we suggest an individual's intention to engage in digital piracy, defined as a conscious plan to carry out this behavior (Eagly & Chaiken 1993), leads to actually engaging in pirating digital content from the Internet (H1). This hypothesis rests on the previously established evidence of a significant influence of intention on actual behavior in the digital piracy context. For example, Ramayah et al. (2009) provide empirical evidence of a significant relationship

between future piracy intention and actual piracy behavior measured as a frequency of downloading various types of free content. Along these lines, Taylor (2012) finds that the individual's digital piracy intention impacts their actual digital piracy behavior defined as the sum of downloaded and uploaded suspect digital files. Based on this evidence, we hypothesize:

H1: *Digital piracy intention positively influences digital piracy behavior.*

Along with the intentions, facilitating conditions are considered an accurate predictor of actual behavior according to the TIB (Triandis 1980). In this study, we examine subjective knowledge as an internal dimension of facilitating conditions. This concept has rarely been examined in digital piracy research. One of the few studies to empirically test the influence of the consumer's perceived knowledge on behavior was conducted by Hennig-Thurau, Henning and Sattler (2007). Their study indicates that consumers' file-sharing knowledge facilitates their obtainment of illegal movie copies. Hence, we hypothesize an individual's perceived knowledge of where and how to share files positively influences their digital piracy behavior (H2).

H2: *Subjective knowledge positively influences digital piracy behavior.*

2.2 Determinants of Digital Piracy Intention

According to Triandis (1980), each act of behavior is perceived as having a potentially positive or negative outcome. When pirating digital content is perceived as having positive outcomes (benefits), individuals will be more motivated to engage in digital piracy and will thus form certain piracy intentions. In the existing piracy studies, several authors have attested to a significant impact of perceived benefits on intentions to pirate. For example, Yoon (2011) shows that an individual veers toward digital piracy behavior directly because of preferred expected consequences, such as saving money and time, possessing more digital products, and improving work performance. Similarly, Lysonski and Durvasula (2008) point out a significant correlation between social benefits of the illegal dissemination of music files and the intention to download such content. Thus, it is suggested that perceived positive consequences are positively related to future piracy intent (H3).

H3: *Perceived benefits positively influence digital piracy intention.*

By contrast, when digital piracy is perceived as having unfavorable outcomes individuals are less likely to form an intention to engage in digital piracy. Sinha and Mandel (2008) demonstrate that an increased risk of getting caught significantly lowers the individual's tendency to pirate. Somewhat unexpected was their finding that for certain groups of consumers increasing the perceived risk led to an increase in their likelihood to pirate. While examining the role of four types of perceived risk (performance, social, prosecution, and psychological) in shaping behavioral intention to use pirated software, Liao, Lin, and

Liu (2010) find that only prosecution risk exerts a significant influence on intention. On the other hand, the role of legal (prosecution) risk proved negligible in a study by Hennig-Thurau et al. (2007) which, instead, pointed out the impact of technical and moral aspects or risk. Given the general tendency of studies to focus on prosecution and technical risks, we decided to tackle this risk controversy by hypothesizing that an individual's perception of technical risk reduces their intention to pirate (H4). Our decision to probe into the technical aspect is primarily guided by the finding of Konstantakis, Palaigeorgiou, Siozos, and Tsoukalas (2010) that consumers consider legal prosecution due to the use of pirated software as highly improbable; hence, technical risk is more likely to influence piracy intention.

H4: *Perceived technical risk negatively influences digital piracy intention.*

To better explain intention, Triandis (1980) also included a purely affective measure of attitude toward behavior. The affective aspect has rarely been investigated in the digital piracy context, with the exception of e.g. Al-Rafee and Cronan (2006) who examine the impact of affective beliefs in the form of happiness and excitement on attitudes to pirating digital material. Likewise, Wang and McClung (2012) reveal that anticipated positive emotions (feeling happy, pleased, and good) predict intentions to engage in illegal digital downloading. In the digital piracy context, we expect that the positive affect expected from pirating digital content will be positively related to one's intent to engage in such behavior in the future (H5).

H5: *Affect positively influences digital piracy intention.*

According to the TIB, another significant determinant of digital piracy intention is social factors which involve an individual's internalization of the reference group's subjective beliefs with respect to the behavior. In this study, norm susceptibility plays the role of a social factor and is viewed as the extent to which an individual seeks compliance from other people when considering various products and brands. In the TIB context, it has been suggested that there is a positive relationship between social factors and the intention to engage in certain behavior. Namely, based on their empirical study Limayem et al. (2004) conclude there is a significant positive impact of two specific groups of people (family and friends) on an individual's piracy intention formation. On the other hand, several studies attest to the negative impact of norm susceptibility on attitudes to piracy and indirectly on piracy intention. For example, Wang, Zhang, Zang, and Ouyang (2005) provide empirical support for a negative influence of normative susceptibility on attitudes to software piracy, while Bashir, Phau, and Ferguson (2012) failed to empirically demonstrate the hypothesized negative effect of normative susceptibility on digital piracy intention. To address this inconsistency, we propose hypothesis 6 which posits that a social factor (norm susceptibility) positively influences one's intent to pirate digital content (H6).

H6: *Norm susceptibility positively influences digital piracy intention.*

3. RESEARCH METHODOLOGY

The model depicted in Figure 1 was tested on a nationally representative sample of 10,000 consumers who had permanent residence in Slovenia and were at least 18 years old. The sample was obtained from the National Statistical Office and was representative of the population in terms of age, gender, type of settlement, and region. To increase the response rate, we offered a raffle with various monetary prizes for the first 100 respondents who completed and returned their questionnaires. Although a total of 1,523 self-administered paper questionnaires were returned, 910 respondents were included in the present study in order to test the stated hypotheses. A prerequisite for the inclusion in this study was the respondent's use of computers. Namely, only those respondents who had at least some experience with computers/ Internet were included in the study.

The final sample consisted of 57.3% females and 42.7% males, while their average age was 43 years (standard deviation of 16.7). More than 60% of all respondents (62.3%) reported having completed secondary school, 27.8% stated they had completed university, 7.8% had finished graduate studies, and 2.2% of the respondents had completed primary school. Over half of the study participants (53.6%) is employed full-time, 17.9% of the sample declared they were students, 13.6% were retired, and 10.3% were not working at the time of filling out the questionnaires. The remainder of the sample was either part-time employed (2.9%) or on temporary leave (1.9%).

The construct measures were based on the existing literature, but were adapted to the specific research context. All constructs were measured on five-point Likert-type scales, except piracy behavior. The latter was measured as the number of units respondents had illegally downloaded in the previous month in various categories (films/TV episodes, music tracks, games software, business/application software, books). As a measure that encapsulates very recent behavior, it is used as a proxy for current behavior. We operationalize the *piracy intention* construct as the likelihood a consumer will illegally download files from the Internet in the future (or within the next month). A two-item scale designed by Taylor and Todd (1995) was applied to measure future piracy intent. Next, *subjective knowledge* is operationalized as knowledge possessed by an individual with regard to file-sharing and downloading. We implement the consumer file-sharing knowledge scale previously used by Hennig-Thurau et al. (2007), resulting in a four-item scale. *Perceived benefits* are captured by three statements referring to specific benefits of illegal downloading perceived by an individual (cf. Hennig-Thurau et al., 2007). *Perceived risk* was operationalized as potential adverse consequences of illegally downloading files that could affect an individual's computer and their data. As in case of benefits, perceived risk was also measured with three statements partly adapted from the scale of technical costs of the copy by Hennig-Thurau et al. (2007). In our study, *affect* is operationalized as an individual's positive emotions associated with illegally downloading files reflecting an individual's emotional state experienced during this activity. The three items measuring affect were drawn from previously conducted studies by Cronan and Al-Rafee (2008) and de Matos, Ituassu, and Rossi (2007). *Norm susceptibility* was measured with six items (cf. Bearden, Netemeyer, & Teel, 1989) and is defined as the extent to which consumers changed their initial decision because of their relevant others' differing opinion.

4. DATA ANALYSIS

Based on Anderson and Gerbing's (1988) recommendations, the data analysis consisted of two steps. First, a Confirmatory Factor Analysis with LISREL was used to check the validity and reliability of the measurement items. Then, full-information structural equation modeling was employed to examine the structural relationships in the model. The model fit measures showed the data conform well to the model ($\chi^2= 931.13$, $df = 194$, $p < 0.00$, $GFI = 0.915$, $CFI = 0.941$, $RMSEA = 0.065$, $sRMR = 0.045$). All the multiple-item constructs display adequate composite reliability (CR) and average variance extracted (AVE). More specifically, CR values ranged between 0.79 and 0.90 and AVE values varied between 0.56 and 0.80, with cut-off values of 0.50 and 0.70, respectively (see Table 1).

Table 1. *Average variance extracted (AVE), composite reliability (CR) and standardized factor loadings with t-values*

<i>Scale Item</i>	<i>AVE</i>	<i>CR</i>	<i>Standardized factor loading (t-value)</i>
<i>Piracy intention</i>	0.80	0.89	
I intend to illegally download files from the Internet in the future.			0.92 (7.31)
If the need or opportunity arises within the next month, I would illegally download files.			0.87 (11.60)
<i>Subjective knowledge</i>	0.70	0.90	
I know several different file sharing networks.			0.72 (19.96)
I know how to find and illegally download software from file sharing networks on the Internet.			0.92 (13.38)
I know how to use file sharing software in order to illegally download files from these networks.			0.95 (9.24)
I know how to configure my firewall in order to be able to access file sharing networks.			0.73 (19.83)
<i>Perceived benefits</i>	0.58	0.80	
Illegally downloading files increases my ability to collect music/ films/games.			0.77 (14.91)
Illegally downloading files allows me to have files that I would not be able to afford.			0.79 (14.20)
Illegal downloading helps me get music/films/games faster compared to legal channels.			0.72 (16.50)

Perceived risk	0.56	0.79
<i>Illegally downloading files is risky because:</i>		
They might infect your computer with a virus or malware.		0.79 (11.30)
It could allow access to your data, files, or passwords.		0.65 (17.16)
They might damage your computer.		0.79 (11.40)
Affect	0.62	0.83
Illegally downloading files would make me feel satisfied.		0.71 (17.99)
I like illegally downloading files from the Internet.		0.89 (9.72)
Illegally downloading files would make me feel happy.		0.74 (17.19)
Norm susceptibility	0.60	0.90
It is important that others like the products and brands I buy.		0.69 (19.34)
If other people can see me using a product, I often purchase the products and brands they expect me to buy.		0.74 (18.65)
I like to know what brands and products make a good impression on others.		0.73 (18.80)
I achieve a sense of belonging by purchasing the same products and brands that others purchase.		0.83 (16.41)
If I want to be like someone I often try the products and brands that they buy.		0.83 (16.26)
I often identify with other people by purchasing the same products and brands they purchase.		0.82 (16.85)

To provide additional insight into the relationships among the constructs and a single-item measure of behavior we calculated a correlation matrix (Table 2). The valence of the correlation coefficients corresponds closely to our research hypotheses. Namely, both digital piracy intention and subjective knowledge are positively related to digital piracy behavior as reflected in the moderately high correlation coefficients. Similarly, perceived benefits and affect correlate positively with the intention, while the correlations of perceived risk and norm susceptibility with the intention are weak and of opposite signs (negative and positive, respectively).

Table 2. *Correlation matrix*

	1.	2.	3.	4.	5.	6.	7.
1. Digital piracy intention	1	0.52	0.52	-0.10	0.53	0.02	0.30
2. Subjective knowledge		1	0.40	-0.14	0.47	0.08	0.32
3. Perceived benefits			1	-0.05	0.44	0.07	0.30
4. Perceived risk				1	-0.20	-0.10	-0.08
5. Affect					1	0.22	0.35
6. Norm susceptibility						1	-0.09
7. Digital piracy behavior							1

As suggested in the first hypothesis, the data confirm that the intention to pirate is positively related to actual digital piracy behavior (std. factor loading = 0.10). We also find support for the hypothesis that knowledge of how and where to share files leads to digital piracy behavior (std. factor loading = 0.56). Similarly, we find a significant positive relationship between perceived benefits and future piracy intent (std. factor loading = 0.32). Although we expected a significant negative influence of perceived risk on piracy intention, we could not provide empirical evidence of a statistically significant relationship. However, there seems to be a strong positive relationship between affect and piracy intention, as suggested in Hypothesis 5 (std. factor loading = 0.54). Contrary to our expectations, we found a negative relationship between norm susceptibility and intention (std. factor loading = -0.13). That is, the more people adhere to norms and beliefs or relevant reference groups, the less likely they are to form piracy intentions. The results are summarized in Table 3.

Table 3. *Testing the conceptual model*

<i>Hypothesis</i>	<i>Structural path</i>	<i>Standardized factor loading (t-value)</i>	<i>Result</i>
H1: +	Piracy Intention → Piracy Behavior	0.10* (2.73)	Supported
H2: +	Knowledge → Piracy Behavior	0.56* (14.41)	Supported
H3: +	Perceived Benefits → Piracy Intention	0.32* (7.81)	Supported
H4: -	Perceived Risk → Piracy Intention	0.02 (0.59)	Not supported
H5: +	Affect → Piracy Intention	0.54* (11.92)	Supported
H6: +	Norm Susceptibility → Piracy Intention	-0.13* (-4.38)	Not supported

Model fit: $\chi^2 = 931.13$, $df = 194$, $p < 0.00$, $GFI = 0.915$, $CFI = 0.941$, $RMSEA = 0.065$, $sRMR = 0.045$

Note: * significant at the .05 level (one-sided)

5. DISCUSSION OF THE FINDINGS

This research offers new insights into the dynamic nature of acquiring illegal digital content by applying the relatively under-researched Theory of Interpersonal Behavior and testing it on a sample of adult computer users. The results show that an individual's piracy intent and their subjective knowledge of downloading significantly impinge on digital piracy behavior, while perceived positive consequences, an affective attitude and norm susceptibility significantly shape the individual's piracy intention. However, we could not provide empirical support for the hypotheses that perceived risk negatively influences future piracy intention and norm susceptibility positively impacts intention.

Interestingly, it seems that compared with future piracy intention subjective knowledge is a significantly stronger determinant of piracy behavior (with path coefficients 0.56 and 0.10, respectively). Both one's intent and their subjective knowledge about file-sharing and downloading tend to increase the level of engaging in digital piracy behavior. These findings are consistent with previous studies in the domain of digital piracy. For example,

Ramayah et al. (2009) demonstrate that intention to pirate leads to actual Internet piracy behavior among university students. Further, Hennig-Thurau et al. (2007) show that consumer file-sharing knowledge correlates positively with the number of illegal movie copies that an individual watches.

With regard to future piracy intention, three drivers significantly shape one's contemplation of potential future action. Namely, perceiving desirable consequences of pirating digital content and experiencing positive emotions associated with illegally downloading files both encourage the tendency to engage in future digital piracy. Contrary to our expectations of a positive influence, norm susceptibility (a consideration of relevant others' opinions) significantly reduces one's piracy intention. A possible explanation might be that those respondents who are generally susceptible to norms of significant others with respect to products and services suppress their tendency to pirate. Namely, the impact of this personality trait might span across various products and activities (even downloading) and is not limited to products and brands. This could be aligned with the empirically supported finding of Wang et al. (2005) that consumers who were normatively susceptible were less likely to have a favorable attitude to software piracy, which indirectly reduces their piracy intention. Allegedly, software piracy does not have a positive social image; hence, higher susceptibility to social influence tends to have a negative influence on a favorable attitude to software piracy. Besides fearing that relevant others will not approve of digital piracy behavior, another potential reason could be our choice of the original measurement scale which was drawn from the study by Bearden et al. (1989). Hence, it was not tailored to the specific digital piracy context, but instead addressed the impact of others in situations of purchasing products and brands in general. Interestingly though, a recent study by Kos Koklic, Kukar-Kinney, and Vida (2016) revealed a strong correlation between a general and piracy-specific measure of norm susceptibility. The two measures even showed the same relationship with digital piracy behavior. This finding makes the first explanation more plausible.

The only construct that seems to exhibit no significant impact on piracy intention is perceived risk. Apparently, potential technical difficulties of pirating digital content are not crucial in consumers' consideration of future piracy actions. Given the well above-average values of respondents' agreement with the technical risk items, we might conclude that this is a relevant aspect of concern, but not in the light of intention formation. Namely, consumers' perception of considerable technical difficulties from pirating digital content is not the main driver of digital piracy intention. The high rating of technical risk spans even across various groups broken down by demographic variables age, gender, and education. Instead, other types of perceived risk that were not captured in our measure might play a pivotal role in influencing digital piracy intention. For example, despite the equivocal evidence of the role of prosecution risk in affecting intentions (e.g., Hennig-Thurau et al., 2007; Sinha & Mandel, 2008), it is possible that our sample of adult computer users would in fact hinge their intentions on this type of risk. Another potential reason for the insignificant role of perceived risk in piracy intention is the greater prominence of other constructs in the model, such as affect and perceived benefits. However, taking into account that there have been relatively few reported prosecutions regarding copyright

infringements and violations in Slovenia and piracy prosecution is still in the early stages of implementation (Bureau of Economic and Business Affairs, 2014), other facets of risk such as psychological risk might be more distinct.

Although not the primary objective of this study, a compelling finding refers to the strength of piracy intention antecedents. That is, among the three significant drivers, affect was the strongest determinant of piracy intention (with a path coefficient of 0.52). This finding underpins Triandis's (1980) contention that affect (emotions) is a significant aspect that needs to be considered in modeling human intention formation. Given the entertaining context of acquiring files from the Internet, Taylor et al. (2009) also highlight that it is critical to include emotional content in a psychological model of intentions and behavior. Although the belief component (perceived benefits) also strongly determines an individual's piracy intention, the role of affective determinants indeed seems more pronounced. Hence, empirical evidence of the role of cognitive and affective antecedents of future intention is provided, as articulated by Malhotra and McCort (2001).

6. RESEARCH IMPLICATIONS, LIMITATIONS, AND FUTURE RESEARCH

The present study affords useful implications for various stakeholders, for example companies from the affected industries and public policy-makers. The study findings indicate that the core construct worth focusing on is the individual's subjective knowledge as it remarkably determines one's piracy behavior (especially compared to piracy intention). However, to a large extent, consumer's knowledge about where and how to reach digital content is beyond a company's control. One possibility of building on this pivotal construct is to systematically examine the levels of knowledge possessed by various groups of consumers. Admittedly, for most companies this is not a feasible practice and can hardly be put into practice.

A more promising strategy for companies would be to focus on decreasing consumers' intentions to engage in digital piracy. In this domain, leveraging digital piracy intention through means of perceived benefits and positive affect seem more appropriate. For instance, marketers of digital content could invest their efforts to reduce the benefits of pirating as perceived by consumers. This could be achieved by narrowing the gap between the characteristics of legally and illegally acquired digital content, especially in light of these three features: (1) ability to collect files; (2) affordability of files; and (3) availability of files. Companies could either increase the positive perception of legally obtained files or decrease the positive perception of illegally obtained content or do both as part of a deterrent educational strategy.

When designing marketing communications with the aim of alleviating the digital piracy phenomenon, marketers could also apply the affective component. Namely, this study demonstrates that experiencing positive emotions on the part of consumers boosts their tendency to engage in digital piracy. Persuasive appeals that would call into question the happiness and satisfaction associated with illegally downloading files might help to divert consumers' emotions and consequently lead to less pronounced digital piracy intentions and behavior.

Given that companies can better control digital piracy when they employ a combination of preventive and deterrent strategies (Jeong & Khouja, 2013), it would make sense to consider concurrently running educational campaigns (for example, by focusing on the gap between legal and illegal obtainment) as well as providing added value, extended services and/or low prices. Similarly, Sinclair and Green (2016) advocate that companies need to work with the technological transformations to improve the consumer experience and the product offering. By combining strategies, companies would on one hand motivate consumers to reduce or stop pirating and, on the other, incentivize them to purchase legitimate products.

The findings of this study also offer grounds for public policy implications. Use of the aforementioned preventive and deterrent strategies (Gopal & Sanders, 1997) has so far met with limited success. Hence, public policy actions could attempt to raise awareness about the limited benefits of obtaining illegal content and emphasize advantages of obtaining and having legal alternatives. Since individuals are most responsive to consequences that affect them personally (Yoon, 2011), public policy campaigns could point out the benefits for consumers themselves. Another potentially useful finding for public policy is the importance of positive affect in driving digital piracy intention. Along with companies, public policy-makers could also design campaigns to illuminate the fallacious nature of consumer happiness experienced when illegal downloading.

Digital piracy is a phenomenon that continues to perplex scholars and practitioners. Accordingly, considerable effort has been made to explore its antecedents and consequences. This study tests a conceptual model of digital piracy intentions and behavior grounded in the Theory of Interpersonal Behavior. It adopts a survey-based approach in the gathering of data among adult computer users in Slovenia. The findings underline the importance of subjective knowledge (facilitating condition) and digital piracy intention in influencing behavior, while perceived benefits (consequences), affect, and norm susceptibility (social factor) are relevant determinants of the digital piracy intention. Our key implications relate to the findings that personally relevant positive consequences in the form of perceived benefits and positive affect experienced with illicit downloading are the strongest drivers of future intentions. Thus, copyright holders as well as public policy-makers could build their appeals on reducing the positively charged perception of the consequences of illegal downloading and the emotional state associated with performing the activity.

There are several limitations of this study which also suggest potentially promising avenues for future research. First, the measurement scales used in our research have a limited scope and do not capture some other facets that might prove relevant in shaping one's digital piracy intent and behavior. Including other aspects such as prosecution risk (Sinha & Mandel, 2008) or psychological risk (Liao et al., 2010) might provide additional insight into the mechanism of digital piracy intention formation. Similarly, extending the scope of perceived benefits into the domain of anti-industry and social aspects is another area worth examining in future studies (Hennig-Thurau et al., 2007).

Second, only a subset of Triandis's original model was applied in this study. Habits as a potentially relevant construct in an individual's routine piracy behavior might improve the

explanatory power of the proposed model. Namely, habits play an important role in some situations of a consumer's digital piracy behavior as pointed out by several researchers (e.g., Ramayah et al. 2009; Yoon, 2011).

Third, the current study employs the original norm susceptibility scale which is a well-established and tested measurement instrument (Bearden et al., 1989). It helped us gain insight into the normative influence of others on an individual's choice of products and brands in general. Notwithstanding the prominent role of this scale, future digital piracy research should allow for examining the influence of relevant others in the specific situation of illegally downloading files from the Internet. Despite these limitations, we hope the study contributes to the existing literature in the field of digital piracy.

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APPROACH TOWARDS BPM ADOPTION UNDER HIERARCHY-MARKET CULTURE: A CASE STUDY¹

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ABSTRACT: *Organizational culture affects the success of business process management (BPM) adoption. Since organizational culture is very difficult to change, organizations should adapt their approach towards BPM adoption to suit the existing organizational culture. The aim of this paper is to find out what approach towards BPM adoption might be appropriate in an organization with Hierarchy-Market culture. For this, we conducted a case study of a large insurance company in South-East Europe. Our findings show that elements, such as formal and well organized approach, and emphasis on benefits of BPM contributed to BPM adoption success in the studied organization with Hierarchy-Market culture.*

Keywords: *business process management, organizational culture, Hierarchy-Market culture, approach towards BPM adoption, success, case study*

JEL Classification: L2, L20

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INTRODUCTION

Business processes management (BPM) is considered to be among the top priorities for many organizations (Bandara et al., 2009). It is a concept that can, if successfully adopted, bring significant benefits to the organization, such as a better understanding of its business processes, more control, better business performance (Škrinjar, Bosilj-Vukšić & Indihar Štemberger, 2008), and an agile adaptation to changing business requirements (Neubauer, 2009). However, many organizations fail in their attempt to successfully adopt BPM (Trkman, 2009). The question of why certain projects succeed and others fail is an important area of research (Grisdale and Seymour, 2011; Alibabaei et al., 2010; Bandara et al., 2009).

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Several studies describe that organizational culture might have a significant impact on BPM adoption (e.g. Rosemann & de Bruin, 2005; Rosemann & vom Brocke, 2010; vom Brocke & Sinnl, 2011; Alibabaei et al., 2010) or that it might be connected with its failure and success (Melenovsky & Sinur 2006; Bandara et al. 2009; Ravesteyn & Versendaal, 2007). It is argued that cultural characteristics in organizations may provide either suitable conditions or hindrances for the success of BPM adoption (Bandara et al. 2009). Also certain values are mentioned to be supportive of BPM objectives or to be road blocks (vom Brocke & Sinnl, 2011). Recent study investigating the correlation between organizational culture and BPM adoption success shows using statistical methods that certain organizational culture types seem to be more favourable and others less favourable for BPM adoption (Hribar & Mendling, 2014). Authors find a significant negative correlation between Hierarchy culture type and BPM adoption success, identifying the Hierarchy culture as the least favourable for adopting BPM. Authors also find that organizations with dominant Market culture appear to be more successful with BPM adoption than organizations with dominant Hierarchy culture. Thus, they identify Market culture as more favourable for adopting BPM than Hierarchy culture.

While previous research has statistically shown that the success of BPM adoption differs between different types of organizational culture, this paper focuses on investigating which specific measures are likely to support BPM adoption in an organization depending on its organizational culture. Thus, the aim of this paper is to contribute to the knowledge about the possible approach towards BPM adoption under specific organizational culture. To this end, we use a case study design in order to find out what approach towards BPM adoption might be appropriate in an organization with Hierarchy-Market culture.

The paper is structured as follows: Section 2 provides a research background. Section 3 presents the research methodology followed by case study description and analysis in section 4. Section 5 summarizes key findings of our research and highlights implications and limitations, together with future research opportunities. Section 6 concludes the paper.

1. BACKGROUND

In this section, we discuss the background of our research. We describe BPM adoption and organizational culture as a factor of BPM adoption.

1.1 Business Process Management Adoption

Business Process Management (BPM) is defined as an approach for managing an organization from a process perspective (de Bruin & Doebeli, 2010). It is *the achievement of an organization's objectives through the improvement, management and control of essential business processes* (Jeston & Nelis, 2006). It requires the consideration of various aspects in order to be successfully and sustainably adopted, including strategic alignment, governance, methods, information technology, people, and culture (Rosemann & vom Brocke, 2010).

The adoption of BPM is a very complex process. For the purpose of this paper, BPM adoption is defined as *the use and deployment of BPM concepts in organizations* (Reijers et al., 2010). These concepts range from governance structures, role definitions, and performance indicators to modelling tools and redesign techniques (Dumas et al., 2013). BPM adoption requires a great deal of effort, time, resources and discipline. In this context, it has been observed that many BPM initiatives (i.e. *organizational projects/programs that aim to enhance the efficiency and effectiveness of business processes*, e.g. business process reengineering, lean management, total quality management, operational excellence programs, six sigma, etc.) are unsuccessful in practice (Trkman, 2009), pointing to problems with adoption and justification of their benefits to business (Grisdale & Seymour, 2011). Because of its scope, BPM adoption is likely to trigger widespread organizational changes. It typically goes through multiple stages, such as (1) awareness and understanding of BPM, (2) desire to adopt BPM, (3) setting up, executing and monitoring BPM projects, (4) converting BPM projects into a BPM program, and (5) ensuring that all BPM-related activities are consistently delivered in a cost-effective way (Rosemann, 2010).

1.2 Organizational culture and BPM adoption

Many studies identify organizational culture as one of the key factors for a successful BPM adoption (Bandara et al., 2009; Rosemann & de Bruin, 2005; Rosemann & vom Brocke, 2010; Melenovsky & Sinur, 2006; vom Brocke & Sinnl, 2011; Alibabaei et al., 2010). Organizational culture is composed of values, beliefs, attitudes and behaviours (Hofstede, 1993; Schein, 1996). It provides unwritten and often unspoken guidelines for how to get along in the organization and conveys a sense of identity to employees (Cameron & Quinn, 2006).

Organizational culture is considered to be important when organizations are trying to improve their organizational performance by business process change (Škerlavaj et al., 2007; Clemons et al., 1995; Guimaraes, 1997; Terziovski et al., 2003). It should be noted that most problems regarding business process management initiatives are not technical but arise from an inappropriate organizational culture (Škerlavaj et al., 2007). How people perceive changes and respond to them plays a key role in such efforts (Alibabaei et al., 2010). Although organizational culture is commonly considered a “soft-factor”, its strong impact on the success of BPM adoption has been established (de Bruin, 2009).

BPM researchers agree that the organizational culture needs to be suitable for BPM adoption to succeed (Alibabaei et al., 2010; vom Brocke & Schmiedel, 2011). If BPM adoption conflicts with the existing organizational culture, the implementation of changes will be resisted (Alibabaei et al, 2010). Therefore, the awareness of the role the organizational culture has in the success of BPM is essential (vom Brocke & Sinnl, 2011) and its characteristics should be seen as predecessors for success of BPM projects (Bandara et al., 2009). However, organizational culture cannot be changed in a short period of time (Grugulis & Wilkinson, 2002) and changing it is very difficult (Lee & Dale, 1998). Therefore, the approach to BPM needs to be adapted to suit existing organizational culture and the goals of the organization.

1.3 Hierarchy-Market culture and BPM adoption

According to the recent findings that Hierarchy culture appears to be the least favourable for adopting BPM (Hribar & Mendling, 2014), organizations with predominant Hierarchy culture would have to consider a higher effort to establish successful BPM adoption. *Hierarchy culture* is characterized by a formal work environment, where structure, control, coordination, and efficiency are emphasized and procedures govern people's activities. Clear lines of decision-making authority, standardized rules and procedures, and control and accountability mechanisms are valued as the keys to success. Stability, predictability, and efficiency characterize the long-term concerns of this organization, and maintaining a smooth-running organization is important (summarized from Cameron & Quinn, 2006).

In contrast, Market culture appears to be more favourable for adopting BPM (Hribar & Mendling, 2014). *Market culture* is a result-oriented workplace focused on goals and creating the competitive advantage. The main values that dominate Market-type organizations are profitability, competitiveness, productivity, and goal achievement. Competitiveness and productivity in Market organizations are achieved through a strong emphasis on external positioning and control. The major task of management is to drive the organization toward productivity, results, and profits. It is assumed that a clear purpose and an aggressive strategy lead to productivity and profitability (summarized from Cameron & Quinn, 2006).

There is very little research on the relationship between Hierarchy and Market culture and BPM adoption; however there are some studies addressing the relationship between organizational culture and total quality management (TQM), which is closely connected to BPM and could be considered as a part of BPM initiative. These studies produced somewhat different and even contradictory findings. For example, Prajogo and McDermott (2011) find that Hierarchy and Market cultures are positively related to process quality. Gimenez-Espin et al. (2013) find that the effects of Hierarchy and Market cultures on quality management are negative. Gambi et al. (2015) find that Market and Hierarchy cultures are positively connected to the use of quality techniques goal setting, measurement and failure prevention/control and that Market culture is also positively associated with the use of continuous improvement techniques. Zu, Robbins and Fredendall (2010) find that Market culture is compatible with TQM/Six Sigma practices whereas they do not find any significant links between these practices and Hierarchy culture. In fact, Hierarchy culture was found to be the least influential for implementing TQM/Six Sigma practices (Zu, Robbins and Fredendall, 2010). On the other hand, Prajogo and McDermott (2005) find that TQM practices strategic planning, information and analysis, and process management highly correlate with Hierarchy culture.

In the following we present a case study of a large insurance company with dominant Hierarchy-Market culture where we focus on investigating which specific measures are likely to support its BPM adoption success.

2. RESEARCH DESIGN AND METHODOLOGY

To answer our research question we used a mixed method approach. We used a survey-based research design for evaluating organizational culture and for measuring the success of BPM adoption, and conducted a case study to research the approach towards BPM adoption. Single case studies are well-accepted in the BPM literature (e.g.: da Silva et al., 2012; Rohloff, 2009; Grisdale & Seymour, 2011), because they allow researchers to develop a deep understanding of BPM related concepts that are still being intensively developed. In conducting our case study, we followed established guidelines for interpretive case study research (Yin, 1994), which is particularly suited to research questions which require detailed understanding of social or organizational processes because of the rich data collected in context (Hartley, 2004, p. 323).

In this section, we first describe the selected measurement model that was applied for assessing the organizational culture. Second, we discuss the measurement of BPM adoption success, and then present the case selection. Finally, we discuss data collection and analysis.

2.1 Measuring the organizational culture

For measuring the organizational culture we adopted the Organizational Culture Assessment Instrument (OCAI), developed by Cameron and Quinn (2006, p. 26-28). OCAI is a well-established instrument for measuring organizational culture, which diagnoses the dominant orientation of the organization based on four core culture types: Clan, Adhocracy, Market and Hierarchy.

The OCAI is an instrument in the form of a questionnaire that utilizes the use of a 100 point summative scale and requires the respondent to self-report perceptions of the organization's current culture by responding to 24 declarative statements arranged in six sections representing the content dimensions of organizational culture. These include *dominant characteristics*, *organizational leadership*, *management of employees*, *organizational glue*, *strategic emphasis*, and *criteria for success* (Cameron & Quinn, 2006). The respondent is asked to divide 100 points among four alternatives for each content dimension of organizational culture, depending on the extent to which each alternative is similar to his or her own organization. Based on the scores of the respondent, the averages are then computed for different alternatives representing the respective culture type of the respondent's organization.

2.2 Measuring the success of BPM adoption

To be able to draw conclusions on the success of BPM adoption, we need to operationalize it on a measurable level. The literature offers general definitions of BPM adoption success, such as *continuously meeting pre-determined goals* (Trkman, 2009) and *sufficiently satisfying intended goals of the BPM initiative* (Bandara et al., 2009).

Due to this absence of an instrument, we follow Škrinjar and Trkman (2013), Thompson et al. (2009) and Dabaghkashani et al. (2012), who use proxies for measuring the success of BPM adoption. In line with Hribar and Mendling (2014) we used the Business Process Orientation maturity model (BPO maturity model), developed by McCormack and Johnson (2001, p. 176), and the Process Performance Index (PPI), developed by Rummler-Brache Group (2004, p. 15). Both are freely available, empirically validated, generic (i.e. used for business processes in general), and produce quantitative data. Both utilize the use of a 5-point Likert scale with anchors of 1 (“Strongly Disagree”) and 5 (“Strongly Agree”) and can be easily statistically analysed and compared. Higher levels of BPO and PPI indicate more successful BPM adoption and lower levels indicate less successful BPM adoption.

The BPO maturity model indicates the level of process orientation in the organization, based on four stages of BPO maturity: Ad Hoc, Defined, Linked and Integrated. *The PPI* serves as an overall measure of process management environment in an organization and suggests how well an organization is managing its key business processes (Rummler-Brache Group, 2004). There are three stages of process management maturity: Process Management Initiation, Process Management Evolution and Process Management Mastery.

2.3 Case selection

As an appropriate case, we chose a large insurance company in South-East Europe (hereinafter referred to as Insur), which has its main areas of work in the fields of non-life insurance, life insurance, supplementary voluntary pension insurance, and health insurance. At the time of the study the company employed approximately 2400 people. Insur was chosen for several reasons. It underwent a BPM initiative in the last five years and has a dominant Hierarchy-Market culture. It is also one of the rare cases, where BPM concepts are actually used in its daily practice, which indicates that the initiative was successful. Also, the company’s management was willing to participate in the case study and enabled access to interviewees and project documentation.

2.4 Data collection and analysis

Both quantitative and qualitative data were collected. The primary sources for data collection were on-line survey on organizational culture and BPM adoption success, in-depth interviews, and review of case documentation about the BPM initiative (e.g. project reports, process models, process documentation).

The on-line survey on organizational culture was translated to Slovene and sent by e-mail to 594 randomly selected employees at different levels in the company, including CIOs, process owners, department leaders, executives and other employees. All participants were guaranteed complete anonymity. The data was collected in September 2013. Out of

594 questionnaires sent, a total of 152 survey responses were received, yielding a 25.6 % response rate. We also prepared an on-line survey on BPM adoption success, which was addressed to the Head of BPM office (the BPM project leader), who should have the best understanding of BPM adoption in the company. Data obtained from on-line surveys was analysed according to the measurement models using MS Excel. In addition to the survey on BPM adoption success, we reviewed the process documentation and observed the company's repository of business processes in order to determine the success of BPM adoption at Insur more objectively. Also, we interviewed several employees that were involved in the BPM initiative to find their point of view on the company's success with BPM adoption.

Interviewees were selected based on their role in the organization and their role in the BPM initiative. An interview guideline was developed, so that all interviews followed the same protocol. The interviews took place in September and October 2013 and were conducted in Slovene. On average, each interview lasted 60 minutes, depending on the availability of individual interviewee. We interviewed project leader, project supervisor, four members of the core project group, and nine other employees, who participated in the project. Out of fifteen interviewees, seven were male and eight female.

The interviews were guided primarily by five key issues: (1) why the organization engaged in a BPM initiative, (2) how was the BPM initiative carried out, (3) which problems the organization encountered during the BPM initiative, (4) which critical factors had an important impact on the success of the BPM initiative, and (5) how work practices of individuals and groups changed in the light of BPM. In the interviews, we allowed for further follow-up inquiries in order to gain a deeper understanding of the subject matter or to clarify individual responses.

All interviews were recorded and transcribed afterwards. Data from the interviews and from project documentation were coded manually, using Atlas.ti as a data management tool. We followed the two-step coding process beginning with basic coding in order to distinguish overall themes, followed by a more in depth, interpretive coding, in which more specific trends and patterns were interpreted (Hay, 2005).

3. CASE STUDY DESCRIPTION

3.1 Organizational culture and BPM adoption success at Insur

The results of OCAI indicate that the dominant organizational culture at Insur is Hierarchy-Market culture, which means it has characteristics of both Market and Hierarchy culture type. The BPO and PPI at Insur are 3.75 and 35, respectively. The BPO score of 3.75 indicates that Insur is at the *Linked* stage of BPO maturity (third out of four stages), which is also known as the breakthrough level. At this level of BPO the managers employ process management with strategic intent and results, and broad process jobs and structures

are put in place outside the traditional functions, including the introduction of process ownership (McCormack & Johnson, 2001). The PPI score of 35 indicates that Insur is at the *Process Management Evolution* stage (second out of three stages) where organizations are “process-aware” and often have instituted formal process improvement programs. Process owners are usually identified and in some cases, the organizations already use the process and performance metrics. However, companies in this stage have not yet reached their full potential regarding the process management (Rummler-Brache Group, 2004).

To be able to more objectively argue why BPM initiative at Insur was considered successful, we also reviewed the project reports and process documentation, including several process models, process descriptions and the company’s definitions of different process roles and responsibilities. In addition, we could observe the company’s repository of business processes and discuss the BPM initiative with several employees at different levels in the company. Based on our findings we could conclude that the BPM concepts are actually used in the daily practice, which indicates that the BPM initiative was indeed successful.

3.2 Previous experience with BPM at Insur

Before the BPM project in May 2010 Insur had some previous experience with BPM. For the purpose of ISO standard certificates the company had process models for key processes. However, the process models were on a higher level (not detailed) and were rarely updated - depending on audits and the requirements of ISO standard. In 2006, the company was faced with the need for major changes, reorganization, centralization, etc. At that point many inconsistencies in business processes were found (e.g. each regional unit had its own way of work). Thus, the idea emerged for a BPM project with the aim of standardizing the business processes, preparing better and updated process models, establishing process ownership, etc.

In the first attempt to adopt BPM a department for business processes (BPM office) was established, which had the assignment to model the processes. However, it did not catch on and was gradually dropped. For some time nothing happened in this area until the end of 2008, when external consultant was hired to model and document core business processes, identify problems, and suggest improvements in terms of initiatives that should be started at the company. This project lasted 3 months, during which employees worked in close collaboration with each other and with external consultant. At that time the new head of department for business processes and organization was appointed and was involved in all activities during the project, which allowed him to learn from this experience, especially about the approach towards BPM adoption.

Since I was actively involved throughout the entire project, I picked up a few things from there for our later BPM initiative. This was much easier than having to start by ourselves from scratch. The method of work, how to approach the initiative, conducting workshops, what is relevant and what is not – these are all the things I picked up from the external consultant (Head of BPM office).

The project in 2008-2009 actually gave impetus to the BPM initiative in 2010. Because of it, employees began to talk more about the processes, the importance of process approach, and the fact that mere reorganization will not bring improvements if processes are not improved as well. Moreover, employees learnt about the approach towards process management and then continued with the BPM initiative on their own. Process models and documents that were made during the 3-month project were later used as templates.

3.3 BPM initiative at Insur

Insur officially launched a BPM initiative in May 2010 and completed it in June 2013. This initiative was a part of a broader business process renovation program, consisting of several different projects (e.g. establishment of change management, internal document management system implementation, etc.). The BPM initiative at Insur affected all operational business processes (core and support business processes) but excluded leadership and management processes. This was a large-scale project with a high priority, which was also included in the company's strategy.

Insur aimed to establish a comprehensive BPM methodology in order to provide a unified and systematic approach to process management focusing on the constant monitoring and improvement of processes in a very systematic and organized way. Main goals were to facilitate achieving the strategic objectives of the company, coordinate processes and business needs, adjust the processes to the environment (i.e. market conditions, conditions in the company, new products, new technological possibilities, new IT support and other circumstances), provide overview of the processes in the company, properly connect the individual processes in the company and ensure they are efficiently performed, and finally to measure and continuously improve processes.

The BPM project was initiated by executive director for business processes and organization, who was the project supervisor. The project leader was a head of department for business processes and organization (BPM office), who closely cooperated with the project supervisor and four other members of core project group. Other participants in the project were included in the broader project group (executive directors and selected employees at the operational level). The project group consisted of employees from different business areas (from each business area at least one employee was included, so that all business areas were represented).

The project was implemented exclusively through internal sources and own knowledge of employees. Insur has a very well established project approach with the project office as an independent organizational unit. Project management is at a very high level and enables the systematic implementation of the activities leading to the pursued objective. For each project a project document is made, which includes all the relevant information about the project, such as project scope, goals, KPIs, phases, assignments, results, risks, corrective measures, resources, costs, etc.

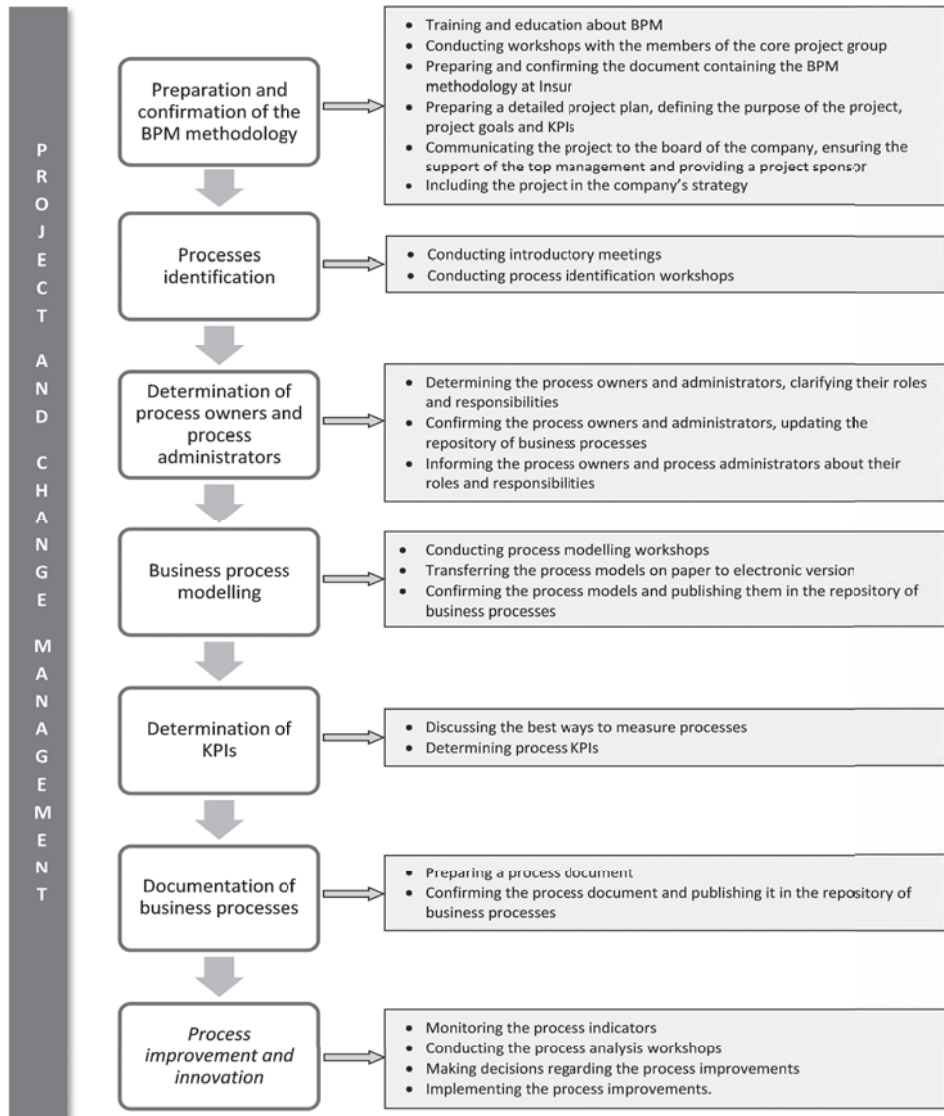
In addition to project management the company established change management to reduce the risk of stopping the projects because of employees' resistance to changes. The company adopted the so called ADKAR methodology for change management and adapted it to suit its needs. The Prosci's ADKAR model consists of 5 steps, namely (1) Awareness of the need for change, (2) Desire to make the change happen, (3) Knowledge about how to change, (4) Ability to implement new skills and behaviours and (5) Reinforcement to retain the change once it has been made.

When major changes are needed and the risk of employee resistance is high, change manager does the ADKAR analysis based on several questionnaires. The results of this analysis show how prepared employees are to participate in the specific project and if there is a need for change. After that an action plan is made and changes are implemented according to it. During all these steps, communication between employees is established and encouraged by the change manager. Any change must be very well communicated.

I think resistance is quite a normal thing when changes are introduced. Therefore, it is necessary to manage the change implementation from the very beginning or from the start of the project. For this, you need to prepare and identify key milestones where resistances may occur and manage them in the sense that you give the right information to all employees involved (e.g. why the change is necessary, how it will affect them, etc.). I think that communication is essential here. Regardless of whether you are in favour or against the change, you feel resistance if you are not informed about it or are excluded from the decision-making. Anyway, the key to this problem is to start communicating about it as early as possible. Indeed, communication is the first and the most important thing (Change manager).

BPM project at Insur was carried out in six phases, namely (1) preparation and confirmation of the BPM methodology, (2) processes identification, (3) determination of process owners and process administrators, (4) business process modelling, (5) determination of KPIs and the way of monitoring KPIs, and (6) documentation of business processes. Figure 1 presents the BPM methodology at Insur.

Figure 1. BPM methodology at Insur



After the confirmation of the BPM methodology all the other phases were conducted consecutively, but in each business area independently from other business areas (e.g. one business area was already in the modelling phase whereas another business area just started with process identification). This pragmatic approach enabled the company to be more flexible and to adjust to the different pace of individual business areas. They started at the department of business processes and organization to give an example to other business areas on how the process identification, modelling and documentation will be

done (the lead by example principle). After that they followed two criteria when choosing which business area was next: simplicity (i.e. first they took on simpler business areas with fewer processes, which were then used as success cases and for gaining affection of other business areas) and necessity (i.e. when business area was on the threshold of change such as reorganization and it was necessary to determine which processes were going to be affected by the upcoming change). During all the phases the core project group members closely cooperated with the members of broader project group at different business areas.

3.3.1 Preparation for the project and establishing the BPM methodology

As a preparation for the BPM initiative (ever since he was appointed as the head of BPM office), the project leader educated himself on the topic of BPM (e.g. what BPM is, what tools and methodologies exist, how to adopt BPM) by reading the relevant papers and books, and attending BPM conferences (mainly from a pragmatic point of view of how other companies were approaching BPM). All this information was then put together into a cohesive whole, and presented to the members of the core project group during several workshops in the first phase of the project.

The workshops were conducted in order to decide on the right BPM methodology at Insur. All employees who were included in the core project group took part in those workshops, which were headed by project leader and project supervisor. At the workshops, the project leader familiarized others with BPM concepts and presented the methodology and tools for process modelling. All participants then discussed the possibilities and different possible approaches. They selected the appropriate tool for process modelling and developed their own BPM methodology, which was adjusted to suit the company and its environment. They also agreed on the definitions of general terms (e.g. operational process, business process, repository of business processes, process model, etc.) and precisely defined all process roles and responsibilities (e.g. process owner, process administrator, manager of the repository of business processes). As a result, a document containing the BPM methodology at Insur was prepared and confirmed by the core project group. At this stage the project group also prepared a detailed project plan, defined the purpose of the project and agreed on project goals and KPIs. The project leader and supervisor then communicated the project to the board of the company, ensured the support of the top management and provided a project sponsor (a management board member). The project was also included in the company's strategy as a large-scale project with a high priority.

3.3.2 Introductory meetings and process identification workshops

In each business area the project started with an introductory meeting where the project leader first briefly explained the BPM methodology at Insur (i.e. the approach towards BPM, which phases they will go through and what will be their roles and responsibilities) and the purpose of process identification workshop. Then, participants agreed on specific tasks, which would take place within the next year. Finally, the head of certain business

area (who was generally determined as a process owner or administrator) determined which employees would participate in the project.

Process identification workshops consisted of identifying the processes in each business area, precise and unambiguous naming of processes (verb + noun), and process classification (business or operational process). Process performers (employees involved in the process) described their work and together with the workshop leader (process analyst from BPM office) decided on the process name. The result of the workshop was a table of identified processes, which was sent to all workshop participants for review and confirmation.

3.3.3 Determination of process owners and process administrators

In the third phase a system of accountability for all processes was introduced. In each business area the BPM office made a request for the determination of process owners and administrators and clarified their roles and responsibilities. Special emphasis was put on the benefits that these roles bring and the power to control and change the processes. Key employees were determined as process owners and process administrators to monitor business processes at Insur, propose further improvements in the future and implement the proposed changes. In principle, process owners and process administrators were determined according to the organizational structure (e.g. executive director of certain business area, head of department, etc.). Such determination of process roles was considered the most appropriate since the organizational structure in the company is based on different types of insurances and corresponds well with the business processes. After their confirmation, the BPM office entered all the information into the repository of business processes. All process owners and process administrators were again informed about their process roles and responsibilities by BPM office.

The roles and responsibilities of process owners and process administrators are clearly determined and published as part of the BPM methodology at Insur. Process owners manage processes on a strategic level whereas process administrators manage processes on a tactical and operational level. Process administrators are responsible for preparing the process documentation in cooperation with process performers. Process owners are responsible for their business processes and oversee the activities and decisions of process administrators. Before the repository of business processes can be updated, process administrators and process owners have to confirm the process models and any changes to processes, as well as process KPIs. It is also their job to monitor the process KPIs and take appropriate actions.

3.3.4 Business process modelling

In the fourth phase processes were modelled at the process modelling workshops, which were led by employee from the BPM office. Other participants at the workshop were

process administrators and few other experienced process performers. Workshops were conducted in smaller groups where participants answered guided questions regarding the details of a process posed by the workshop leader and discussed about the process in order to create the process model. Operational processes were modelled in more detail whereas business processes were presented as a sequence of individual operational processes.

At the process modelling workshop the focus was only on the current state (as-is models), because they did not want to confuse the participants with “what could be better” and “how the process should be” questions. This was completely separated. However, it was quite common for participants to express their suggestions for improving the process during the workshop. The workshop leader took notes of the suggestions, but then directed them back to the modelling of as-is processes. Otherwise it was very likely that the participants would get distracted and worry too much about how it should be instead of how it is. If some deficiencies in the as-is process were found by the workshop leader, they were usually pointed out at the end of the workshop when the process model was complete.

At the workshop the processes were modelled on a special paper, which enabled the workshop leader to simply change the process (by adding or deleting certain activities, etc.) in order to create the correct process model as the participants described it. When there were different opinions between the participants, the workshop leader took the role of a moderator and coordinated the workshop.

I tried to distinguish between process activities that are common for all, and those that are exceptions. The opinion of participants, who said that they are doing something differently, was also taken into account by including the exceptions to the main process model in the form of notes or comments. Thus, we made a process model that is common for all participants and placed the exceptions under the comments, such that all participants contributed to the model and felt acknowledged. It was essential that at the end of the workshop the participants would look at the process model and agree that it represents the way they perform their work. That was our main goal (Head of BPM office).

After the workshop the process model on paper was transferred to electronic version in MS Visio. The electronic version of the process model was sent by e-mail to all workshop participants for review and confirmation. In case workshop participants had some comments and there was a need for correcting the model, the BPM office made the necessary corrections and sent the revised model back to them for final confirmation. When the process model was done and confirmed by process administrator, it was saved in the repository of business processes.

If necessary, the list of identified processes from the second phase of the project was changed at the process modelling workshops (e.g. renaming the processes, merging processes, eliminating or adding processes). After the processes have been modelled such changes were very rare (only in case of reorganization when processes were moved to another business unit).

3.3.5 Determination of process KPIs

Fifth phase focused on determination of KPIs and the way of monitoring KPIs. This was a challenging task for process owners and administrators. In many cases determining process KPIs was not that simple and they needed the help of BPM office. Together they discussed the best ways to measure processes and determine process KPIs.

3.3.6 Process documentation

Sixth phase was mostly conducted simultaneously with the fifth phase. Process administrators (with the cooperation of selected process performers) were responsible to prepare a process document based on a pre-prepared template. The process document had to be confirmed by process owner and checked by BPM office for compliance with methodology before it was published in the repository of business processes. In case process administrators needed help with documentation, they could turn to BPM office and discuss with them how to proceed. The process document consists of all relevant information about the process, such as the purpose of the process, definition of general terms used within the process, process roles and responsibilities relevant to the process (based on RASCI model), process inputs, process outputs, detailed description of the process and its activities, resources, environment, process KPIs, reference documents (internal and external) and appendices.

Process roles and responsibilities based on RASCI model are defined for each business process. RASCI is an abbreviation for **R**esponsible (the person who is ultimately responsible for delivering the task successfully - the person in the process who is carrying out the activity), **A**ccountable (the person ultimately answerable for the correct and thorough completion of the task and often the one who delegates the work to the performer, gives instructions, makes key decisions, monitors the implementation - the person who has ultimate accountability and authority), **S**upportive (the person or team of individuals who can play a supporting role in implementation and help complete the task), **C**onsulted (the person or team of individuals whose opinions are sought and with whom there is two-way communication), and **I**nformed (the person or groups of individuals who need to be notified about results or actions taken, but do not need to be involved in the decision-making process, and with whom there is one-way communication).

3.3.7 Process improvement and innovation

At the end of the BPM project additional two phases can be added, which actually represent permanent tasks of process owners and process administrators, which are prescribed in the company's BPM methodology. First is process analysis and identification of opportunities for improvement, and second is monitoring of process indicators. Process owners and process administrators are responsible to take the initiative to look for opportunities for process improvement. Based on their initiative a workshop is convened, where workshop leader (BPM office), process administrators and key process performers work together.

First, they identify, record, and evaluate all issues relevant to the process (e.g. process delays, the bottlenecks). Second, they conduct a detailed analysis of the process, and then discuss ideas about possible improvements.

Our opinion is that no process is so good that it cannot be even better. Therefore, processes need to be continuously measured and improved. In principle, this is a task of process owners and administrators; we are only their support and are always willing to help (Member of BPM office).

Suggestion for process improvements can come from process performers, process owners and administrators, and BPM office. However, certain improvement suggestions might be good for individuals, but might not be optimal for the process as a whole. This is why process improvement workshops are necessary to discuss how the proposed change could affect other participants in the process. It is important to find a unanimous solution that will be suitable for everyone.

Unanimous decisions are recorded and included in the final document called Problem analysis, together with a list of all processes affected by the proposed changes and all identified issues regarding the processes. A new process model (to-be model) is prepared and (if applicable) a member of the development team for IT prepares a functional specification for IT support. At the end of the workshop all participants get their own assignments, which they need to complete until a specific deadline.

In the end, process owners and process administrators are responsible to make decisions on the realization of specific improvements. They are also responsible for establishing process KPIs, periodic monitoring of process indicators and keeping records on KPIs in the repository of business processes. Once a year BPM office (department for business processes) prepares a report on process indicators and presents it to the management board and all process owners.

3.4 Outcomes of BPM initiative at Insur

The BPM initiative has met its goals and was completed successfully. By adopting the BPM methodology and establishing the repository of business processes the company gained a good overview of its processes in different business areas. Moreover, it clearly defined responsibilities for the processes (process owner, process administrators). Informing and educating process owners and process administrators about their roles was a big part of the project, which led to their better understanding of BPM and increased process awareness.

3.4.1 Transparency of process roles and responsibilities

One of the major benefits of adopting BPM was increased transparency in relation to responsibilities. Before the BPM initiative, process roles and responsibilities were not clearly determined. This caused insufficient improving of processes, because it was not

clear who had the authority to make process changes or who was responsible for the process. Finally, with appointment of process owners and process administrators the decision-making authority was clearly defined (e.g. who does what, who is responsible, who can change the process, who has the authority to make decisions, etc.). This enables better management of processes and more efficient decision-making (e.g. it is no longer necessary to go around the company and search for an employee who could make certain decision; now they can immediately see who is responsible for certain process from the repository of business processes).

There are many advantages, especially the standardization of procedures in terms of who does what and where certain processes are performed. You see, Insur is a quite a big company and even within the company we did not know who does what. This means that also the processes were not being improved, because no one knew who was responsible and had the right to make process changes. Since we have the repository of business processes, things are finally clear and we can see exactly where and who does what, to whom we can turn if we want some information... For each process we know exactly who its owner and administrators are, i.e. the accountability for the process is defined (Member of the project team).

BPM office gained an important role during the BPM project. It is an independent organizational unit and consists of three employees. The primary tasks of BPM office are to establish BPM methods, model business processes and provide support to process owners and process administrators with their process responsibilities (e.g. determining process KPIs, preparing process documentation, process analysis and improvement). Within the BPM office one employee is assigned as the manager of the repository of business processes and is responsible for keeping it up-to-date. Process owners have to notify the BPM office about any changes to the processes as soon as the changes are confirmed, so that the repository of business processes is always updated. In fact, updating the repository of business processes according to the changes made has become one of the most important tasks for BPM office.

3.4.2 Standardized procedures and transparency of process data

Another perceived benefit of BPM adoption was standardizing the procedures and publishing the rules regarding process management. Methodology for modelling, documenting, measuring, and renovating the processes is prescribed and published in several connected documents in the company's internal application, which facilitates controlling that processes are managed as agreed.

Process models give a good overview of the processes (e.g. process boundaries, process performers, process triggers (what triggers the process), inputs, outputs, activities, and (if applicable) IT support that supports a particular activity) and enable employees to better understand their work and how it relates to the end-to-end processes in the company. In addition, process models and descriptions can be used for training the new employees. They can simply review the process models and descriptions and get all the necessary information about the processes without having to ask other employees for help.

The repository of business processes comes in handy also when process or organizational changes are to be implemented. It gives a good overview of all the processes that exist in certain business area, which makes it easier to combine, separate or move processes, and to predict the extent of the proposed changes. Since each process has its own process owner and process administrator it is also easy to see which employees need to be consulted regarding the specific change.

All key information on business processes (i.e. process models, process documentation, process KPIs, process roles and responsibilities, etc.) is now gathered in one place and is available to all process owners and administrators, which improves the transparency of the process data and facilitates sharing the information between process owners, administrators and other employees. So far, the access to the repository of business processes is limited to the BPM office, process owners and process administrators. However, in the future limited access will be made available to all employees, who will be able to access all the information about those processes that are relevant to them.

3.4.3 Process awareness

Awareness of the importance of business processes is an extremely high level in the company. Processes are considered as assets that have an important value for the company.

It seems to me that we have made enormous shift toward process thinking in the company – employees collaborate more, they know what the processes are, and they know they need to improve them. It seems to me that a remarkable shift was made (Member of BPM office).

At the end of the project the BPM office conducted a short survey on process awareness among process owners and administrators. The purpose was to find out how much they know BPM methodology, what is their opinion about BPM and their potential suggestions for the next steps (the necessary measures). The results of the survey showed that most of the process owners and process administrators understood the principles of BPM and were aware of its importance.

3.4.4 Employee satisfaction

Employees seem to be very content with the BPM project and its outcomes. They already see the benefits of BPM and are proud of their achievements in this area; however, they are aware that the company has not reached its full potential yet. Whether BPM adoption will really succeed largely depends on process owners and administrators and how committed they will be to their new process roles and responsibilities.

I think that BPM is not quite yet at the point where we want it to be. It is still somewhere in the mid-level. However, we see it improving over time (Head of BPM office).

Thus, the plan for the future is to further enforce the BPM methodology and to teach process owners and administrators about several process analysis methods and techniques that can be used when problems occur (e.g. route-cause analysis, fishbone diagram).

4. DISCUSSION

In this section, we summarize the key findings of our case study and discuss implications, limitations and future research.

Our findings are twofold. First, we identify several characteristics of BPM initiative at Insur that were found to be important. Some of these characteristics are more general and cannot be directly linked to the specific organizational culture. They may have bigger role in certain types of organizational culture; however, based on our case study alone we cannot make this judgement. Due to the lack of references from literature we were unable to assign all the characteristics to organizational culture. While previous studies have established the link between organizational culture and BPM adoption success, and several studies addressed the relationship between organizational culture and TQM, these studies focused on which culture types are more or less appropriate for BPM (e.g. Hribar & Mendling) or which cultural characteristics are associated with different elements of TQM (e.g. Prajogo & McDermott, 2005). In contrast, our study focuses on the approach towards BPM adoption in specific organizational culture setting.

Second, we focus on the specific measures that seemed to support BPM adoption success in the studied case and link the elements of our findings to the organization's culture. Here, we try to avoid all hints of causality, since the possibilities for generalization on the basis of a single case study are quite weak. We identify which approach towards BPM adoption might be appropriate in an organization with Hierarchy-Market culture based on the findings from our case study and characteristics of this culture type as defined by Cameron and Quinn (2006).

4.1 Key characteristics of BPM initiative at Insur

We identified several characteristics that played a key role in the BPM initiative at Insur. We first present these characteristics in Table 1 and then discuss them in more detail.

Characteristic	Description	Connection to Hierarchy and/or Market culture
Good preparation for the project and clearly defining the BPM methodology	Establishing very detailed rules on how the processes should be managed (BPM methodology)	Hierarchy culture (Cameron & Quinn, 2006)

Characteristic	Description	Connection to Hierarchy and/or Market culture
Managing the BPM initiative	Approaching BPM adoption very formally and systematically in a very controlled and yet also pragmatic way	Hierarchy culture (Cameron & Quinn, 2006)
Establishment of BPM office and introducing a system of accountability for all processes	Clearly defining process roles and responsibilities, determining control and accountability mechanisms	Hierarchy and Market culture (Cameron & Quinn, 2006)
Process measurement and continuous improvement	Determination of KPIs and continuous improvement of business processes	Hierarchy (Gambi et al., 2015; ; Prajogo & McDermott, 2005) and Market culture (Gambi et al., 2015; Zu, Robbins & Fredendall, 2010)
Fostering employee collaboration	Constant communication and the use of participative methods (workshops, brainstorming)	Applies to all cultures, however it could also be linked to Market culture (Gambi et al., 2015)
Leadership support and attention to process	Gaining support by emphasizing the importance of BPM and the need for determining KPIs, monitoring and improving the processes	Applies to all cultures
Increasing process awareness	Making employees understand that adopting BPM is necessary and how they will benefit from it	Market culture (Cameron & Quinn, 2006)

Table 1. Key characteristics of BPM initiative at Insur

We derived these characteristics based on our case study analysis. The question of which factors had an important impact on the success of the BPM initiative was one of our five key issues we were interested in when conducting the interviews with employees who participated in the BPM initiative (see section 3.4 for more details). Most common answers were then grouped together into seven key characteristics of BPM initiative at Insur presented in Table 1. Besides the characteristics and their short descriptions we suggest which characteristics could be linked to Hierarchy and/or Market culture based on findings from previous studies. As mentioned, some of these characteristics are quite general and we cannot claim that they are only valid for organizations with Hierarchy-Market culture or that they are valid for all organizations with Hierarchy-Market culture. In fact, it may well be that the same factors would contribute to success also in different organizational cultures.

4.1.1 Good preparation for the project and clearly defining the BPM methodology

The BPM initiative at Insur was very well planned. Brainstorming techniques were used at workshops, which were set up in order to develop and decide on an appropriate BPM methodology for the company. Employees from the core project group worked closely together with the project leader and project supervisor. They decided on the common terminology and clearly defined all process roles and responsibilities. The confirmed BPM methodology was then used as a basis for determining the project plan together with project purpose, goals and KPIs.

This characteristic is more general and could easily be attributed to any type of organizational culture. In the light of Hierarchy and Market culture, we could argue that establishing very detailed rules on how the processes should be managed by clearly defining and adopting their own BPM methodology is in fact in line with Hierarchy culture, where following rules is important (Cameron & Quinn, 2006).

4.1.2 Managing the BPM initiative

Our data analysis shows that Insur approached BPM adoption in a very controlled (strictly according to the established BPM methodology), and yet also pragmatic way (e.g. conducting the project phases in each business area independently from other business areas, adjusting to the different pace of individual business areas and prioritizing processes). The BPM initiative was led very formally and systematically, according to the guidelines for project management. For example, the company established the BPM methodology, which includes specific rules and procedures regarding BPM. During the BPM initiative the project leader had to report about the project progress to the project supervisor and to the project office every three months and at the end of the project, the final report on achieving the objectives of the project had to be made. This is clearly in line with the characteristics of Hierarchy culture, which emphasizes formal work environment, control, coordination, and where procedures govern people's activities (Cameron & Quinn, 2006).

At Insur, project management as well as change management are at a very high level, which enables the systematic implementation of the activities leading to the pursued objective. Project and change management were also frequently identified in literature as one of the success factors for BPM (Ariyachandra & Frolick, 2008; Bandara et al., 2009; Ohtonen & Lainema, 2011; Ravesteyn, 2007; Trkman, 2009); however, not in connection with the organizational culture.

4.1.3 Establishment of BPM office and introducing a system of accountability for all processes

BPM office played a key role in the BPM initiative at Insur. It was crucial that the BPM office was established at the beginning of the BPM initiative and was included in planning

the BPM initiative, educating other employees about BPM and establishing the BPM methodology. Main responsibilities of BPM office are modelling of business processes and providing support to process owners and process administrators. Dedicated employees at the BPM office are also responsible for the proper implementation of BPM methodology, maintaining the repository of business processes and the overall success of BPM initiative.

Transparency of process roles and responsibilities as well as clearly determining control and accountability mechanisms early in the project are important characteristics of Insur's BPM initiative, which are in line with Hierarchy culture. It was very beneficial that the process owners and process administrators were determined early in the project, such that the decision-making authority was clearly defined. In Hierarchy culture this is valued as one of important keys to success (Cameron & Quinn, 2006).

Determining process owners and administrators was a key point in our BPM initiative. We wanted to determine process ownership early in the project because it was a prerequisite for the successful implementation of all the remaining phases of the project. It would not work without this. If nothing else, you need to know who the process owner and administrators are so that you can invite them to participate in the process modelling workshop (Project supervisor).

4.1.4 Process measurement and continuous process improvement

One of important steps in Insur's BPM methodology is establishment of process KPIs, which enables periodic monitoring of processes. Insur's approach is based on continuous improvement of processes, which is a permanent responsibility of process owners and administrators in cooperation with the BPM office. The use of techniques, such as brainstorming, that encourage employee participation and involvement, and support continuous improvement was widely used during Insur's BPM initiative.

In literature, the use of process measurement was found to be positively associated with Hierarchy (Gambi et al., 2015; Prajogo & McDermott, 2005) and Market culture (Gambi et al., 2015; Zu, Robbins & Fredendall, 2010). Market culture was also found to be a strong predictor of the use of continuous improvement techniques (Gambi et al., 2015).

4.1.5 Fostering employee collaboration

Employee collaboration at Insur was encouraged through constant communication and the use of participative methods, such as workshops and brainstorming. Communication played a key role for the success of the BPM project. All employees were informed about the project and the newly accepted BPM methodology via online internal notification. In addition, at the beginning of the project the company's CEO announced the importance of the project for the company in several messages, so that the process awareness of employees would increase. After that employees were informed only if necessary, when they got a specific task that required their cooperation.

BPM office communicated directly with process owners and process administrators, who then communicated further with other employees (process performers). Main means of communication were meetings, workshops and e-mail (exchange of information, confirmation of process models and documents, etc.). Key issues regarding the project were also published in internal company newsletter.

A lot of time and effort was put into persuading the process owners about the benefits of process ownership and the great decision-making power that stems from it. There was constant communication between BPM office and process owners and process administrators throughout the project and continuing communication after the project was officially completed. Each business area also has weekly meetings where they can discuss about the processes (e.g. if any changes are necessary).

I think the rule here is that you cannot communicate too much. Too much communication does not exist, only not enough communication. We should probably communicate even more; especially encourage the process owners to want this power of process management (Member of the project group).

In addition to communication, employees were encouraged to participate in the BPM initiative by attending different workshops. In fact, this was the most commonly used method in the BPM initiative at Insur. Workshops were used as a method for process identification, process modelling and process analysis as well as for process owners and process administrators to get acquainted with their new roles and responsibilities.

Workshops are a popular method because they foster cooperation and enable the personal contact with employees who normally do not work in the same office and do not personally know each other, even though they are participating in the same process. As the number of participants at each workshop is limited to maximum of 5-7 employees, managing the workshops is quite easy. All of the participants have the opportunity to contribute and express their opinion. To achieve the best results, all participants should be at the same or similar hierarchy level in the company to ensure that the atmosphere at the workshops is relaxed and open.

It is essential for employees to understand the purpose and goals of the workshop. For this, the workshop leader has to clearly explain what exactly the purpose of the workshop is and what is it that they want to achieve at the workshop. The explanation should be brief and on point (only relevant to the respective workshop) so that participants focus on the right things and are not distracted by other details about the project.

At the beginning of the workshop you need to explain the purpose, so that participants know why they will sit there for 3 or 4 hours. And if you explain it well enough so that they understand, then there shouldn't be any problems. When there are problems, it means that you did not explain it well enough for participants to understand (Member of BPM office).

Another important issue when conducting workshops is to listen to all the participants and show them that their opinion matters and that their input is appreciated and taken into account. It is very important that the project leader listens to workshop participants and takes notes of their suggestions so that they feel acknowledged. Workshop participants are motivated to cooperate when they feel their opinion matters and that they will be able to contribute to changing and improving the processes.

Employee collaboration is crucial in any project regardless of organizational culture. Importance of communication is recognized as a key success factor for BPM in many different studies (e.g. Ariyachandra & Frolick, 2008; Bandara et al., 2009; Ohtonen & Lainema, 2011; Ravesteyn & Batenburg, 2010; Thompson et al., 2009; Trkman, 2009) and the use of workshops is also found to be appropriate by several authors (e.g. Dumas et al., 2013; Manfreda et al., 2015). While these studies recognize the importance of communication and the use of workshops, they do not connect their findings to organizational culture. Thus, we assume that fostering employee collaboration is a general factor that applies to all cultures. However, findings from Gambi and associates (2015), which suggest that the use of participative methods, such as brainstorming and workshops, is positively associated with Market culture, could also link this characteristic to Market culture.

4.1.6 *Leadership support and attention to process*

Another key factor for successful completion of the project is leadership support and attention to processes. Leadership support for the BPM project was strong from the very beginning and throughout the whole project. In fact, the initiative for the BPM project came from project supervisor. Active involvement of the project supervisor who is also a member of top management was very important for the success of the project. Being a member of top management and participating at all the top-level strategic company meetings enabled the project supervisor to gain support of others by emphasizing the importance of BPM and especially the need for determining KPIs, monitoring and improving the processes. This personal commitment of project supervisor could be recognized as the driving force for the project, as she was working in the background and »opening doors« for other project participants. At the beginning of BPM initiative the project leader and supervisor communicated the project to the board of the company and provided a project sponsor (a management board member), which additionally ensured the support of the top management. The project was also included in the company's strategy as a large-scale project with a high priority.

Leadership support and involvement is again very general success factor, recognized in many studies (e.g. Ohtonen & Lainema, 2011; Ravesteyn & Batenburg, 2010; Ravesteyn, 2007; Trkman, 2009), independently of the organizational culture.

4.1.7 Increasing process awareness

Besides leadership support and constant communication before, during and after the project, one of the key issues for the BPM project at Insur was to increase process awareness and to convince employees that adopting the BPM methodology and accepting their new process roles (i.e. process ownership and administration) will bring major benefits to them and the company as a whole. We find that even for a company with Hierarchy-Market organizational culture, which is inclined to following rules and achieving results, it is not good enough just to give orders to employees. Sure, they would complete the task, but with resistance or at least a bad mood. For employees to really cooperate, the project leader (or the workshop leader) should clearly explain to them the purpose of the project (or specific workshop) as well as how they will benefit from it (especially emphasize the ability to achieve better results).

Most frequently we are facing the questions of whether and how this [process modelling] will benefit employees at their work. If we manage to explain that we can solve a problem by modelling and coordinating the process with other employees who participate in the process in different business units, then it is easier. But as long as a person does not understand why he or she would do this, then often they are reluctant to participate (Member of BPM office).

The case study analysis shows that making employees understand that adopting BPM is necessary and how they will benefit from it is a very challenging task. However, it has proven to be worth the effort. When employees understood why BPM is important and why they needed to cooperate in the project, it was much easier to work with them and get the job done without resistance.

Communication truly is 90 % of work. If you tell process owners and administrators to determine the process KPIs until September, it will not work. However, if you can “sell” this to them by explaining why and how will it benefit them (e.g. “Determine process KPIs so that you will be able to better manage your process and achieve better results”) and they “buy” it, then you will be successful (Head of BPM office).

Increasing process awareness in the sense of convincing employees to adopt the BPM methodology and their new process roles because it will enable them to achieve better results could be linked to Market culture. Market culture organizations are very result-oriented and focus on creating the competitive advantage and customer satisfaction (Cameron & Quinn, 2006). Employees can therefore better relate to the process ownership when they understand that at the end of each process there is a customer and that by establishing the process ownership it is clear who has the power to improve the processes and can consequently achieve better results. A key thing is therefore to make employees understand that they can achieve better results by managing the processes.

I think some more time will have to pass before process owners will truly internalize their process role. Somehow it was never in our organizational culture that they would have to deal with the processes. All that was important to them were results. That is, it was important only that results are positive, but not how the processes are performed. ... Now we have rules for BPM written and we must adhere to them (Member of the project group).

4.2 Lessons learned: Approach towards BPM adoption under Hierarchy-Market culture

When analysing our case study we proceeded from the characteristics of Hierarchy-Market culture as defined by Cameron and Quinn (2006) and tried to connect these characteristics to specific measures that seemed to support BPM adoption success in the studied case. We were specifically looking for a match between organization's culture characteristics and the measures that were taken during their BPM initiative. At this point we would like to clarify that it was not our intention to make any generalized assumptions based on this case study, but rather provide an insightful illustration of the elements that contributed to successful BPM adoption in the studied organisation with Hierarchy-Market culture. To be able to give valid and generalizable conclusions regarding the appropriate approach towards BPM adoption under specific organizational culture, future research on this topic is necessary. Future research (similar case studies in different cultural contexts as well as empirical research) could show whether Insur's approach would also work in other organizations with Hierarchy-Market culture and also whether this approach would not work as well in other types of organizational culture.

Insur's orientation towards achieving results and reaching its objectives is very strong. Employees are also rewarded in relation to achieving objectives (the variable part of their salary is tied to the realization of goals), which is in line with the characteristics of Market culture. At the same time, the company has established very detailed rules on how the processes should be managed by adopting their own BPM methodology, and clearly defined process roles and responsibilities (e.g. who communicates with whom, who is responsible for what, who can make certain decisions, etc.). This is consistent with the characteristics of Hierarchy culture.

Cameron and Quinn (2006) characterize Hierarchy culture organizations as having a lot of standardized rules and procedures that employees need to follow (e.g. documenting process changes, updating the repository of business processes, etc.). Clearly defining the BPM methodology, establishing the BPM office and determining control and accountability mechanisms at Insur was therefore fitting with the Hierarchy culture characteristics.

Since Insur has a combination of Hierarchy and Market culture, the right approach in this case seemed to be to clearly determine assignments and responsibilities for each process role, however at the same time emphasize that BPM is something that they need, and explain how it will benefit them, especially from the point of view that they will have the power to control and change their processes, and be able to achieve better results. The emphasis on achieving results is very much in line with the Market culture, whereas determining the rules and clearly defining the decision-making authority are characteristics of Hierarchy culture. Based on our data analysis and the characteristics of Hierarchy and Market culture as defined by Cameron and Quinn (2006), we find that the approach towards BPM adoption at Insur appeared to be in line with the Hierarchy-Market culture, which is dominant organizational culture in the company.

Table 2 summarizes our main findings and presents the fit between the cultural characteristics and the measures taken during the company's BPM initiative. We mapped together the characteristics of Hierarchy and Market culture as defined by Cameron and Quinn (2006) with specific measures that seemed to contribute to the success of BPM adoption at Insur. In the first column we present the Hierarchy and Market culture characteristics and in the second column we identify which measures can be linked to the characteristics of Hierarchy culture and which measures match better with Market culture characteristics.

Hierarchy culture characteristics	Measures in line with Hierarchy culture characteristics
Formal work environment with emphasis on structure, control, coordination, and efficiency.	<ul style="list-style-type: none"> - Approaching BPM adoption very systematically in a formal, organized and controlled way, according to the guidelines for project management.
Procedures govern people's activities, standardized rules and procedures are valued as keys to success.	<ul style="list-style-type: none"> - Establishing standardized rules and procedures regarding BPM (BPM methodology, pre-prepared templates for process documentation).
Clear lines of decision-making authority, control and accountability mechanisms are highly valued.	<ul style="list-style-type: none"> - Clearly defining the decision-making authority early in the project (determining process owners and process administrators). - Establishing a system of accountability for all processes. - Precisely defining all process roles and responsibilities.
Maintaining a smooth-running organization is important.	<ul style="list-style-type: none"> - Establishing a BPM office for the support of process owners and administrators. - Keeping a good overview of the project at all times.
Stability, predictability, and efficiency characterize the long-term concerns of an organization.	<ul style="list-style-type: none"> - Maintaining the repository of business processes. - Controlling whether the processes are managed according to the BPM methodology.
Market culture characteristics	Measures in line with Market culture characteristics
Clear purpose and an aggressive strategy are assumed to lead to productivity and profitability.	<ul style="list-style-type: none"> - Clearly defining the purpose of BPM initiative. - Including the BPM project in the company's strategy. - Clearly explaining to employees the purpose of the BPM initiative and how they will benefit from it.

Market culture characteristics	Measures in line with Market culture characteristics
Main values that dominate Market-type organizations are profitability, competitiveness, productivity, and goal achievement.	<ul style="list-style-type: none"> - Emphasizing the power to control and change the processes. - Making employees understand that they can achieve better results by managing the processes.
The major task of management is to drive the organization toward productivity, results, and profits.	<ul style="list-style-type: none"> - Leading by example and motivating employees by showing them results of other business areas.
Result-oriented workplace focused on goals and creating the competitive advantage. Emphasis is on external positioning and control.	<ul style="list-style-type: none"> - Controlling whether the objectives have been achieved. - Rewarding employees according to achieved objectives.

Table 2. Approach towards BPM adoption under Hierarchy-Market culture

Here, we would again like to point out that while the measures identified in Table 2 might work well in the specific case due to their assumed cultural fit (without further research that could confirm our findings this is still just an assumption), it is important to note that there were also other factors that had an important role in the success of the company's BPM initiative. Some of these factors are more general and cannot be assigned to organizational culture.

4.3 Implications, limitations and future research

Previous studies have established the importance of organizational culture for the success of BPM adoption and found that certain organizational culture types seem to be more favourable and others less favourable for BPM adoption. In this paper we go a step further and present a case study of BPM adoption in an organization with Hierarchy-Market culture and find which specific measures have successfully been used in such specific setting. This study forms an insightful illustration of the elements that contributed to BPM adoption in an organisation that is characterised by having a Hierarchy-Market culture and that appears to be on a good path towards full BPM adoption. Our work extends the body of knowledge regarding the cultural issues in BPM, and thereby contributes towards more successful BPM adoption.

However, the important limitation of this research is that it is based on a single case study, limiting our ability to make an empirical generalization. Therefore we propose additional research in this area. More case studies and empirical investigations are needed to confirm and expand our findings. Furthermore, it will be important to investigate which specific measures are likely to support BPM adoption success under different organizational cultures, not only Hierarchy-Market culture.

5. CONCLUSION

Organizations should be aware of their dominant organizational culture type and its characteristics and choose the appropriate approach towards BPM adoption. We believe that organizations can better prepare for their BPM initiative by including an organizational culture analysis in the preparatory phase. This way they can adapt the approach towards BPM adoption to fit with their organizational culture.

In this paper we analyse the approach towards BPM adoption under Hierarchy-Market culture. We focus on investigating which specific measures are likely to support the successful adoption of BPM in such cultural setting. Our findings show that formal, well organized and controlled approach worked well in our studied case. Clearly determining assignments and responsibilities for each process role, defining the decision-making authority early in the project, as well as emphasis on the benefits of BPM (especially the power to control and change their processes, and the ability to achieve better results) are in line with the characteristics of Hierarchy-Market culture and seem to contribute to the successful BPM adoption in the studied organization. This might be due to the assumed fit between cultural characteristics and measures taken during the BPM initiative, however further research is necessary to be able to confirm and expand our findings.

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EXPANDING THE MODEL OF ORGANIZATIONAL LEARNING: SCOPE, CONTINGENCIES, AND DYNAMICS

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ABSTRACT: *Our paper seeks to contribute to the understanding of organizational learning by (a) integrating existing models of organizational learning into a single model and (b) expanding the model to include inter-organizational learning, adding key contingencies suggested by the growing literature on neuroleadership, and incorporating a process dimension to reflect the fact that organizational learning is continuous and dynamic. The resulting expanded model of organizational learning encompasses four levels on which learning can occur: individual, team, organizational, and inter-organizational. The overall validity of the model is illustrated by applying it to two knowledge-intensive Slovenian firms. Implications for theory and practice are discussed.*

Keywords: *organizational learning, organizational learning model, inter-organizational learning, neuroleadership*

JEL Classification: M1, M12

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INTRODUCTION

In the contemporary environment, the key organizational resource is knowledge (Miles, Snow, & Miles, 2000). To be competitive in the global economy, organizations need to learn how to continuously adapt by both acquiring and generating knowledge and, increasingly, by sharing and co-creating it with clients, suppliers, partners, and other stakeholders. Moreover, organizations need to be able to absorb and apply new knowledge quickly due to the constant changes within the global competitive environment, as managing firms has never been so challenging and difficult, especially for firms operating in complex, dynamic environments (Breznik & Lahovnik, 2014).

Existing models of organizational learning tend to be static and do not address important contingencies that affect the learning process (Crossan, Maurer, & White, 2011). In

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addition, learning is often characterized as a reaction to environmental change (Kim, 1993; March & Olsen, 1975) rather than a proactive, collaborative process among involved stakeholders. These and other limitations indicate that existing learning models need to be combined into a single comprehensive model that includes a broader scope, key contingency factors, and a dynamic focus.

We articulate a new model of organizational learning that builds on previous models and adds missing elements, using Huber's (1991) model as the basic building block. In order to develop a model of organizational learning that meets the needs of contemporary organizations, we first systematically review the research literature on organizational learning in order to identify key variables and relationships as well as theoretical limitations. Then, we discuss the main factors that are under-emphasized or missing in the existing models. Those factors include learning at the *inter-organizational level*, *contingencies* suggested by the rapidly expanding literature on neuroleadership, and *dynamics* that represent learning as a continuous process rather than a discrete, periodic activity. Third, we assess the general applicability of our expanded model by using it to analyze two firms in the Slovenian information technology industry that are recognized for their learning capabilities in order to provide empirical support for of the expanded model. Lastly, based on our model-building efforts, we develop implications for theory and practice in the area of organizational learning.

The 21st century global business environment is complex, dynamic, and highly competitive (Chen & Miller, 2015). This environment has caused disruptions in many industries and has put enormous pressure on organizations to learn and adapt quickly. Organizations that know how to collaborate with key stakeholders and to learn continuously will be able to gain competitive advantages. We believe our expanded model of organizational learning will help managers and organizational designers to develop more adaptive organizations.

1 ORGANIZATIONAL LEARNING

The field of organizational learning focuses on the processes of learning within and between organizations (Hernaus, Škerlavaj, & Dimovski, 2008) at four different levels: individual, team, organizational, and inter-organizational (Crossan, Lane, White, & Djurfeldt, 1995). Kim (1993, p. 38) defined individual learning as "the acquiring of knowledge or skill" encompassing the "know-how" and "know-why." Team learning is defined as cohesive collective individual learning resulting in shared mental models. Organizational learning is "increasing an organization's capacity to take effective action" (Kim, 1993, p. 43). Based on the analogy with organizational learning, inter-organizational learning is defined as increasing the capacity to take effective action within a group of organizations (Yang, Ou, Chou, Fang, & Fang, 2011) or by advancing Huber's (1991, p. 89) words: "a group of organizations that continuously learn(s), if, through processing of information, the range of their potential behaviors is changed".

1.1 Existing Models of Organizational Learning

Different models and explanations of the organizational learning process exist in the literature. The four most cited models are presented chronologically, and additional models are presented in Table 1.

March and Olsen (1975) explained that the basis for individual actions comprises individual cognitions, preferences, and beliefs. Individual actions lead to organizational actions, which cause environmental responses, which in turn affect individual cognitions, preferences, and beliefs, thus completing the circle of organizational learning. In their model, the environment drives the process of organizational learning that occurs when the whole cycle is completed. Kim (1993) later advanced the model by substituting individual beliefs with the OADI-IMM model of individual learning and emphasizing individual learning on the conceptual and operational levels and individual mental models as well as shared mental models.

Huber (1991) focused on the information processing perspective and associated the process of organizational learning with four crucial constructs: (1) knowledge acquisition, (2) information distribution, (3) information interpretation, and (4) organizational memory. Knowledge acquisition is a process of obtaining knowledge and is further defined by five sub-constructs: (a) congenital learning or drawing on knowledge existent at the time of the establishment of an organization, (b) experiential learning or learning from direct experience, (c) vicarious learning or learning from the experience of others, (d) grafting and acquiring new members that possess knowledge not possessed in an organization before, and (e) searching for and noticing information about the organizational environment and monitoring its effectiveness. Information distribution is a process of sharing information from different sources among organizational members to create new information. Information interpretation is the organizational process of interpreting and giving information meaning. The extent of the new information is determined by (a) existing cognitive maps and framing information during communications, (b) richness of the media used to send information in terms of a sender and receiver to give it a common meaning, (c) information overload, and (d) amount of unlearning (Huber, 1991). Organizational memory consists of storing and retrieving information and computer-based organizational memory (Huber, 1991).

According to Crossan, Lane, and White's (1999) 4I model, organizational learning is conducted on three levels: individual, group, and organizational. Four social and psychological processes link the three levels of learning, which transform tacit knowledge into explicit knowledge and intuition into institution. Crucial to this model is the interactive relationship between cognition and action throughout the feed-forward and feedback processes that add a dynamic dimension. These four processes are (1) intuiting at the individual level, (2) interpreting at the individual and group levels, (3) integrating at the group and organizational levels, and (4) institutionalizing at the organizational level.

1.2 Theoretical Limitations of the Existing Models

The main theoretical limitation of March and Olsen's (1975) model and Kim's (1993) model is that they do not incorporate inter-organizational learning. March and Olsen (1975) claimed independence of organizational action and environmental response, which clearly excludes inter-organizational learning. In both models, other organizations are perceived as part of the environment, which presents an environmental response to organizational action and changes individual beliefs (March & Olsen, 1975). In Kim's (1993) model, these actions are caused by individual or organizational actions that affect individual learning. The environment is perceived in terms of representing shocks (March & Olsen, 1975, p. 157), not as offering opportunities to learn together and co-create the future. Despite the fact that both models show dynamics and emphasize continuity, they also indicate, but do not sufficiently emphasize, the importance and interactions of different contingency factors.

On the other hand, Huber's (1991) information processing view is static, as it does not integrate the continuity of the organizational learning process, which requires the application of gained knowledge and feedback that form the basis for new loops of organizational learning (Crossan et al., 1999). In addition, Huber's (1991) model does not incorporate the contingency perspective that would enable information to be processed successfully; therefore, this model can be considered universally applicable. In addition, it does not discuss inter-organizational learning, although the subject could be understood implicitly from the model.

The main limitation of the 4I model (Crossan et al., 1999) is the explicit division of the 4I elements into only three levels of learning. Organizations can learn from and with other organizations, as evidenced by platform strategies (e.g., Android and numerous others) and knowledge sharing within organizational networks, yet no specific element of the 4I model incorporates inter-organizational level learning explicitly. The contingency dimension is also not addressed sufficiently, although it is somehow indicated: for example, by pointing to the need to further investigate the role of leadership in the organizational learning model and by mentioning an organizational structure and strategy next to other institutionalized processes. However, these aspects are perceived as results of the organizational learning processes and not as conditions for organizational learning to occur. Therefore, these factors play a passive role in relation to the four social and psychological processes. The summarized theoretical limitations of organizational learning models are presented in Table 1.

Table 1: *Theoretical Limitations of Organizational Learning Models*

Model	Inter-organizational level	Contingency dimension	Dynamic dimension	Limitations/ context
The Complete Cycle of Choice (March & Olsen)	No	Not emphasized explicitly	Yes	- focus on cycle of choice - no team level (Crossan et al., 1999) nor inter-organizational - conceptual
OADI-IMM model (Kim)	No	Not emphasized explicitly	Yes	- no team and inter-organizational level - conceptual
Information processing (Huber)	Not emphasized explicitly	No	No	- inter-organizational learning level could be implicitly assumed - conceptual
4I model (Crossan, Lane & White)	No	Not emphasized explicitly	Yes	- no inter-organizational level - conceptual and verified
5I model (Jones & Macpherson)	Yes	Not emphasized explicitly	Yes	- focus on SMEs - qualitative research
Dynamic model of intra- and inter-organizational learning (Holmqvist)	Yes	Partially	Yes	- intra-organizational level (individual, team and organizational as one level) - conceptual
Conceptualizing the learning process (Zhang, Macpherson, & Jones)	Yes	Partially	Yes	- focus on SMEs - qualitative research - verification
A conceptual framework for the management of organizational learning (Pawlowsky)	Yes	No	Yes	- conceptual

Organizations do not learn constantly or at the same speed and quality, and some do not practice organizational learning at all, as their contingencies do not support organizational learning. Those models do not fully include any denotation of contextual factors. On the other hand, if an organization processes the information to produce knowledge but only stores it, an important opportunity to learn is missed, as every application of acquired knowledge gives feedback information, which then serves as the source for a new cycle of learning. As evident from Table 1, the dimensions have been partially addressed before; however, none of the existing models incorporate (a) four levels of organizational learning, including the proactive role of inter-organizational learning, where the group of organizations learn(s), (b) contingency, (c) dynamic dimensions, and (d) representation with one single model; therefore, these existing models should be integrated and expanded accordingly.

1.3. Organizational Learning and Neuroleadership

The process of individual learning, which is a necessary but insufficient condition for organizational learning (Senge, 1993), is managed by human brains, as individual learning is the basis of and therefore a prerequisite for higher, social-level learning (Jashapara, 2003; Kim, 1993; Senge, 1993). In searching for an answer to how an organization learns, Hedberg (in Romme & Dillen, 1997, p. 69) claims that an organization does not have a brain but has cognitive systems and memories available through which certain behaviors, mental models, and values are retained, resulting in co-influencing the learning of individuals and the storage of new knowledge by organizations, occurring in the form of manuals, procedures, symbols, rituals, and myths. Those manuals, procedures, symbols, rituals, and myths are then again put in action by the human brain. As Vorhauer-Smith (2011) points out, a key process in the brain is learning, conducted through memory.

Neuroscience studies the nervous system, and it is not surprising that the interest in neuroscience is high due to the wide range of possible implications such as, for example, in the area of neuroeconomics (Hubert, 2010) or the implications of neuroscience for leadership. The area is still emerging, and according to Rock (Lafferty & Alford, 2010; 2010), who coined the term, neuroleadership explores how leaders and followers think and transfers the findings of neuroscience to four key leadership domains: (a) the ability to solve problems and make decisions, (b) the ability to regulate emotions, (c) the ability to collaborate with others, and (d) the ability to facilitate change, as presented in Table 2. The relation between leaders and co-workers has changed content wise, as the emphasis is on acknowledging and raising awareness about the thinking process of both leaders and co-workers.

Table 2: *Four Key Domains of Neuroleadership According to Rock*

Decision making	A small part of our brain, the prefrontal cortex (hereinafter: PFC), is responsible for human conscious interactions, problem solving, and decision making. Rock (2009) claimed that conscious mental performance can be improved by overcoming the key limitations of PFC: (1) PFC needs lots of energy, which is a limited resource; (2) people can hold and manipulate only a limited number of pieces of information at the same time; (3) the human brain can accurately perform only one conscious process at a time; (4) attention is easily distracted; (5) fussiness is present; and (6) limitation exists in creative situations, resulting in an increased capacity for problem solving and decision making.
Emotion regulation	Automatic responses to dangers or rewards, even subconscious ones, are perceived as emotions, which play an important role in human thinking, and the ability to regulate emotions is crucial to being effective (Rock, 2009), as cognition and emotions are interrelated. Emotions are seen as triggers and responses to conscious thinking (Hubert, 2010); therefore, it is important to understand, pull back, and detect emotional and cognitive action occurring within the mind and, if needed, constructively regulate emotions.
Collaboration	Along with the human need for food, water, shelter, and a sense of certainty, humans have social needs such as feeling safe among people, a sense of fairness, and a sense of status, which strongly influence how people collaborate (Rock, 2009). For example, obtaining a good reputation or avoiding a bad one is a powerful incentive for human actions (Izuma, 2012), next to the readiness of individuals to act in a way that will increase their personal status and support activities that seem fair (Rock, 2009). To exemplify, an individual who voluntarily and spontaneously engages in positive or negative behaviors, like knowledge sharing or knowledge hiding, will implicitly invoke a similar reciprocal behavior, which affects motivational climate and creativity of the organization (Černe, Nerstad, Dysvik, & Škerlavaj, 2014).
Facilitating change	According to Rock and Schwartz (2006), change is registered in our brain as a threat that triggers the fear response and affects how our brains operate. To overcome resistance to change, repeated attention, or an insight generated from within, is needed, which facilitates change implementation.

Those four domains of neuroleadership are closely related to the organizational learning process, as (a) decision making and problem solving ability focuses on cognition and (b) emotion regulation ability focuses on emotions, which are an important part of individual and organizational processes of learning (Long & Newton, 1997), as the relationship between cognition and affective states exists in both directions. Cognition influences most affective states and informs individuals about the relevance of the situation and previous experience; meanwhile, affective states influence cognition through one's choice of what to perceive and store and by assessing the learning experience as good-bad, pleasant-unpleasant, and important or not (Gondim & Mutti, 2011). Hubert (2010) stressed that emotions often represent unconscious knowledge. (c) The ability to collaborate with others is important for learning, because, according to social learning theory, learning always takes place in the social context (Bandura, 1977) in terms of defining mental maps and beliefs about the world and as people often learn directly from and with others at an individual level. Meanwhile, higher-level learning is social by definition. Nevertheless, changes are an important source for learning, while learning also results in implementing changes.

As those domains are related to learning and are at the same time not too narrowly defined to limit the research, those four dimensions were chosen to streamline the research. At the same time, the novelty of neuroleadership makes a theoretical contribution to the field.

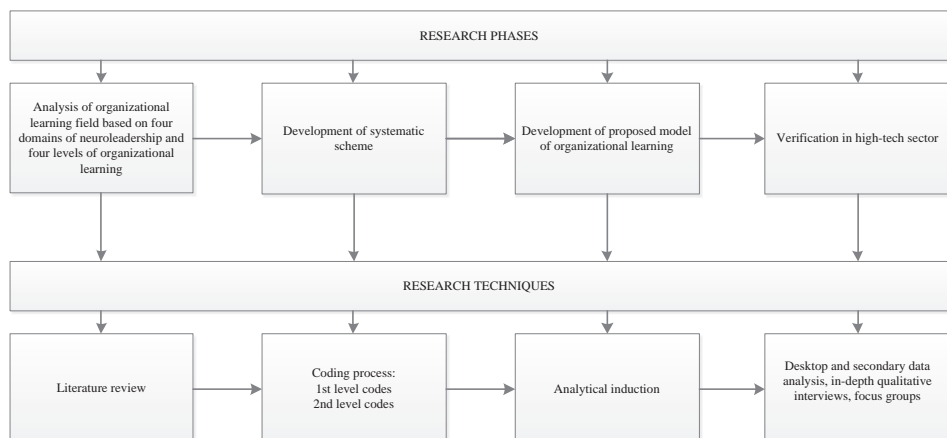
2 RESEARCH METHODOLOGY

2.1 Concept of the Study

Based on the limitations of the existing models of organizational learning discussed above as well as the trends in the global business environment, this study seeks to answer the following question: How can the models of organizational learning be integrated and expanded through contingencies and the dynamic dimension of the organizational learning process on all four levels? Our answer offers an integrated and expanded information-processing model of organizational learning that incorporates organizational learning on all four levels and four dimensions of neuroleadership to emphasize its contingency and dynamic dimensions. According to Jashapara (2011), qualitative studies represent the majority of empirical research on organizational learning. This research was conducted in two parts.

The research design scheme is presented in Figure 1. The first part of the study, encompassing the first three phases, presents the development of the systematic scheme based on the vast literature review and implementation of the coding process. The identified codes were further analyzed and coded using second-level coding, which enabled identification of the contingency and dynamic dimensions in the scientific literature on organizational learning. The analysis offers a solid base to propose the integrated and expanded model of organizational learning. To further verify the contingency and dynamic dimensions of the proposed organizational learning model, an empirical verification is provided.

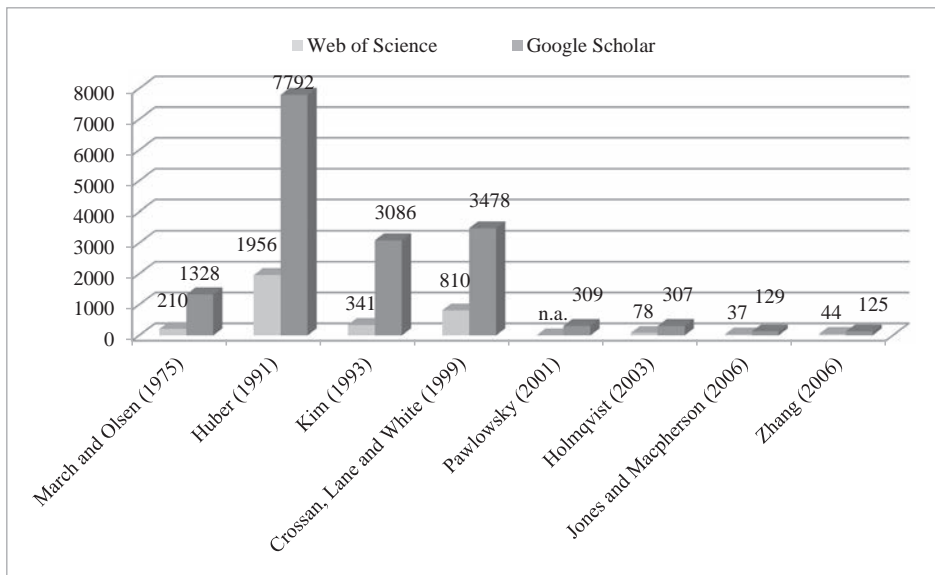
Figure 1: *Research design scheme*



2.2 Description of the Study and Development of the Systematic Scheme

Based on the limitations of the acknowledged models, Huber's (1991) process was chosen to build upon, for the following reasons: (1) It is the most acknowledged model of organizational learning, according to Web of Science and Google Scholar statistics, as presented in Figure 2. Until July 6, 2015, Huber (1991) was cited 1,956 times according to Web of Science and 7,792 times according to Google Scholar; (2) Huber's (1991) model focused on information processing perspective of organizational learning; (3) it explicitly included grafting and other external sources of learning; and (4) at its core, it does not connect specific phases to specific levels of learning.

Figure 2: Citations of organizational learning models according to Google Scholar and Web of Science



Source: Google Inc., Google Scholar, 2015.

In order to work on the identified limitations of the existing models, we conducted a systematic query on organizational learning. The search framework was designed as a two-dimensional matrix. The first axis of the matrix was defined by different levels of organizational learning, namely individual, team, organizational, and inter-organizational learning, because of the emphasized need to include the inter-organizational learning level in our model. The other axis of the matrix framework was defined using the four domains of neuroleadership: decision making, emotion regulation, collaboration, and change enhancement, which are on one hand closely related to the organizational learning process, and on the other hand broad enough not to limit the search too narrowly.

Based on the literature review per the described matrix framework, the systematic scheme presented in Figure 3 was developed. This scheme represents the theoretical in vivo codes generated from SCI/SSCI cited scholarly articles, denoting summaries and their special features, identified as connecting the dimensions of organizational learning field with the four dimensions of neuroleadership.

First-step theoretical coding was conducted to produce the codes. Two scholarly databases were examined, namely ScienceDirect and Google Scholar. The search criteria integrated both axes. A search was conducted for each possible content interconnection within the two-dimensional matrix, and the results were presented based on their relevance. We examined the first 100 most relevant hits of each linkage in each database. By way of example, for the connection between individual learning and decision making, the search criteria “individual learning and decision making” was used in both databases, and the first 100 hits in each database were scanned.

To narrow the bibliographic database, the first criterion of a SCI/SSCI citation was applied, followed by the second criterion, the relevance of the content. The researchers examined the abstracts, introductions, and discussion sections of each scholarly article and identified 195 relevant peer-reviewed articles, which were read in detail. During the process of classifying articles, keywords were identified for theoretical coding, and the preliminary SCI/SSCI literature review database was validated by another researcher who also focused on the strength of the connections between the dimensions. In addition, the theoretical codes were extracted from the most appropriate articles according to the research framework. The identified codes are presented in Figure 3.

Figure 4: Systematic Scheme of the Identified Theoretical Codes

Organizational learning Neuroleadership	Individual learning	Team learning	Organizational learning	Inter-organizational learning
Decision making	Risk (Dillon & Tinsley, 2008) Analytical detachment and experiential learning (Kolb, 1976)	Individual accountability (Feingold et al., 2008) Application of gained knowledge (Sarin & McDermott, 2003)	Strategic decision-making processes (Shrivastava & Grant, 1985) Explorative and exploitative knowledge (Kang, Morris, & Snell, 2007)	Absorptive capacity (Lane & Lubatkin, 1998)
Emotion regulation	Metacognition (Efklides, 2006) Learning from business failure (Shepherd, 2003)	Collaborative learning, shared regulation (Järvenoja & Järvelä, 2009)	Emotional capability (Akgün, Keskin, Byrne, & Aren, 2007)	Relational fit (Weber & Weber, 2007)
Collaboration	Computer-mediated vs. face-to-face collaboration (Ocker & Yaverbaum, 1999) Learning perception, knowledge construction (Benbunan-Fich & Arbaugh, 2006)	Team psychological safety (Edmondson, 1999) Conflict, politics (Adamson & Walker, 2011)	Parallel learning system (Schein, 1993)	Internalized experience, utilization of past experiences, and collaborative know-how (Simonin, 1997) Virtual integration, trust (Scott, 2000) (In)formal learning behaviors (Janowicz-Panjaitan & Noorderhaven, 2008)
Enhancing change	Learning synchronization (Chonko, Dubinsky, Jones, & Roberts, 2003) Routine (Hendry, 1996)	Learning facilitation (Edmondson, 2003)	Organizational learning culture (Škerlavaj, Štemberger, Skrinjar, & Dimovski, 2007) Organizational memory and organizational change (Van der Bent, Paauwe, & Williams, 1999)	Institutionalization of external knowledge (Jones & Macpherson, 2006)

Note: The type of box reveals the coverage of the identified research articles in a certain category between two chosen dimensions based on the search (thick bold line: very well-researched area; highlighted line: well-researched; normal line: poorly researched; dashed line: under-researched)

All identified codes were further analyzed and coded on the second level (see Table 3). All of the existing four processes of Huber's (1991) model were used on the second level as well as two additional processes, *learning inhibitors and facilitators*, causing appropriate learning environment denoted by individual accountability, metacognition, team psychological safety, conflict, politics, virtual integration, trust, (in)formal learning behaviors, risk, strategic decision making processes, routine, learning facilitation, and the first-level code of organizational learning culture, which denoted the contingency dimension. The dynamic dimension of organizational learning was coded as the process of *knowledge application and feedback information – information transformation* on the second-level coding and denoted the following first-level codes: application of gained knowledge, learning from business failure, internalized experience, utilization of past experiences and collaborative know-how, and explorative and exploitative knowledge.

Table 3: *Analysis of Identified Codes*

First-level code	Second-level code
Individual accountability	
Metacognition	
Team psychological safety	
Conflict, politics	
Virtual integration, trust	
(In)formal learning behaviors	Learning inhibitors and facilitators
Risk	
Strategic decision making processes	
Routine	
Learning facilitation	
Organizational learning culture	
Analytical detachment and experiential learning	Knowledge acquisition
Parallel learning system	
Absorptive capacity	
Computer-mediated vs. face-to-face collaboration	Information distribution
Relational fit	
Learning perception, knowledge construction	Information interpretation
Collaborative learning, shared regulation	
Learning synchronization	
Organizational memory and organizational change	Organizational memory
Institutionalization of external knowledge	
Application of gained knowledge	
Learning from business failure	Knowledge application and feedback information – information transformation
Internalized experience, utilization of past experiences and collaborative know-how	
Explorative and exploitative knowledge	

Based on the analysis of identified codes, the Diamond model of organizational learning was developed.

2.3 Empirical Verification of the Theoretical Study

Because knowledge acquisition, information distribution, information interpretation, and organizational memory are already well-established processes in theory and practice, the empirical evidence emphasizes the additional two identified codes, (1) learning inhibitors and facilitators and (2) knowledge application and feedback information – information transformation, which denoted the contingency and dynamic dimensions.

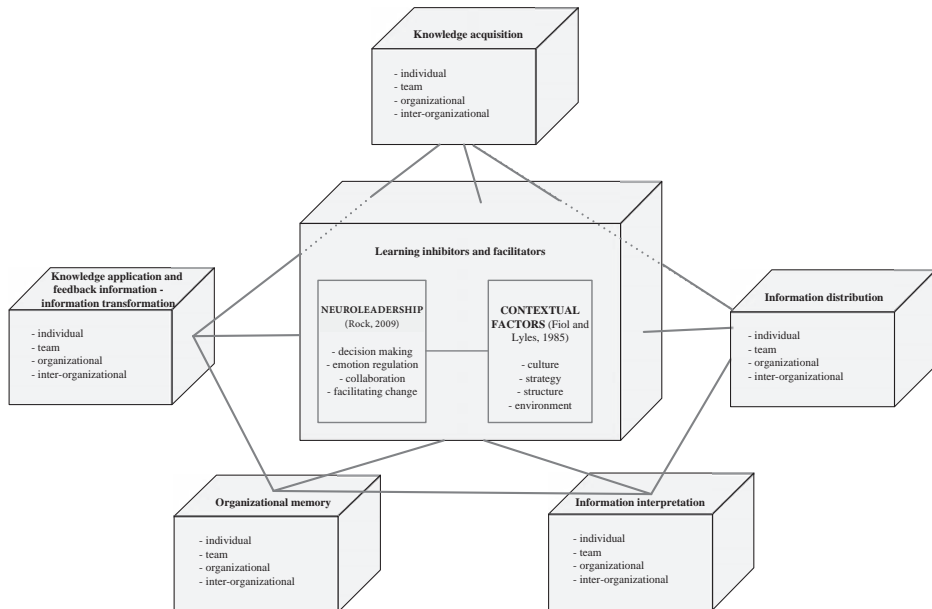
Illustrative examples of the second-level codes of learning inhibitors and facilitators and knowledge application and feedback information – information transformation were identified in two high-tech organizations that practice organizational learning process systematically and continuously. There are two main reasons why this industry was chosen (Yang et al., 2011): (1) The high-tech industry is knowledge intensive, and therefore organizations must cooperate with external partners to gain additional resources, and (2) the high-tech industry is rapidly changing; therefore, the cooperation among R&D and technology departments is vital. Halcom Group and Si.mobil were identified as the most appropriate organizations (Dimovski, Penger, Škerlavaj, & Žnidaršič, 2005) in which to highlight the organizational learning dynamic and contingency dimensions. Specifically, these organizations offer important contributions to the advancement of learning organizations in the Slovenian knowledge-intensive business environment, and the researchers were also able to access these organizations to collect in-depth primary qualitative data in addition to the vast amount of secondary data that were available. This research is part of a larger research program that takes place in the period of 2012 onward. The interviews lasted from 0.5 to 2 hours, and all of them were recorded and transcribed. In order to provide quotations for the empirical verification of this study, 5 interviews and 2 focus groups were used. Proof quotations (Pratt in Langley, 2012) were sought in Halcom and Si.mobil for each dimension to highlight and support the two identified second-level codes empirically, namely learning inhibitors and facilitators and the application of gained knowledge and feedback information – information transformation.

3 RESULTS OF THE STUDY

3.1 Emergence of a Diamond Model of Organizational Learning

Several different models of organizational learning exist, each with advantages and limitations, as presented in Table 1. The proposed theoretical integration and expansion is built on Huber's (1991) process, based on the identified second-level codes, is presented in Figure 4.

Figure 4: *Diamond model of organizational learning*



When designing the model, special emphasis was given to the four advancements of the existing model: (1) its contingency dimension, (2) its dynamic dimension, (3) its inclusion of all four levels of learning, and (4) its inclusion of neuroleadership.

(1) Networks do not learn at the same speed and quality, and neither do organizations, teams, or individuals. Even more differences in learning exist that determine the learning process, its quality, and continuity, and therefore these contextual factors are of crucial importance. The learning inhibitors and facilitators' code denoting the contingency dimension is positioned at the center of the model. Different contextual factors are grouped into one element for three reasons: (a) Those factors affect organizational learning on all levels, as levels of learning are inter-related. If those factors do not support and encourage learning on any of these four levels, then organizational learning will not truly occur continuously and systematically. For example, metacognition might be a characteristic of individuals and therefore of individual-level learning; however, individual-level learning is a necessary but insufficient condition for organizational learning. (b) One facilitator could facilitate or inhibit learning on several levels (e.g., organizational learning culture – if it is supportive of learning, it affects learning on all four levels, not only organizational-level learning), and (c) it keeps the model comprehensible. In naming contingencies, we follow Fiol and Lyles (1985), also quoted by Bapuji and Crossan (2004). Those contingencies can be supportive of learning or not, and in the case that it is not supportive, organizational learning will not (fully) take place.

(2) The continuity of the organizational learning process is represented with a diamond shape of the model, emphasizing that organizational learning is not linear, but is a continuously looping process. Coded as knowledge application and feedback information – information transformation, it denotes the need to implicate the knowledge. This knowledge application provides feedback information and transfers the information into new one(s) providing the basis for new cycle of organizational learning. Only if information is transferred into new information can the organizational learning be a continuous process. However, the phases need not be sequential once the organizational learning is established; therefore, the five phases are represented by the outer form of the diamond structure, each connected to an element of the learning inhibitors and facilitators. Time lag might exist before the knowledge application; however, it facilitates building on, modification of, and advancement of existing knowledge.

(3) The proposed Diamond model of organizational learning includes all levels of organizational learning, and also each of the non-central five phases in the model could be implemented at each organizational level; for example, organizational memory denotes all levels of memory, similar to organizational learning, which denotes learning on all four levels. Namely, each level can have its own knowledge repositories that in the long term also reflect lower levels and constitute higher levels of knowledge storage. The model also does not limit specific phases with a specific level of learning; the process can, but not necessarily will, take place within and among different levels in one cycle, and the transformed information could start a new cycle on a different level. As this is a continuous process, information and knowledge are shared among learning levels and entities in several cycles, and it does not just reside in a form of some rules, processes, politics, or manuals at the organizational level. It is important to note that for inter-organizational learning to truly occur, it is not enough that a single organization learns something from other organizations. Rather, more than one organization has to learn in the continuous process of learning among involved organizations, and from and with other organizations. It is a collaborative, reciprocal process.

(4) Nevertheless, through practicing the neuroleadership domains, the contextual factors (contingency dimension) that stimulate organizational learning are established that further support and enhance the dynamic process of information processing (dynamic dimension) of all five components: knowledge acquisition, information distribution, information interpretation, organizational memory, and knowledge application and feedback information – information transformation that stimulates new knowledge acquisition. However, neuroleadership cannot be understood as the only means for building appropriate contextual factors, rather, it should be understood as the model limitation. Also, other means to achieve it might exist; however, it exceeds the focus of this research.

3.2 Empirical Verification – Illustrative Examples of Two Knowledge-Intensive Organizations: Halcom Group and Si.mobil

Headquartered in Ljubljana, Slovenia, Halcom was established in 1992. Since then, it has become a leading provider of electronic payment system solutions in Central and Southeast Europe, and it is renowned for its excellent e-banking and e-invoicing advancements (Čadež, 2014; Halcom, 2014, n.a.; Kostelec, 2012), which positions Halcom as one of the most advanced knowledge-intensive organizations in local markets. The numerous awards for excellence Halcom has received indicate its dedication to excellence. Halcom's incubator of ideas, Halcom Studio, engenders a culture of innovation within and outside the organizational borders. Halcom engages in the process of organizational learning continuously on all levels.

Halcom's good practices support its formal learning process to develop soft skills and expert knowledge; for example, a Friday knowledge market is held to share knowledge on a chosen topic with co-workers; annual interviews are held to identify appropriate courses or conferences for employees; higher education is offered for employees, and an academy for top managers; and webinars, classical courses, exams, and other formal learning opportunities are provided to acquire certificates. In addition, Halcom practices informal procedures: for example, dedicating specific months to each Halcom value, practicing teamwork, or holding regular meetings with people from its subsidiaries during which they can share experiences and keep up to date (Čadež, 2014).

Si.mobil is the second largest mobile operator and service provider in Slovenia that practices organizational learning continuously. Organizational learning in Si.mobil emphasizes the Internal Competencies Identification System, Si.mind program, Potential and Talent Development Program, Program of Keeping Key Human Resources, Engagement Program, Pay for Performance Award System, Role Model Program, and Simplicity Program. Employees regularly take part in the Si.mobil Academy, x.change program, online application TAG Business School 2.0, and TAG Business School in Vienna as participants or internal lecturers in which they share their gained knowledge and experiences to adjust or apply new knowledge to organizational substructures.

3.2.1 Contingency Dimension

The contingency dimension should be understood as a necessary, although insufficient, condition for organizational learning to take place. The collected empirical evidence from both studied examples showcase special care on building and maintaining appropriate learning facilitators, as demonstrated by the following quotations:

QUOTATION 1 - Mr. Čadež:

“Basically, Halcom cultivates the virtue that the leader is not the ultimate executor or thinker, but is an integrator that nurtures thinking process of his followers”

The quotation of Čadež denotes individual accountability, virtual integration, trust, (in) formal learning behaviors, learning facilitation, and organizational learning culture codes. It clearly expresses the need to create an environment that will support thinking and learning of all co-workers, which is also in line with the neuroleadership perspective that leaders should cultivate the thinking process of co-workers and not do all the thinking to solve problems and make decisions instead of them.

QUOTATIONS 2 - Mr. Zupan:

“Halcom is focused on developing new ideas and prototypes and not on the projects and sales themselves; that would leave us to the price competition. Competitors might reengineer and copy our products and solutions; however, they are always lagging behind; as we go to our clients, talk with them about possible solutions, we get to know how our clients think, we learn together with clients, and this gives us the competitive advantage in relation to our competitors. [...] For building creative minds, we have started with Qi Gong yoga classes, as we are practicing half an hour yoga, or math, or physics... Every day of the week we have something; for example, on Fridays, we have creative challenges, including improv theatre and dancing, to nurture the creativity of our employees”.

The first part of this quotation denotes the (in)formal learning behaviors, strategic decision-making process, and routine codes and emphasizes inter-organizational learning together with clients, which the contextual factors need to support (e.g., focus on exploration, not sales and price competition), which ultimately bring them a competitive advantage due to challenging status quo and implemented changes. Furthermore, they also practice a “Building creative minds” initiative that is in line with the neuroleadership perspective to overcome the limitations in creative situations (e.g., by focusing on other things and allowing insights to happen), and to build and encourage collaboration among employees (e.g., through practicing together) that also evokes positive emotions (e.g., yoga classes).

QUOTATIONS 3 - Mr. Miladinović - part 1 and Mr. Krajner - part 2:

“Si.mobil has a competency model for developing leadership competencies according to which leader at Si.mobil needs to be a role model in all he does in a positive sense. He needs to make decisions fast, be efficient in difficult situations, be critical, and not be easily satisfied. Of course, he does also praise others when they do something extraordinarily well or unexpected. In addition, he needs to aspire toward change in order not to be static”. [...] The most important thing in stress management in the organization is communication. People need to be told what is going on, sincerely. Personal contact is crucial and as much possibilities of seeing the CEO are needed. Dejan Turk is the best stress reliever: he walks around the company, knows the names of the employees, and demonstrates concern for employees. Leaders are those that must work on stress management the most. We invest a lot into educating leaders how to deal with changes. It is logical; employees first look up to us”.

The first part of the quotation denotes individual accountability, team psychological safety, risk, strategic decision-making processes, and learning facilitation codes. Leaders

are the learning facilitators or inhibitors in practice, as co-workers look up to them for behavioral benchmarks and their behaviors become “the way we do things around here” – principles of organizational culture. Due to the hectic business environment in advanced knowledge-intensive organizations, decision makers inside the company must take on the wider responsibility for decisions made, and the strategic decision-making process always considers core business at the center of their attention. Due to the specific management style, appraisal for good work is instant, and initiatives are highly welcomed; therefore, shared leadership is a way to establish balance between individuals’ accountability and team psychological safety. The second part of the quotation denotes individual accountability, metacognition, team psychological safety, conflicts/politics, (in) formal learning behaviors, risk, strategic decision-making processes, learning facilitation, and organizational learning culture. Issues that are important to employees need to be formalized in the educational system of the company.

QUOTATION 4 - Attendee at Si.mobil Focus Group November 30, 2012:

“We act as the creators of new technologies in Slovenia, as; for example, we introduced cloud services, for which we have to educate and nurture our environment to achieve targeted business results”.

The quotation denotes virtual integration, trust, risk, strategic decision-making processes, and learning facilitation codes, demonstrating the importance of organizational learning in introducing a new technology to the market that is accompanied by risk and the need to prepare potential consumers for its usage.

As evident, the contingency dimension plays an important role in the organizational learning process, as it can foster and nurture or inhibit the organizational learning process itself. When the appropriate environment for organizational learning is established, knowledge acquisition, information distribution, information interpretation, organizational memory, and knowledge application and feedback information – information transformation can take place at individual, team, organizational, and inter-organizational levels of learning within the network or group of organizations that cooperate or collaborate in one or other way and therefore learn together on a continuous basis.

3.2.2 *Dynamic Dimension*

The dynamic dimension was denoted as the application of gained knowledge and feedback information – information transformation. This dimension enables the continuity of information processing; therefore, the organizational learning process itself is understood as a continuous process, not a linear one. The gained knowledge should be applied in practice to enable feedback in terms of lessons learned, which should serve as the basis for another loop of learning.

QUOTATIONS 5 - Mr. Čadež:

“I say that no learning activity is too expensive, if it has an appropriate effect, as well as that no learning is too cheap if it has no effect whatsoever. [...] One of the most important things is that the leader gives an example of openness, positivism, optimism, as well as accepting facts that mistakes are made; however, we need to learn from them. [...] Crucial activity in a successful organization is a discussion on what was done well as well as what was done badly, next to what we have learned from it, and not a discussion on who did something and why he did that instead of something else”.

The first part of the quotation is very clear on the need to implement the gained knowledge in practice, denouncing the application of gained knowledge code. The other is focused on learning from mistakes made, for which (a) appropriate learning environments established by managing learning inhibitors and facilitators need to be established that will support such learning and the mistake will be reported on, for which knowledge application is needed and will as such offer feedback information and therefore transform the information, which will serve as the input for the new loop of learning in order to prevent making the same mistake again. It denotes team psychological safety, learning from business failure, and internalized experience, utilization of past experiences, and collaborative know-how codes. The last part of the quotation emphasizes the need to learn from knowledge applications through discussions on activities done and lessons learned. On the other hand, a discussion on who is to blame and why it was done in one particular way would impede learning. For example, according to neuroleadership, such discussions evoke negative emotions that negatively affect human cognitive action. Even the knowledge would be implicated; it would not serve as a basis for a new cycle of learning if the contextual factors were not supportive to learning, denoted by team psychological safety, avoidance of conflict and politics, virtual integration and trust, (in)formal learning behaviors, learning facilitation, organizational learning culture, learning from business failure, and internalized experience, utilization of past experiences, and collaborative know-how codes.

Zupan, Halcom's idea manager, discussed the implementation of Halcom-related ideas:

QUOTATION 6 - Mr. Zupan:

“People say this is the best, a good approach, because they go back as being reborn, as they were working on things they like to work, which have fulfilled them, developed them; they have learned something, study new things, realize.”

Knowledge application (in this case, developing prototypes) serves as the source for learning, as is evident from the quotation above, which denotes the application of gained knowledge and explorative and exploitative knowledge codes. It also evokes positive emotions and empowers people to return to the regular part of their jobs.

QUOTATIONS 7 - Attendee at Si.mobil Focus Group December 7, 2012:

“TAG Business School education framework seems interesting to me as during those trainings that I attended the lecturer delivered content, a theory, and then we had to form groups and solve tasks and present the solutions to the rest of the audience; in this way we somehow tested the understanding of the content, presentation, networking. [...] What is most important to me is the chance to develop and upgrade my knowledge through practicing my job, as well as implementing newly gained knowledge in practice and, in that way, develop myself holistically. I think I would have really missed that” (Si.mobil, 2012a).

The first part of the quotation highlights the application of gained knowledge through metacognition in the official learning environment at the TAG group level, which means that the cultural dimension is also incorporated, as Si.mobil employees get to experience foreign people’s perspectives and their way of solving challenges, which facilitates comparison with Si.mobil’s methods of solving them. The next part is focused on the internalized experience, utilization of past experiences, and collaborative know-how code, which clearly demonstrates the need to make work meaningful.

QUOTATION 8 - Attendee at Si.mobil Focus Group, November 30, 2012:

“Through our yearly interviews, identified individual development paths, competencies system, and giving and accepting feedback, we are receiving constant opportunities for planning, and executing our mission” (Si.mobil, 2012b).

The last quotation denounces the dynamic dimension by highlighting that employees are information transformers by receiving regular feedback about their performance and applying it in their future work activities. Feedback also empowers people to contribute to the execution of the company’s socially responsible mission, which is connectivity.

3.2.3 Scope of learning

As demonstrated with the provided quotations, organizations learn from and together with other organizations, enabling not only one, but rather more, organizations to learn in their collaborative learning processes. Quotation 2 clearly indicates that inter-organizational learning is a meaningful part of Halcom learning activities, as the organization also learns from and with clients, partners, and other stakeholders, providing Halcom with important competitive advantages. Similarly, as is evident from quotation 7, inter-organizational learning has an important role also in the Si.mobil case, as it represents the key developmental platform for learning from and with stakeholders inside and outside of América Móvil Group, TAG Business School, and local business partners.

No attempt was made to validate the model in a positivistic sense, but rather to highlight the model with empirical data to provide a better understanding of discussed social phenomena. Consequently, our data and research conclusions are tentative and open to new interpretations (Zhang et al., 2006). Our proposed model can be generalized to any

sector; however, in this paper, we have illustrated its usefulness in the high-tech sector only. The proposed model includes proactive, collaborative inter-organizational learning, as well as the contingency and dynamic dimension, and presents it in one conceptual model that also establishes the link between the organizational learning field and the emerging field of neuroleadership.

4 DISCUSSION

Each era brings new challenges (Van Der Vegt, Essens, Wahlström, & George, 2015), and the environment has changed dramatically since the introduction of the most acknowledged models of organizational learning; therefore, the research community needs to indicate which dimensions play important roles in contemporary organizational learning. The paper integrates partial studies, for example, (a) inter-organizational learning (Bapuji & Crossan, 2004; Beeby & Booth, 2000; Crossan et al., 1995; Crossan et al., 2011; Holmqvist, 2003; Jones & Macpherson, 2006; Mariotti, 2005; Yang et al., 2011; Zhang et al., 2006), and at the same time emphasizes its (b) contingency (Bapuji & Crossan, 2004; Crossan et al., 2011; Yang et al., 2011; Zhang et al., 2006) and (c) dynamic (Crossan et al., 1995; Crossan et al., 2011; Holmqvist, 2003; Jones & Macpherson, 2006) dimensions through investigating organizational learning literature, and presents it all in (d) an integrated, expanded model. The first identified element, learning inhibitors and facilitators, should be understood as a necessary but insufficient condition for establishing the process of organizational learning, which denotes the contingency dimension. This includes support of the appropriate information technology, organizational culture, including but not limited to regulating emotions, open communication, trust, problem solving orientation, and leadership, as well as organizational strategy, structure, and environment, which all support the successful implementation of the learning process. Several authors (Cannon & Edmondson, 2005; Chialvo & Bak, 1999; Tjosvold, Yu, & Hui, 2004) studied organizational learning from failures and emphasized the importance of such learning. Organizational culture that promotes identification and revealing of failures enables individuals and organizations to learn from their mistakes, as otherwise important opportunities are missed and learning is not a continuous process.

Different organizational learning facilitators exist (Bapuji & Crossan, 2004) that cause numerous differences in learning. For example, just as humans do not learn at the same pace (Powell, Rabbitt, & Kennedy, 2014) at the individual level, practice shows that all organizations do not learn at a constant basis or at the same pace. Fiol and Lyles (1985, p. 804) further support the contingency dimension, claiming that four contextual factors create and reinforce and are created by learning “corporate culture conducive to learning, strategy that allows flexibility, an organizational structure that allows both innovativeness and new insights, and the environment.” Nevertheless, how an organization processes information and its speed, quality, and continuity are important, and its effects constitute organizational learning. The contingencies per se are indicated in some pre-existing models, although they are not addressed sufficiently or in an appropriate proactive role. For example, in the 4I (Crossan et al., 1999) model, learning is institutionalized in its systems,

structures, strategies, and procedures. In this case, these are only the consequences, not the conditions of learning per se. Furthermore, March and Olsen (1975) suggested the need to investigate a theory of environment that was less organization centered, which is in line with adding the inter-organizational level of organizational learning. At the same time, this suggestion points to the need to include the interactive relationships with the environment and other contingency factors. Nonaka and Takeuchi (1995) emphasize organizational intention, autonomy, fluctuation and creative chaos, and redundancy, as well as requisite variety, as main contingencies; however, their SECI model is to be understood as a knowledge creation process within the knowledge management domain (Jashapara, 2011, p. 328).

The element called knowledge application and feedback information – information transformation has extreme importance in the proposed model, as it denotes the application of newly gained knowledge, which several authors support, including Örtengren (2004, p. 133), who proposed adding an additional element of organizational learning to Huber's (1991) four elements, which represent the practical usage of stored knowledge. This element enables the continuity of the process itself, as learning without any knowledge application to real life, products, solutions, processes, or artificial settings (e.g., simulations or experiments) does not allow for feedback or lessons learned, nor creative processes (Harrison & Rouse, 2015); therefore, it offers no grounds for further learning or continuity of the process. According to the information processing perspective on organizational learning, information should be translated into feedback through knowledge acquisition, information distribution, information interpretation, organizational memory, and knowledge application; this transformed information should enter into or constitute a new loop of organizational learning. Argyris and Schön (1978; in Kim, 1993, p. 38) pointed out that “learning takes place only when new knowledge is translated into different behavior that is replicable.”

Garvin (1993) also supported the need to further incorporate knowledge application into the organizational learning model. He notes that three overlapping stages of organizational learning include (a) cognitive, when members of the organization are exposed to new ideas and begin to think differently; (b) behavioral, in which employees alter their behaviors; and (c) performance improvement, when changes in behavior lead to measurable improvements in results, as performance improvement cannot be understood differently from the application of newly gained knowledge that enables feedback to improve performance. Argote and Miron-Spektor (2011) also claimed that the common denominator of existing definitions of organizational learning is a change in an organization that occurs because of the experience gained by the organization.

March (1991) emphasized the relation between an exploration of new possibilities (e.g., developing new product) and an exploitation of old certainties, (e.g., improving existing products) is important on all levels of organizational learning, which implicitly and clearly demands application of knowledge. The included dynamic dimension integrates March and Olsen's (1975) dynamic model, which incorporates individual-causing organizational actions and leads to environmental responses, which calls for knowledge

application, and the feed-forward and feedback processes relating to the four Is in Crossan et al.'s (1999) model. Nevertheless, Huber's (1991) process itself also closely looks at experiential learning (learning from direct experience) (Penger, Žnidaršič, & Dimovski, 2011) or vicarious learning (learning from others' experiences) that appear in the phase of knowledge acquisition and calls for the knowledge application phase to enable the experience in one's own or others' settings. Therefore, the learning process should and must not be understood linearly or as the end in itself, but rather as incorporating the knowledge application and feedback information – information transformation element as the basis for the next loop of organizational learning to enable the dynamic dimension based on the lessons-learned approach.

The contemporary environment has changed the learning processes in terms of content and methods, as the World Wide Web offers “instant expertise” (Peters & Snowden, 2008). Therefore, it is not enough for organizations to learn only on internal, team, and organizational levels, and hide and protect their knowledge, as the complex, dynamic, highly competitive, knowledge-intensive environment calls for forming collaborative relationships with other organizations (Fjeldstad, Snow, Miles, & Lettl, 2012; Miles, Miles, & Snow, 2005). And nevertheless, those collaborative processes include proactive learning, namely learning from and together with involved stakeholders, where several different organizations learn. It brings them important competitive advantages compared to other, not involved stakeholders.

5 IMPLICATIONS AND LIMITATIONS

5.1 Theoretical contributions

The main theoretical contribution of this paper is (a) the integration of the existing models of organizational learning into a single model and (b) adding key contingencies suggested by neuroleadership literature, emphasizing the continuity and dynamics of the process, as well as broadening the scope by adding proactive, collaborative inter-organizational learning. The proposed Diamond model of organizational learning includes a dynamic dimension that incorporates organizational learning on all levels, including the inter-organizational one, and allows for a continuous, dynamic process of organizational learning, which is shown by the outer form of the diamond that connects the five elements of the organizational learning process. This model also includes the contingency dimension by emphasizing the need to build the appropriate learning environment through managing learning inhibitors and facilitators; e.g., by practicing neuroleadership, characterized by occupying the central position of the added element and connected to all other elements. The proposed information processing model is in line with previous research and business practices of the studied illustrative examples from knowledge-intensive organizations.

As another theoretical contribution, the definition of inter-organizational learning is provided, emphasizing the group of organizations that learn in proactive, collaborative

ways, as external sources of learning are not sufficient conditions for inter-organizational learning, but are necessary. According to the definition provided, more organizations need to learn together in the long term. Learning of only one organization based on the sources of other organizations is not enough for inter-organizational learning to truly occur, e.g., through vicarious learning or grafting. When only one organization learns once from the mistake of the competitor, from benchmarking (vicarious learning), or by employing one of its competitor's key employees (grafting), this is not to be seen as inter-organizational learning, as it lacks reciprocity. Rather, it requires the mutual learning of more than one organization. This process requires cooperation or collaboration, and not just competition (Snow, 2016).

The additional theoretical contributions of this paper follow from the research findings of the developed systematic scheme. First, a more detailed inspection of the framework for the established 16 connections within the developed model points to the possibility of an under-researched area. Based on the developed systematic scheme, a poorly researched area between inter-organizational learning and emotion regulation dimensions was identified, which might offer insights into the design of other studies, as emotions and their regulation are important at all levels of organizational learning, and, as at the organizational level, might affect learning within the network of organizations.

5.2 Practical Implications

This study offers several important practical implications for knowledge-intensive organizations. First, organizations that wish to implement an organizational learning process continuously are advised to audit their organizational learning practices. By concretely auditing these processes, organizations should be able to identify their strong and weak elements and opportunities for improvement. Although the process of organizational learning must be practiced at all hierarchical levels, leaders must ensure that they practice and support the process first, as they are role models to other employees. This leads to the second important implication of the study, which concerns a focus on building an appropriate learning environment that will not impede, but support information processing and learning on all levels where leaders and the HR development department play a crucial role. Specifically, they must acknowledge that mistakes do happen, and if they cannot learn from them, they will keep repeating the same mistakes. In addition, leaders should support the building of appropriate IT environments, cultures, and climates of trust, and positive emotions where people feel safe to learn and propose new ideas and solutions based on existing and newly gained knowledge. They must also feel free to reveal and not hinder mistakes made. This is often the case in practice, as employees do not want to lose their statuses. This practice is in line with neuroleadership, which is one way to approach managerial challenges of establishing continuous organizational learning processes.

A third important implication based on neuroleadership that has managerial implications is that leaders should be aware of the fact that emotions influence the learning process at the individual and collective levels. Therefore, they should be aware of their emotions

and regulate them as well as be capable of understanding others' (e.g., followers, business partners) emotions and help them successfully regulate their emotions to not interrupt the learning process. They should incorporate good practices that will enable employees to understand how other people think as well as their reasons, which will ease their emotional regulations.

Another important implication that follows in neuroleadership is the importance of nurturing collaboration by ensuring that people feel safe as well as challenging the status quo constantly to enhance changes and enhance learning, e.g., through discussions on changes to make them more familiar to people.

The fifth important implication for practitioners and the consulting industry is the continuity of the process itself, which is based on knowledge application and feedback. When applying gained knowledge, organizations should prepare lessons learned reports, identify whether the set goals of the activity have been achieved, and identify major lessons learned and best practices. It is suggested that leaders and employees openly discuss these issues and build databases of the written reports so the next time other employees who did not participate in the post-mortem discussions will be able to act in line with the lessons learned from previous activities. This approach will enable better knowledge application and continuity of the learning process based on the gained feedback.

Nevertheless, in a turbulent, disruptive, highly competitive environment, emphasis should be given also to learning not only from, but also together collaboratively with other organizations, including suppliers, partners, customers, and other involved stakeholders. Practitioners should not understand their competitive advantages being decreased, if they learn and share it with other involved stakeholders. Rather, they should establish the process of learning from and with others searching and building on the collaborative benefits of the inter-organizational learning.

5.3 Limitations

Our paper should be read with some limitations in mind. The main limitation is its nature, as readers should be aware that the proposed Diamond model of organizational learning was developed based on an extensive literature review and was further supported with two illustrative examples from knowledge-intensive organizations. The main boundary of the proposed model is its neuroleadership framework, namely the four key domains, problem solving, emotion regulation, collaboration, and enhancement of change, that were used to limit the literature review. On the other hand, those four domains are not too narrowly defined to limit our literature review and systematic scheme too much. By no means is practicing neuroleadership the only way to build appropriate contextual factors; other means might exist, too. However, this subject exceeds the focus of this paper. This study was verified in the Slovenian business setting, which, under no circumstances, allows statistical generalization to other settings, although it does facilitate comprehension for the contemporary meaning of the organizational learning process itself.

CONCLUSION

In this paper, organizational learning was conceptualized as a dynamic, contingent, proactive, and collaborative process of information processing on all four levels. The new model proposes an integration and expansion by adding two new elements: learning inhibitors and facilitators established through practicing neuroleadership that emphasize the contingency dimension, and knowledge application and feedback information – information transformation that denotes the dynamic dimension on all four levels. The proposed advancements were suggested based on the developed systematic literature review and its coding process and was further verified within two Slovenian knowledge-intensive organizations that continuously practice organizational learning. This introduction of the integrated, expanded model of organizational learning offers the answer to the contemporary business environment. In addition, several implications of the study for the organizational learning theory and practice were identified.

The importance of organizational learning is increasing, as the global economy is becoming more complex, dynamic, and highly competitive. Learning needs to occur collaboratively within and between organizations to build and retain their competitive advantage in order to excel in a constantly changing business environment. Neuroscience findings offer valuable insights to understand the process of learning at the individual as well as social levels that is not yet incorporated into the theory and practice of the organizational learning field. It offers enormous potential also for managers and organizational designers to improve organizational learning processes on all four levels.

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THE COSTS OF TRAFFIC ACCIDENTS DUE TO THE HETEROGENIZATION OF TRAFFIC FLOWS ON SLOVENIAN MOTORWAYS

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ABSTRACT: *The evolution of modal split of freight transport is causing the heterogenization of traffic flows on motorways, so the aim of the paper is to explore the effects of changing structure of traffic flows on Slovenian motorways on road safety and to assess this effect in a financial way. We have calculated crash costs of accidents that were caused by trucks as well as the crash costs of the accidents involving trucks. In addition, we created two safety performance functions for prediction of the number of traffic accidents on Slovenian motorways. The number and the share of accidents involving trucks on Slovenian motorways is increasing as well as the amount of traffic work done by the trucks is, so it is possible to expect increasing crash costs of such accidents on Slovenian motorways.*

Keywords: *motorways, traffic flows structure, trucks, traffic safety, external costs of traffic accidents, safety performance function*

JEL Classification: R41, R42, O18

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INTRODUCTION

One of the most important elements that describe the functioning of transport system is traffic safety. Traffic safety is commonly expressed in terms of number of accidents and severity of their consequences. An estimation of the World Health Organization is that approximately 1.24 million people die every year on the world's roads, and another 20 to 50 million sustain nonfatal injuries as a result of road traffic crashes (WHO, 2013a). Apart from the human suffering, traffic accidents also cause significant costs.

Road traffic injuries cause considerable economic losses to victims, their families, and to nations as a whole. These losses arise from the cost of treatment (including rehabilitation and incident investigation) as well as reduced or lost productivity (e.g. in wages or unpaid

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taxes) for those killed or disabled by their injuries, and for family members who need to take time off work to care for the injured (WHO, 2013b). Crash costs, thus include internal costs, which are damages and risks to the individual traveling by a particular vehicle or mode, and external costs, which are un-compensated damages and risks imposed by an individual on other people (VTPI, 2013). In economic terms, the external costs of road crash injuries are estimated at roughly 1% of gross national product (GNP) in low-income countries, 1.5% in middle-income countries and 2% in high income countries (Armigol *et al.*, 2008). Traffic safety is thus clearly one of the major concerns of modern transport.

A road traffic accident results from a combination of factors comprising roads, vehicles, weather conditions and road users. Some of the factors contribute to the occurrence of a collision and are therefore part of crash causation, while other factors aggravate the effects of the collision and thus contribute to trauma severity (WHO, 2006). And while five major causes of traffic accidents namely speed, drink-driving, distracted driving, use of motorcycle helmets and use of seat belts and child restraints have been thoroughly analysed worldwide, the impact of the structure of traffic flows on traffic safety has been marginally researched, especially in developed countries.

Given the fact that important European freight transport routes pass through the Slovenian territory and that Slovenian legislation demands the use of higher category roads for trucks⁴ if such roads exist parallel to lower category roads, we decided to examine the traffic safety in regards of traffic flow structure on the Slovenian motorways, with the focus on the involvement of trucks in the accidents. The objectives of the paper are:

- Examination of trends in the structure of traffic flows on Slovenian motorways,
- Examination of the involvement of trucks in traffic accidents on Slovenian motorways,
- Financial assessment of traffic accidents involving trucks on Slovenian motorways, and
- Creation of safety performance functions for Slovenian motorways based on the past safety records.

The structure of the paper is the following: in the next section we present the theoretical introduction to the traffic flow theory followed by the literature overview on the interaction between traffic flow structures and traffic safety. We then describe the data and methodology and this is followed by the description of the results that we obtained. In the last chapter we summarize the results and point out to some indirect safety issues that can arise from the heterogenization of traffic flows on Slovenian motorways.

4 We use the word “truck” for freight vehicles with the permissible weight of more than 3.5 tons

1. THE INTERACTION BETWEEN TRFFIC FLOW STRUCTURE AND TRAFFIC SAFETY

Traffic flow theory seeks to describe the interactions between the vehicles and their operators as well as the infrastructure in a mathematical way. Traffic flow theory distinguishes between microscopic and macroscopic traffic flow variables, where microscopic traffic flow variables focus on individual drivers, while macroscopic traffic flow variables reflect the average state of the traffic flow (see e.g. May, 1990; Papageorgiou 2003; Dadić & Kos, 2007; Hoogendoorn & Knoop 2013). A relation needs to be established between the microscopic behaviour and the macro performance of the flow (Lasmini *et al.* 2013).

Macroscopic traffic flows is further on divided into homogeneous and inhomogeneous or heterogeneous traffic flows. Homogenous traffic flows are composed of vehicles of same characteristics, while the heterogeneous traffic stream consists of vehicles that have different speeds, sizes, and operating characteristics (see e.g. Katz, 2009; Dadić & Kos 2007). The dividing line between homogeneous and heterogeneous traffic flows is not uniquely defined; it is possible to talk about heterogeneous traffic flow if the share of the dominant mode is less than certain percentage, more precisely around 85% during peak time (Katz, 2009) or that there are three types of vehicles using the same infrastructure, namely fast vehicles, slow vehicles and long vehicles (Kerner, 2004). Another definition says that the heterogeneity of traffic flows is expressed in the share of commercial vehicles in the traffic flow, that is with the share of trucks and buses (Dadić & Kos, 2007).

1.1. Literature overview

It is possible to find many articles dealing with the heterogeneity of traffic flows in urban areas of developing countries where the mix of non-motorized and motorized modes exists (see e.g. Mizanur, Nakamura 2005; Sharma *et al.* 2011; Lasmini *et al.* 2013), while there has not been a lot of published work on heterogeneity of traffic flows on motorways and its influence on road safety.

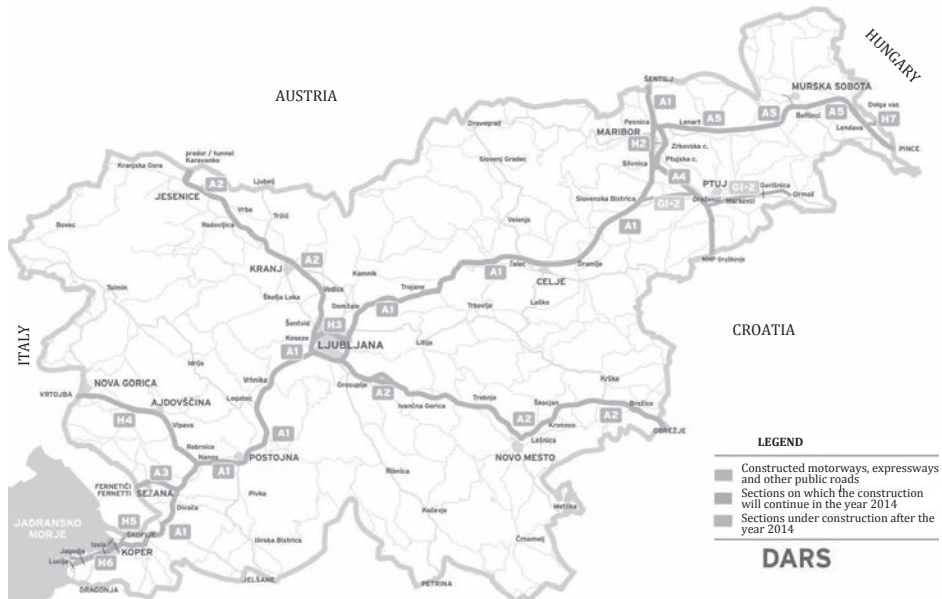
Ferrari has been researching the traffic flows on motorways, and in his recent works he has emphasized the effect of trucks on traffic flows; however, not on traffic safety (see Ferrari, 2009; Ferrari, 2011). Martin (2002) on the other hand, has analysed traffic flows on 2,000 kilometres of French motorways for the period of two years in order to determine the relation between traffic flows and crash occurrence, but with no specific attention to trucks. Marchesini and Weijermars (2010) explored the relationship between congestion and road safety on motorways from the theoretic point of view, while Golob and others (2004) presented strong evidence between flow condition and the likelihood of traffic accidents by type of crash on motorways. Finally, Ramirez and others (2009) investigated the impact of trucks on traffic safety on Spanish interurban roads. They find out that a reduction in total number of accidents would occur as a result in the drop in the number of trucks on all Spanish interurban roads.

Traffic impacts our living environment in many different ways. Besides accidents, it causes congestion, noise, air pollution, climate changes etc. These impacts change with the changes in traffic volume and traffic structure. In past decades several studies dealing with the negative impacts of transport have been created (for example INFRAS/IWW, 2000, 2004; HEATCO, 2005; GRACE, 2008; IMPACT, 2009; CE/INFRAS/ISI, 2011), while the only comprehensive assessment of the external costs of transport in Slovenia was obtained in 2004 with the research Analysis of External Costs of Transport (Lep *et al.*, 2004). This study includes also the financial assessment of the impact of the involvement of trucks in the traffic accidents.

2. SLOVENIA AND ITS MOTORWAY SYSTEM

The Slovenian motorway system is being constructed since 1970s. Slovenian government gave the priority to the construction of motorways network in the early 1990s when Slovenia became a sovereign state, given the fact that some segments of Slovenian motorway system were already constructed, and considering the broader social and economic importance of motorways in regards to the railways. Today the Slovenian motorways system is pretty much completed while the railways remained in poor condition.

Figure 1: *The motorway system in the Republic of Slovenia*



Source: DARS, 2014

The Slovenian motorway system is divided into five segments as can be seen in Figure 1. These segments are:

- A1 motorway segment is around 245 km long, connecting Sentilj at the Austrian border and Koper on the Adriatic shore. It passes by several important Slovenian cities, including Maribor, Celje, Ljubljana and Koper, and is a part of formal Pan-European Corridor V.
- A2 motorway segment is around 175 km long, connecting the Karavanke Tunnel at the Austrian border via the capital city Ljubljana to Obrezje at the Croatian border, near Zagreb. It connects several major Slovene cities, including Kranj, Ljubljana, and Novo Mesto, and is a part of formal Pan-European Corridor X.
- A3 motorway segment is around 12 km long, connecting Gabrk/Divaca on A1 with Italian border via the city of Sezana.
- A4 motorway segment is around 21 km long connecting Slivnica/Maribor on A1 to Gruskovje at the Croatian border.
- A5 motorway segment is around 80 km long connecting Dragucova near Maribor on A1 and Pince at the Hungarian border via Murska Sobota and Lendava.

3. DATA AND METHODS

3.1. Data collection

Slovenia has a long tradition of traffic accidents data recording; first records on traffic accidents date back to early 1950s. The current data set is composed of two data bases; the first one including the information on the occurrence of accidents and the other one on the participants in these accidents. The two data bases are connected through the accident identification number, and are both provided by the Slovenian Police.

For purposes of this paper we created an integral data base on traffic accidents covering the period from 2001 to 2012. We identified and removed 26 cases with mismatched identification number (same identification number for different cases). The data for the year 2013 served for testing purposes.

The Average annual daily traffic (AADT) and the Vehicle kilometres travelled (VKT) are two very important types of traffic data. These two raw traffic variables, mainly derived from fixed sensors measurements, play a key role in traffic engineering analysis and policy decisions (Leduc, 2008). Fixed automatic counters are installed on several spots on Slovenian motorways and they allow the differentiation among vehicle types. So, in order to link the crash occurrence with the traffic flows we extracted the data on traffic volume and traffic flow structure on Slovenian motorways from the annual publications of Slovenian Roads Agency.

In addition, Slovenian traffic information centre provides data from 587 automatic counters on Slovenian roads in real time over the web portal, but the system does not allow the

retrieval of past data. In order to get the picture on how heterogeneity of traffic flows reflects on average speed of vehicles, average time between driving vehicles, and occupancy of the carriageway we recorded the data on traffic flows during March and April 2014.

To express the consequences of accidents on motorways caused by the trucks in monetary terms we used the determined costs of accidents from the study on external costs in Slovenia that was created by Lep and others in 2004. We adjusted these costs by the inflation rates obtained from the Statistical office of the Republic of Slovenia.

3.2. Limitations of the obtained data

It is well known that the reporting of road accidents in official statistics is incomplete and biased (Elvik *et al.* 2009), and even when crashes are well defined in identical terms, there are significant variations in crash data among sources (Shinar, 2007).

Brvar (2010) expressed doubts on the accuracy of Slovenian official road safety statistics, but there is no better publically available data on traffic accidents in Slovenia than data provided by Slovenian police. In addition the Slovene reporting system on traffic accidents does not differentiate on the size of trucks that are involved in the accident.

Another problem regarding traffic accidents database is the fact that the inducer is not indicated in 18.6% cases of traffic accidents on Slovenian motorways.

3.3. Methods

Firstly, we created a time series with monthly data on traffic accidents on Slovenian motorways for the period from 2001 to 2012. Then we used descriptive statistics to get an overall picture as well as to identify trends of traffic flows and traffic safety on Slovenian motorways.

Then we continued with the estimation of crash costs on Slovenian motorways. The value of life can be calculated in different ways (see e.g. VTPI, 2013), that is HC=Human capital; WTP=Willingness to pay; PGS=Pain grief suffering or VSI=Value of serious injury. In the only available study on external costs of transport in Slovenia, Lep *et al.* (2004), the value of life is calculated as WTP. Based on this study, we created an estimation of external costs involving trucks on Slovenian motorways. For this purpose we used the following formula

$$TC = A(b + c) \tag{1}$$

where A is the number of traffic accidents involving the trucks, b is the willingness to pay for the accident risk reduction and c represents the systematic external costs including the costs of hospital treatment and the costs of police investigation at the accident scene.

A common approach to forecast traffic safety is by the creation of safety performance function (SPF). SPF is an equation that is used to predict the average number of crashes per year at a location as a function of exposure and in some cases roadway characteristics. The generalized form of models that are used to forecast the number of road accidents takes the following form (Eenink *et al.* 2008):

$$E(\lambda) = \alpha Q^\beta e^{\sum y_i x_i} \quad (2)$$

where estimated expected number of accidents, $E(\lambda)$, is a function of traffic volume, Q , and a set of risk factors, x_i ($i = 1, 2, 3, \dots, n$). The effect of traffic volume on accidents is modelled in terms of an elasticity, that is a power, β , to which traffic volume is raised.

It would be good to make the selection of explanatory variables that are included in a SPF based on theory; however, data availability is often a limiting factor, thus formula (2) often takes the following simplified form as suggested by Elvik and others (2009):

$$E(\lambda) = AADT^\beta \quad (3)$$

where $AADT$ stays for average annual daily traffic, which is a proxy for traffic volume. The presumption of this model is that accidents occur randomly, but at constant rate in regards to traffic activity.

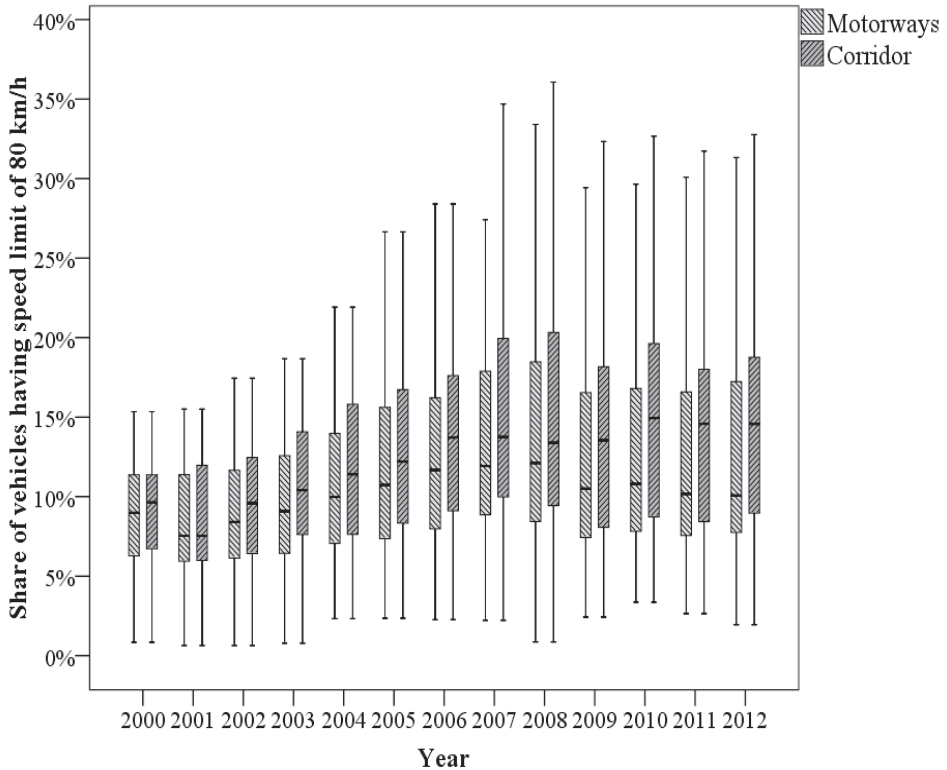
4. RESULTS AND DISCUSSION

4.1. Basic findings

Because of the large expansion of Slovenian motorway network (245 km were built in the period from 2001 to 2012) it was reasonable to convert data on transport volume to data on transport volume per kilometre of road to get first impression on traffic safety trends. Transport volumes have been constantly increasing on Slovenian motorways in the analysed period with average annual growth rate (AAGR) of traffic work per kilometre of road reaching 3.2% and compound annual growth rate (CAGR) 3.1%. However, in the same period, the traffic volume of freight vehicles increased in average by 8.9% per year, to reach 13.1% of all traffic volume done in 2012 in comparison to 7.4% in 2001.

On many sections of Slovenian motorways the share of vehicles having speed limit 80 km/h (that is trucks and passenger commercial vehicles with the maximum permissible weight of more than 3.5 tons) now surpasses 15% as can be seen from Figure 2. This is especially the case on the sections that correspond to the formal corridor V.

Figure 2: The share of vehicles that have a speed limit of 80 km/h on Slovenian motorways



Note: Outliers (more than $\frac{3}{2}$ times of upper quartile and less than $\frac{3}{2}$ of lower quartile) have been removed from the chart

Source: Authors, based on (DRSC, 2013)

In the period from 2001 to 2012 a total of 26,800 of traffic accidents occurred on Slovenian motorways, among which around 20% were injury accidents. The motorways accidents involved almost 48,300 people, 249 (172 on A1) of which have died, 728 were severely injured (478 on A1) and more than 7,500 suffered minor injuries (more than 5,200 on A1).

There is an increasing trend in the number of accidents on Slovenian motorways over the analysed period; in average the number of accidents was increasing by 6.6% per year, while the number of injury accidents increased in average by 5.0% per year.

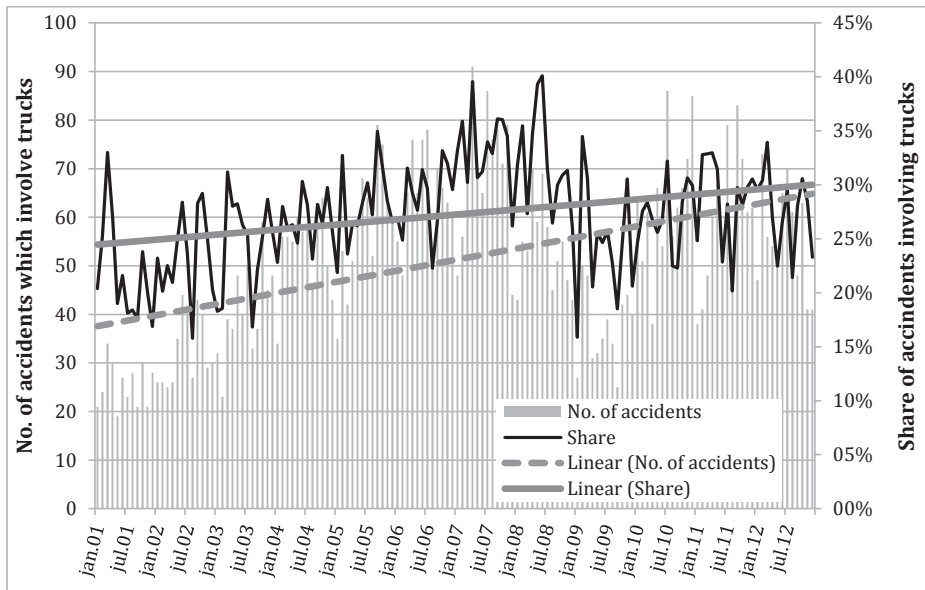
Proportion of the number of people killed on the Slovenian motorways is also growing; in 2001 the share of fatalities on motorways represented only 7% of all road fatalities, while in 2012 this share was almost 14%. However, it should be noted that back in 2001 motorways accommodated barely 21% of all traffic work in Slovenia, while in 2012 more than 44% of transport work was done on motorways, which is significantly above the European average (while accounting for more than one quarter of all kilometres driven, the European motorways contribute only to 8% of to the total number of road deaths (ETSC 2008)). So, in 2001

there were 9 fatalities per billion VKT on motorways and in 2012 this number dropped to 3.1 fatalities per billion of VKT on motorways. Thus, in the aspect of fatality risk it is possible to say that the safety on Slovenian motorways has improved significantly irrespectively of the changes in traffic structure. According to the fatality risk level the motorways represent the safest roads in Slovenia, which is consistent with the theory (see e.g. ETSC 2008).

4.2. The analysis of accidents involving trucks

In the European Union (EU) a heavy truck is involved in 6% of all accidents and in 16% of all fatal accidents (EC 2013). In Slovenia these numbers are somewhat worse; in the analysed period trucks were involved in 27.5% of all accidents (while causing at least 14.5% of all accidents), and in 33.3% of fatal accidents (while causing at least 16.2% of such accidents). Regardless of the legislation (Ur. L. 102/2006), that requires trucks to use motorways wherever possible, still more than 75% of accidents involving trucks occur on lower rank roads.

Figure 3: *The monthly number of accidents involving trucks on Slovenian motorways and the share of these accidents*



Source: Authors, based on (Police 2014)

At least one truck was involved in 7,372 accidents on Slovenian motorways (all together 8,420 truck were involved in these accidents) in the period from 2001 to 2012. This means that in 27.5% of all accidents at least one truck was involved (21.4% in 2001, 27.3% in 2012 with the maximum in 2007 and 2008 with 33.5% and 32.0% respectively), and this share is even higher on A1, where at least one truck participated in 31.4% of accidents (23.0% in 2001, 32.1% in 2012 with the maximum in 2007 and 2008 with 38.2% and 36.9% respectively).

The largest number of traffic accidents on Slovenian motorways involving trucks occurs in in the morning between 7 and 9 AM, and in the afternoon between 1 and 5 PM during week days. The majority of accidents involving trucks occurred during normal traffic condition, while around 22% of these accidents happened during heavy traffic, which can be described by⁵:

- Higher density of vehicles on the fast lane than on regular lane (in 15.0% of measurements on motorways in total, and 26.5% on A1 motorway);
- Inadequate time heading (in 24.3% of cases when there is more traffic on fast lane than on regular lane the time heading is less than 2 seconds);
- High difference between the average speed on fast and regular line (26 km/h (25 km/h on A1) when traffic density is higher on fast lane than on regular lane).

In the Table 1 the crash costs of accidents on Slovenian motorways involving trucks are presented.

Table 1: *The monetary aspect of the injury accidents caused by trucks and involving trucks on Slovenian motorways in the period 2001–2012*

	Costs of accidents caused by trucks			Crash costs of acc. involving trucks	Crash costs of acc. involving trucks on A1
	Internal costs [*]	External costs	Total costs		
2001	581,510	1,022,750	1,604,260	2,680,004	2,313,399
2002	94,685	6,381,557	6,476,242	17,594,961	17,351,485
2003	2,252,540	5,180,865	7,433,404	12,408,225	12,118,218
2004	2,295,487	3,887,777	6,183,264	20,927,662	19,592,935
2005	4,252,651	4,510,051	8,762,702	19,097,799	16,087,095
2006	2,119,187	2,421,854	4,541,041	17,492,418	11,423,087
2007	4,340,587	7,494,248	11,834,834	25,236,927	21,242,023
2008	782,230	4,354,449	5,136,680	8,929,384	7,156,328
2009	763,161	11,391,610	12,154,772	21,760,667	20,553,807
2010	523,955	18,493,673	19,017,627	17,942,079	9,341,421
2011	3,890,986	10,012,019	13,903,005	17,767,480	14,760,206
2012	3,367,881	7,840,394	11,208,275	13,634,076	7,480,459
Total	25,264,860	82,991,246	108,256,106	195,471,679	159,420,463

Note: ^{*} – Internal costs are the costs of injury accidents that were caused by truck drivers to themselves

Source: Authors, based on (Police, 2014), (Lep et al., 2004) and (STAT, 2014)

As the causer of the accident is not reported in almost 19% of cases of traffic accidents on Slovenian motorways, the monetary estimation presented in the Table 1 represents

⁵ In brackets are presented the results of traffic data recording in March and April 2014 which can serve as a describer of traffic condition in certain periods of day, but cannot be generalized to past or future.

the minimum possible costs of accidents that are caused by truck drivers on Slovenian motorways.

In general, crashes involving trucks lead to higher casualty severities compared to other crashes (Sandin et al., 2014), due to the weight of the vehicle. This is true also in Slovenia, as the crash involving truck leads to 31.8% more fatal consequences than a crash in which no trucks are involved. In average in 90 accidents on Slovenian motorways involving trucks there is one victim.

Accidents are the outcome of mix of various factors; however, increasing traffic volumes are usually related to increasing number of accidents. For the Slovenian motorways we determined the following impact of traffic volume on the number of accidents:

$$E(\lambda) = AADT^{0.7577} \quad (4)$$

This means that the increase of traffic by 1%, generates 0.76% of additional traffic accidents. This model predicted 2,410 accidents on Slovenian motorways in 2013, while official statistics recorded 2,294 accidents.

However, as the particular interest of this paper is given to the influence of the trucks on traffic safety on Slovenian motorways we included the share of trucks (%GV⁶) into the model.

$$E(\lambda) = AADT^{0.8221} \%GV^{0.3110} \quad (5)$$

The model proves that the number of accidents on Slovenian motorways is increasing with the increasing share of trucks in the structure of traffic flows. In fact, the increase of share of trucks by 1%, increases the number of accidents by around 2.5 to 3% if AADT remains unchanged (the actual impact depends on the actual share of trucks; the lower the share is, the impact is greater, and 2.5-3% is averaged for the current traffic structure on Slovenian motorways). This model predicted 2,483 accidents on Slovenian motorways in 2013.

5. CONCLUSIONS

A literature review showed that the topic of traffic flows affecting traffic safety is not often analysed in developed countries, although the problem is actual and analysis, at least in the Slovenian case, draws attention to increasing participation of commercial vehicles in road accidents, and can as such be useful for transport policy makers or at least motorway operators.

Although traffic volume and traffic structure are not the only factors affecting road traffic safety, they are important and measurable ones. Traffic structure on Slovenian motorways

⁶ The share of traffic work is used as a proxy for the share of trucks in AADT.

is becoming more and more heterogeneous (AAGR = 4.9%) and at the same time the number and the share of traffic accidents including trucks is increasing (AAGR is 10.5% and 6.6% respectively). We have also shown that on Slovenian motorways traffic accidents involving trucks produce heavier consequences than traffic accidents that do not include these vehicles. Consequently the cost of these accidents is increasing as well.

The probability of a truck being involved in an accident increases with the increasing share of these vehicles in traffic structure; however, the studies show that truck drivers themselves create further danger by driving tired, under the influence of drugs or by not obeying the mandatory rules (see e.g. McCartt et al., 2000; Zanne, 2009; Verster et al., 2009; Penning et al., 2010).

Trucks pose danger due to their huge mass in comparison to other road vehicles; on Slovenian roads the weight of trucks can be up to 44 ton. Another important characteristic that distinguishes trucks from other vehicles on the roads is the speed limit; the speed limit for trucks on Slovenian motorways is 80 km/h, which is 50 km/h less than the speed limit for passenger cars, which encourages overtaking and thus causes dangerous situations. This results in the situation when there is greater and denser traffic on the fast lane with spacing between vehicles dangerously declining. In such situations trucks can indirectly cause the traffic accident that is the accident in which the truck alone is not involved. This means that the impact of trucks on road safety is not fully covered within the official statistics; therefore, it is not possible to accurately evaluate their impact in monetary terms. In addition, trucks damage the road surface much more than personal cars; but, their effect on road safety is not easily quantifiable (e.g. the number of accidents due to poor surface condition, or the number of accidents due to road maintenance).

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THIS IS NOT AMERICA: THE IMPACT OF THE NEW EU AUDIT REGULATION IN SLOVENIA

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ABSTRACT: *The article presents problems that could arise in a small European country with a modest number of public interest entities and weak market competition due to the new European audit legislation. In this framework, special attention is paid to the effects of the extended requirements to audit public interest entities, public oversight of the audit profession, and adoption of the international auditing standards. The author points out those fields where the European Commission's further action could make the legislation more proportionate in terms of the size of the country and its capital market development.*

Keywords: *European audit reform, directive, regulation, Slovenia, public oversight body, international auditing standards*

JEL Classification: K23, M42, M48

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INTRODUCTION

By publishing the Green Paper on the Audit Policy: Lessons from the Crisis, the European Commission (EC) started the discussion of what needs to be done to ensure that both audits of financial statements and auditor reports are “fit for purpose” (2010 p. 4). As stressed by Quick (2012, p. 18), the Commission recognised that the audit is a key contributor to financial stability and to re-establishing trust and market confidence. What emerged at the end of 2011 were the proposed Directive amending Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts and the proposed Regulation on specific requirements regarding the statutory audit of public interest entities (hereinafter: PIEs). Preparation of the proposed legislation presumed that having two separate legal acts makes sense since: a Regulation is a suitable and proportionate legal instrument to ensure high quality audits of PIEs; the direct applicability of a Regulation offers greater legal certainty; the legislation would become applicable on the same date across the European Union (hereinafter: the EU), thus avoiding problems associated with the late transposition of legislation by Member States; and a Regulation offers the highest degree of harmonisation since under its regime statutory audits would be carried out according to substantially identical rules in all Member States (EC, 2011b, p. 5).

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After a long and versatile discussion, final versions of Directive 2014/56/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts, and Regulation (EU) No 537/2014 of the European Parliament and of the Council of 16 April 2014 on specific requirements regarding the statutory audit of public interest entities and repealing Commission Decision 2005/909/EC (hereinafter: Regulation 2014), substantially different from the proposals of 2011 but still in two pieces, were accepted by the European Parliament and the Council at the end of May 2014. With Regulation 2014, additional requirements were introduced for audits of PIEs, while the Directive on statutory audits of annual accounts and consolidated accounts (2006, 2014) (hereinafter: Directive 2014) is still effective for all kinds of statutory audits.

This article will only cover a few aspects of audit quality exposed in Directive 2014 and Regulation 2014. It will concentrate on the effect of the additional requirements for audits of PIEs, on the definition of PIEs and on the way of enforcing the international auditing standards and the public oversight body in a small European country that joined the EU in 2004. These fields have not been as widely discussed as others (such as concentration of the audit market (cf. Velte and Stiglbauer, 2012), prohibited services (cf. Ratzinger-Sakel & Schönberger, 2015), joint audits (cf. André et al., 2016, Ratzinger-Sakel et al., 2013), mandatory rotation (cf. Ewelt-Knauer, Gold & Pott, 2013), audit fees (cf. André et al., 2011), the auditor's independence (cf. Evans & Nobes, 1998) etc.), yet can cause many substantial problems in a country within a different environment and with a short tradition of commercial auditing.

The article's principle aim is to identify problems that could arise as a consequence of the new audit legislation in the fields discussed. The identified problems might serve as a basis for furthering the debate about which measures the EC could take to ensure more proportionate implementation of the legislation.

The article consists of two major parts and concluding remarks. The first part presents a review of: the EU audit legislation literature regarding the additional requirements for auditing PIEs arising from a different legal form of the audit reform; the public oversight of statutory auditors; and the international auditing standards. In the second part, the same fields are discussed for the case of Slovenia as a small EU country with a modest number of PIEs and a less developed capital market. The concluding remarks summarise the main problems identified and indicate possible additional action the EC could take to make the legislation more proportionate regarding the country's size and the development stage of its capital market.

1. REVIEW OF THE EU AUDIT LEGISLATION LITERATURE

Some six years after Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts (hereinafter: Directive 2006) as a successor of the Eighth Directive was supposed to have

been implemented by EU Member States, we have obtained new European legislation in the auditing field. As stressed by Humphrey et al. (2011, pp. 435–436), Directive 2006's overall objective “was stated as being to improve and harmonise the quality of audits and to support public confidence in the statutory audit function. This involved measures relating to the competence and independence of auditors, the potential acceptance of ISAs as EU standards for audit, third party public oversight and a range of other issues”.

Even before the new audit legislation started to be enforced in 2014, many authors had critically assessed the extensive audit regulation. Arruñada (2004, pp. 635–636) established that the great changes made to auditing in recent decades were aggravating the difficulties legislators usually face when weighing up the costs and benefits of regulation. Instead of showing patience, they are keen to use audit and financial crises as excuses to introduce additional regulation into an industry that is already over-regulated. The findings of Posner and Véron (2010, pp. 400–401) suggest that European decision-makers have mainly tried to secure full market integration inside the EU rather than shape regulation to meet a common public purpose. They have also passed legislation that has harmonised rules largely in sync with the United States (US) and British approaches, which cannot be accurately described as aimed at managing globalisation. Critical views have also been expressed by Humphrey et al. (2011) and Öhman and Wallerstedt (2012). Last but not least, in 2013 Knechel (p. A13) reported that the auditing profession was more highly regulated than at any other time in its history.

The consequences of the recently enacted audit reform supposed to be demonstrated by higher audit quality cannot be predicted with a high degree of probability since practical experiences with Directive 2006 in different Member States were neither analysed nor taken into account as a basis for the audit reform in 2014. While higher audit quality is not certain, the additional administrative burden (at least in small Member States) is both certain and inevitable.

1.1 The Legal Form of the Audit Reform

Under the relatively strong influence of the American legislation, the European audit reform of 2014 brought extended additional requirements especially for audits of PIEs. Compared to the previous reforms, the primary feature of the last European audit reform was that Directive 2006 as a single legal act regulating the auditing field was replaced by two separate legal acts, Directive 2014 and Regulation 2014. While Directive 2014 retained its aim of harmonising the auditing legislation of European Member States, Regulation 2014 directly enforced additional requirements for the activities of auditors and audit firms that audit PIEs as well as for PIEs themselves. These extra requirements refer among others to audit fees in relation to prohibited services, mandatory rotations of an audit firm and audit partner, engagement quality control reviews, elements of the audit report, a special auditor's report to the audit committee, additional elements of the transparency report and public oversight. An additional speciality of Regulation 2014 is that in more than 20 cases options are given to Member States to not stick to the requirements of Regulation 2014

but to use allowed alternatives. The given options, which are not normally included in regulations, pose a serious danger of harming the initial intention of the unified European audit market for PIEs.

Following enforcement of the European audit reform effective from 17 June 2016, there are three main European legal acts dealing with statutory audits: Directive 2013/34/EU of the European Parliament and of the Council of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC (hereinafter: Accounting Directive), Directive 2014 and Regulation 2014.

According to the Accounting Directive (Article 34), each Member State shall ensure that the financial statements of PIEs, medium-sized and large undertakings are audited. The Accounting Directive defines PIEs as undertakings whose transferable securities are admitted to trading on a regulated market of any Member State (hereinafter: listed companies), credit institutions, insurance undertakings, and undertakings designated by Member States as PIEs, for instance undertakings that are of significant public relevance by the nature of their business, their size or the number of their employees (Article 2). The same definition of PIEs can be found in Directive 2014.

As an outcome of the European legislation, two different classes of statutory audits inside Europe can be expected:

- statutory audits of PIEs; and
- all other statutory audits.

This distinction immediately raises the question: why should statutory audits be prescribed by the Accounting Directive also for non-PIEs if non-PIEs are not risky enough to require an independent and high quality audit as determined by Regulation 2014? Or, vice versa, why do we need special requirements for PIEs in Europe where micro, small and medium-sized enterprises make up 99% of all businesses² and where even listed companies in most European countries are confronted with relatively inefficient capital markets³?

Moreover, fears are growing that the legislative solution might adversely impact the concentration of the audit market. At once we will obtain a group of 'highly qualified' auditors, no doubt including auditors employed by the international audit networks – Deloitte, Ernst & Young, KPMG, Pricewaterhousecoopers (the 'Big Four' auditors) auditing PIEs, and other auditors auditing 'less important' entities.

From the auditing point of view, it seems logical that the proportionality of each individual audit is granted by the nature and size of the entity being audited because not

2 http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_5.9.2.html (accessed January 18, 2016).

3 For the definition, see Brigham and Daves, 2010, pp. 177-180.

all auditing rules apply to all kinds of entities. On the other hand, it is illogical why the audit (as 'an audit') of large and medium undertakings (although not PIEs) should be less independent and transparent than the audit of PIEs. Besides, similar to the auditing rules, the European legislation should enable Member States to take proportionality into account when implementing the legislation. This was possible under Directive 2006 but will be significantly limited by Directive 2014 and Regulation 2014. All of the fields specifically addressed by Regulation 2014, such as audit fees, prohibition on the provision of non-audit services, international auditing standards, report to the audit committee, report to supervisors, transparency report, information to the competent authority, the appointment, dismissal and resignation of statutory auditors and audit firms, duration of the audit engagement, hand-over files, competent authorities, quality assurance and cooperation between Member States, could be adequately dealt with in Directive 2014 as minimum harmonisation requirements. The details are already well determined by the international auditing standards as defined by Directive 2014 and there is no need to prescribe them again in a somewhat different manner but with more or less the same substance in Regulation 2014.

The enacted legislation can hardly satisfy critical observers of the European audit environment. As pointed out by Humphrey et al. (2011, p. 450), it is crucial to ensure that practice and regulatory regimes allow adequate space to learn from difference. According to Cooper and Robson (2006, p. 430), "it is important to avoid adopting the myth (Hirst and Thompson, 1996) that national systems of regulation, or the nation state, are obsolete". On the other hand, as stressed by Arruñada (2004, p. 642), "the presence of externalities is even questionable for most quoted companies and, where external effects do seem to exist (e.g. when financial intermediaries are involved), specific mechanisms, including specialised impartial official auditing, are already in place to prevent them. When regulators of these industries demand omniscient external audits, they are just casting doubt on their own efficacy".

In the view of the Federation of European Accountants (FEE), it does not appear opportune to split the statutory audit legislation into two different instruments, a Directive and a Regulation, because this may increase barriers to entry to the PIEs audit market (FEE 2012b).

1.2 Public Oversight of Statutory Auditors

In line with Directive 2006, all 27 EU Member States have established a public oversight body (POB) (FEE 2012b, p. 1), confirming the statements by Humphrey et al. (2011, pp. 444–445) that "the decline in professional scepticism has potentially been happening on the watch of independent regulators" and "it would be useful to have a detailed analysis of achievements enacted by the Statutory Audit Directive and the impact to date – especially in terms of it having assisted in the stimulation and delivery of higher levels of audit quality".

With the final goal of higher audit quality, Directive 2014 and Regulation 2014 have imported into the European legislation extensive amendments and additional provisions regarding the public oversight system, which are supposed to be implemented by the POBs.

A comparison of the requirements of Directive 2014 and Regulation 2014 indicates that many provisions could be avoided if we had one document stressing special requirements connected with the audits of PIEs instead of two documents, namely, one requiring minimum harmonisation for all statutory audits and the other requiring maximum harmonisation for PIEs.

On the other hand, we can observe that a very small pool of knowledge is assigned to the extensive powers and responsibilities of the POBs. The legislative acts leave a lot of space for determining the appropriate professional education, relevant experience and specific training that can range from extensive theoretical and practical education to crash courses for public servants. Thus, it seems that 'professional competence' and 'due care' are much more relevant for the profession itself than for the employees at the POBs. Alternatively, observing the situation from the other side, contrary to the audit the regulation is supposed to be efficient by itself, which is difficult to expect. As stated by Humphrey et al. (2011, p. 449), "technologies of regulation should be subjected to the same sort of testing that regulators impose on auditors, but there is currently very little evidence on which to judge the quality of regulation or regulatory methodologies. ... Key questions include whether compliance with form is dominating matters of substance in audit practice? Are we getting better quality audits or better controlled audits? ...".

However, since "the role of the public regulation of auditing is widely recognized, the natural question arises of what is the optimal design of such regulation" (Pagano & Immordino, 2007, p. 364). Supported by a case study (Caramanis, Dedoulis, & Leventis, 2015, p. 12), "the formation and operation of the newly-established system of oversight is conditioned by local political and economic constraints and, thus, does not automatically translate into concrete benefits for the quality of financial reporting".

The quality of an audit depends a lot upon the proper exercise of professional judgement. This became even more important after the enactment of the International Financial Reporting Standards (IFRSs) (Regulation (EC) No 1606/2002), which leave significant space for accounting treatments of various kinds. "Elements such as accounting accruals (provisioning, fair value measurements) and the absence of a single set of rules, which serves as guidance for fair value measurements, contribute to the difficulty of ensuring consistent application, and hence comparability" (Ojo, 2010, p. 607). The research by André, Filip, and Paugam (2015, p. 510) indicates there is "a potential negative effect of the greater flexibility permitted by IFRS and/or lack of appropriate enforcement on a key dimension of accounting quality". Besides, they maintain (2015, p. 504) that the "decrease in conditional conservatism is lower for countries with high audit quality and strong enforcement of compliance with accounting standards". If IFRSs are accepted widely by an EU Member State with a less developed capital market, a short-term audit tradition and weak enforcement of compliance with accounting standards, the critical role of professional judgement becomes even greater.

According to Arruñada, auditing quality depends on technical competence, defined as the auditor's ability to carry out a thorough examination of the accounts and detect possible errors or anomalies, and his/her independence/willingness to provide an objective opinion. Technical competence can be hindered and independence trivialised if auditors are not allowed to exercise their professional judgement. Putting it even more precisely, he says:

Since they have to convey unverifiable information, it is not sufficient for auditors merely to be independent. What is required of them is that they exercise their professional judgement independently. It would be prejudicial if, in order to preserve their independence, auditors were obliged to refrain from making a professional judgement since the latter provides valuable information to those using the company's accounts (Arruñada, 2000, p. 206).

If we want to have efficient POBs, then their employees should comply with the same independence requirements as auditors. This means they should be independent not only in appearance⁴ but also in mind⁵ and, as such, able to exercise their own professional judgement. For this to be realisable, they would need appropriate skills and competencies. But “a professional skill is difficult for those outside the profession to duplicate, and this skill represents the profession's knowledge base” (Öhman & Wallerstedt, 2012, p. 252). Caramanis et al. (2015, p. 13) maintain that “global regulators should realize that independence from the profession, while simultaneously ignoring local institutional impediments, by no means guarantees the operation of effective national OBs across the globe”.

We have thus returned to the question posed by Humphrey et al. (2011, p. 444): “To what extent is regulatory oversight capable of being ‘independent’ of the profession?”

1.3 International Auditing Standards

The problem often exposed in Europe – that is, whether one set of auditing standards can fit all audit clients – seems to be overestimated and is not a real problem even for small emerging market economies.

The difference between accounting and auditing standards is very well illustrated by Knechel (2013, pp. A2–3):

A critical distinction is that ‘accounting standards’ define how to consistently measure and report an outcome across different companies, while ‘auditing standards’ define a process to verify the outcome.

⁴ The avoidance of facts and circumstances that are so significant that a reasonable and informed third party would be likely to conclude, weighing all the specific facts and circumstances, that a firm's, or a member of the audit or assurance team's, integrity, objectivity or professional scepticism has been compromised (IESBA, 2012, p. 150).

⁵ The state of mind that permits the expression of a conclusion without being affected by influences that compromise professional judgement, thereby allowing an individual to act with integrity, and exercise objectivity and professional scepticism (IESBA, 2012, pp. 149–150).

With the size of the entity and the complexity of its operations, the problem of the auditing standards' scalability in the audit procedure is resolved by itself as far as the volume of standards is reasonable.

It is interesting to observe how the attitude to use of international auditing standards changed from Directive 2006 to Directive 2014. Both of them required statutory auditors and audit firms to carry out statutory audits in compliance with international auditing standards adopted by the Commission. But without going into details, we can realise that there are two major differences between Directive 2006 and Directive 2014. While the first one includes no explicit definition of international auditing standards, the second one explicitly defines international auditing standards as International Standards on Auditing (ISAs), the International Standard on Quality Control (ISQC 1) and other related Standards issued by the International Federation of Accountants (IFAC) through the International Auditing and Assurance Standards Board (IAASB) in so far as they are relevant to statutory audits. In addition, by comparison with ISAs the first one allows add-ons and carve-outs regarding the national requirements connected with statutory auditing, in contrast with the second one which only allows add-ons.

The projected deadline for adopting the international auditing standards under Directive 2006 was 29 June 2010. Given that nothing has happened to date, we may still be afraid that something will go wrong before uniform auditing standards are finally adopted in Europe.

It is very likely that the reluctance to adopt international auditing standards is connected with doubts about the efficiency of the IFRSs' adoption. As pointed out by Ojo (2010, p. 616): "Difficulties in the implementation of rules are evidenced by the EC Regulation of 2002 and some other accounting Directives. It is argued that accounting Directives have achieved less harmonisation than was originally considered, whilst constituting 'an inflexible source of rules', which are 'difficult to change in a business world which is constantly changing'". Ojo also describes the lessons learned from the crisis, as stated at the Conference on Financial Reporting in a Changing World in Brussels (2009), as follows:

- the inter-connective and mobile nature of world capital markets;
- the inability of operators to comprehend the magnitude and impact of the risks they have undertaken and the need for greater transparency in financial reporting;
- the number of options presented by current rules, which have not only added to its complexity but also reduced comparability (Ojo, 2010, p. 610).

Nevertheless, irrespective of the political hesitation, a complete set of international auditing standards as defined by the Directive⁶ (ISAs) is widely supported by the profession and many European countries. Even before Directive 2006 was enacted, we could find statements identifying a vacuum that called for international auditing standards, such as:

It should be pointed out that the Eighth Directive defines the minimum training a statutory auditor should have, but does not establish auditing standards, and, accordingly, these standards have had to be drawn up by the governments of the

⁶ The International Standards on Auditing (ISAs), the International Standard on Quality Control (ISQC 1) and other related Standards issued by the International Federation of Accountants (IFAC) through the International Auditing and Assurance Standards Board (IAASB), in so far as they are relevant to the statutory audit.

Member States or regulated within the audit profession itself. This is evidently incompatible with the objective of attaining uniform quality and procedures (López Combarros, 2000, p. 649).

López Combarros also refers to the EC's Communication (1998) on the statutory audit in the EU and its conclusion:

The wide consultation which has taken place on the matter of the statutory audit has shown general agreement that the audit function is important, that the EU needs a framework of reference in the auditing field and that such a framework should be based as far as possible on existing international standards.

The Federation of European Accountants (FEE) has always expressed very strong support for the international auditing standards and their improvements declaring: "Recognising that ISAs promote quality and enhance confidence in the internal market, FEE continues to call for their adoption for all statutory audits in the European Union" (FEE 2012a, p. 1). As the European professional organisation, the FEE also played an important role in the public debate on proposed Directive 2014. At the same time, the FEE confirms that "ISAs also address many issues arising from the financial crisis such as reinforcing professional scepticism, strengthening the requirements relating to group auditors and enhancing auditor's communication" (FEE 2012a, p. 1).

The adoption of international auditing standards as the driving gear of audit quality can also be supported by the indication of economic conditions that help justify the requirement to implement auditing standards, including: "(1) an unobservable outcome of the audit process (achieved level of assurance), (2) uncertainty surrounding penalties for inappropriate audit work (a negligence regime in law), (3) a fuzzy relationship between audit effort and assurance that is unknown to the client (credence good), and (4) an information advantage to the auditor (incentives)" (Knechel, 2013, p. A11). According to Knechel, taken together, these conditions may yield circumstances in which auditors are motivated to act strategically in their own self-interest. "At a minimum, auditing standards can serve the purpose of preventing auditors from taking a particularly dangerous path" (Knechel, 2013, p. A3).

2. CASE OF SLOVENIA

In line with the rationale of performing case studies (Meyer, 2001, p. 330), there are at least three reasons for choosing Slovenia as a relatively new EU country as a case.

The first reason is there are practically no articles in which newly joined EU countries are equally included in the research. As evidenced by the article of Brüggemann, Hitz, and Sellhorn (2013), the samples arising from these countries are extremely small, in some cases even 0. Another example is the book *Auditing, Trust and Governance: Developing Regulation in Europe* (Quick, Turley & Willekens, 2008) which includes case studies of nine EU countries (Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Spain and UK), Russia and the USA. The same applies to the survey⁷ performed by the IAASB at

⁷ Stakeholders in nine countries were included, as follows: Australia, Canada, Germany, Japan, Netherlands, New Zealand, South Africa, the UK, and the USA.

the IFAC in 2011 to assist in developing a framework for audit quality (2013, p. 69).

The second reason is that no research has been performed to prove or reject the contention that the attitude to audit regulation is different in countries with a short historical tradition of auditing.

The third reason is that the lessons learnt from Slovenia can send out an important message to international regulators and be useful for other similar economies that entered the EU in 2004 and later. These countries face the serious problem of adopting legislation “modelled on the external Anglo-American tradition” (Caramanis et al., 2015, p. 26), and the challenge of its (in)appropriate enforcement (compare André et al., 2015, p. 485). Since the importance of these countries is not negligible (look at Europa / How the EU works / Countries (2014) for details), it is of value analysing the audit reform’s possible effects regarding the mentioned fields in one of them.

As mentioned by The Economist (2013), Slovenia is “a text book case of the problem that has plagued other parts of the euro zone: the link between weak banks, which governments end up recapitalising at great expense, and weak government finance”. If we believe that extremes are the best illustrators of a situation, it is worthwhile taking a look at Slovenia as one of the smallest EU Member States.

As far as the auditing market is concerned, Slovenia has 56 audit firms and 195 registered certified auditors – of these, approximately 120 auditors are active, meaning they are employed by audit firms performing the audits of financial statements (as at the end of 2013).⁸ Currently, there are no solo practitioners in the Slovenian audit market.

On the side of audit clients, the number of entities listed on the Ljubljana Stock Exchange is 71 with a total market capitalisation of EUR 19,143,231,435 as follows:

Table 1: *Ljubljana Stock Exchange – Market Capitalisation*

	31 December 2012 (EUR)	31 December 2013 (EUR)	Market share (% in 2013)
EQUITY MARKET	4,911,166,381	5,173,109,323	27.02
Prime market	3,991,718,590	4,487,490,573	23.44
Standard market	317,840,563	234,913,579	1.23
Entry market	601,607,228	450,705,171	2.35
Banks	81,153,681	0	0.00
Companies	4,388,221,623	4,600,990,682	24.03

⁸ Slovenski inštitut za revizijo. Poročilo o delu za leto 2013. [Slovenian Institute of Auditors. Annual Report for 2013] http://www.si-revizija.si/sites/default/files/o_siru/porocilo-o-delu.pdf (accessed April 15, 2014).

	31 December 2012 (EUR)	31 December 2013 (EUR)	Market share (% in 2013)
Insurance companies	441,791,077	572,118,641	2.99
BOND MARKET	12,735,677,573	13,956,273,831	72.91
State	11,781,562,221	13,231,880,840	69.12
Banks	535,956,492	296,869,213	1.55
Companies	379,814,480	397,823,778	2.08
Insurance companies	38,344,380	29,700,000	0.16
FUND MARKET	16,848,376	13,848,281	0.07
TOTAL	17,663,692,330	19,143,231,435	100.00
SHARES	4,911,166,381	5,173,109,323	27.02
BONDS	12,735,677,573	13,956,273,831	72.91
FUNDS	16,848,376	13,848,281	0.07

Source: http://www.ljse.si/media/Attachments/English/Statistika/Letni/2013_01-12_statistics.pdf (accessed April 10, 2014).

2.1 Impact of the New EU Audit Policy in Slovenia

Returning to the definition of a PIE, Slovenia has 55 stock issuers, 22 bond issuers of which 6 have also issued stocks, one (the biggest) is the Republic of Slovenia and 5 are banks which means that (excluding banks and the Republic of Slovenia) there are 65 listed companies. In addition, there are 1 mutual fund, 20 banks (including 7 subsidiary banks and 3 savings banks)⁹ and 20 insurance companies (including 2 reinsurance companies and 3 pension companies)¹⁰. Altogether, Slovenia has 106 PIEs as defined by Directive 2014. We can conclude that the PIEs in Slovenia would scarcely meet the criteria for a PCAOB yearly inspection if the same audit firm were to audit all of them (Lennox & Pittman, 2010, p. 87)¹¹.

9 Bank of Slovenia. *Annual Report* (2012). http://www.bsi.si/iskalniki/letna_porocila_en.asp?MapaId=711 (accessed May 13, 2014).

10 Report on Business Performance of the Insurance Industry in 2012. http://www.a-zn.si/Documents/Porocila/annual_report-2012.pdf (accessed May 13, 2014).

11 PCAOB inspections are performed annually for firms that audit at least 100 public companies and triennially for smaller audit firms.

Taking account of the size of the Slovenian audit market with approximately 1,700 audited separate accounts and 500 audited consolidated accounts (AJPES, 2014)¹² and 120 active statutory auditors, of whom 70 statutory auditors are working in 52 Slovenian Small and Medium Practices (SMPs), it is very difficult to expect that SMPs would be prepared to cope with Regulation 2014's extensive requirements in order to be able to audit just one or two PIEs. Consequently, the PIEs' audit market is expected to become more concentrated after Regulation 2014 comes into effect.

On the other hand, PIEs will be faced with an extra administrative burden connected with the sources needed to ensure extended reporting by the auditors and the operating of audit committees or other appropriate bodies. While additional costs are inevitable, it is very difficult to imagine adequate benefits, especially in a PIE with extremely poor market capitalisation.

2.2 Public Oversight of Statutory Auditors

According to Caramanis et al. (2015, p. 16), "the proliferation of OBs in the early 2000s rests on the assumption that every country has the capability to successfully establish and operate accounting institutions molded on Anglo-American governance regimes". To better illustrate the situation in Slovenia, let us start with a short description of the situation in the 'source' country.

The American Congress passed the Sarbanes-Oxley Act (SOX) in 2002 in response to the Enron and WorldCom scandals. SOX terminated self-regulation for firms that audit public companies and the peer-review programme was replaced by independent Public Company Accounting and Oversight Board (PCAOB) inspections (Hilary & Lennox, 2005, p. 228). "The total compliance cost of the Sarbanes-Oxley Act has been estimated at \$7 billion a year for listed companies only. The cost of complying with one of its provisions, Section 404, which requires managers to organise and assess internal control systems and auditors to assess their effectiveness, has been estimated at 1 per cent of firms' earnings" (Arruñada, 2004, p. 637). Besides, according to Lennox and Pittman (2010, p. 84), audit clients do not perceive that the PCAOB's inspection reports are valuable for signalling audit quality, and less is known about audit firm quality under the new regulatory regime.

It is obvious that certain dilemmas emerge even in a large country with a well-developed capital market and enough clients to support the functioning of the PCAOB. One can imagine what the situation looks like in a small country with 65 listed companies.

12 AJPES – Agency of the Republic of Slovenia for Public Legal Records and Related Services (2014) *Objavljena letna poročila za leto 2013*. [Published Annual Reports for 2013]. http://www.ajpes.si/Letna_porocila/Druzbe_in_zadruge/Javna_objava/Koledar_JOLP/Arhiv_objavljenih LETNIH_porocil?id=1570 (accessed April 10, 2015).

According to the requirements of Directive 2006, Slovenia established a public oversight body in 2008 in the form of a state agency – the Agency for Public Oversight over Auditing (hereinafter: the Agency), financed by the state budget. Ultimate responsibility for all fields included in Directive 2006 has been assigned to the Agency. In fact, the Agency only took over part of the work hitherto performed by the professional institution – the Slovenian Institute of Auditors (the SIA) – in the field of the external quality control of audit firms and statutory auditors. The tasks transferred to the Agency mainly refer to sanctioning and issuing disciplinary measures based on the work still performed by the SIA¹³. For the purpose of external quality control procedures, the SIA has a monitoring unit with four experts who are not practising auditors. Recommendations for the Agency on the basis of the reviews performed are prepared by the Auditing Council as the professional body covering the auditing field at the SIA and consisting of seven members: the director of the SIA, four licensed statutory auditors and two “representatives of the interested public”, appointed by the Ministry of Finance. The Agency, on the other hand, has six employees, all engaged in the field of oversight. Since it is a public sector entity, it falls under the regime of public sector salaries and the limitations of state budget spending. A Director and Council of Experts, consisting of the Agency’s director and eight other members appointed by the Minister of Finance, govern the Agency. The Securities Market Agency, the Bank of Slovenia, the Insurance Supervision Agency, the SIA, the Ljubljana Stock Exchange, the Ministry of the Economy, the Ministry of Finance and the University shall propose eight members of the Council of Experts. All of them have to be non-practitioners.¹⁴

The additional pressure of regulation is gradually being reflected in ‘defensive auditing’. On one side, auditors are using more and more hard evidence to support their opinions, and audits are ‘becoming trivial’ (compare Arruñada, 2000, p. 218). Although the Agency is making a lot of efforts for the best possible results it cannot avoid the fact that (like in Greece) it is practically “impossible to attract suitably qualified staff at the very low public sector salary rates it legally has to follow” (as cited in Caramanis et al., 2015, p. 26). On the other side, foreign (mainly World Bank) experts are trying to help the Agency by proposing formal – quite ‘box-ticking’ – methodologies which are based on the form over substance principal, are easier to understand, and include very little professional judgement.

The problem is to be solved by striking an appropriate balance between independence from the audit profession and the competence required for the task of supervising the audit profession (FEE 2012b). Slovenia expects the EC to provide a more detailed explanation of the desired organisation and structure of the competent authorities, their skills and competencies, and their sources of financing to enable them to be efficient in its small market environment.

13 This is in line with the finding of Cooper and Robson: “Since the 1980, we have seen a shift in institutional justifications such that accounting regulatory institutions appear to have greater legitimacy if they facilitate and support capital markets rather than state agencies, who may be interested in supporting other social groups and institutions” (Cooper & Robson, 2006, p. 416).

14 The detailed structure of the Slovenian audit profession is evident from the Auditing Act (2008). http://www.si-revizija.si/sites/default/files/ZRev_2-EN.pdf (accessed December 23, 2015).

2.3 International Auditing Standards

Although we cannot deny some serious dilemmas connected with the ISAs, like for example the ‘expectations gap’¹⁵, we can claim that even small countries treat use of the ISAs as an optimal solution (compare Duhovnik, 2011). Let us consider an example of Slovenia as a member of the group of 25 EU Member States that currently fully comply with ISAs for all statutory audits in their national jurisdiction without modification or with a few national additions (FEE 2015).

The international auditing standards have been used in Slovenia for around 20 years (mandated by the Auditing Act 1993). In 2010, the SIA was invited by the IFAC to gather information from a sample of audits to help evaluate the impact of the clarified ISAs on audits undertaken by Small and Medium Practices (SMPs). The clarified ISAs were the result of the IFAC’s programme to enhance the clarity of its audit pronouncements. We can logically assume that this programme was also stimulated by Directive 2006 predicting ISAs to become part of EU legislation. As explained by IAASB (<http://www.iaasb.org/clarity-center>), the programme involved the application of new drafting conventions to all ISAs, either as part of a substantive revision or through a limited redrafting, to reflect the new conventions and matters of clarity. On 27 February 2009, the Clarity Project reached its completion when the Public Interest Oversight Board approved 36 newly updated and clarified ISAs and a clarified ISQC. The renewed-clarified ISAs were issued by the IAASB in March 2009. The SIA translated them into Slovenian with the financial help of the World Bank.

The IAASB believed it was especially important to obtain the views of SMPs as questions have been raised about whether the ISAs are proportional for smaller audits. A survey performed by the IAASB aimed to obtain information about the impact of the ISAs on a sample of SME audits carried out by SMPs over the three-year period 2009–2011 (hereinafter: the relevant period); where:

- 2009 is the year *prior* to the first use of the renewed ISAs (Year 0); and
- 2010 and 2011 are their *first and second years of use*, respectively (Years 1 and 2).

The SIA invited all 47 Slovenian SMPs (without the Slovenian Big Four and BDO) to take part in the project and throughout the relevant period the number of participating firms was 19 or 40% of Slovenian SMPs, employing 48.8% of SMPs’ practitioners (statutory auditors).

It is worthwhile to again stress that:

- in Slovenia use of the ISAs is mandatory in their current version; and
- implementation of the renewed ISAs in the initial years was not assisted by the use of audit software, although audit software is now available.

¹⁵ As defined by Ojo (2006, p. 2), the ‘expectations gap’ is the difference between what users of financial statements, the general public, perceive an audit to be and what the audit profession claim is expected of them when conducting an audit.

The information was gathered for the audit of one entity per SMP selected for the purpose of the survey, and included:

- information on the impact of the renewed ISAs on the audit time and thus the costs of the audit;
- views on the impact of the renewed ISAs on the quality of the audits selected for review and whether there were other benefits from using the renewed ISAs; and
- views on the challenges of using the ISAs.

Based on the survey results¹⁶, SMPs in Slovenia consider implementation of the renewed ISAs has had a fairly large impact. In terms of the different phases of the audit, views on the impacts were as follows:

Table 2: Impact assessment of the ISAs in Slovenia

	Number of audits included in the sample		
	High	Medium	Low
Agreeing the terms of engagement	4	11	4
Quality control	9	10	-
Audit planning	7	11	1
Audit performance	6	13	-
Communications	4	10	5
Forming the audit opinion	7	6	6

Source: Survey results.

On the basis of the survey the cost of implementing the ISAs does not seem to have been significant. When compared to the base Year 0, total audit hours increased by 6% (165 hours in aggregate) in Year 1 and by 0.4% (12 hours in aggregate) in Year 2 due to the renewed ISAs. Between Year 1 and Year 2, audit hours fell by 5%, suggesting there was a small 'year one cost' in implementing the renewed ISAs (in 6 of the 19 audits there was a time reduction in Year 2 compared to Year 1). Implementation costs might have been lower if Slovenia had had access to the ISA-compliant audit software.

The survey results are even more encouraging regarding benefits; five audits were more effective in identifying misstatements and nine produced an improved management letter. Other benefits were also identified for audit firms and engagement teams.

Indeed, implementation of the renewed ISAs in Slovenia was not without its challenges and, although 12 (63%) of the firms reported the challenges were reduced in the second year of implementation, seven of them (37%) reported that they were not reduced.

¹⁶ In June 2012, the author was given approval by the IFAC to use the detailed data she had collected for Slovenia in her article.

While additional training and guidance would probably reduce some of the challenges, a minority of firms (7) believe that changes to the ISAs themselves are needed in the following directions:

- The guidance needs to be simplified.
- More examples need to be included in the ISAs.
- A unique set of standards with differentiated guidance for SMEs' audits is needed.
- Too much repetition in the ISAs 'befogs' the essentials.

It is evident that even those who thought the changes would be necessary did not criticise the requirements in the ISAs but focused more on the Application and Other Explanatory Material as the mandatory part of each ISA.

Regarding the fact that "at this moment in time the clarified ISAs are the best instrument available to unify the auditing approach in the European environment and to take the necessary second step after the endorsement of the IFRSs" (Duhovnik, 2011, p. 138), the EU should make its best to legally enforce ISAs just after the application of the new audit legislation in June 2016.

3. DISCUSSION AND CONCLUSION

Based on the Slovenian case, we can argue that the main problems that could arise in the fields discussed as a consequence of the new audit legislation in a small EU country with a less developed capital market are as follows.

It is very difficult to expect that SMPs in small EU countries will be prepared to cope with Regulation 2014's extensive requirements in order to be able to audit just one or two PIEs. Consequently, the PIEs' audit market is expected to become more concentrated after Regulation 2014. At the same time, relatively small PIEs will be faced with an extra administrative burden connected with the sources needed to ensure extended reporting by the auditors and the operating of audit committees or other appropriate bodies. While additional costs are inevitable, it is very difficult to imagine adequate benefits, especially in a PIE with extremely poor market capitalisation.

Since according to the European legislation a very small portion of knowledge is assigned to the extensive powers and responsibilities of the POBs, it can happen that, although independent from the profession, employees in the POB will not be qualified enough to exercise their own professional judgement independently.

The possible delay in enforcing the ISAs inside the EU will cause disproportionate costs of translating the ISAs in small EU countries which do not have enough financial and human resources to develop their own auditing standards.

The identified problems might serve as a basis for further debate about the measures the EC could take to ensure more proportionate implementation of the audit legislation.

While nothing can be done regarding the additional requirements for audits of PIEs, the EC could provide a more detailed explanation of the desired organisation and structure of the POBs, their skills and competencies, and their sources of financing to enable them to be efficient in a small market environment. Besides, enforcement of the ISAs inside the EU would enable the EC to better communicate with the international auditing standard setter (currently the IAASB at the IFAC) whether it consistently follows the principles set up by the clarified ISAs and does not exaggerate by pursuing the currently increasing ideas to have each detail defined in the ISAs, which would likely destroy the positive attitude of SMPs regarding their usefulness.

Although we have to be aware that the distinctive characteristics of a small and less developed market economy would need to be proved by analysing the effects of legislation in the longer time period, the main contribution of the article should be perceived in the recognition that the group of small EU countries with a less developed capital market deserves special attention to be kept in mind when drawing up European legislation.

We may conclude that a lot of room remains for tracing and further investigating how the legal form of the audit reform, the legally prescribed structure of public oversight, and the implementation of the ISAs will influence those EU countries with a small number of PIEs and weak market competition. Among others, special attention should be paid to:

- the effect of the audit regulation on concentration of the audit market;
- whether employees of the competent authorities comply with the same independence and professional requirements as auditors and are thus able to exercise an independent professional judgement; and
- whether the European Commission will be able to adopt the ISAs in due course and without hesitation.

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E / B / R

**POVZETKI V
SLOVENSKEM JEZIKU**

DIGITAL PIRACY AMONG ADULTS IN SLOVENIA: AN APPLICATION OF THE THEORY OF INTERPERSONAL BEHAVIOR

DIGITALNO PIRATSTVO PRI ODRASLIH UPORABNIKIHI INTERNETA V SLOVENIJI: UPORABA TEORIJE MEDOSEBNEGA VEDENJA

MATEJA KOS KOKLIČ

POVZETEK: Namen študije je nasloviti pojav digitalnega piratstva s pomočjo uporabe teorije medosebnega vedenja (TIB) in preveriti model na vzorcu odraslih uporabnikov interneta. Izhajajoč iz osnovne predpostavke TIB, predlagamo, da na posameznikovo namero po piratstvu vplivajo zaznane posledice (koristi in tveganje), čustva in dovzetnost za norme. Nadalje predpostavljamo, da namera po piratstvu skupaj s subjektivnim znanjem vpliva na dejansko piratsko vedenje. Na podlagi anketnih podatkov, zbranih v Sloveniji, pokažemo, da namera po piratstvu in subjektivno znanje vplivata na piratsko vedenje, medtem ko zaznane pozitivne posledice, čustva in dovzetnost za norme značilno oblikujejo posameznikovo namero po piratstvu.

Ključne besede: digitalno piratstvo, odrasli, Slovenija, teorija medosebnega vedenja

APPROACH TOWARDS BPM ADOPTION UNDER HIERARCHY-MARKET CULTURE: A CASE STUDY

PRISTOP K PRIVZEMANJU MANAGEMENTA POSLOVNIH PROCESOV PRI HIERARHIČNI TRŽNI KULTURI: ŠTUDIJA PRIMERA

BRINA BUH, MOJCA INDIHAR ŠTEMBERGER

POVZETEK: Organizacijska kultura vpliva na uspešnost privzemanja managementa poslovnih procesov (MPP). Ker je spreminjanje organizacijske kulture zelo zahtevno, bi morale organizacije prilagoditi svoj pristop k privzemanju MPP, da bi bil v skladu z obstoječo organizacijsko kulturo. Namen tega članka je ugotoviti, kateri pristop k privzemanju MPP bi bil primeren v organizaciji s kombinacijo hierarhične in tržne kulture. S tem namenom je bila izvedena študija primera v večjem zavarovalniškem podjetju v Jugovzhodni Evropi. Ugotovitve kažejo, da so formalen in dobro organiziran pristop ter poudarjanje prednosti MPP prispevali k uspešnemu privzemanju MPP v preučevani organizaciji s Hierarhično-Tržno kulturo.

Ključne besede: management poslovnih procesov, organizacijska kultura, Hierarhično-Tržna kultura, pristop k privzemanju MPP, uspešnost, študija primera

EXPANDING THE MODEL OF ORGANIZATIONAL LEARNING: SCOPE, CONTINGENCIES, AND DYNAMICS

ŠIRITEV MODELA ORGANIZACIJSKEGA UČENJA: OBSEG, KONTINGENČNOST IN DINAMIČNOST

BARBARA GRAH, VLADO DIMOVSKI, CHARLES C. SNOW, JUDITA PETERLIN

POVZETEK: *S člankom želimo poglobiti razumevanje konstrukta organizacijskega učenja preko (a) vključitve obstoječih modelov organizacijskega učenja v celovit model ter (b) širitvijo modela z vključitvijo med-organizacijskega učenja, dodanimi ključnimi kontingenčnimi faktorji na podlagi naraščajoče literature o nevrovođenju ter vključitvijo procesne dimenzije, ki odraža dejstvo, da je organizacijsko učenje kontinuiran in dinamičen proces. Predlagani razširjeni model organizacijskega učenja zajema štiri ravni, na katerih se pojavlja organizacijsko učenje: individualno, timsko, organizacijsko in med-organizacijsko. Splošna veljavnost modela je ilustrirana z aplikacijo le-tega na dveh primerih na znanju temelječih slovenskih podjetij. Podane so tudi implikacije za teorijo in prakso.*

Ključne besede: *organizacijsko učenje, model organizacijskega učenja, med-organizacijsko učenje, nevrovođenje*

THE COSTS OF TRAFFIC ACCIDENTS DUE TO THE HETEROGENIZATION OF TRAFFIC FLOWS ON SLOVENIAN MOTORWAYS

STROŠKI PROMETNIH NESREČ ZARADI HETEROGENIZACIJE PROMETNIH TOKOV NA SLOVENSКИH AVTOCESTAH

MARINA ZANNE, ALEŠ GROZNIK, ELEN TWRDY

POVZETEK: *Evolucija tovornih prometnih tokov povzroča heterogenizacijo prometnih tokov na avtocestah, zato je bil naš cilj raziskati vpliv spreminjajoče se strukture prometnih tokov na slovenskih avtocestah na prometno varnost ter te spremembe stroškovno opredeliti. V članku smo izračunali stroške prometnih nesreč, ki so jih povzročila tovorna vozila ter stroške nesreč, ki vključujejo tovorna vozila. Izdelali smo tudi dve funkciji varnostne učinkovitosti, ki nam omogočajo napoved števila prometnih nesreč na slovenskih avtocestah. Število prometnih nesreč, kakor tudi delež prometnih nesreč, v katerih so na avtocesti udeležena tovorna vozila, narašča, narašča pa tudi obseg prometnega dela, ki ga na teh cestah opravijo tovorna vozila, zato lahko pričakujemo rast stroškov tovrstnih prometnih nesreč.*

Ključne besede: *avtoceste, struktura prometnih tokov, tovorna vozila, prometna varnost, zunanji stroški prometnih nesreč, funkcija varnostne učinkovitosti*

THIS IS NOT AMERICA: THE IMPACT OF THE NEW EU AUDIT REGULATION IN SLOVENIA

TO NI AMERIKA: VPLIV NOVE REVIZIJSKE UREDBE EU V SLOVENIJI

METKA DUHOVNIK

POVZETEK: Članek predstavlja težave, ki se lahko pojavijo zaradi nove revizijske zakonodaje EU v majhni evropski državi s skromnim številom organizacij v javnem interesu in šibko tržno konkurenco. V tem okviru je potrebno posvetiti posebno pozornost učinkom razširjenih zahtev za revidiranje organizacij v javnem interesu, javnemu nadzoru nad revizijsko stroko in uveljavljanju mednarodnih revizijskih standardov. Avtorica opozarja na tista področja, kjer bi lahko Evropska komisija z dopolnjevanjem to zakonodajo uravnotežila tako, da bo primerna ne glede na velikost države in na razvitost njenih kapitalskih trgov.

Ključne besede: *revizija, EU reforma, Slovenija, organizacije v javnem interesu, mednarodni revizijski standardi.*

