

Impact of a firm's commitment to learning and open-mindedness on its organizational innovation among Russian manufacturing firms

Firm's
commitment to
learning and
open-mindedness

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Abstract

Purpose – During the last decade, a firm's ability to innovate has gained substantial attention in the literature devoted to innovation and strategic management. This study aims at discussing on what is the relationship of a firm's commitment to learn and its open-mindedness with its activity in introducing organizational innovations. The data collection was carried out in Russia. In order to make the research more specific, the organizational innovation is broken down into two subtypes, namely innovation in management practices and innovation in workplace organization.

Design/methodology/approach – The study is grounded on the data obtained by the surveying of 123 Russian top managers working in manufacturing firms. The structural equation modeling was approached in order to investigate the impact of a firm's commitment to learn and open-mindedness on its organizational innovation.

Findings – The results indicate that the commitment to learn and the open-mindedness have considerable impact on organizational innovation activity in a firm. The findings also provide evidence that both the investigated subtypes of organizational innovation are positively influenced by commitment to learn and open-mindedness, though the degree of that influence differs.

Originality/value – The literature traditionally focuses mostly on the technological type of innovation leaving the organizational innovation covered by scarce research. In this respect the study contributes to the theory of organizational innovation by elaborating its relations with organizational learning dimensions. Apart from the investigation on the research question at a general level, the study explores the specific context related to the manifestation of phenomenon in a transition economy of Russia.

Keywords Organizational innovation, Innovation management, Organizational learning, Commitment to learn, Open-mindedness

Paper type Research paper

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Introduction

The current business environment requires continuous implementation of new management approaches and organizational forms. This study seeks to investigate organizational innovation (ORI) in the context of its relationship with organizational learning (OL). The study follows the definition of the OSLO manual (OECD, 2005) proposed for organizational innovation. Creating new ways of improving a firm's performance is a critical issue in a rapidly changing world, and many studies therefore focus on factors that underlie organizations' overall efficiency (e.g. Aragón-Correa *et al.*, 2007; Jiménez-Jiménez and Sanz-Valle, 2011). In this respect, one acknowledged concept is the theory of innovation. The ultimate reason for promoting innovation usually relates to the problem of increasing a firm's competitiveness. A good innovation strategy is traditionally considered a way for a firm to obtain an advantage over its rivals and secure its internal growth (Damanpour and Aravind, 2011). Academics and practitioners reveal a consensus in sharing the idea that an efficient firm should uninterruptedly innovate (e.g. Bierly *et al.*, 2000; DeCarolis, 2003). However, the source of innovation is not always obvious (Coccia, 2016).

The literature traditionally focuses more on technological innovation, with ORI being the object of less research (Freeman and Soete, 2012). However, during the last decade, an increase in studies devoted to nontechnological innovation has been noted (e.g. Amarakoon *et al.*, 2016; Birkinshaw *et al.*, 2008; Damanpour and Aravind, 2011). There appears to be a need for further research into both the essence of organizational innovation and its antecedents and the processes employed for the generation and adoption of ORI (Guest, 2011).

Numerous studies have shown that the relationship between processes associated with a firm's innovation activity and its OL is positively strong (e.g. Argyris and Schön, 1978). Many scholars argue that a firm can be considered an entity in which collective learning takes place. Most of these studies consider the interconnection between innovation and OL from the perspective of a product or process innovation (Delgado-Verde *et al.*, 2011). This can partly be explained by the fact that the very concept of ORI was not developed to the extent as technological innovation. This is also the reason for an unsettled terminology base, metrics and definitions in studies focusing on nontechnological innovation (Lam, 2004).

This study contributes to the research field of ORI by investigating how it is influenced by two dimensions of OL. The study is therefore based on two different concepts: ORI and OL. The two dimensions of OL considered in the study are commitment to learning and open-mindedness. The latter is studied very broadly in OL and the innovation-related literature (e.g. Calantone *et al.*, 2002; Griese and Kleinaltenkamp, 2012; Sinkula *et al.*, 1997). However, the relationship between them and ORI has yet to be broadly addressed.

This article is structured as follows. The theoretical background of ORI, commitment to learning and open-mindedness is discussed in the next section. Based on the proposed theoretical framework, the hypotheses are articulated, followed by a section that explains the methodology, the data collection procedure, the data analysis and the results. The final section discusses the findings and concludes the paper.

Theoretical background

Organizational innovation

A firm's ability to innovate is one of the factors that characterize its sustainability and potential for growth (O'Reilly *et al.*, 1991). Numerous studies on how a firm innovates, the antecedents of innovation and the kinds of business environment that enhance the innovation are based on the assumption that individuals display the most efficiency when they are placed in an environment in which the person-situation interaction fits their own aspirations, and they are supported by the internal processes of that business environment (O'Reilly *et al.*, 1991).

In investigating internal processes in organizations, this study is based on the OECD (2005, p. 51) definition of organizational innovation: "An organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations." ORI in the given terminology originated in Joseph Schumpeter's (1934) concept of a "new industrial organization." The literature suggests various definitions and interpretations of ORI (e.g. Lam, 2004; Mothe *et al.*, 2015). Since the concept of ORI was introduced at the beginning of the 20th century, it has been little studied (Klette and Kortum, 2004), and the literature sheds light on few of its distinctive features. To some degree, ORI and the effect of its introduction deeply involve human relations (O'Reilly *et al.*, 1991). The sense of ORI is easy to understand theoretically, but it is often difficult to recognize it without a familiarity with the processes within a given firm (Lam, 2004). ORI cannot easily be transferred from one organization to another, because its nature greatly depends on a specific organizational structure (Bierly *et al.*, 2000; Wolfe *et al.*, 2006). The latter greatly depends on an organization's strategic or operational goals (O'Reilly and Tushman, 2008) and plays an increasing role in a firm's sustainable development (Armbruster *et al.*, 2008). Thus, ORI embedded in organizational structure and aiming to generate and adapt new business practices is a powerful source of competitive advantage, which is difficult to copy (Wolfe *et al.*, 2006).

Studies on ORI consider a number of research areas, such as the organizational consequences of the introduction of different ORI subtypes (e.g. Damanpour *et al.*, 2009; Damanpour and Aravind, 2011; Birkinshaw *et al.*, 2008), the antecedents of ORI and its subtypes (e.g. Dukeov *et al.*, 2018; Griese and Kleinaltenkamp, 2012), the effects of the simultaneous introduction of several management practices and workplace reorganizations (e.g. Cappelli and Neumark, 2001; Hung *et al.*, 2011), the generation and adoption of human resource management practices (Laursen and Mahnke, 2001) and new ways of establishing external relations (Henderson, 2006). In addition, the research has provided rare insights into ORI related to Lean production, quality management, reengineering, subcontracting and outsourcing (Mothe *et al.*, 2015).

Although many studies (e.g. Amarakoon *et al.*, 2016; Beblavý *et al.*, 2012) have shown the benefits a firm can derive from generating and adapting ORIs, only a small portion of these firms focus their activities on introducing ORI on a continuous basis. The extent of this introduction also varies considerably (Oeij *et al.*, 2011).

In line with the OECD (2005), ORI aims to improve a firm's performance by enhancing the efficiency of its management system. It is assumed that ORI reduces administrative and transaction costs, intensifies labor productivity, ameliorates workplace satisfaction and simplifies access to nontradable assets, such as noncodified internal and external knowledge. ORI can also serve to reduce external environmental barriers to enlarge the number of business connections with suppliers, customers, governmental and nongovernmental organizations, R&D and other organizations (Heidenreich, 2009; Rammer *et al.*, 2009). Despite the fact that ORI is by definition based on the strategic decisions of a firm's management, many scholars suggest that ORI has only a supportive function in technological innovation, providing it with the conditions for its efficient introduction (Tidd *et al.*, 2005).

The OECD (2005) stresses the complex nature of ORI and divides the concept into three innovation subtypes, dealing with business management practices, workplace organization and external relations. Many scholars (e.g. Murphy, 2002; Uhlaner *et al.*, 2007) have grounded their studies in this OECD (2005) classification, selecting only specific subtypes of ORI for their research. This study focuses on innovation in business management practices and workplace organization, while omitting the external relations subtype.

Innovation in business management practices (IMP) aims to introduce new elements to a firm's behavior. IMP involves a new way of organizing work routines in a firm through

implementing new management processes, procedures and operations and making other changes in management routines that are new for the firm. This subtype of ORI is also known as procedural ORI (Som *et al.*, 2012). In practical terms, the first implementation of the Total Quality Management system, Plan-Do-Study-Act (PDCA) cycle, Lean production, Six Sigma and the Theory of Constraints are examples of potential IMPs. The first implementation of practices related to knowledge management or IT systems can also be considered IMPs. These are, for example, the introduction of new databases for codifying knowledge or best management practices, the diminution of barriers to accessing these databases and the implementation of new approaches for accessing noncodified knowledge. Thus, IMP plays a strong role in enhancing the dissemination of knowledge in organizations (Armbruster *et al.*, 2008; OECD, 2005).

The second subtype of ORI is called innovation in workplace organization (IWO) or structural ORI (OECD, 2005; Som *et al.*, 2012). It deals with organizational models that are new to a firm. These models must focus on changing the organizational structure to bring it to a more efficient level. Any changes in responsibilities, accountability, the divisional structure of functions, knowledge flows, centralization or decentralization and integration or diversification can be considered ORIs if they are implemented in a firm for the first time.

To perform successfully both in strategy implementation and the carrying out of operations, a firm must continuously implement new organizational business structures and practices. In other words, it must constantly generate and/or adapt to ORI (Damanpour and Aravind, 2011). Furthermore, to find new business practices and structures, a firm must possess several capabilities, especially for OL. However, a failure in introducing a new business structure or business practice may prompt an increase in learning in order to propose another, potentially more successful, organizational pattern (O'Reilly and Tushman, 2008). Since ORI addresses organizational structures and business practices, it is important to understand that the process of introducing ORI depends on OL. The problem of the ability to innovate as a function of OL has been the focus of numerous studies (e.g. Argyris and Schön, 1978; Delgado-Verde *et al.*, 2011; O'Reilly and Tushman, 2008). Several of these studies argue that OL has a strong direct impact on innovation (e.g. Aragon-Correa *et al.*, 2007; Hung *et al.*, 2011; Inkine *et al.*, 2015; Rothaermel and Deeds, 2004; Weerawardena *et al.*, 2015). For example, Baker and Sinkula (1999, 2002) state that innovation depends in many respects on a firm's ability to organize the learning process efficiently. However, to the best of our knowledge, few studies deal with ORI as a specific type of innovation.

According to the study by O'Reilly *et al.* (1991), OL in many respects deals with the problem of increasing the fitness of an individual in the organizational context, as well as with enhancing a person's performance efficiency in specific areas. Since ORI, on the one hand, requires by its nature many managerial-related activities provided by individuals, and on the other, OL ability can be associated with the potential to adapt to innovation, including ORI, it is logical to assume that there should be a significant relationship between OL and ORI. In this case, an individually focused response might convert the external knowledge obtained by the firm into various forms of organizational activity, including innovation activity (O'Reilly *et al.*, 1991).

Organizational learning

The concept of OL became of great interest among scholars only in the 1970s (Jyothibabu and Farooq, 2010). The literature suggests numerous definitions of OL, considering it at individual, group or organizational levels (Bappuji and Crossan, 2004). Generally, OL is understood as the number of a firm's capabilities that evolve its competences to meet the challenges of continuous change to the external environment (Eisenhardt and Martin, 2000). The concept is broadly considered an element of innovation management that could and should be employed in building a firm's competitive advantage by fostering its ability to innovate continuously (Liao *et al.*, 2008; Lloréns Montes *et al.*, 2005; López *et al.*, 2006; Vera and Crossan, 2004). Indeed, it

deals with the dilemma posed by the urges to continue to do things as they have always been done or to switch to exploring new opportunities (March, 1991). OL supports the process of improving a firm's innovation performance through adsorbing new knowledge (Baker and Sinkula, 1999; Hung *et al.*, 2011). The extensive studies related to organizational structures also provide an understanding of a firm's ability to introduce ORI by employing a learning process. For its part, OL is often associated with adsorbing knowledge from the external environment by approaching the advanced outside actors that are more competitive in certain matters (Lam, 2010). Thus, OL as a component of a firm's organizational culture plays a crucial role in many aspects of its performance, especially in the process of introducing innovation (Baker and Sinkula, 2002; Henderson, 2006; O'Reilly *et al.*, 1991).

The OL process supports a firm's management in the reconfiguration of organizational assets to meet the demands of the dynamically changing business environment. It also reinforces a firm's ability to integrate, rebuild and develop the competences that pertain to its sustainable growth by changing critical organizational structures and business practices (O'Reilly and Tushman, 2008). In turn, the organizational structural change can provoke the further learning process that leads to a cumulative change in technologies. Coccia (2017) argues that the efficiency of a firm's innovation management substantially depends on the ability to use the learning process to obtain new knowledge for research and development. Thus, the learning process accumulates, analyzes and advances knowledge, resulting in the introduction of various kinds of innovation, including both technological and organizational. In this case, ORI takes the form of new business structures of various forms of cooperation, for example, the cooperation of established firms with new entrances.

The current perspective of the OL concept is multidimensional and cannot be easily described by a single theory (Antonacopoulou, 2008). Each of its dimensions plays an important role in the overall success of the learning process in a firm. The literature provides a variety of frameworks for describing the dimensions that vary in both number and definition. For example, Sinkula *et al.* (1997) propose three dimensions for the OL construct: commitment to learning; open-mindedness; and shared vision. Calantone *et al.* (2002) posit four dimensions of OL: commitment to learning; shared vision; open-mindedness; and intraorganizational knowledge sharing. Numerous OL models share the same two constructs, namely commitment to learning and open-mindedness or very similar ones. For example, commitment to learning is very close to what Park *et al.* (2014) and Marsick and Watkins (2003) refer to as "continuous learning." Open-mindedness has much in common with what Jerez-Gómez *et al.* (2005), Jiménez-Jiménez and Sanz-Valle (2011) and Pérez López *et al.* (2004), for example, refer to as "openness and experimentation" and to some extent with what Moshabaki (2008) refers to as "knowledge sharing."

As studies on OL have shown, commitment to learning may play a significant role in introducing innovation in a firm (Calantone *et al.*, 2002; Griese and Kleinaltenkamp, 2012; Sinkula *et al.*, 1997). Open-mindedness is also shown as a key feature of an innovation-active firm (Griese and Kleinaltenkamp, 2012; Liao *et al.*, 2008; Mothe *et al.*, 2015; Sinkula *et al.*, 1997). We have therefore chosen these two constructs for further exploration in the context of their relationship with ORI.

Commitment to learning

According to Dixon (1992), the firms that continuously work on their development by seeking new opportunities are to a great degree committed to the learning process. In the literature, commitment to learning is considered the extent to which a firm appreciates the value of the learning process, supports its continuous nature (Sinkula *et al.*, 1997) and secures an internal learning-oriented environment (Norman, 1985). Sinkula *et al.* (1997) state that commitment to learning is shown by the firms that constantly analyze the effect of its action and continuously learn and reflect based on the obtained knowledge.

Galer and van der Heijden (1992) suggest that a firm's commitment to learning underlies the process of adequately understanding the external and internal environments, which is essential for innovation activity. In line with this, Dixon (1992) argues that commitment to learning facilitates the obtaining and processing of information about the business environment to develop and capture competitive advantages. This means, for example, handling the information of the firm's internal changes, its successes and failures and production and administrative processes, as well as of its customers, competitors, technologies and other dimensions of the external environment. In this context, commitment to learning influences the information the firm seeks, accepts or rejects, as well as the process of transforming the obtained information into knowledge (Argyris and Schön, 1978; Calantone *et al.*, 2002; Dixon, 1992). In turn, the accumulated knowledge triggers all kinds of innovation, and firms that demonstrate a high level of commitment to learning tend to accomplish superior results in innovation performance (Ussahawanitchakit, 2008). Senge (1990) supports this statement by arguing that commitment to learning is a fundamental principle in an innovative organization.

The mutual interrelation of commitment to learning and innovation activities was also suggested in the studies of Nonaka (1993) and Von Hippel (1988), for example. Norman (1985) and Sackmann (1992) argue that if a firm invests little in developing its learning process, it is probable that the firm will be unable to evolve innovative strategies. In their study of architectural innovation, Henderson and Clark (1990) claim that the efficiency of the innovation process largely depends on a firm's commitment to learning, but a specific type of innovation demands an appropriate type of OL. On the practical side, a firm that is committed to learning regards the learning process as a long-term investment in its future success (Calantone *et al.*, 2002). The greater a firm's commitment to learning, the more intensive is the learning that takes place within it (Sinkula *et al.*, 1997; Slater and Narver, 1995).

Furthermore, Calantone *et al.* (2002) argue that in firms that are committed to learning, employees are encouraged by management to scale up their learning above the level demanded by their job responsibilities. The last statement matches the concept proposed by O'Reilly and Tushman (2008), who argue that OL successfully evolves only if the firm's organizational culture fosters this process by considering OL one of its core values and focuses on the individual competence development of key personnel.

Consequently, commitment to learning characterizes the degree to which a firm is satisfied with the knowledge it possesses for executing operations, including the introduction of innovation (Tobin, 1994).

Griese and Kleinaltenkamp (2012) state that a firm is innovative when it integrates skills at organizational level through continuous use of the learning process. Tohidi *et al.* (2012) have shown that commitment to learning positively and significantly impacts a firm's innovation activity in the broad sense of this term.

Having assumed that the ORI process is a component of the overall innovation activity in a firm, the following hypothesis is proposed:

H1. Commitment to learning positively relates to ORI.

Open-mindedness

To secure survival, continuous development and a firm's long-term competitive advantage, its management team must be open to accepting new ideas related to potential products and processes, as well as to organizational models (e.g. Baker and Sinkula, 2002). Open-mindedness implies a firm's ability to absorb new ideas (Sinkula *et al.*, 1997) or critically analyze its experience to generate new knowledge pertaining to the current situation (Senge, 1990; Verona, 1999). Vătămănescu *et al.* (2017) noted that a firm's capability to innovate is greatly shaped by the internal context of the organization, which includes open-mindedness.

The serendipity and sagacity of the management team that are important for a firm to be innovative and successful in strategy development are based on managers' knowledge and curiosity, as well as on open-mindedness and the ability to investigate new areas (Taramigkou *et al.*, 2017).

The generation and adoption of innovation that relate to various organizational processes such as management, manufacturing and marketing substantially depend on how easily information is disseminated within the firm (Henderson and Clark, 1990). If a firm's management has a conservative thinking that prevents OL, it is unlikely that it will be active in both technological and nontechnological innovation (Calantone *et al.*, 2002; Sinkula *et al.*, 1997). The ability to unlearn as an element that curtails open-mindedness is also an essential characteristic of a firm if it is to be capable of receiving new ideas and finding the most appropriate innovative strategies and solutions (Sinkula *et al.*, 1997; Nystrom and Starbuck, 1984).

According to Velo and Mittaz (2006), open-mindedness is a crucial attribute if a firm is to develop new organizational forms to be successful in international markets. In their study of the hospitality business, they concluded that open-mindedness was one of the key abilities that helped a firm to find new organizational forms and adapt to a new international environment. For the sake of company development, it is often more efficient to hire new potentially open-minded staff than train existing personnel to be open-minded. This proposition also finds support in the studies of Hsu *et al.* (2013), Nielsen and Nielsen (2011) and Vătămănescu *et al.* (2017) in the context of new organizational forms pertaining to international expansion. On the other hand, Peng and Lin (2017) suggest that an internationally active firm has more opportunities to innovate in both the technological and organizational fields. Consequently, open-mindedness fosters a firm's potential to innovate by developing its networking abilities for using all kinds of open channel to secure the continuous inflow of vitally important information for creating new forms of business (Vătămănescu *et al.*, 2017).

Henderson and Clark (1990) suggest that the successful performance of cross-cultural teams that introduce various types of innovation can be understood and described from the perspective of the open-mindedness environment. Peng and Lin (2017) support this in claiming that open-mindedness is one of the constructs of OL that positively influences a firm's research and development capability. New path-breaking technologies supported by research and development processes are increasingly based on learning in practice (Morlacchi and Nelson, 2011). Nelson (2008) argues that professional knowledge is acquired in almost all technological fields through learning by doing and is associated with practical activities. In turn, technological innovation in an industry affects the networking process, which results in innovative business practices and structures. Overall, this means that open-mindedness supports the change of business by introducing ORI. An open-mindedness firm is active in establishing external relations with partners to obtain external knowledge for developing technologies and advanced organizational structures (Vera and Crossan, 2004). This is in line with Lazonick (2010), who demonstrated that firms with open-mindedness cultures are characterized by their implementation of aggressive strategies that are always accompanied by the development of new organizational patterns.

Specific characteristics of a firm's open-mindedness environment, such as discussing and accepting failure, ease of knowledge flow and the ability to integrate knowledge, are basic and life-and-death elements for implementing new business practices through ORI (O'Reilly and Tushman, 2008). We have therefore assumed that a firm's open-mindedness as a major construct of OL affects the firm's activity in the area of ORI, because the last of these characteristics deals with promoting new organizational structures and business practices. As a result, the following hypothesis is proposed:

H2. Open-mindedness positively relates to ORI

Research methodology

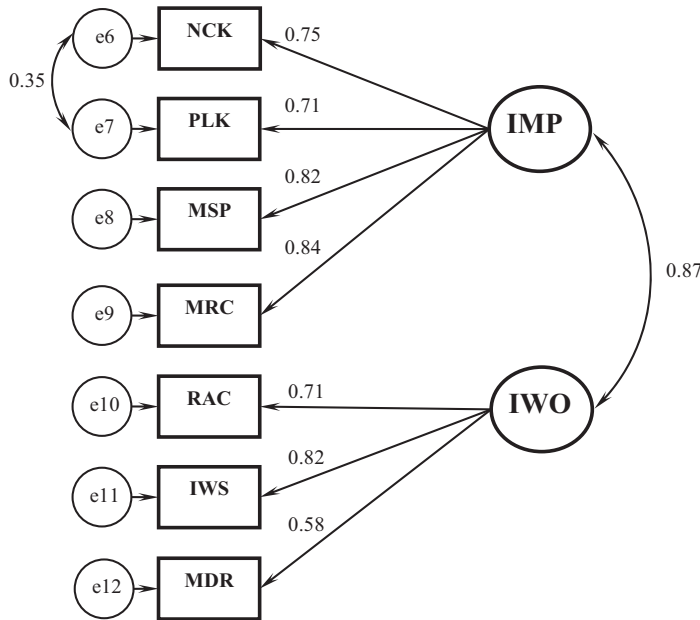
As suggested by numerous scholars (e.g. [Henderson, 2006](#); [O'Reilly et al., 1991](#)), this study hypothesizes that a relationship exists between ORI activity in a firm and its OL process. At the same time, the source of ORI is not always obvious and requires further investigation by different research fields ([Coccia, 2017](#)). The research's methodology is grounded in a deductive study that addresses incumbent firms, chosen based on geographical and industrial principles. Concerning the geographical principle, firms in the Central and Northwestern Economic Regions (CNWER) of Russia were chosen for data collection. The central cities of these regions are Moscow and Saint Petersburg. More than 25% of Russian citizens live in the CNWER, and more than 80% are urban dwellers. Production requiring highly skilled human resources and low energy consumption is very well developed in the CNWER. Around 30% of all manufacturing industries are metalworking production and machinery. A considerable share of production accounts for electronics and instrument engineering, as well as road, railway and water transportation. Production of chemicals, textile, construction materials and food and beverages are also among the other well-developed industries of the CNWER ([ROSSTAT, 2019](#)).

In total, 550 target companies with more than 25 employees and operating in the market for more than three years were chosen randomly from the list of manufacturing companies in the directory of industrial companies for the target area. The questionnaire was distributed electronically to the 550 respondents holding a top managerial position (CEO, CFO or similar) during the second half of 2016. After two weeks, a reminder was sent to those who had not replied. As a result of the fieldwork, 145 completed surveys were collected, and 22 were discarded, because answers to some questions were missing. The overall response rate was therefore slightly above 25%.

Based on the hypothesis, the study investigated the impact a firm's commitment to learning and open-mindedness had on its ORI ([Figure 1](#)). The investigated problem was limited to studying only two subtypes of ORI and only two dimensions of OL. The dependent variables for ORI performance measurement were developed based on the definitions proposed in the Oslo Manual ([OECD, 2005](#)), as well as in studies conducted by [Eurostat \(2012\)](#) and [Dadura and Lee \(2011\)](#). The first ORI factor, IMP, included four items that were used to measure innovation in business management practices. These were: (1) a system that enabled employees to gain access to noncodified external knowledge (NCK); (2) new practices for improving learning and knowledge sharing within a firm (PLK); (3) new management systems for general production or supply operations (MSP); (4) new methods reducing supplier costs (MRC). The second ORI factor, IWO, included three items that were used to measure innovation in workplace organization. The items associated with IWO were: (1) a new workplace organizing method that reduced administrative and internal transaction costs (RAC); (2) a new approach to improving workplace satisfaction (IWS); (3) new methods for distributing responsibilities and decision-making among employees for the division of work within and between firm activities (and organizational units), as well as new concepts for the structuring of activities (MDR).

The latent variables related to commitment to learning and open-mindedness were measured, based on the metrics proposed in studies conducted by [Griese and Kleinaltenkamp \(2012\)](#) and [Zortea-Johnston \(2011\)](#). One question was self-operationalized. The open-mindedness factor, OMN, included five items, and the commitment to learning factor, LEN, included four.

A firm's size (SZF), measured by the number of employees, was considered an exogenous variable and was used as a control variable ([Amarakoon et al., 2016](#); [García-Morales et al., 2006](#); [Jyothibabu and Farooq, 2010](#)). A considerable number of studies have been devoted to the problem of the impact a firm's size has on organizational innovation ([Dukeov et al., 2018](#); [García-Morales et al., 2006](#)). Many studies have proven the positive relationship between a



Note(s): CMIN = 9.683; df = 12; $p = 0.644$; GFI = 0.979; AGFI = 0.950; RMSEA = 0.000; $P_{close} = 0.836$

Figure 1.
Structure of the scales
in the model for
measuring ORI

firm's size and its activity in introducing innovation (Aiken *et al.*, 1980; Kim, 1980). This positive relationship is explained by the fact that the larger a firm is, the more resources it can invest in introducing all kinds of innovation (Damanpour and Aravind, 2011).

The description of the variables and the exploratory factor analysis loadings is presented in Table 1.

The questions were articulated in such a way that respondents compared each of the characteristics of their firm with the same characteristic of their firm's main competitor. A seven-point Likert scale (where 1 corresponds to "strongly disagree" and 7 corresponds to "strongly agree" (Dadura and Lee, 2011; Eurostat, 2012) was used in the questionnaire for the basic questions. To rely on model fit indices, the sample size needed to satisfy the condition of $N > 5T$, where N was the number of elements in the sample, and T was the number of variables under consideration (Byrne, 2010; Kline, 2011). As in the sample for the study, $N = 123$, it was possible to rely on obtained model fit indices and use the structural equation modeling (SEM) method. Statistical analysis was conducted by means of IBM SPSS Statistics and AMOS version 25.

Concerning data analysis, exploratory factor analysis was applied in the first step to decrease the data dimension. The nine independent variables, OMN1...OMN5 and LEN1...LEN4, determined two factors: open-mindedness (OMN) and commitment to learning (LEN). The factor loadings are shown in Table 1.

After applying exploratory analysis, confirmatory factor analysis (CFA) was applied to seven dependent variables describing the two ORI subtypes to confirm the scale structure in the model for measuring ORI. The results obtained by CFA confirmed that the dependent variables NCK, PLK, MSP and MRC could be used as indicators for the IMP subtype of ORI, while the dependent variables, RAC, IWS and MDR, could be used as indicators for the IWO

Variable description	Variable sign	Variable type	Factor loadings	Reference
<i>Organizational innovation</i>	<i>ORI</i>	Latent, dependent variable	–	Dadura and Lee (2011) , Eurostat (2012) , OECD (2005)
<i>Innovation in management practices</i>	<i>IMP</i>	Scale, dependent variable	–	
A system that enables the employees gain access to noncodified external knowledge	NCK	Item	0.86	
New practices of improving learning and knowledge sharing within the firm	PLK	Item	0.83	
New management systems for general production or supply operations	MSP	Item	0.74	
New methods that reduce costs of suppliers	MRC	Item	0.71	
<i>Innovation in workplace organization</i>	<i>IWO</i>	Scale, dependent variable	–	
A new workplace organizing method that reduces administrative and internal transaction costs	RAC	Item	0.78	
A new approach of improving workplace satisfaction	IWS	Item	0.66	
New methods for distributing responsibilities and decision-making among employees for the division of work within and between firm activities (and organizational units), as well as new concepts for the structuring of activities	MDR	Item	0.75	
<i>Open-mindedness</i>	<i>OMN</i>	Scale, independent variable	–	Griese and Kleinaltenkamp (2012) , Zortea-Johnston et al (2012)
We initiate the exchange of individual positions and opinions	OMN1	Item	0.80	
We initiate exchange of ideas	OMN2	Item	0.77	
We place a high value on open-mindedness	OMN3	Item	0.80	
Original ideas are highly valued	OMN4	Item	0.73	
Managers encourage employees to think “outside of the box”	OMN5	Item	0.74	
<i>Commitment to learning</i>	<i>LEN</i>	Scale, independent variable	–	
Learning is seen as a key commodity necessary to guarantee organizational survival	LEN1	Item	0.70	
The basic values include learning as key to improvement	LEN2	Item	0.72	
Our managers often participate in various learning courses/seminars/conferences	LEN3	Item	0.85	Self-operationalized
We systematically identify the need of knowledge relevant to manage our competitive position	LEN4	Item	0.74	Griese and Kleinaltenkamp (2012)
<i>Firm's size</i>	<i>SZF</i>	Exogenous variable/control variable	–	Amarakoon et al. (2016) , García-Morales et al. (2006) , Jyothisbabu and Farooq (2010)

Table 1.
Variable description

subtype of ORI. [Figure 1](#) demonstrates the structure of the scales in the model for measuring ORI. When SEM was applied, the result of the CFA (two factors, seven items) was used as a

hypothetical structure of the scales in the model for measuring ORI, and the factors IWO and IMP were considered indicators for the latent variable "organizational innovation" (ORI).

The goodness of fit of the SEM was evaluated using the following criteria: CMIN/df < 2.0; p -value of CMIN (p) > 0.05; Goodness of Fit Index (GFI) > 0.90; Comparative Fit Indices (CFI) > 0.85; the Root Mean Square Error of Approximation (RMSEA) < 0.05 with the closeness of fit (P_{close}) > 0.40 (Byrne, 2010). The values for the model fit measures were as follows: CMIN = 9.683; df = 12; p = 0.644; GFI = 0.979; AGFI = 0.950; RMSEA = 0.00; P_{close} = 0.836. These measures demonstrated the very high level of the model fit. All the regression weights, covariance and variances for the latent variables were statistically significant (p < 0.001).

The factor analysis therefore confirmed the usability of two scales (OMN and LEN), based on nine independent variables for measuring two dimensions of OL, as well as two other scales (IMP and IWO), based on seven dependent variables for measuring the subtypes of ORI (Table 1).

The next step was to check the reliability of each of the scales for the internal consistency of the contained items. For the scales OMN, LEN, IWO and IMP, the calculated Cronbach alpha was 0.93, 0.91, 0.78 and 0.82. The high values of the Cronbach alpha for each of the scales grounded the possibility of computing the values of the scales as a mean of the contained items.

Based on the obtained scales, a prior structural model was proposed that linked the dependent and independent variables (Figure 2) to check its fit with data collected through the SEM method.

As the requirement of multivariate normality was met (Multivariate Kurtosis = 2.202; C.R. = 1.46), the maximum likelihood method of SEM analysis was applied (Byrne, 2010; Kline, 2011). However, the values for the model fit demonstrated an unsatisfactory level (CMIN = 8.265; df = 3; p = 0.41; GFI = 0.979; AGFI = 0.872; RMSEA = 0.120; P_{close} = 0.094). To improve the model fit, the relationship between SZF and ORI was added. The final model obtained is shown in Figure 3. The values for the model fit measures are as follows: CMIN = 2.320; df = 2; p = 0.313; GFI = 0.993; AGFI = 0.944; RMSEA = 0.036; P_{close} = 0.417. These measures demonstrated the very high level of model fit. All the regression weights and variances obtained for the final model were statistically significant at the level of p < 0.001 (Hair *et al.*, 2010).

Based on the obtained results, ORI experienced a strong impact from a firm's commitment to learning. ORI also received a statistically significant impact from open-mindedness and positively depended on the size of an organization. A firm's size positively influenced its commitment to learning and negatively influenced its open-mindedness corporate culture. The aggregated impact of independent variables LEN, OMN and SZF explained 57% of the dependent variable ORI variance. Both the proposed hypotheses were therefore supported:

- (1) Commitment to learning positively relates to ORI
- (2) Open-mindedness positively relates to ORI.

In addition, the model provided results concerning the constructs of the latent variable ORI. A firm's ability to introduce ORI depended strongly on both the considered subtypes of ORI. However, its impact on IMP was stronger (96% of variance) than on IWO (50% variance).

Discussion

Although numerous studies are devoted to the phenomena of both ORI and OL, the theoretical framework for innovation theory does not provide sufficient evidence for the relationship between ORI and the learning process in a firm (Freeman and Soete, 2012). This study contributes to the literature on innovation management by investigating a problem on

how a firm's ORI is influenced by the two specific dimensions of OL, which are commitment to learning and open-mindedness. The paper not only underscores the role of OL in ORI-related activities but suggests a new perspective that considers ORI a multiplex concept. In this vein, the relationship between the two subtypes of the ORI variable and OL has been analyzed.

The literature regards OL as a process that is crucial for innovation activity in a firm (Calantone *et al.*, 2002; Griese and Kleinaltenkamp, 2012; Henderson and Clark, 1990; Liao *et al.*, 2008; Mothe *et al.*, 2015; Sinkula *et al.*, 1997). However, most of these studies address only technological innovation. In this context, this study makes a contribution to the concept of ORI by exploring how the evolution of new business practices and organizational structures is supported by OL, which in turn reinforces a firm's technological development (Coccia, 2017).

The study contributes to the innovation theory literature in two ways. First, although numerous studies address various features of the ORI concept, they do not break down ORI into subtypes to consider it in parts. At the same time, some scholars (e.g. Wang and Xu, 2018) claim there is a need for research on the relationship between different subtypes of ORI and various factors that determine organizational performance. In this light, our research dealt with two subtypes of ORI: innovation in management practices and innovation in workplace

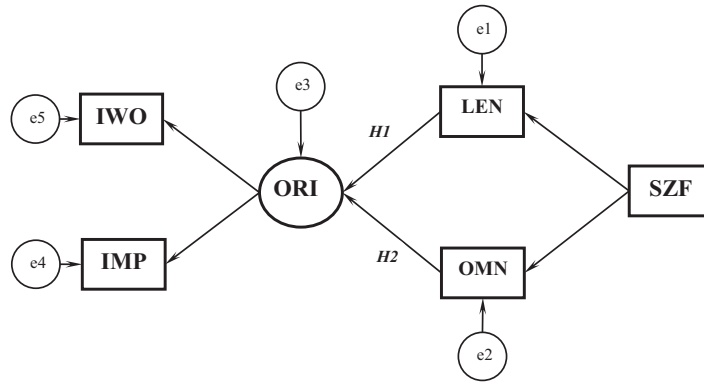


Figure 2.
The proposed model

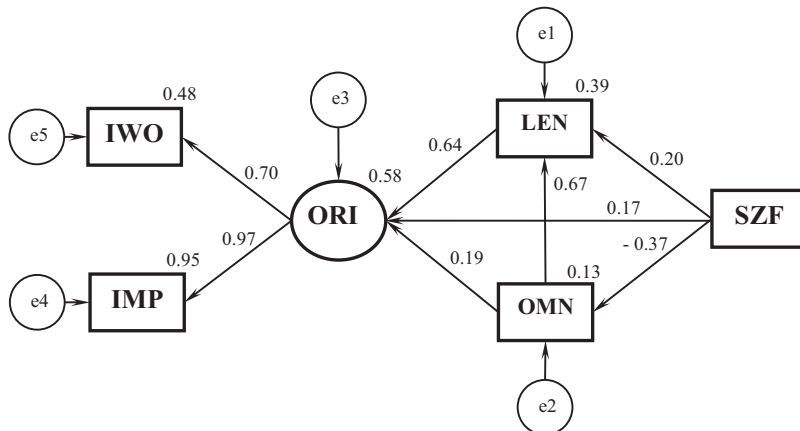


Figure 3.
The final model
obtained

Note(s): CMIN = 2.320; df = 2; $p = 0.313$; GFI = 0.993; AGFI = 0.944; RMSEA = 0.036; $P_{close} = 0.417$

organization. The findings provide evidence that both IMP and IWO are positively influenced by a commitment to learning and open-mindedness, although the degree of this influence differs. The difference in influence supports the statement of [Damanpour and Aravind \(2011\)](#) that specific subtypes of ORI experience an unequal impact from various antecedents, because each has its own nature. The prevailing role of the innovation associated with business management practices in the overall ORI can be explained by the fact that IMP enhances flows of knowledge in firms ([Armbruster et al., 2008](#); [OECD, 2005](#)), while the innovation in workplace organization relates more to tactical matters ([OECD, 2005](#); [Som et al., 2012](#)). The two IMP items are related to the learning process that takes place in a firm. The first variable is NCK (a system that enables employees to access noncodified external knowledge). The second is PLK (new practices of improving learning and knowledge sharing within the firm). The importance of ORI in developing an efficient learning environment in a firm becomes obvious. This is also confirmed by other studies addressing the problem of the relationship between the learning process in a firm and its innovation activity (e.g. [Lin, 2007](#)).

Second, the study investigates the link between ORI and two dimensions of OL: commitment to learning and open-mindedness. The results indicate that both dimensions have a considerable impact on a firm's ORI activity. The result is coherent with prior studies (e.g. [Camisón and Villar-López, 2011](#); [Sinkula et al., 1997](#)), which have demonstrated the strongly positive impact of OL on ORI. The obtained result also supports the findings of [Calantone et al. \(2002\)](#) and [Sinkula et al. \(1997\)](#), who claim that OL is essential for creating new organizational forms to secure a firm's sustainable development. Thus, commitment to learning and open-mindedness may drive an organization to develop its management processes and renew its organizational forms. In other words, this means increasing a firm's activity in introducing ORI as organizational knowledge increases. However, according to the obtained results, the commitment to learning has a stronger impact on ORI compared with open-mindedness. This result corresponds with the studies of [Keskin \(2006\)](#) and [Sinkula \(1997\)](#) and can be considered evidence that new knowledge plays a crucial role in introducing ORI to a firm, while an open-minded culture has a supportive function. Nevertheless, without an appropriate organizational culture that supports a firm's learning process, innovation activity will be inefficient, as [O'Reilly and Tushman \(2008\)](#) also state.

Besides its academic contribution, this study offers practical implications for innovation management. As the results show, the role of innovation in business management practice is much greater than it is in workplace organization. This output may be driven by the priority of continuous improvements in efficiently organizing all kinds of management-related activity over changing organizational operational processes ([Som et al., 2012](#)). Firms should develop their organizational structures and management systems with a high level of open-mindedness and devotion to continuous learning. In turn, this may enhance their ORI activity to allow the latter to play its own role in a firm's development processes ([Damanpour and Aravind, 2011](#)). The results indicate that a firm should be committed to continuous learning and the development of an open-minded corporate culture, constantly renewing its business processes by responding to the challenges of the current business environment. The findings should also inspire decision-makers to observe the mechanism that enables the inception of new organizational forms and processes, as well as designing new strategies to drive the organizations toward a digitalized business environment.

One of the limitations of this study was conditioned by the sample representing only manufacturing firms based in Russia. The sample therefore referred to a single country and some industries. Firms operating in transition economies have some specifics in their corporate culture ([Balabanova et al., 2018](#); [Hutchings and Michailova, 2006](#)) that may influence the results in matters related to open-mindedness, for example.

Consequently, this study provides new knowledge on ORI and opens up new research avenues in the field. A new research direction might be to investigate the parallels between

OL in transition and developed economies, as well as to consider firms from industrial sectors other than manufacturing. To increase the results' generalizability, data from various industries might be collected and analyzed. Despite its sufficient empirical data, the study is limited by its exploratory nature and could consider only some aspects of ORI. This may open up new research avenues for comparative and longitudinal studies. As the data was collected from a single country, the economic and cultural context may also have some effect on the results (Balabanova *et al.*, 2018).

Several studies (e.g. Hutchings and Michailova, 2006) have observed that the management behavior of organizations in modern Russia adapts Western-oriented management practices to some extent. Balabanova *et al.* (2018) argue that this phenomenon relates only to privately owned companies, whereas most organizations strongly retain a Soviet management style. For example, it is typical for Russian employees to avoid being open and sharing knowledge readily within their firm, because they are afraid of being punished for doing so. The heritage of the Russian economy means it might be interesting to study whether innovation performance differs between privately owned and state companies.

A final – and certainly no less important – area for future studies might be to consider another subtype of ORI, external relations innovation. OL constructs probably also have a strong impact on the external relations innovation, because the knowledge acquired from outside a firm plays a considerable role in its development.

Conclusion

This exploratory study examined ORI. Its focus was on the problem of how commitment to learning and open-mindedness affect a firm's ORI activity. In turn, ORI was broken down into two subtypes: innovation in business management practice and innovation in workplace organization. The findings of this study reveal that a firm's ORI activity and both its subtypes are greatly exposed to commitment to learning and open-mindedness. In turn, commitment to learning affects open-mindedness. In sum, the findings support the proposition that OL plays a significant role in a firm involved in the process of introducing ORI. The results should also inspire firms and policymakers to observe the mechanism that drives a firm's development and design new strategies to propel organizations' innovation activity.

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