Formalizing company KM portrait: pilot study with evidence from Russia

Tatiana Gavrilova, Artem Alsufyev and Anastasiia Pleshkova

Abstract

Purpose – *The purpose of this paper is to develop the model of knowledge management influence on company performance for further empirical testing of the links between knowledge management practices and processes and organizational performance.*

Design/methodology/approach – *This study establishes a model for comprehensive analysis of knowledge management's influence on performance and describes the preliminary results gained from the experience of 120 Russian companies. For further testing structural equation modelling and the partial least squares methods are proposed.*

Findings – *The results of the literature review justify the importance of the study conducting this study in the field of knowledge management and its connection to organizational performance in the developing market of Russia. A theoretical model for future empirical testing is provided and methods suggested for further data analysis and interpretation. The preliminary conclusions are discussed.*

Research limitations/implications – *The focus on Russian firms limits the generalizability of the results. The non-response bias is also taken into account for further study.*

Practical implications – *This pilot study outlines the importance of knowledge management practices and processes for firm performance. The preliminary results will be interesting both for researchers and practitioners in the countries with the developing economies. The final results will provide new insights in understanding and formalizing the portrait of a typical Russian company with regards to knowledge management policies.*

Originality/value – *Few studies have been published on the knowledge management process within the Russian context. This study is expected to encourage future studies in this field. The present paper fills an important gap in the extant literature by conceptualizing the model for knowledge management performance analysis and proposes empirical testing of the relationship between knowledge management and firm performance in the context of a developing country that will be presented later as the direction for future study. This study is one of the first ever to study these relationships within the Russian context.*

Keywords *Innovation, Financial performance, Knowledge management, Organizational performance*

Paper type *Research paper*

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Introduction

Among researchers and practitioners alike, there is no doubt regarding the importance of knowledge within firms. In a knowledge-based economy, knowledge is the most valuable resource for creating a sustainable competitive advantage (Grant, 1996a, 1996b). Modern trends (globalization and technological evolution, growth of highly diversified markets and products) have changed the structure of market in a way that makes it hard to remain competitive using standard sources of company's advantage (4 P's, reliable suppliers, etc.). These trends make knowledge even more valuable as it is strongly connected to another important and scarce resource – time (Ragab and Arisha, 2013). Differences among firms' performance can be explained by the way knowledge is managed (Massingham and Massingham, 2014). Consequently, over the past decade, the field of knowledge management as a discipline has been growing steadily as reported in prominent academic journals (Serenko and Bontis, 2013).

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Organizations show an increasing interest in knowledge management because they recognize that an effective use of their knowledge assets and resources may enable them to innovate, respond to customers' requirements and, to a large extent, survive (Schiuma, 2009; Bigliardi *et al.*, 2014; Celenza and Rossi, 2014). Despite the growing interests in knowledge management (KM), the issues surrounding its implementation practices, both from a theoretical and an empirical standpoint, remain under-researched, at least in comparison with the huge amount of writings concerning the philosophical foundations of knowledge, knowledge taxonomies and the role played by information and communications technology (ICT) (Foss *et al.*, 2010). Moreover, there are no previous studies proposing a comprehensive theoretical framework that synthesize the level of maturity of an organization's KM, both in terms of KM strategy and knowledge sources, and absorptive capacity (Galati, 2015).

Knowledge builds a new sustainable competitive advantage for all global companies, but there is a significant difference in the means of competitiveness between European and Russian enterprises (Shakina and Barajas, 2015). Few studies focus on knowledge management in the Russian context, and even fewer have established a conceptual framework or explained how organizational characteristics influence its implementation (Wang *et al.*, 2015); we aim to close this gap. The purpose of the current paper is to establish a theoretical model that describes the average Russian company with regards to knowledge management practices and various performance outcomes (organizational performance, innovative performance and financial performance) to propose the further empirical testing of the model. The research question can be formulated as follows:

RQ1. How do knowledge management processes and practices influence the performance outcomes in Russian companies?

To answer this question, the study is divided into two sections: the pilot study and the final results study. We initially conducted a thorough review of the research papers on the relationship between knowledge management and performance outcomes; based on this review, we proposed a generalized conceptual model of all the interconnections. We used descriptive statistics to apply this model to the activity of 120 Russian companies of different sizes and industrial sectors. Preliminary results are provided as the research continues. The second step of this research focuses on the formulation and empirical justification of the picture of Russian companies that uses knowledge management practices and processes. The results obtained allowed us to underscore the importance of company maturity in defining the level of knowledge management system development.

This paper is structured as follows:

- First, we theoretically explore knowledge management practices by defining them and examining how they are likely to impact a firm's performance.
- Second, we set the empirical framework for testing and examine the preliminary results of knowledge management practices and processes on performance.

We conclude by discussing our findings and their implications for managing knowledge in a beneficial manner and for the knowledge-based view of the firm.

Theory

Companies now have broad access to any physical, financial or technological assets under similar open-market conditions. Therefore, they are faced with the need to start the process of developing their own distinctive capabilities that would be difficult for their competitors to reproduce. A promising example of such capabilities is the company's human resources, where personnel apply their skills and abilities and manage the direction for development by using knowledge they obtain. This development based on knowledge is the force to expand the company's distinctive capabilities. Knowledge of this kind does not exist and

cannot be acquired in the open market and is very hard to imitate. Reproduction of such knowledge is challenging because it requires resources such as time, effort and specific contexts to understand the origins of this knowledge.

Knowledge has three fundamental characteristics that make it the subject of research. First, it belongs to the person who assimilates it during his/her own working experience, making it personal. People use the knowledge they acquire in the context of an organized whole that gives structure and meaning to its different components (Kolb, 1984). Second, knowledge utilization allows other people to understand the perceived phenomena based on their own experience and to evaluate it further in different situations. Third, knowledge serves as a guide for action and helps the step-by-step decision-making process. All these issues consider knowledge as a good base for building sustainable competitive advantage. The role of knowledge in performance management is at least two-dimensional – a resource that is argued to yield sustainable competitive advantage and a basis for decision-making and management control. With these two complementary perspectives, knowledge management provides an essential tool for improving organizational performance in the twenty-first century (Laihonen, 2015).

Several empirical studies assessing the impact of KM on firm performance have already been established and represent a sound basis for promising research (Andreeva and Kianto, 2012; Chuang, 2004; Kamhawi, 2012; Lee *et al.*, 2012). The main purpose of the research in the field is to investigate the impact of KM on performance (Table I), although researchers and specialists still do not agree whether the impact is direct or mediated by some other variables (Andreeva and Kianto, 2012).

If we look at an organization from the knowledge management point of view, we can divide it into two major units of analysis: knowledge management practices and knowledge management processes. KM practices are defined as the set of management activities conducted in a firm with the aim of improving the effectiveness and efficiency of organizational knowledge resources (Andreeva and Kianto, 2012). KM practices refer to the aspects of the organization that can be manipulated and controlled by conscious and intentional management activities (Andreeva and Kianto, 2012; Foss and Michailova, 2009). We conceptualize them as the set of intentional management activities that enable the company to get the value from its knowledge-based assets.

Based on the categorization of the four success factors crucial for KM (Heisig, 2009) (Table II), we split KM practices into ten categories corresponding to Heisig's differentiation and practices already observed in previous studies, but we also suggest the categorization of these factors into larger groups: human resource management – HRM [recruiting, training and development, performance attestation, compensation), divided to enable finer-grained analysis (Currie and Kerrin, 2003; Cabello-Medina *et al.*, 2011)], infrastructure (decentralization and supervisory work, organizational culture, organizational design, learning mechanisms), information technology – IT (ICT) and strategy (strategic management of knowledge and

Table I Proven knowledge management connection to other organizational constructs

Organizational constructs	*Authors*
Product leadership	Wu and Chen (2014)
Operational excellence	Darroch (2005)
Customer intimacy	Zack *et al.* (2009)
Innovation	Darroch (2005), Kianto, 2011)
Organizational creativity	Lee *et al.* (2012)
Competitive advantage	Andreeva and Kianto (2012), Chuang (2004)
Overall performance	Lee and Choi (2003), Marqués and Garrigos-Simón (2006)
Financial performance	Andreeva and Kianto (2012), Tanriverdi (2005)

Table II Correspondence of KM practices with Heisigs' success factors and authors' interpretation of these factors in Russia

Critical success factors for KM (Heisig, 2009)	*Corresponding KM practices (in previous studies)*	*Structure of the KM practices in this study in four major units*
Human-oriented		HRM:
Culture	Organizational culture	Recruitment
People	Recruitment, training and development, performance attestation, compensation, learning mechanisms	Training and development
Leadership	Decentralization and supervisory work	Performance management
		Compensation
Organization-oriented		Infrastructure
Processes	Organizational design	Decentralization and supervisory work
Structure		Organizational culture
		Organizational design
		Learning mechanisms
Technology-oriented		IT
Infrastructure	ICT	ICT
Applications		
Management processes-oriented		Strategy
Strategy	Strategic management of knowledge and competence	Strategic management of knowledge and competence
Goals		
Measurement		

competence). This enables standardization of the elements as they represent similar units of analysis.

Knowledge management practices

Strategy unit: Strategic management of knowledge and competence can be explained as strategic planning, implementation and activities related to the knowledge-based assets in the firm (Kianto and Andreeva, 2014). Knowledge-based strategy is built on the organization's main strategic knowledge (Dalkir, 2005; McKeen *et al.*, 2005). Strategic management of both knowledge and competence can enhance innovation and organizational performance through the following mechanisms: by enabling the organization to focus on the most value-creating activities of the company, which is important as researchers have suggested that knowledge as an intangible asset is a source of sustainable competitive advantage (Kushwaha and Rao, 2015); and by enabling the organization to make strategic decisions of the right allocation and utilization of the company's competence base that follow its strategic aims (Shujahat *et al.*, 2017).

Decentralization and supervisory work may be the most crucial factor for developing organizational culture. The management level has a direct impact on a company's performance and defines the scope of its growth. Top-level support coupled with local freedom at the department level is suggested as a good combination for company development. The leader is the master of inspiration, mentorship, trend setter and creator of the working atmosphere of communication and knowledge sharing, respect and trust (Carson *et al.*, 2004; Macdonald, 1978; Lu *et al.*, 2013). Therefore, we regard this block of decentralization and supervisory work as a tool to establish an innovative atmosphere in a firm and form the following hypotheses.

Infrastructure unit: There is compelling evidence to support the role of *organizational culture* on innovation performance (Nam Nguyen and Mohamed, 2011); various aspects of organizational culture, such as organizational structure, education and training, reward and incentives, open communication, worker involvement and workforce flexibility, can enable organizations to overcome the barriers of KM and achieve competitive advantage (Patil and Kant, 2012). Organizational culture is a critical factor in building and reinforcing knowledge management in organizations, and improvements in its practice in turn improve both innovation and organizational performance (Rai, 2011). Organizational culture has positive effects on employees' intention to participate in the knowledge processes, especially in knowledge creation; this in turn leads to more innovative decisions and performance while a strictly controlled organizational culture has negative effects (Chang and Lin, 2015). Practices for organizing work include *organizational structure* issues that facilitate the leverage of knowledge. These entail decisions concerning the division of work and responsibilities, as well as the coordination of work (Mintzberg, 1992). For example, the distribution of power and decision-making rights to knowledge workers has been suggested to speed up organizational activities and to promote innovativeness (Davenport and Prusak, 1998). *Learning mechanisms* in an organization can be explained through learning-by-doing or practice-based learning or social learning (by observing the behaviour of others and its consequences). Organizational learning increases the level of organizational innovativeness through implementing the knowledge acquired from lessons learned or best practice (Gherardi, 2009; Lave, 2009). By using different techniques of learning, the company stimulates the employees to share and develop knowledge, as the company is in constant search for better decisions.

HRM unit: These practices play a significant role in KM and obviously in organizational performance (Hislop, 2003; Scarbrough, 2003; Wong, 2005). In this study, we characterize HRM practices from four basic points of view: search for the right people who will share their unique knowledge – recruitment, teaching and developing the employees – training and development, assessing their performance and ability to communicate with other participants of the knowledge flow – performance management, rewarding the employees materially or otherwise for spreading their knowledge and valuable ideas within the organization – compensation. KM-focused HRM practices can increase innovation performance through four main mechanisms (Scarbrough, 2003). First is by paying attention in the recruitment process to the candidates' knowledgeability and social skills, so that the company can increase the availability of a knowledgeable workforce for producing effective and efficient performance in knowledge-intensive tasks (Chen and Huang, 2009; Currie and Kerrin, 2003). Second, training and development greatly influence the firm's knowledge base; active plans and arrangement of seminars and courses keep the knowledge base competitive and updated (Scarbrough, 2003). Third, performance attestation is a regular employee performance review to understand the progress of the employees' careers and to form future directions; in our study, we analyse the performance in terms of interactions and activities within basic KM processes (creation, sharing, utilization, documentation, etc.). Fourth, a compensation scheme based on these activities increases the likelihood of employees engaging in such activities. Basically, positive HRM practices retain knowledgeable employees within the organization using intangible and tangible motivations.

IT unit: ICT can be exploited to make a difference in performance metrics. Nowadays, the scale of available information for companies is enormous. This could be seen as both a threat and an opportunity. The companies that see the positive side of market conditions take advantage of IT support in searching, gathering and analysing information to support their decision-making and key performance metrics. IT can also assist in open innovation by providing platforms to joint innovation with external parties, as well as establishing various communication channels for the internal and external stakeholders (Andreeva and Kianto,

2011). Thus, managers should consider IT not only as a support system but more specifically as a tool to gain competitive advantage.

Knowledge management processes

Intra-organizational knowledge sharing refers to the movement of existing knowledge between different departments or actors, hierarchical levels and units (Bhatt, 2001; Szulanski, 1996). First, it gives the company an opportunity to use available resources in the most efficient way by transferring the lessons learned or best practices from one department to another, from one project or client to another, etc. Second, the literature suggests that knowledge sharing also contributes to the creation of new knowledge. For example, a closer look at the classical model of organizational knowledge creation of Nonaka (1991) makes it clear that sharing knowledge represents the essence of two out of the four stages of the model: the socialization phase includes intensive sharing of tacit knowledge among employees, mainly among close colleagues, whereas the combination phase concerns sharing explicit knowledge among a broader range of employees throughout the whole organization (Andreeva, 2009).

While *knowledge creation and knowledge sharing* basically contribute to intra-firm focus, *knowledge acquisition* refers to the knowledge that is available outside the company. Various external sources such as clients, competitors, suppliers and other stakeholders present a rich knowledge source; however, to be able to exploit it, the organization needs to know how to identify what is interesting and useful in the external environment, acquire this knowledge, disseminate it and apply it to a commercial end (Cohen and Levinthal, 1990; Zahra and George, 2002). Researchers argue that companies that acquire external knowledge possess a more differentiated knowledge base and, as a consequence, are more innovative, as innovation is stimulated by the diversity of viewpoints inside the organization (Cohen and Levinthal, 1990; Kianto, 2011).

All the knowledge that has been acquired, created and shared needs to be supported by *knowledge storage and documentation* as well as appropriate *protection*; otherwise, the organization is constantly in danger of accidentally losing the knowledge already gained. The organizational memory resides in various forms, such as written documents, electronic databases, codified knowledge in expert systems, documented organizational procedures and processes and tacit knowledge located in individuals (Alavi and Leidner, 2001). A company will undoubtedly struggle to retain its competitive advantages, innovativeness and creativity if the needed knowledge has not been made easily available in the right kind of format. We separated knowledge protection from other strategic activities because of the increased attention it has attracted during the discussion on open innovation (Chesbrough, 2003).

Innovation performance

Innovation performance can be described as the implementation of both discoveries and inventions and the process by which new outcomes, whether products, systems or processes come into being (Williams, 1999). The process definition of innovation – as of a process of interrelated activities from ideas to invention and to its commercialization, where new knowledge is created and used through these activities (Trott, 2005) – highlights that it depends heavily on knowledge. Therefore, it is logical to conclude that knowledge management processes and practices will support the innovativeness of an organization. Few case studies demonstrate that knowledge management systems support innovation (Jang *et al.*, 2002; Suh *et al.*, 2004). Wide-scale, quantitative research in this area is scarce, yet it also supports the idea of the positive relationship between knowledge management and innovation (Gloet and Terziovski, 2004; Darroch, 2005; Kiessling *et al.*, 2009; Kianto, 2011).

The impact of KM practices has already been tested (Tables III and IV), and several constructs are already proven, including strategic management of knowledge and competence, compensation and IT.

Organizational performance

Organizational performance in terms of knowledge management in this study is presented in the form of the perceived assessment of key performance metrics and indicators: financial savings, time savings and increased revenue and organizational performance. The study explores how companies use their ability to perform a task and to plan the output from its processes (Table V) (Choong, 2013).

Financial performance

Significant KM investment will not necessarily lead to improved financial performance (Kalling, 2003), but a set of intermediate variables will most probably be influenced which, in turn, should affect it (Lee and Choi, 2003). Therefore, the actual outcome of KM is hard to predict (Yahya and Goh, 2002), although we will use our model to analyse the connections between these variables and organizational and financial performance. In a recent study (Giampaoli *et al.*, 2017) on the impact of key elements that comprise knowledge

Table III Previous studies on KM processes and their impact on innovation performance

KM processes	*Knowledge intensity ("the more knowledge-intensive a company is, the more intense are its processes")*	*Impact on innovation performance*
Knowledge creation	Proved, but no impact on innovation performance	Mediator
Internal knowledge sharing	Proved, but no impact on innovation performance	No direct impact
External knowledge acquisition	Proved, but no impact on innovation performance	No direct impact
Knowledge storage and documentation	Proved, but no impact on innovation performance	No direct impact

Source: Visualized by authors, Andreeva and Kianto (2011)

Table IV Previous studies of KM practices and their impact on innovation performance

Innovation performance ("compared to competitors, how successfully has your company managed to create innovations in the following areas")	*KM practices ("variable X is positively associated with a firms innovation performance")*	*Impact*
Products and services for customers	Supervisory work	Negative
	Knowledge protection	Negative
Production methods and processes	Strategic management of knowledge and competence	Positive
Management practices	Recruitment	Negative
Marketing practices business models	Training and development	Negative
	Performance appraisal	Negative
	Compensation	Positive
	Learning mechanisms	Negative
	IT	Positive
	Work organization	Negative

Source: Visualized by authors, Inkinen *et al.* (2015)

Table V Previous studies on KM practices and their influence on performance in service-oriented firms vs product-oriented firms

KM performance	*KM practices*	*Usage and development*	*Hypothesis check*	*Impact on KM performance*	*Hypothesis check*
Money savings Time savings Revenue increase Innovativeness	Strategic management of knowledge	Develop equally frequently	Accepted	Stronger impact for service-oriented firms	Rejected
	Organizational culture	Develop equally frequently	Accepted	Stronger impact for service-oriented firms	Rejected
	Human resource management practices	Service-oriented firms support more often	Rejected	Stronger impact for service-oriented firms	Rejected
	Organizational design	Develop equally frequently	Accepted	Equal impact	Rejected
	ICT	Product-oriented firms support more often	Rejected	Less impact for service-oriented firms	Accepted

Source: Visualized by authors, Kianto and Andreeva (2014)

management infrastructure (work design, training and development, reward, culture, ICT and decentralization), it was proved that these features have a positive direct effect on both creative problem solving and problem-solving speed, which in turn have a direct relationship with organizational performance. The link with financial performance was also proved in this study.

Hypotheses arrangement

Building on the description of the variables and the reasons for their inclusion in the model, based on the previous studies presented above, we formulate the following hypotheses by splitting them into the following more precise statements appropriate to the Russian context. Their structure is illustrated in Figure 1.

H1. There is a relationship between knowledge management practices and organizational performance; if yes, is it direct or indirect (mediated by innovation performance).

H2a. Knowledge creation mediates the link between the other knowledge processes and innovation.

H2b. Each of five knowledge processes has a direct impact on organizational innovativeness.

H3. There is a positive direct relationship between innovation performance and organizational performance.

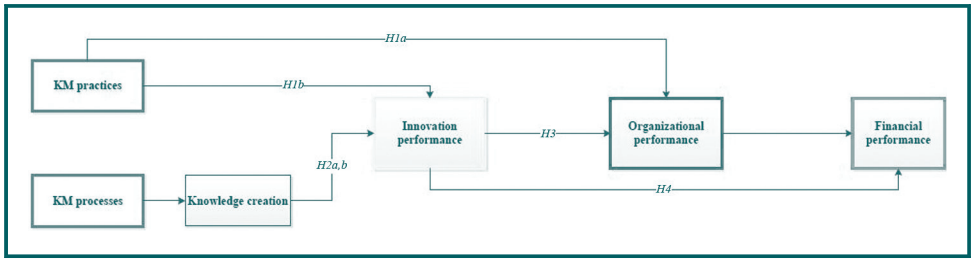
H4. There is a negative direct relationship between innovation performance and financial performance.

Methodology

Measures

As pointed out by Ragab and Arisha (2013), studies that investigate the impact on performance often use qualitative methods such as questionnaires, surveys or interviews; KM performance in this relies on a respondent's perception. Here, we plan to analyse the impact of KM practices and processes on performance using structural equation modelling techniques (Andreeva and Kianto, 2012) more specifically the partial least squares (PLS)

Figure 1 Structure of hypotheses



method (Lee *et al.*, 2012; Wu and Chen, 2014; Zack *et al.*, 2009; Bontis and Fitz-enz, 2002). We plan to use PLS to estimate the model because it is a structural equation modelling technique less constrained by residual distributions and well-suited for model testing (Chin, 1998a, 1998b; Gefen, *et al.*, 2011; Lohmöller 1989). As we have already stated, the results are insufficient for the analysis: the sample size for performing PLS requires ten times the number of indicators associated with the most complex construct or the largest number of antecedent constructs linked to an endogenous construct (Hair *et al.*, 2010): however, the choice of the method is already established.

For the purposes of this study, we composed a survey of 16 questions, broken down into sub-questions as shown in Table VI, adapting the constructs and measures from various sources. Strategic management of knowledge and competence items were adapted from McKeen *et al.* (2005), Kianto and Andreeva (2014) and Boumarafi and Jabnoun (2008); decentralization and supervisory work was covered by 11 items adapted from Lee and Choi (2003) and Kamhawi (2012); organizational culture was investigated using nine items adapted from Lopez *et al.* (2004) and Kamhawi (2012); organizational design was covered by items adapted from Cabrera and Cabrera (2005) and Donate and Guadamillas (2011); HRM practices (recruitment, training and development, performance attestation, compensation) were covered by items adapted from Andreeva and Kianto (2012) and Kamhawi (2012); learning mechanisms was covered by four items adapted from Cabrera and Cabrera (2005) and Lee and Choi (2003); and ICT was covered by seven items adapted from Andreeva and Kianto (2012) and Lee and Choi (2003). As for the knowledge processes, the scales for internal knowledge sharing, external knowledge acquisition, storage and documentation paired with protection scales were based on Kianto (2011), with some insights from Nonaka (1991). The knowledge creation scale aimed to estimate the frequency of new ideas developed in the surveyed organizations in different areas of their activities. Some items were borrowed from Kianto (2011), and a few more were developed by the research team informed by the literature on knowledge creation (Nonaka, 1991).

The survey is grounded on the previously adapted and tested questions, translated into Russian and back to eliminate any sense lost. It was distributed through an online survey website and in person. The model constructs and preliminary results were then translated

Table VI Questions of the survey

Question block	*No. of questions*	*No. of sub-questions*
Overall information about the company	10	20
Strategic management	2	15
Organizational culture	1	21
Human resource management	1	21
Information technologies	1	8
Knowledge management	1	6

into English for presentation in this study. Respondents were asked to rate their perceived performance of their organizations on a six-point Likert scale. All measures were replications or adaptations of the validated scale. Response options for all items ranged from 1 "very strongly disagree" to 6 "very strongly agree". The breakdown of the questionnaire was as follows.

This study collected data for control variables (age of firm, number of employees, industry, use of material or non-material resources) likely to influence organizational performance, as suggested by past research – to eliminate any effects they might have had on performance.

Sample

A quantitative data set was gathered using a structured survey questionnaire from firms in Russia. To date, we have obtained 120 promising results, although these are insufficient for the statistical testing of the hypotheses that we have determined, and therefore for any final conclusions. To test our research model, we started collecting data from leading Russian companies with more than 100 employees. The choice of these companies was made as larger firms tend to have a broader profile of KM activity (Gold *et al.*, 2001). The search for further data is in progress, and the expected final results should be from more than 250 participants. The companies included in the sample show the following scope (Table VII).

Preliminary results

After analysis of existing, tested models and regarding our own research implications, we constructed the following model of KM's influence on innovation and organizational performance (Figure 2).

We also provide descriptive statistics (Table VIII) of the variables as we cannot yet perform any statistical analysis. This analysis of mean value responses may be the ground on which we can base our assumptions as to which unit of KM practice has more impact on the performance metrics.

As can be concluded from these mean values from the preliminary results of the descriptive statistics, the most developed KM practice is in the sphere of organizational culture. This means that the atmosphere of trust and interaction is supported; readiness to share the knowledge gained is appreciated, and interaction between different departments is encouraged. The next KM practice to show a result above average was knowledge protection. Strategic knowledge is available only to those stakeholders for whom it is intended. This construct also indicates that Russian companies use employee instructions and other informal facilities and measures to protect the knowledge. The next important practice was in the sphere of HRM, recruitment of employees described as hiring personnel with the required competences and skill in learning and self-development. Here, companies also check whether the person is eager to work on the tasks in a group that includes people from other departments. The process close in value to recruitment is internal knowledge sharing, showing that

Table VII Description of the sample

Average number of employees	43,628
Employees with higher education	81.87%
Employees engaged in R&D	18.7%
Usage of resources	
Material sources	45.97%
Non-material sources	54.03%

Figure 2 A theoretical model of the influence of knowledge management practices

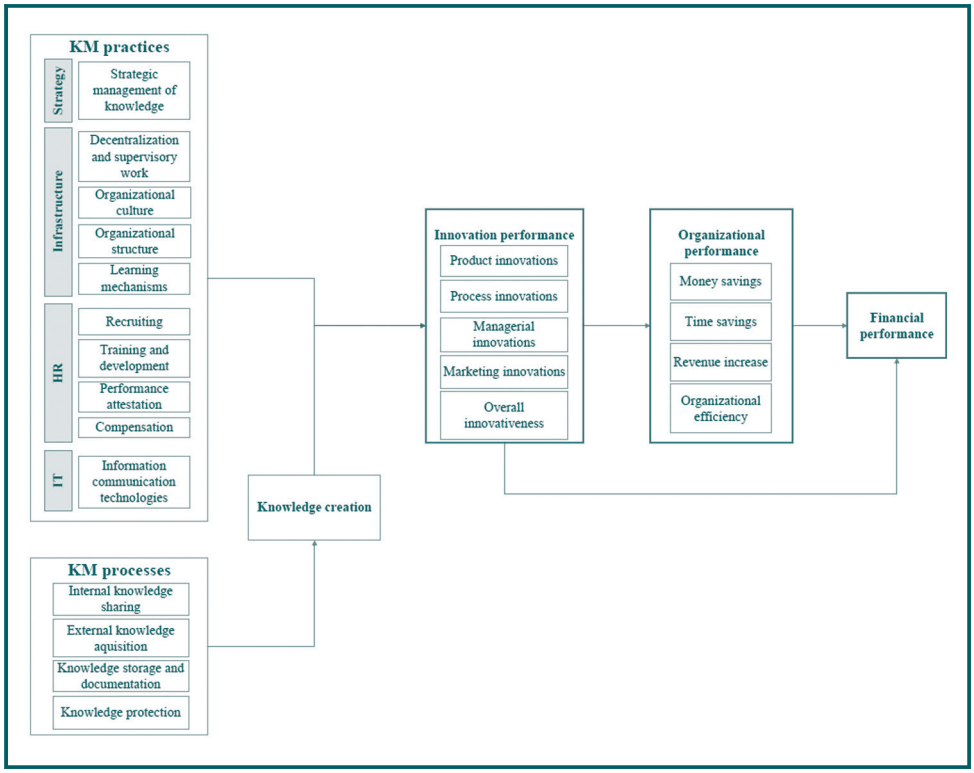


Table VIII Descriptive statistics

KM practices	*Constructs*	*Mean values*
Strategy	Strategic management of knowledge	4.10
Infrastructure	Decentralization and supervisory work	4.01
	Organizational culture	4.27
	Organizational structure	4.12
	Learning mechanisms	4.17
HRM	Recruitment	4.21
	Training and development	3.97
	Performance management	3.98
	Compensation	4.06
IT	ICT	4.14
Processes	Internal knowledge sharing	4.20
	External knowledge acquisition	4.02
	Knowledge storage and documentation	4.12
	Knowledge protection	4.23
	Knowledge creation	4.13

Russian companies exploit the force of communities of practice to help them to disseminate knowledge through information technology (intranet portals and similar systems of information sharing). These were the most developed practices in the preliminary analysis.

The least developed practices were two constructs from the HRM block: training and development, and performance management. The questionnaire answer, indicated a lack

of development courses for employees to encourage team spirit, although some companies provide courses for enhancing decision-making and problem solving and development of employees' skills. In addition, the needs of employees regarding their work processes are not being communicated on a regular basis, which may lead to serious problems such as lack of understanding of the employee's place in the company, or even burnout. In the performance management section, we can see that knowledge exchange is one the basic criteria that is counted when the employee is being tested. However, the creation of new knowledge is not taken into consideration when it comes to non-material appraisal. This means that if the company does not obtain sufficient resources, or has a high level of bureaucracy, the creation of new knowledge will be unnoticed and will reduce employees' motivation. One more practice that is not developed is decentralization and supervisory work. Here, we face the following situation: while the management of the company appreciates the ideas and views of the employees and broadcasts knowledge in an open and equal manner, they do not accept the possibility of mistakes and do not encourage the employees to doubt existing knowledge or ways of thinking. Nor does management permit employees to operate individually and make even the simplest decisions without their interference. Another practice that was neglected was external knowledge acquisition, meaning that most of the companies do not make use of knowledge that has already been collected in research centres or universities and which may be helpful for their performance. Companies in Russia also do not tend to collect and store knowledge from other industrial sources, like professional associations or competitors. They do not use IT to obtain knowledge about the consumers of their products or the overall environment of the market in which they operate.

Discussion

Analysis of descriptive statistics allowed us to come to the following preliminary conclusions with regard to Russian companies' KM systems. First, the most developed factor is an organizational culture conducive to KM and knowledge sharing. This leads us to the importance of the general maturity of the company, which influences the speed of development of KM systems and is emphasized by high scores on strategic management. Second, practices from HRM units, recruitment, are also developed and play an important role. It seems that in the Russian market, the employer tends to find talented workers with the ability to spread and share their specific knowledge. This assumption is also confirmed by the fact that, third, KM processes are mainly oriented at sharing rather than creation and acquisition. It is easier to share what you have already obtained than to find new information sources for more productive decisions. Fourth, innovation performance lacks marketing and business models and mainly focusses on management and products; nevertheless, the surveyed companies seemed to rank innovation highly. Fifth, in KM system performance, the highest metric is the perception of time saving rather than financial savings, and we suggest that this is the reason why Russian companies do not really tend to develop KM.

Implications

The findings of the study may be critically important both to academia and practicing managers. The study emphasizes the previous research findings that KM has an influence on organizational performance. Successful implementation of the KM practices is fully realized only when the objectives and its impacts on performance are understood by the practicing managers. The preliminary findings of this study have a number of implications for management literature. First, this research contributes to the existing discussion on the influence of knowledge management practices on organizational performance and will enrich it with national research that may indicate environmental peculiarities. On another level, our results highlight the potential impact of knowledge-based theory on how knowledge management variables influence the performance of Russian organizations. The

preliminary results indicate that the background of top managers and the characteristics of organizational culture play an important role in the ability of the company to use the full potential of its knowledge management. The suggested theoretical model needs to be tested and applied in developing countries.

This study also has a number of substantial practical implications, along with its contribution to theory. First, it benefits organizations and individuals working on performance studies in Russia. One of the most important outcomes of the present study is the model of KM, which contains groups of items. This model provides a theoretical framework for any organization or individual intending to study KM-related topics in a Russian context. Second, the findings suggest the room for further research in the field and going deeper into particular constructs such as the influence of particular KM practices or processes on time and money savings in the organization performance. The theoretical model provides means to sustain the KM implementation more effectively especially in the developing environment of Russia.

Limits and future development

This preliminary survey is expected to encourage future studies in this field. Notwithstanding, the methodological choice of the study indicates a serious limitation that needs to be addressed: the study is currently based on 120 survey responses and needs additional responses to be significant. Therefore, the results reported here primarily serve as illustrations of the theoretical reasoning, rather than being conclusive evidence of any underlying hypothesis. To overcome this limitation, the next step of our research will involve a broader sample of companies operating in the Russian market, with an additional attempt to verify the existence of or to develop a general model of KM.

A further limitation resulted from the research method, as data were collected via surveys. According to Yang and Mossholder (2010), results based on data from surveys may be biased by common method variance, which refers to the spurious variance attributable to the measurement method rather than to the constructs the measures represent (Podsakoff *et al.*, 2003). To reduce this potential bias, this study used the procedural remedy of assurance of anonymity and confidentiality (Podsakoff *et al.*, 2003). To overcome this limitation, future studies might apply multiple sources of opinion (i.e. collect data from non-managerial employees), or temporal separation which measures each variable at a different point in time separated by two-week intervals (Johnson *et al.*, 2012).

The potential for non-response bias will be assessed by comparing the number of responses in the last quartile to the mean of responses in the first three quartiles; it may be assumed that those who were among the last to respond most closely resembled non-respondents (Saunila, 2017).

Further studies are necessary to examine this relationship in greater depth and to understand whether the development of knowledge management practices and increase in intensity of knowledge management processes can be used as a performance enhancer. For the future, it might be useful first of all to consider the cost (or investment) in knowledge management to have a more complete picture of the profitability produced by KM practices and processes. Second, it would be particularly interesting to carry out a comparative study of the proposed model between companies in other developing countries. These research questions are left for further stages of our study and those of colleagues in the field.

Conclusion

It is a complex challenge to evaluate the effects of knowledge resources management, as these effects may appear to be indirect and long-term in perspective (Carlucci, 2014). Substantial investment in knowledge management may have multiple effects, even if it was initially intended to improve a single dimension of performance. This encourages

researchers to explore the impact of knowledge management on organizational performance. This issue is prominent in developing countries where knowledge management implementation is at the development stage. Therefore, in this paper, the authors set out to examine the impact on performance (innovative, organizational and financial) of ten types of knowledge management practice: strategic management of knowledge and competence, decentralization and supervisory work, organizational culture, organizational design, four human resource management (HRM) practices: recruitment, training and development, performance attestation and compensation, learning mechanisms and information communication technology and four types of knowledge process: knowledge creation, documentation and storage, knowledge sharing and knowledge acquisition.

Based on the literature analysis, this study formulated a model of the impact of knowledge management practices and processes on innovation and organizational performance. The key contribution of the study to the academic community will be the more specific articulation and empirical examination of relationships between knowledge-related practices and processes and the dependent variables such as innovation performance and organizational performance in the context of a developing country's market. The explanations from the theoretical model, measured against the collection of results from the emerging market of Russia, make this a significant study.

References

Alavi, M. and Leidner, D.E. (2001), "Review: knowledge management and knowledge management systems: conceptual foundations and research issues", *MIS Quarterly*, Vol. 25 No. 1, pp. 107-136.

Andreeva, G.M. (2009), "The difficult way of social psychology in Russia", *Psychology in Russia: State of the Art*, Vol. 2, pp. 11-24.

Andreeva, T. and Kianto, A. (2011), "Knowledge processes, knowledge-intensity and innovation: a moderated mediation analysis", *Journal of Knowledge Management*, Vol. 15 No. 6, pp. 1016-1034.

Andreeva, T. and Kianto, A. (2012), "Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance", *Journal of Knowledge Management*, Vol. 16 No. 4, pp. 617-636.

Bhatt, G.D. (2001), "Knowledge management in organizations: examining the interaction between technologies, techniques, and people", *Journal of Knowledge Management*, Vol. 5 No. 1, pp. 68-75.

Bigliardi, B., Galati, F. and Petroni, A. (2014), "How to effectively manage knowledge in the construction industry", *Measuring Business Excellence*, Vol. 18 No. 3, pp. 57-72. No.

Bontis, N. and Fitz-enz, J. (2002), "Intellectual capital ROI: a causal map of human capital antecedents and consequents", *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 223-247.

Boumarafi, B. and Jabnoun, N. (2008), "Knowledge management and performance in UAE business organizations", *Knowledge Management Research & Practice*, Vol. 6, pp. 233-238.

Cabello-Medina, C., López-Cabrales, Á. and Valle-Cabrera, R. (2011), "Leveraging the innovative performance of human capital through HRM and social capital in Spanish firms", *The International Journal of Human Resource Management*, Vol. 22 No. 4, pp. 807-828.

Carlucci, D. (2014), "Grasping knowledge-based value creation dynamics in 21st century organizations", *Measuring Business Excellence*, Vol. 18 No. 1.

Carson, C., Mosley, D. and Boyar, S. (2004), "Goal orientation and supervisory behaviors: impacting SMWT effectiveness", *Team Performance Management: An International Journal*, Vol. 10 Nos 7/8, pp. 152-162.

Celenza, D. and Rossi, F. (2014), "Intellectual capital and performance of listed companies: empirical evidence from Italy", *Measuring Business Excellence*, Vol. 18 No. 1, pp. 22-35.

Chang, C. and Lin, T. (2015), "The role of organizational culture in the knowledge management process", *Journal of Knowledge Management*, Vol. 19 No. 3, pp. 433-455.

Chen, C. and Huang, J. (2009), "Strategic human resource practices and innovation performance: the mediating role of knowledge management capacity", *Journal of Business Research*, Vol. 62 No. 1, pp. 104-114.

Chesbrough, H. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press, Boston, MA.

Chin, W. (1998a), "Issues and opinion on structural equation modeling", *MIS Quarterly*, Vol. 19 No. 2, pp. 7-16.

Chin, W. (1998b), "The partial least squares approach to structural equation modeling," in G.A. (Ed.), *Modern Methods for Business Research*, in Marcoulides Lawrence Erlbaum Associates, Mahwah, NJ.

Choong, K. (2013), "Understanding the features of performance measurement system: a literature review", *Measuring Business Excellence*, Vol. 17 No. 4, pp. 102-121.

Chuang, S. (2004), "A resource-based perspective on knowledge management capability and competitive advantage: an empirical investigation", *Expert Systems with Applications*, Vol. 27 No. 3, pp. 459-465.

Cohen, W. and Levinthal, D. (1990), "Absorptive capacity: a new perspective on learning and innovation", *Administrative Science Quarterly*, Vol. 35 No. 1, pp. 128-152.

Currie, G. and Kerrin, M. (2003), "Human resource management and knowledge management: enhancing knowledge sharing in a pharmaceutical company", *International Journal of Human Resource Management*, Vol. 14 No. 6, pp. 1027-1045.

Dalkir, K. (2005), *Knowledge Management in Theory and Practice*, Elsevier, Oxford.

Darroch, J. (2005), "Knowledge management, innovation and firm performance", *Journal of Knowledge Management*, Vol. 9 No. 3, pp. 101-115.

Davenport, T. and Prusak, L. (1998), *Working Knowledge: How Organizations Manage What They Know*, Harvard Business School Press, Boston, MA.

Donate, M. and Guadamillas, F. (2011), "Organizational factors to support knowledge management and innovation", *Journal of Knowledge Management*, Vol. 15 No. 6, pp. 890-914, available at: www.emeraldinsight.com/doi/abs/10.1108/13673271111179271

Foss, N. and Michailova, S. (2009), "Knowledge governance: what have we learned? And where are we heading?", *Knowledge Governance: Perspectives, Processes and Problems*, Oxford University Press, Oxford, pp. 272-288.

Foss, N.J., Husted, K. and Michailova, S. (2010), "Governing knowledge sharing in organizations: levels of analysis, governance mechanisms, and research directions", *Journal of Management Studies*, Vol. 47 No. 3, pp. 455-482.

Galati, F. (2015), "At what level is your organization managing knowledge?", *Measuring Business Excellence*, Vol. 19 No. 2, pp. 57-70.

Gefen, D., Rigdon, E.E. and Straub, D.W. (2011), "Editor's comments: an update and extension to SEM guidelines for administrative and social science research", *MIS Quarterly*, Vol. 35 No. 2, pp. 3-14.

Gherardi, S. (2009), *Organizational Knowledge: The Texture of Workplace Learning*, Blackwell Publishing, Oxford.

Giampaoli, D., Ciambotti, M. and Bontis, N. (2017), "Knowledge management, problem solving and performance in top Italian firms", *Journal of Knowledge Management*, Vol. 21 No. 2, pp. 355-375.

Gloet, M. and Terziovski, M. (2004), "Exploring the relationship between knowledge management practices and innovation performance", *Journal of Manufacturing Technology Management*, Vol. 15 No. 5, pp. 402-409.

Gold, A., Malhotra, A. and Segars, A. (2001), "Knowledge management: an organizational capabilities perspective", *Journal of Management Information Systems*, Vol. 18 No. 1, pp. 185-214.

Grant, R. (1996a), "Prospering in dynamically competitive environments: organisational capability as knowledge integration", *Organization Science*, Vol. 7 No. 1, pp. 375-387.

Grant, R. (1996b), "Toward a knowledge-based view of the firm", *Strategic Management Journal*, Vol. 17 No. S2, pp. 109-122.

Hair, J., Black, W., Babin, B. and Anderson, R. (2010), *Multivariate Data Analysis: A Global Perspective*, Pearson, NJ.

Heisig, P. (2009), "Harmonisation of knowledge management – comparing 160 KM frameworks around the globe", *Journal of Knowledge Management*, Vol. 13 No. 4, pp. 4-31.

Hislop, D. (2003), "Linking human resource management and knowledge management via commitment: a review and research agenda", *Employee Relations*, Vol. 25 No. 2, pp. 182-202.

Inkinen, H., Kianto, A. and Vanhala, M. (2015), "Knowledge management practices and innovation performance in Finland", *Baltic Journal of Management*, Vol. 10 No. 4, pp. 432-455.

Jang, S., Hong, K., Bock, G. and Kim, I. (2002), "Knowledge management and process innovation: the knowledge transformation path in Samsung SDI", *Journal of Knowledge Management*, Vol. 6 No. 5, pp. 479-485.

Johnson, R.E., Rosen, C.C., Chang, C.-H., Djurdjevic, E. and Taing, M.U. (2012), "Recommendations for improving the construct clarity of higher-order multidimensional constructs", *Human Resource Management Review*, Vol. 22 No. 2, pp. 62-72.

Kalling, T. (2003), "Knowledge management and the occasional links with performance", *Journal of Knowledge Management*, Vol. 7 No. 3, pp. 67-81.

Kamhawi, E.M. (2012), "Knowledge management fishbone: a standard framework of organizational enablers", *Journal of Knowledge Management*, Vol. 16 No. 5, pp. 808-828.

Kianto, A. (2011), "The influence of knowledge management on continuous innovation", *International Journal of Technology Management*, Vol. 55 Nos 1/2, pp. 110-121.

Kianto, A. and Andreeva, T. (2014), "Knowledge management practices and results in service-oriented versus product-oriented companies", *Knowledge and Process Management*, Vol. 21 No. 4, pp. 221-230.

Kiessling, T., Richey, R., Meng, J. and Dabic, M. (2009), "Exploring knowledge management to organizational performance outcomes in a transitional economy", *Journal of World Business*, Vol. 44 No. 4, pp. 421-433.

Kolb, D. (1984), *Experiential Learning: Experience as the Source of Learning and Development*, Prentice-Hall, Englewood Cliffs, NJ.

Kushwaha, P. and Rao, M. (2015), "Integrative role of KM infrastructure and KM strategy to enhance individual competence: conceptualizing knowledge process enablement", *VINE*, Vol. 45 No. 3, pp. 376-396.

Laihonen, H. (2015), "Performance improvement in twenty-first century organizations: models, tools, techniques", *Measuring Business Excellence*, Vol. 19 No. 3.

Lave, J. (Ed.) (2009), *Contemporary Theories of Learning: Learning Theorists in Their Own Words*, Routledge, New York, NY.

Lee, H. and Choi, B. (2003), "Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination", *Journal of Management Information Systems*, Vol. 20 No. 1, pp. 179-228.

Lee, S., Kim, B. and Kim, H. (2012), "An integrated view of knowledge management for performance", *Journal of Knowledge Management*, Vol. 16 No. 2, pp. 183-203.

Lohmöller, J.-B. (1989), *Latent Variable Path Modeling with Partial Least Squares*, Physica Verlag, Heidelberg.

Lopez, P., Peon, S., Vazquez, J. and Ordas, C. (2004), "Managing knowledge: the link between culture and organizational learning", *Journal of Knowledge Management*, Vol. 8 No. 6, pp. 93-104.

Lu, L., Cooper, C. and Lin, H. (2013), "A cross-cultural examination of presenteeism and supervisory support", *Career Development International*, Vol. 18 No. 5, pp. 440-456.

McKeen, J., Smith, H. and Singh, S. (2005), "Developments in practice XVI: a framework for enhancing IT capabilities", *Communications of the Association for Information Systems*, Vol. 15 No. 1, pp. 661-673.

Macdonald, E. (1978), "Supervisory management", *Education + Training*, Vol. 20 No. 3, pp. 87-88.

Marqués, D. and Garrigos-Simón, F. (2006), "The effect of knowledge management practices on firm performance", *Journal of Knowledge Management*, Vol. 10 No. 3, pp. 143-156.

Massingham, P. and Massingham, R. (2014), "Does knowledge management produce practical outcomes?", *Journal of Knowledge Management*, Vol. 18 No. 2, pp. 221-254.

Mintzberg, H. (1992), *Structure in Fives: Designing Effective Organizations*, Prentice Hall, Englewood Cliffs, NJ.

Nam Nguyen, H. and Mohamed, S. (2011), "Leadership behaviors, organizational culture and knowledge management practices: an empirical investigation", *Journal of Management Development*, Vol. 30 No. 2, pp. 206-221.

Nonaka, I. (1991), "The knowledge-creating company", *Harvard Business Review*, Vol. 69 No. 6, pp. 96-104.

Patil, S. and Kant, R. (2012), "Organizational culture a HR strategy for successful knowledge management", *Strategic HR Review*, Vol. 11 No. 6, pp. 322-328.

Podsakoff, P.M., MacKenzie, S.M., Lee, J. and Podsakoff, N.P. (2003), "Common method variance in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.

Ragab, M. and Arisha, A. (2013), "Knowledge management and measurement: a critical review", *Journal of Knowledge Management*, Vol. 17 No. 6, pp. 873-901.

Rai, R. (2011), "Knowledge management and organizational culture: a theoretical integrative framework", *Journal of Knowledge Management*, Vol. 15 No. 5, pp. 779-801.

Saunila, M. (2017), "Understanding innovation performance measurement in SMEs", *Measuring Business Excellence*, Vol. 21 No. 1, pp. 1-16.

Scarbrough, H. (2003), "Knowledge management, HRM and the innovation process", *International Journal of Manpower*, Vol. 24 No. 5, pp. 501-516.

Schiuma, G. (2009), "The challenges of measuring business excellence in the 21st century", *Measuring Business Excellence*, Vol. 13 No. 2.

Serenko, A. and Bontis, N. (2013), "Global ranking of knowledge management and intellectual capital academic journals: 2013 update", *Journal of Knowledge Management*, Vol. 17 No. 2, pp. 307-326.

Shakina, E. and Barajas, A. (2015), "Intangible-intensive profile of a company: the key to outperforming", *Journal of Intellectual Capital*, Vol. 16 No. 4, pp. 1-25.

Shujahat, M., Hussain, S., Javed, S., Malik, M., Thurasamy, R. and Ali, J. (2017), "Strategic management model with lens of knowledge management and competitive intelligence: a review approach", *VINE Journal of Information and Knowledge Management Systems*, Vol. 47 No. 1, pp. 55-93.

Suh, W., Sohn, D. and Kwak, J. (2004), "Knowledge management as enabling RandD innovation in high tech industry: the case of SAIT", *Journal of Knowledge Management*, Vol. 8 No. 6, pp. 5-15.

Szulanski, G. (1996), "Exploring internal stickiness: impediments to the transfer of best practice within the firm", *Strategic Management Journal*, Vol. 17 No. S2, pp. 27-43.

Tanriverdi, H. (2005), "Information technology relatedness, knowledge management capability, and performance of multi-business firms", *MIS Quarterly*, Vol. 29 No. 2, pp. 311-334.

Trott, P. (2005), *Innovation Management and New Product Development*, 3rd ed., Pearson Education Limited, New York, NY.

Wang, Y., Bhanugopan, R. and Lockhart, P. (2015), "Examining the quantitative determinants of organizational performance: evidence from China", *Measuring Business Excellence*, Vol. 19 No. 2, pp. 23-41.

Williams, A. (1999), *Creativity, Invention and Innovation*, Allen and Unwin, Sydney.

Wong, K. (2005), "Critical success factors for implementing knowledge management in small and medium enterprises", *Industrial Management & Data Systems*, Vol. 105 No. 3, pp. 261-279.

Wu, I. and Chen, J. (2014), "Knowledge management driven firm performance: the roles of business process capabilities and organizational learning", *Journal of Knowledge Management*, Vol. 18 No. 6, pp. 1141-1164.

Yahya, S. and Goh, W. (2002), "Managing human resources towards achieving knowledge management", *Journal of Knowledge Management*, Vol. 6, pp. 457-468.

Yang, J. and Mossholder, K.W. (2010), "Examining the effects of trust in leaders: a bases-and-foci approach", *Leadership Quarterly*, Vol. 21 No. 1, pp. 50-63.

Zack, M., McKeen, J. and Singh, S. (2009), "Knowledge management and organizational performance: an exploratory analysis", *Journal of Knowledge Management*, Vol. 13 No. 6, pp. 392-409.

Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review reconceptualization, and extension", *Academy of Management Review*, Vol. 27 No. 2, pp. 185-203.

Further reading

Chen, C.J., Huang, J.W. and Hsiao, Y.C. (2010), "Knowledge management and innovativeness: the role of organizational climate and structure", *International Journal of Manpower*, Vol. 31 No. 8, pp. 848-870.

Darroch, J. and McNaughton, R. (2003), "Beyond market orientation: knowledge management and the innovativeness of New Zealand firms", *European Journal of Marketing*, Vol. 37 Nos 3/4, pp. 572-593.

Foot, M. and Hook, C. (2008), *Introducing Human Resource Management*, Prentice Hall, Harlow.

Shakina, E., Barajas, A. and Molodchik, M. (2017), "Bridging the gap in competitiveness of Russian companies with intangible bricks", *Measuring Business Excellence*, Vol. 21 No. 1, pp. 86-100.

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