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Knowledge Management Practices
as a Source of Absorptive Capacity of
Emerging Market Firms: Evidence from Russia

Master's Thesis by the 2nd year student

Sergei Pitinov

Research advisor:

Associate Professor, Marina O. Latukha

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**ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ
ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ**

Я, Питинов Сергей Владимирович, студент второго курса магистратуры направления «Менеджмент», заявляю, что в моей магистерской диссертации на тему «Практики управления знаниями как источник поглощающей способности компаний развивающихся рынков: свидетельства из России», представленной в службу обеспечения программ магистратуры для последующей передачи в государственную аттестационную комиссию для публичной защиты, не содержится элементов плагиата.

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Мне известно содержание п. 9.7.1 Правил обучения по основным образовательным программам высшего и среднего профессионального образования в СПбГУ о том, что «ВКР выполняется индивидуально каждым студентом под руководством назначенного ему научного руководителя», и п. 51 Устава федерального государственного бюджетного образовательного учреждения высшего образования «Санкт-Петербургский государственный университет» о том, что «студент подлежит отчислению из Санкт-Петербургского университета за представление курсовой или выпускной квалификационной работы, выполненной другим лицом (лицами)».



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ABSTRACT

Master Student's Name	Sergei V. Pitinov
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Faculty	Graduate School of Management
Main Field of Study	Management
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Description of the goal, tasks and main results	<p>The most profitable innovations were found not to be built in-house, but rather adopted from external environment. Ability to capture them was called absorptive capacity (AC).</p> <p>Claimed to be the crucial element of a firm's development and survival, AC is required to be built. Hence, the current study is aimed at determining the antecedent of AC and providing insights on the factors that condition it. Namely, the research is aimed at answering the question of how knowledge management (KM) practices can be a source of AC for the firms of emerging Russian market. What is more, we propose that AC would serve a mediator in the relationships between KM practices and organizational performance.</p> <p>The results revealed that KM practices connected with learning mechanisms and work organization are associated with higher potential AC. Whereas, realized AC is conditioned with the practices connected with information technologies, training and development, learning mechanisms and work organization.</p> <p>Though initially relationship where AC serves a mediator was proposed, the indirect effect of KM practices to organizational performance through AC was found insignificant, which might be caused by time-lagged influence of AC over performance.</p> <p>Thus, the current research contributes both academically and managerially, enhancing understanding the link between AC and KM practices and also their impact over performance of organization; also providing specific recommendations for managers on how KM practices can be a source of AC.</p>
Keywords	Absorptive capacity, absorptive capacity antecedents, knowledge management practices, emerging market context, organizational performance

АННОТАЦИЯ

Автор	Сергей Владимирович Питинов
Название магистерской диссертации	Практики управления знаниями как источник поглощающей способности компаний развивающихся рынков: свидетельства из России
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Научный руководитель	Марина Олеговна Латуха
Описание цели, задач и основных результатов	<p>Было обнаружено, что самые прибыльные инновации были разработаны не внутри компании, а позаимствованы извне. Способность заимствовать их была названа поглощающей</p> <p>Поглощающая способность (ПС) является важной для развития и выживания компаний, и её следует развивать. Текущее исследование направлено на определение предпосылок ПС и факторов, которые воздействуют на них. А именно, данная работа отвечает на следующие вопросы: как определенные практики управления знаниями воздействуют на компоненты ПС (потенциальная и реализованная ПС) в компаниях российского развивающегося рынка; служит ли ПС медиатором в отношениях между практиками управления знаниями и эффективностью работы организации.</p> <p>Результаты исследования показали, что практики управления знаниями связанные с механизмами обучения и организацией труда ассоциируются с более высоким уровнем потенциальной ПС. В то же время, на реализованную ПС положительно воздействуют практики, связанные с информационными технологиями, тренингами и развитием, механизмами обучения и организацией труда</p> <p>Также было установлено, что ПС не выступает в роли медиатора в отношениях между практиками управления знаниями и эффективностью работы организации. Возможно, это вызвано задержанным по времени влиянием ПС на производительность.</p> <p>Подводя итоги, данное исследования имеет и практическую и теоретическую значимость, так как углубляет понимание связи между практиками управления знаниями и ПС, а также их влияния на эффективность работы организации..</p>
Ключевые слова	Поглощающая способность, предпосылки поглощающей способности, практики управления знаниями, развивающиеся рынки, эффективность работы организации

TABLE OF CONTENTS

Introduction	6
Research Background	7
Research Gap	8
Research Problem, Objectives and Delimitation	8
Research Strategy and Organization of the Study	9
1 Knowledge Management Practices and Absorptive Capacity Theoretical Framework	11
1.1 Absorptive Capacity and its Antecedents	11
1.2 Knowledge Management Practices	20
1.3 Relationships between Knowledge Management Practices and Absorptive Capacity ..	28
Summary of Chapter 1	35
2 Empirical Study of Relationships Between Knowledge Management Practices and Absorptive Capacity	36
2.1 Research Strategy	36
2.2 Measurement of Variables	38
2.3 Results Analysis	41
2.4 Descriptives	44
Summary of Chapter 2	49
3 Discussion and Conclusions	50
3.1 Findings	50
3.2 Theoretical Contributions	58
3.3 Managerial Implications	60
3.4 Limitations and Directions for Future Research	62
3.5 Conclusions	62
References	64
Appendix 1 Survey	70

LIST OF TABLES

Table 1 Classifications of Knowledge Management Practices	27
Table 2 Connection between knowledge management practices and absorptive capacity antecedents	32
Table 3 Absorptive Capacity Measurement Scale.....	39
Table 4 Knowledge Management Practices Measurement Scale	41
Table 5 Organizational Performance Measurement Scale	41
Table 6 Variables Description	44
Table 7 Descriptives of variables	48
Table 8 KM practices and PAC model description	51
Table 9 RAC and KM practices model description.....	55
Table 10 Estimates of the KM practices, AC and performance model indirect effects	58

LIST OF FIGURES

Figure 1 Absorptive Capacity Operationalization (based on Volberda et al (2011)).....	19
Figure 2 Theoretical Framework of the Research	34
Figure 3 Model of relationships between KM practices, AC and performance	43
Figure 4 Distribution of responses by industry	45
Figure 5 Distribution of response by firms' age	46
Figure 6 Distribution of responses by number of employees.....	46

INTRODUCTION

Research Background

Knowledge today is considered as a key strategic asset for any kind of firm (Bollinger and Smith 2001). It does not appear sufficient to have superior market share or vast production capabilities in order to dominate market in the period other than short-term. The increasing complexity of customer demand enforced with the more fierce competition and strengthened with the ever-faster product or service improvement requirement (Sargut and McGrath 2011) made organizations reconsider the old ways of doing business and invest in flexibility development (Reeves and Deimler 2011). What can leverage this flexibility? How can a firm be susceptible to the changes of the external environment?

Scholars found that many innovations that helped firm to capture abnormal profits for prolonged time period were not developed in house, but rather adopted from the sources beyond the firm (Cohen and Levinthal 1990). This ability to capture outside knowledge was called absorptive capacity. Many argues that absorptive capacity is one of the key determinants of the firm's future success, as it enhances its degree of flexibility and innovativeness (Zahra and George 2002).

However, though the importance of the concept is widely recognized, it still remains a kind of black box (Lewin, Massini, and Peeters 2011). Nobody knows what inside is and how to enhance it. Though there are various streams of literature describing the antecedents of absorptive capacity, there are not many studies that tell in a detailed way what a manager should do to enhance it.

Having in mind this lack of clarity, we introduce knowledge management practices as a mean to shed light onto practical side of absorptive capacity development. Building on the current stream of antecedents of absorptive capacity, we investigate the intentional and conscious knowledge management practices one could apply and test their effect on the said concept.

Another particular relationship deserves attention from our side: what is the relationship between absorptive capacity and a firm's performance? And what role does knowledge management practices play in it?

Giving answers to the above stated questions is tightly connected with day-to-day activities of business.

Research Gap

The concept of absorptive capacity received enormous attention in few last decades since its emergence (Volberda et al. 2010). Its significance for practice was proven through empirical studies indicating the positive relationship between it and firm's performance indicators (Kostopoulos et al. 2011; Chen, Lin, and Chang 2009). The concept is claimed to have gone through reification and rejuvenation (Lane, Koka, and Pathak 2006). Numerous studies have drawn attention to its outcomes as well as antecedents (Bosch, Wijk, and Volberda 2003). Notwithstanding the great attention received, there are few gaps that still remain.

Firstly, though the antecedents of the model were broadly studied, the general lack of research onto how managerial actions and individual agents influence AC was noticed (Volberda, Foss, and Lyles 2010) . What is more, the investigation of routines able to enhance absorptive capacity through these antecedents was limited (Lewin, Massini, and Peeters 2011). In addition, the strong need to explain how an individual can affects absorptive capacity process is determined (Lane, Koka, and Pathak 2006).

Secondly, there were few studies that concentrated on general performance rather than innovative one and there is a strong need to provide examination of it (Lane, Koka, and Pathak 2006). Bearing in mind, that even AAC definition itself explicitly implies that its main goal is to apply knowledge to commercial ends (Cohen and Levinthal 1990). Connecting AC with financial performance would increase understanding of it (Kostopoulos et al. 2011).

Thirdly, there has been few studies concentrating on AC investigation in the context of the developed markets, while emerging markets context remains of limited attention (Liao, Welsch, and Stoica 2003).

To conclude, though the field received a broad attention, there are still areas for the development that requires research.

Research Problem, Objectives and Delimitation

The increasing complexity of customer demand makes the companies seek more and more effective ways to be competitive. Enhancing absorptive capacity has proven to be a way to operate more efficiently.

Though previous scholars have investigated various antecedents of absorptive capacity, no clear management practices from the side of knowledge management aimed at their enhancement

were elaborated. Recognizing the relative complexity of absorptive capacity development with this study we aim to provide a manager with a clear indication of what knowledge management practices he or she should apply in order to build it. From the various knowledge management practices, we would distinguish the most important ones. Additionally, we would show how application of these practices would affect company's financial performance mediated by absorptive capacity.

The thesis aims to answer the following research question: How can knowledge management practices be a source of absorptive capacity?

The research question can be split into few sub-questions:

1. How do specific knowledge management practices influence the particular dimension of absorptive capacity?
2. Does absorptive capacity serve a mediator in the relationship between knowledge management practices and organizational performance?

The scope of the study is limited by knowledge management practices and its connection to absorptive capacity antecedents that we have found during the literature analysis. Absorptive capacity is measured indirectly using the already wide-used scale. The organizational performance of the firm is measured subjectively and mostly restricted to financial indicators that may also provide certain limitations.

Research Strategy and Organization of the Study

The deductive approach was applied to the study. The study is grounded into theoretical research of absorptive capacity and knowledge management practices with a subsequent formulation of proposed relationships between concepts. The relationships presented are mostly concerned with the effect particular knowledge management practice has over particular dimension of absorptive capacity and the effect absorptive capacity plays as a mediator between those practices and the firm's performance.

We deployed survey research strategy, using snowball sampling to overcome low response rates. Survey allows to gather vast amounts of standardized data for bigger sample thus allowing to make more meaningful implications. The survey was presented in the form of online questionnaire link to which was sent over via e-mail.

The thesis is structured the following way. Firstly, we present theoretical framework where we connect knowledge management practices and absorptive capacity antecedents also proposing the relationship it should have over performance. In the second section, we describe in details the research strategy, data gathered and their analysis. In the last section we present the discussion of our main findings, theoretical and practical contributions, as well as the limitations of the research.

1 KNOWLEDGE MANAGEMENT PRACTICES AND ABSORPTIVE CAPACITY THEORETICAL FRAMEWORK

1.1 Absorptive Capacity and its Antecedents

The most successful innovations were found not to originate from in-house development, but rather from external adoption. However, few firms, for example Procter & Gamble, were able to achieve significant profits from such adoption and exploitation, while other firms failed (Lichtenthaler 2009). To better understand this phenomenon, the research stream concentrated on understanding how a firm can efficiently acquire information from the external environment and apply it to commercial ends was created, the ability of the firm to do so was called absorptive capacity (Cohen and Levinthal 1990).

The high level of absorptive capacity directly contributes to the innovation level of a firm and thus indirectly to its financial performance (Kostopoulos et al. 2011). Hence, the developing of it can be a key issue in gaining superior performance. Through more than 25 years of development, this concept was investigated from the perspective of various theoretical lenses: learning, innovation, managerial cognition, knowledge-based view of the firm, dynamic capabilities, and coevolution (Volberda et al. 2010).

Within this subchapter, the concept of AC is scrutinized from its early stages as well as its antecedents.

1.1.1 Absorptive Capacity Origins and Development

Cohen and Levinthal have noticed that the most successful innovations did not come from in-house development, but rather from borrowing beyond a firm's borders, and outlined a new concept that later on became one of the most discussed in the field of management, absorptive capacity. Within their seminal paper "Absorptive Capacity: A New Perspective on Learning and Innovation" they defined it as *an ability to recognize the value of new information, assimilate it, and apply to commercial ends* (Cohen and Levinthal 1990).

At that time, the theoretical background of absorptive capacity was rooted in the cognitive science that suggested that learning efficiency was conditioned with the presence of prior related to the field knowledge. Specifically, they inferred two ideas crucial for AC concept development: firstly, that learning is a cumulative process, i.e. the greater amount of knowledge one learns the

greater the efficiency of it, and secondly, that the higher degree to which new knowledge is related to the already existing one ensures higher learning efficiency. Though these findings were previously presented at the level of individual, Cohen and Levinthal suggested that the ideas about cognitive structures and cumulative nature of learning can be applied also on the higher level, the organizational one.

Though the organizational level of AC was suggested to consist of individual ACs, it was not only summation. Understanding the structure of communication between external and internal environments of organization as well as the mechanisms of information distribution were required for organizational level AC comprehension. They suggested that AC was greatly influenced with a “gatekeeper”, a person within an organization, who served an interface between external and internal environment and regulated the flows of the information. However, the effect of such role could be limited and not sufficient, and the way to overcome it was having the similarity of prior knowledge as well as variety of background among all the company employees.

Another important concept connected with AC and introduced by them was path dependence. Path dependence arose out of the inability of the firm to realize the value of knowledge not related to current or past activities. Thus, a firm’s scope of new information absorbed was limited by the nature of the previous information gathered. Hence, the importance of investments at the early stages of organizational development should not be undervalued. The limitations of the initial knowledge and subsequent focus only on the specific area were apt to create lock-out effect for a firm and significantly decrease its adaptability and competitive advantage (Cohen and Levinthal 1990).

Having described the origins of it, we proceed to shedding light onto AC development. To begin with, few units of analysis were introduced in AC researches. Firstly, understanding of it was enriched by shifting the unit of analysis to the interorganizational level. The founders of this approach claimed that two units of interaction within the knowledge exchange, so-called teacher and student firm, form a learning-dyad, the efficiency of which would depend on the similarity of partners’ basic knowledge, management formalization, etc. Hence, the concept of absorptive capacity was defined as a relative; thus meaning that a firm could have different AC levels from one firm to another (Lane and Lubatkin 1998). Secondly, the concept of AC was also analyzed at a country level in order to explain faster economic growth of particular countries over the others, thus recognizing that a particular country can have its AC level (Keller 1996).

The first major event in AC understanding was initiated by Zahra and George who proposed to re-conceptualize it by adding new dimensions and changing its definition. Deploying other theoretical perspective, they recognized AC as a dynamic capability a firm has to develop. Within their paper, the concept was later subdivided into two parts: potential absorptive capacity (PAC) and realized absorptive capacity (RAC). PAC dimension was responsible for two processes, acquisition and assimilation of information, thus meaning the ability to firm to gather knowledge from external environment. RAC was concerned with transformation and exploitation of knowledge gathered with PAC, thus it determined whether this knowledge was applied to commercial ends. This distinction allowed to better grasp the dynamics within AC, as within this re-conceptualization AC was no longer treated as a holistic unit, but the interaction between PAC and RAC determined the size of its effect. In addition, so-called efficiency factor was introduced that presented RAC divided by PAC, the greater amount of which meant higher AC. Introduction of such drastic changes also lead to introduction of new definition of AC, in was re-defined as *a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability* (Zahra and George 2002).

Meanwhile, with the increase of scope and age of the concepts, the number of works published increased respectfully. However, the quality of the papers and their cohesiveness was questioned. Having analyzed 289 management papers in the field, Lane et al claimed that the concept of AC was reified. Such a strong statement was backed with the two arguments: firstly, AC became a “taken-for-granted” concept with initial meaning lost, as within the scope of works analyzed the initial meaning was rarely deployed and the scholars described somewhat different concepts under the name of it; secondly, that there was no mutual connectedness and inter-quotations between papers within the scope, thus meaning that the authors did not ground themselves onto previous works and research the concept separately. The re-conceptualization of Zahra & George was also a subject of critics in the Lane et al’s paper. To overcome reification, the up-to-date works were analyzed and main research concepts within field were mapped; on the basis of them rejuvenation model was suggested. They determined 5 dimensions that AC should possess and proposed new definition of AC as *a firm's ability to utilize externally held knowledge through three sequential processes: (1) recognizing and understanding potentially valuable new knowledge outside the firm through exploratory learning, (2) assimilating valuable new knowledge through transformative learning, and (3) using the assimilated knowledge to create new knowledge and commercial outputs through exploitative learning*” (Lane, Koka, and Pathak 2006).

Most of the scholars partially accepted the AC reification. Agreeing with it, Dursin and Todorova pointed out the fact that Zahra and George in their seminal article did not build systematically on Cohen and Levinthal's work, thus allowing for ambiguities. Dursin and Todorova claimed to eliminate these ambiguities by bringing together the initial AC definition and the up-to-date research papers on the topic. To do so, firstly, they assumed its dynamic and iterative nature, and proposed addition of feedback loops between dimensions, antecedents and outcomes of AC. Secondly, the omitted by Zahra and George "recognize" dimension was added back, to better reflect initial sense implied; the four dimensions according to them were recognizing the value, assimilation, transformation and application to commercial ends (Todorova and Durisin 2007)., thus finding a balance between Cohen & Levinthal, Zahra & George and Lane et al.

The significant effort in the concept further development was paid by Volberda et al. Having conducted the bibliographical analysis of the stream of AC literature, they identified major discrepancies within in, resolved it and elaborated an integrative model. What is more, the researches using different theoretical lenses were integrated. Firstly, they combined Cohen and Levinthal and Zahra and George dimensions to produce the integrated model of AC process including four dimensions as acquisition, transformation, assimilation and exploitation (recognition was still omitted). Secondly, within the comprehensive model they systematized and described antecedents of AC, contextual factors that might have influence over it and its outcomes; the antecedents were split into the three categories: managerial, interorganizational and intraorganizational. Thirdly, they underlined the importance of further empirical research of outcomes of AC in respect of competitive advantage, innovation and firm performance, thus giving a start to the next stream of papers describing tangible and intangible outcomes of AC (Volberda et al. 2010).

1.1.2 Antecedents of Absorptive Capacity

The various papers written on the topic of AC determines different dimensions of it and subsequently its antecedents. Thus, we suggest that the critical analysis of AC antecedents development is required for enhancing understanding of the concept itself and shedding light onto how it is connected with knowledge management practices. What is more, determining the factors that condition AC existence can help us isolate the influence of knowledge management over AC from the other factors present.

To begin with, Cohen and Levinthal while writing the AC founding paper relied strongly on the economic theory, and as their operationalization of AC was based on RD intensity, they suggested that the factors influencing RD as suggested by the previous research works would also influence absorptive capacity. These factors included direct effect of ease of learning, technological opportunity and appropriability, these three being external factors influencing AC. The first factor suggests that in the harsh learning environment a firm becomes more reliant on R&D expenses, the second, technological opportunity, means that a firm would increase R&D spending even in the harsh learning environment, if the technological opportunity is high. The third one, appropriability, traditionally for economic theory refers to the ability of the firm to capture the profit earned with the innovations(Cohen and Levinthal 1990).

Zahra and George increased the complexity of the model. As it was said before, they split AC into PACAP and RACAP, also changing the dimensions of it. This reconceptualization gave them insights into how antecedents influence each particular dimension, thus they follow these dimensions as an anchor for the proposed antecedents. Being more detailed, on top of Cohen and Levinthal's factors they introduced the new ones: external sources and knowledge complementarity (that substituted "ease of learning), experience, activation triggers, social integration mechanisms and renamed "appropriability" into "regimes of appropriability", that would be discussed briefly in the following sentences. Firstly, knowledge part and experience part were distributed in line with the current at the time research streams, with the former having higher effect on PACAP and the latter on RACAP. In addition, new element "activation factors" basically means the challenges from the external world or within organization to accept which an organization has to develop AC. What is more, they developed the idea of Cohen and Levinthal that AC depends on the way of communication within firm and introduced "social integration mechanisms" that serve a connection between PACAP and RACAP and determine the knowledge availability over the firm. Thus, Zahra and George enriched the concept with adding more factors (Zahra and George 2002).

Jansen et al investigated the organizational antecedents and their influence over AC based on Zahra and George model. They split all the antecedents into three groups of organization mechanisms each associated with coordination, system or socialization capabilities. The first group comprises the concepts relevant for coordination within organization as cross-function interfaces, decision making participation and job rotation. The second represents the mechanisms associated with formalization and routinization, while the third denote the connectedness within an organization and socialization tactics. Having made an empirical research, they found that the said

areas influence RACAP and PACAP in a different way. Coordination capabilities increase PACAP, socialization capabilities enhance RACAP, while the influence of system on AC was found to be controversial. The analysis on the level of organizational antecedent level allowed to bridge the gap in understanding of how organizational practices influence AC. However, the different influence over ACAP and PACAP can be a subject of discussion, as the stream of works later on determined the distinction between PACAP and RACAP not feasible (Jansen, Bosch, and Volberda 2005).

Lewin et al introduced a routine-based model of AC and subsequent set of antecedents, splitting them into external and internal following Lewin and Massini's classification (Lewin and Massini, 2003). They identified the two set of factors, from the internal, firm, side the antecedents would be organization structure, past experience, key people, and incentive and reward structures, with the last two being firstly mentioned. From the external, environment, side they introduce national innovation systems and institutional structure and R&D intensity. By doing that, Lewin et al all attempted to better operationalize AC.

Lane et al managed to summarize all the main and important streams of antecedents and components of AC and integrate them into holistic model. It includes quite a numerous amount of different factors and outcomes; therefore, I would like to discuss those that were either changed or not mentioned in the paper at all. Firstly, they split environmental conditions into two: characteristics of knowledge and relationships, the latter was integrated from Lane and Lubatkin's relational component (Lane and Lubatkin 1998) and named it "characteristics of learning relationship". Secondly, "characteristics of firm members' mental models" was introduced thus recognizing individual level of AC and claiming it as a multilevel construct. Thirdly, organizational structure the importance of research of which Cohen and Levinthal stressed is presented and named "Characteristics of firm's structure and processes". Overall, Lane et al put tremendous effort in reviewing the field of AC and integrating the relevant theories into one framework that us quite comprehensive (Lane, Koka, and Pathak 2006).

Though Todorova and Dursin published their paper after Lane et al, they based their new model of AC antecedents not on the Lane's, but on that of Zahra and George. The added two new elements conditioning AC, these are power relationships and feedback loops. The first one was meant to have a moderating effect between AC and competitive advantage, allocation of resources by the administration can be suggested as an example of it. The feedback loops help to explain the dynamic nature of phenomenon better, as they depict that the previous knowledge shapes the future

one. What is more, they changed the application of “social integration factors” not to only specific processes, but for all dimensions, as Zahra defined AC as a set of organizational processes (Zahra and George 2002) and each process definitely includes social interactions, which seems to be a valid argument (Todorova and Durisin 2007).

Fosfuri et al grounded his research in Zahra and George reconceptualization, exploiting their split into PAC and RAC. They concentrated specifically on PAC that means “the ability to identify and assimilate external knowledge” and investigated what the antecedents of it were. Firstly, they found that the level of involvement into R&D cooperation determine the magnitude of PAC, whereby external knowledge acquisition plays significant role. Additionally, knowledge search experience is suggested by them to be a key antecedent thus underlying path-dependence component. What is more, they proved positive correlation between PAC and organizational performance of a company.

Yeoh (2009) applied concept of absorptive capacity to understanding the nature of knowledge transfer among two companies in a sourcing relationship. He stressed the importance of realized and potential absorptive capacities and also determined their antecedents. Interestingly, PAC was studied at interorganizational level, while RAC was studied at intraorganizational level. The findings revealed that firstly the magnitude is mediated by the industry. As for the antecedents, from PAC side three main contexts determine it: knowledge, institutional and relational. For knowledge context there are two factors: knowledge relatedness that means how close technology and manufacturing of the two firms are and knowledge characteristics that imply knowledge articulateness and complexity. As for relational and institutional contexts, the former implies cultural relatedness, while the latter implies the nature of linkages between firms, sponsorship and partnership-based. As for RAC antecedents, at an intraorganizational level, the social components are paid attention to, namely the extent of social embeddedness (meaning trust) and closeness of interfunctional coupling (Yeoh 2009).

The significant effort in the concept clarification was made by Volberda et al. Having conducted the bibliographical analysis of the stream of AC literature, they combined Cohen and Levinthal and Zahra and George dimensions to produce the integrated model of AC process including four dimensions as acquisition, transformation, assimilation and exploitation. Secondly, they segmented antecedents into the three categories: managerial, interorganizational and intraorganizational (Volberda, Foss, and Lyles 2010).

The other attempt to understand the AC antecedents from learning processes perspective was conducted by Knoppen et al. They investigated how structural, policy, psychological and cultural mechanisms influence exploration, assimilation and exploitation of knowledge depending on relationships within learning dyad (Knoppen, Saenz, and Johnston 2011).

As a basis of operationalization of the antecedents of AC Volberda's classification was chosen due to the comprehensiveness, it includes the aspects from the previous works including: the distinction between RACAP and PACAP; environmental conditions from Jansen and Van den Bosch et al; antecedents from organizational from Andersen and Foss, Argote, Van den Bosch and intraorganizational sides from Lane and Lubatkin, Lante et al, Lyles and Sall; managerial antecedents from Kogut and Zander, Zahra and George. Thus, we have taken previously discussed managerial antecedents and included them into Volberda et al's operationalization; the summary of it is depicted in Figure 1

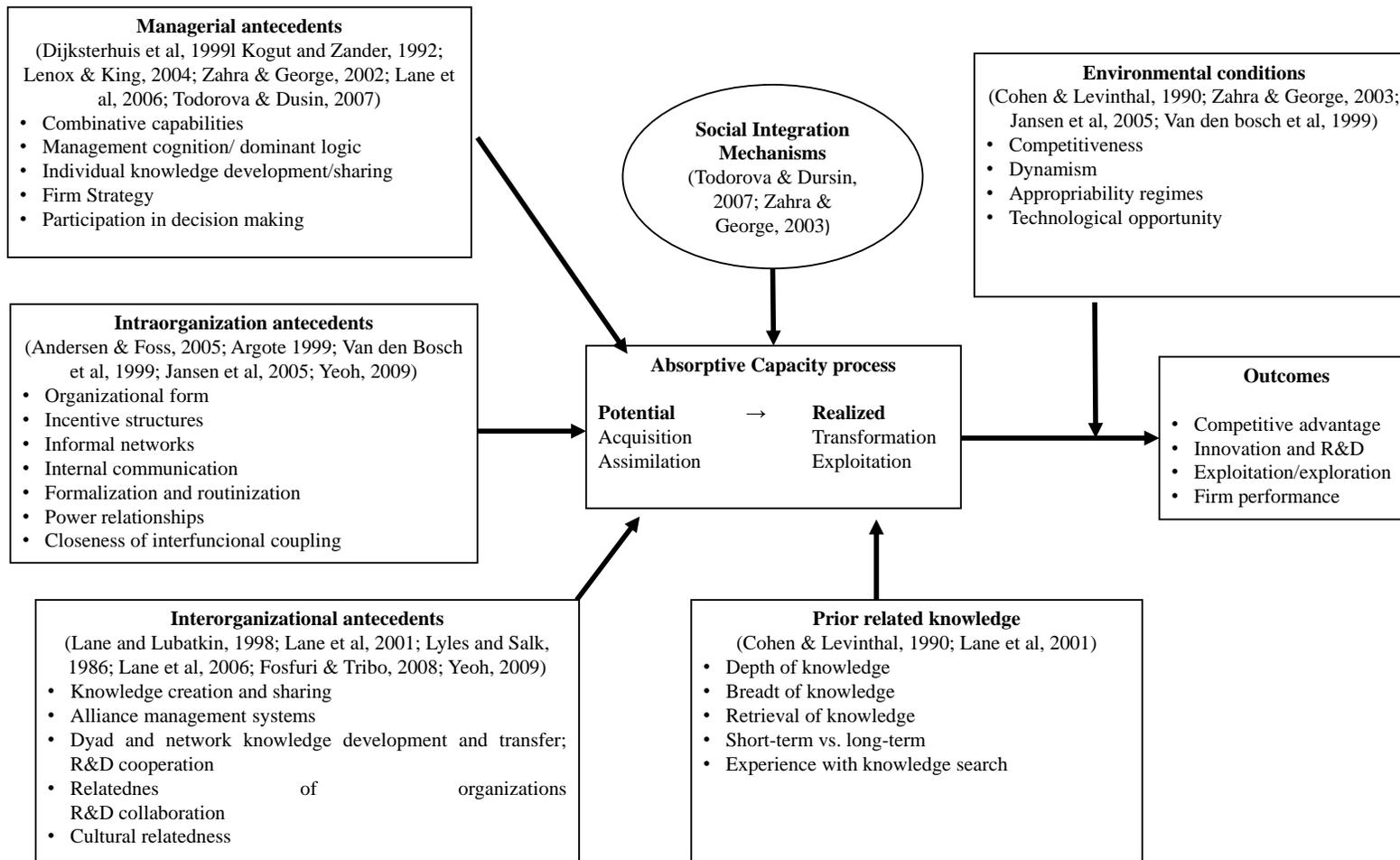


Figure 1 Absorptive Capacity Operationalization (based on Volberda et al (2011))

1.2 Knowledge Management Practices

In order to define and classify knowledge management practice, we firstly take a broad perspective and describe knowledge management origins to ground our research in the theory. Having defined main concepts related to knowledge management, we proceed to selecting the definition of the practices, describing the current views at their classification and finally merging them into one comprehensive classification including all up-to-date researches as well as applicable for the research goal in respect of its practice orientation.

1.2.1 Knowledge Management

The field of knowledge management emerged only in 1991, but since then has been developing drastically receiving a lot of attention from the scientific society. The opinion that knowledge is the only meaningful economic resource is quite widespread (Al-hawamdeh 2002) and it clearly reflects the importance of knowledge for today's world. Knowledge itself today is treated as the key competitive advantage that a company can possess. The fact that the knowledge can be managed seems to be essential for any developing organization.

There are two streams in knowledge management. The first stresses importance of the concept "knowledge". According to their definition, knowledge is presented as a sum of information that helps the person to make right decisions in reaction to some circumstances. To this stream belong Zack, Davenport, Prusak, Nonaka and Takeuchi, etc. Zack identifies contexts of knowledge management that are strategic, knowledge and organizational ones. In strategic he underlines the importance of addressing of its capabilities by a firm to exploit its knowledge and gain a competitive advantage (Zack 1999a). In knowledge context, the significance of the existing knowledge is stressed in respect of its competitiveness: an organization must define its knowledge gaps now and expected in the future. Organizational context is about both formal and informal organizational structure, the roles people play, their relations and organizational culture. Technology context describes the technological systems available to support knowledge sharing inside the firm. Nonaka and Takeuchi underlines the importance of values. Depending of an individual's culture one will understand a piece of knowledge differently, thus knowledge has different meaning for people from different cultural background. the same is applicable to individual values (Ikujiro Nonaka and Takeuchi 1995).

In order to understand the nature of knowledge, one should segment it into different components. Different taxonomies were introduced in the course of the first stream. Zack suggested that it should be classified according to its nature defining the following types of knowledge (Zack 1999b): declarative (shared understanding, describes something), procedural (the knowledge of procedures, how something is done), causal (shared causal knowledge, understanding why something occurs). Nonaka's criteria for knowledge classification was the level of diffusion. He determines the following levels (Ikujirō Nonaka and Hedlund 1991): individual, group, organization as a whole, interorganizational. What is more, Nonaka and Takeuchi introduced a seminal classification of knowledge having a great importance for the KM field development into tacit and explicit knowledge. Explicit knowledge is the knowledge shared and available within or outside of organization, while tacit knowledge is the knowledge one can have, work with, but that is not shared with others.

The second stream is centered on the concept of “knowing”. The dynamic nature of knowledge accumulation is stressed. Knowledge is created within internal processes and is recorded in the memory of individual and organization. The frameworks are focused around two features: the understanding of the stage when knowledge flow is made and understanding of the factors that start this flow.

Within the first group of this stream, it is suggested that knowledge management practices an organization follows can become a new source of competitive advantage for any organization. Bolinger and Smith treat knowledge as a key asset in a postindustrial society and favor wide implementation of technologies in order to support knowledge systematization and availability (Bollinger and Smith 2001). Knowledge management can also be treated as a business process. Sarvary conducted a research on consulting companies and it showed that a system of creation and exploitation of knowledge in the industry became one of the main factors of its high efficiency (Sarvary 1999).

The other group within the second stream was concentrated on defining the factors that can foster or limit knowledge flow. Von Krogh research highlights the importance of the relationship component in knowledge flow, only good relations will motivate parties to share knowledge (Seufert, Von Krogh, and Bach 1999). Lang follows Von Krogh theory and continues it by saying that good relations are formed within an organization's culture, so he states that organizational culture is very important for efficient knowledge management (Chinying Lang 2001). Inkpen

suggests that the factors for KM right and efficient implementation are: flexible target for education, trust culture, commitment of top management and the existence of creativity chaos. These factors taken together according to his opinion can significantly boost knowledge exploitation efficacy within organizations (Inkpen 1996).

1.2.2 Knowledge Management Practices

To understand how particular knowledge management practices might affect AC we firstly have to understand its definition and secondly its landscape. The latter is required for integration of previous theoretical works and also for ensuring that none of them is missing within our research.

The concept knowledge management practices requires clarification, as for example Andreeva claim that various concepts such knowledge tools (Massingham 2015), knowledge enablers (Ho 2009; Pee and Kankanhalli 2008), “knowledge management initiatives” (Chawla and Joshi 2010), can be classified under the term. However, all of them bear the similar characteristics within, these are intentionality, knowledge management efficiency and firm’s performance orientation. In the frames of this research, we follow the definition suggested by Andreeva and Kianto that bears these characteristics too; knowledge management practices are defined as *those management practices that which support the efficient and effective management of knowledge for organizational benefit* (Schiuma, Andreeva, and Kianto 2012). Further on Andreeva and Sergeeva narrowed down the definition of knowledge management practices, claiming that it is too broad. To do this, they suggest identifying how a separate practice can govern a particular knowledge process (Sergeeva and Andreeva 2013). However, it proved to be difficult to elaborate knowledge management practices concerning particular processes due to under-review of them within the literature. Thus, in our paper we follow Andreeva and Kianto’s definition.

Having defined the concept of knowledge management practices, we would discuss current up-to-date theoretical contributions in the field, attracting various researches where practices though not called KM ones, but falls under the aforementioned definition. Foss et al argues based on the bibliographical analysis that the researchers preoccupied with macro-level, but pay less attention to micro-levels, where knowledge management practices belong (Foss, Husted, and Michailova 2010). Thus, while selecting the most appropriate classification for our research we use the following criteria: comprehensiveness, by that meaning that the classification should include the previous theoretical findings, obviously favoring the most recent ones; and connectedness with managerial incentives, the classification should not be too broad or too narrow, so to provide link between

theoretical concepts and specific management practices one could perform concentrating on micro-level.

Bhatt suggests that in order to exploit knowledge to the full extent a company has to balance its knowledge management activities. Drawing on the fact that knowledge can be of various types depending on its form (data, information and knowledge), he argues that sole reliance on technological and social systems implementation and development is not sufficient. He supposes that in order to maintain this knowledge flow what is important is not the social and technological systems themselves, but rather their interaction. In order for a data to become information and information to become knowledge, the three components of people, technology and techniques should be aligned. Therefore, efficient KM is not about only management information, but rather about a shift in organizational culture that requires change in the three said components. Thus, he introduces three main streams of knowledge management practices: those related to people, those related to technology and those related to techniques (Bhatt 2001). Though contributing to providing more rich understanding of KM practices and conceptual dynamics of knowledge management, the classification provided does not give particular insights onto which practices a manager should perform.

Gold & Malhotra determined the main processes capabilities of knowledge management that are essential for smooth knowledge flow based on the previous researches. These capabilities are acquisition, conversion, application and protection. The first capability is connected to obtaining knowledge, the second one deals with transforming the existing knowledge to the useful form. Application capability ensures that the knowledge is used for the commercial ends, while protection capability secures the knowledge a company has and restricts access to it from unauthorized parties. They believed that a company can obtain them through practicing routines constituting these capabilities and elaborated the scale measuring them based on these routines (Gold and Arvind Malhotra 2001). Thus, Gold & Malhorta presented a classification both comprising theoretical concepts and connecting them with particular managerial routines, hence this classification is correspondent to one of the criteria initially set.

Husted and Michailova suggest that the most failures in knowledge sharing happen due to the fact that people are inherently hostile to knowledge sharing. Thus, eliminating the hostility the process of knowledge sharing can be significantly more useful. Three factors according to them condition this hostility: reasons for hoarding, reasons for rejecting, attitudes towards mistakes.

Therefore, the ability to test the organization for these factors' presence and subsequently to mitigate these factors is critical for a successful knowledge sharing. These practices include (Husted and Michailova 2002):

1. Encouraging and stimulating knowledge sharing
 - a. Managerial actions related to knowledge transmitters' behavior
 - b. Managerial actions related to knowledge receivers' behavior
 - c. Managerial actions associated with content-related behavior
 - d. Those addressing all the three dimensions
2. Forcing and imposing knowledge-sharing
 - a. Related to knowledge transmitters' and receivers' behavior
 - b. Associated with content-related behavior
 - c. Addressing all the three dimensions

Though providing more or less clear managerial incentives, this classification comprehensiveness is questionable, as providing only measures aimed at knowledge sharing hostility decrease.

Foss summarizes the current at the time works connected with the emerged knowledge governance approach. The approach foundation is the hypothesis that knowledge management efficiency can be enhanced through deployment and development of various organizational mechanisms like reward system, job rotation and organizational structure. Grounded on Coleman's Social Science model, his arguments claim that KM is preoccupied with high-level processes and lack micro-foundations. He suggests that knowledge governance approach (KGA) can address this gap and provide KM with such micro-foundations. KGA is supposed to deepen our knowledge in the following practical fields: understanding how different incentives condition knowledge processes from motivation side; what the best mechanisms for the promoting of knowledge processes are; what the threats to knowledge management are and how to mitigate them (Foss 2007). Thus, Foss attracts attention to the significant side of knowledge management: practical one stressing the importance of elaborating the clear link between governance mechanisms and KM outcomes, but not providing clear managerial guidelines,

Hsu contributes to KM by establishing a link between knowledge sharing practices, human capital development and a firm's performance. Firstly, based on prior evidence he creates a model that accounts for how KM practices improve a firm's performance through human capital development as an intermediary. On the sample of 256 Taiwan organizations Hsu investigates the influence of two knowledge sharing practices, namely, information strategy and the values of top management, on the said above indicators. It is worth mentioning that as performance indicators not only financial ones are chosen, but a wider set. The findings show proved his initial suggestions. In particular, innovation strategy is found to be a significant predictor of KM practices implementation. As for the values of management, they are found to be another variable influencing performance through human capital developing, specifically they enhance knowledge creation process (Hsu 2008). Overall, the proposed model elaborated a connection between knowledge management practices and organizational performance, and thus lays a foundation for more thorough link development, though, however, the range of managerial practices provided is quite limited.

Focusing on knowledge sharing process, they claim that a certain attention is required to analyze KM from multi-level perspective, thus creating a level of how an individual participates in knowledge transfer within the firm. Such practices derived by them from literature analysis are rewards systems, mobility, personal rotations and leadership (Foss, Husted, and Michailova 2010).

Andreeva and Kianto split knowledge management practices into two branches: those connected with information technology and those related with human resource management. Andreeva and Kianto empirically tested which effect these practices have over competitiveness and financial performance of 234 firms in Finland, Russia and China. It was found that the said practices are strongly correlated with a firm's performance; interestingly, KM practices have rather big influence over it. What is more, ICT and HRM practices are found to be complementary and interrelated, so in order to improve performance ICT practices should be combined with HRM ones (Andreeva and Kianto 2012). Though providing clear managerial guidelines, the classification presents to be too broad, not providing deep enough level of analysis.

Massingham investigated how specific knowledge management tool influence the performance of organization, he proposes the list of knowledge management best practices based on the previous articles review. He determines 4 toolkits and 16 tools that are assessed according to the framework elaborated by him under the three dimensions: strategy, implementation and performance. There are the following toolkits that he defines:

1. Knowledge strategy. It comprises three tools: competency mapping, future capability requirements and sourcing decision
2. Knowledge creation. It includes more tools than the first one: creative abrasion, parallel thinking, SECI model, expert teams, double-loop learning
3. Knowledge retention. It consists of interviewing, mind maps, videotaping, mentoring, strategic action framework
4. Knowledge measurement. There are the following practices: knowledge valuation, cultural change metrics, risk management.

The effectiveness of these practices was tested in a large longitudinal 5-year project. The findings revealed that the most effective toolkit according to the elaborated measures was knowledge strategy, followed with knowledge measurement (Massingham 2014a). However, we argue that toolkit level is too narrow for the current research, as it concentrates rather on knowledge management particular instruments than more general practices concerned with knowledge management.

Lee and Choi investigate how knowledge management enablers affect processes and organizational performance. Based on the literature review they determined the following knowledge enablers (i.e. knowledge management practices): those providing collaboration, trust, learning, centralization, formalization, T-shaped skills and IT support. The finding provided the insights into the importance of cultural factors, lower significance of IT practices if taken separately (Lee and Choi 2014). It provides factors important for effective knowledge management, but does not focus that much on intentional and conscious managerial incentives, as it might prove to be challenging to determine set of practices influencing trust or T-shaped skills.

Kianto et al studied the connection between KM practices and intellectual assets. The classification of KM practices they presented included the following dimensions: strategic KM, organizational structure, knowledge-sharing and – creation friendly culture, ICT practices, learning mechanisms, HRM practices, knowledge protection mechanisms (Kianto et al. 2014). Inkenen et al propose another classification of knowledge management practices. They divided them into ten basic categories: supervisory work, knowledge protection, strategic management of knowledge, learning mechanisms, information technology practices, work organization, recruiting, training, and

development, performance appraisal, and compensation practices (Inkinen, Kianto, and Vanhala 2015).

	References to theories					
	Inkinen, Kianto, and Vanhala (2015)	Kianto et al (2014)	Lee & Choi (2014)	Massingham (2014)	Andreeva & Kianto (2012)	Hsu (2008)
Kn. Management Practices	Supervisory Work	Kn.-friendly Culture	Trust			Values of Top Exec.
	Kn. Protection					
	Work Organization	Org. Structure	Kn. Retention	Kn. Retention		Values of Top Exec.
	Learning Mechanisms	Learning mechanism	Learning			
	Information Technology	ICT Practices	Kn.. Retention	Kn. Retention	ICT practices	
	Strategic KM	Strategic KM	Kn. Measurement	Kn. Strategy, Kn. Measurement		Information Strategy
	Recruiting	HRM Practices			HRM Practices	
	Training & Development					
	Performance Appraisal		Kn. Creation, Kn. Measurement	Kn. Creation, Kn. Measurement		
	Compensation Practices					

Table 1 Classifications of Knowledge Management Practices

Supervisory work relates to the degree managers foster knowledge sharing behavior through encouragement or introducing mistakes tolerant environment. Additionally, they can create the atmosphere that enables equal discussion and serve a knowledge sharing role model for employees. Knowledge protection involves practices connected with utilization of patents and laws in order to protect a company's existing knowledge assets. Strategic management of knowledge and competence conditions to which extent knowledge is addressed while overall company strategy

formulation. What is more, it is connected with the practices such as benchmarking against competitors. Knowledge-based recruiting practices include such actions as assessing ability to learn of applicants or their ability to work in various environments. Knowledge based performance appraisal incorporates practices binding the amount of knowledge one produced, stored or exploited with a person's key performance indicators. Almost the same is done with knowledge-based compensation, though the reward is provided directly for knowledge creation, sharing or application. IT practices implements the extent to which ICT supports and fosters information search and discovery as well as communication within the firm. What is more, it addresses the way information is delivered conveniently for better decision making. Work organization practices are concerned with declaring duties, meetings, interaction and processes for employees to enhance knowledge management efficiency. Learning mechanisms addresses the way knowledge transmitted from experienced to unexperienced employees, the way a company stores the lessons learned and the way employees make use of its exploitation. Knowledge-based training and development practices are connected with the extent to which employees have a chance to develop their knowledge, to which specific training with modern knowledge are provided and to which the needs of development are discussed with employees. What is more, it assesses if specifically-tailored for individual needs workshops are held by the company (Inkinen, Kianto, and Vanhala 2015).

We claim that the last one (by Ikinen et al) should be basis of our research, as it satisfies to both of criteria initially set. Firstly, it provides comprehensiveness in terms of incorporating previous researchers. For example, it encompasses IT and HRM practices suggested by Andreeva and Kianto, also assessing them more detailed, namely splitting HRM into set of four practices: recruiting, training and development, performance appraisal and compensation. What is more, it is conceptually in lines with those practices aimed at decrease of knowledge hostility. More specifically, Table 1 reveals how Ikinen et al (2015) classification encompasses the other classifications, only relevant ones with sufficient practical focus are included within it. Secondly, it provides clear managerial actions associated with each of KM practices

1.3 Relationships between Knowledge Management Practices and Absorptive Capacity

Volberda et all underline the importance of understanding of microfoundations behind AC concept. These microfoundations are said to include learning how AC arises, influence performance and how it is transformed into managerial actions. Additionally, they notice lack of empirical research onto how managerial actions and individual agents influence AC (Volberda et al. 2010).

Todorova and Dursin encourage researchers to draw their attention to the antecedents and drivers of AC and understand its importance (Todorova and Durisin 2007). Jansen et al also stress lack of research of AC at individual-level. In addition, they point out at the importance of understanding how organizational units manage their PAC and RAC (Jansen, Bosch, and Volberda 2005). Therefore, by bringing conscious and intentional knowledge management practices and proposing that they have influence over AC, we aim at introducing micro-routines way of AC enhancement.

Late et al highlighted the importance of characteristics of firm members' mental model as an internal driver of AC development (Lane, Koka, and Pathak 2006). Yeoh emphasized the significance of cultural aspect for PAC enhancement (Yeoh 2009). Volberda et al offered management cognition as a main source of AC from the side of managerial antecedents (Volberda, Foss, and Lyles 2010). Inkenen argues that supervisory work is the most crucial factor for developing organizational factor and through these practices a company can establish an innovative culture (Inkenen, Kianto, and Vanhala 2015). DeTienne supports this argument by saying that without the influence over culture of the management team the distribution of mature knowledge management practices is questionable. Holsapple and Singh suggested that leadership is a catalyst for many knowledge-related activities.

Zahra and George claimed that one of the antecedent of AC is activations triggers, by that meaning external and internal events regarding the company (Zahra and George 2002), one of such this events can be a need to develop knowledge expressed by management. Lane et al underlines the importance of firm strategies as an internal drive of AC development (Lane, Koka, and Pathak 2006). Fosfuri and Tribo argue that R&D and cooperation is a source of PAC, and decisions to cooperate are taken in the frames of KM strategy (Fosfuri and Tribo 2008). Knowledge management strategy deals with identifying crucial strategic knowledge and elaborating knowledge strategy, the needs of the firm and the way of measurement and monitoring knowledge (Inkenen, Kianto, and Vanhala 2015). Thus, we suggest that the process of needs development can become an activation trigger for AC and R&D cooperation can be a potential way of obtaining strategic knowledge. Through focus on value-creating activities of an organization (Grant 1996) and tailoring firms knowledge strategy with overall strategy (Zack 1999b) strategic knowledge management practices are able to increase organization performance.

Even Cohen and Levinthal suggested that ease of learning is one of the antecedents of AC (Cohen and Levinthal 1990). Zahra and George proposed that one other major antecedent of PAC is

experience, according to them experience is gathered through exposure to knowledge (Zahra and George 2002), where learning mechanisms play crucial role, their suggestion is supported by Todorova and Durisin and Volberda et al (Todorova and Durisin 2007; Volberda, Foss, and Lyles 2010). What is more, Volberda et al also underlined the importance of knowledge creation and sharing, that is partially conditioned with learning mechanisms within a firm (Volberda, Foss, and Lyles 2010). Lane et al proposed characteristics of learning relationship as one of the main external driver of knowledge (Lane, Koka, and Pathak 2006). Learning mechanisms are conceptualized as the improvement and increase of organizational knowledge and competence, and claimed that they are crucial for effective knowledge management. In addition, these practices are claimed to increase firm's performance by delivering broader access to tacit and explicit knowledge (Inkinen, Kianto, and Vanhala 2015).

IT practices can lower transaction cost and improve coordination and social interaction (Alavi and Leidner 2001), which is claimed to be one of the major AC antecedents (Jansen et al., 2005; Zahra & George, 2002). What is more, the integration of them would affect the knowledge storage and retrieval through improved access to historical information and better opportunities for codification (Inkinen, Kianto, and Vanhala 2015), thus affecting prior knowledge of the firm which is suggested to be one of the main antecedents of PAC (Todorova and Durisin 2007) as well as an antecedent of AC in general (Volberda, Foss, and Lyles 2010). Todorova and Durisin underlined importance of social integration mechanism claiming that they serve a linkage between PAC and RAC (Todorova and Durisin 2007). Jansen et al suggested that the degree of socialization positively influences firms RAC. Yeoh believed that social embeddedness directly influences RAC. Thus, we suggest that knowledge management practices connected with IT would affect PAC through increase in the prior knowledge and affect AC in general through enhancing the link between PAC and RAC with increase of socialization. Additionally, these KM practices are argued to increase organizations performance (Inkinen, Kianto, and Vanhala 2015).

Practices connected with work organization determines the work design issues that enable effective knowledge management (Inkinen, Kianto, and Vanhala 2015), to them belong the level of involvement of employees into decision making that is suggested to be a driver of PAC. Additionally, they include practices connected with exploiting cross-functional teams (Ikujiro Nonaka and Takeuchi 1995), whereby closeness of interfunctional coupling is suggested as an antecedent of RAC (Yeoh 2009). Work organization is also affect characteristics of firm's structure

and processes (Lane, Koka, and Pathak 2006) and organization form (Volberda, Foss, and Lyles 2010) those being antecedents of AC.

Training and development practices enables monitoring and assessment of employees need and providing them with an adequate training (Senge 1991).The deployment of such practices allows to keep a company knowledge base up-to-date and update it systematically (Inkinen, Kianto, and Vanhala 2015). The importance of knowledge base is highlighted as an antecedent of PAC in many works (Zahra and George 2002; Todorova and Durisin 2007; Yeoh 2009; Volberda, Foss, and Lyles 2010). Therefore, we suggest that knowledge management practices connected with training and development can increase PAC through affecting firm’s knowledge base and company’s performance.

As for knowledge management practices connected with knowledge-based compensation, incentives structures are mentioned as one of the antecedents of AC (Volberda, Foss, and Lyles 2010). Additionally, rewards are claimed to change individual sharing behavior (Bartol and Srivastava 2002) that is also an antecedent of AC (Volberda, Foss, and Lyles 2010). Therefore, those KM practices can affect AC through raising employees incentives to engage into a company’s activities and facilitating knowledge sharing, and thus increasing company’s performance.

To conclude, the brief proposition of interconnection between KM practices and AC dimensions is presented in Table 2.

		AC dimension		
		PAC	RAC	Unspecified
KM Practices	Supervisory work			Firm's mental models (Lane et al. 2006) Cultural aspect (Yeoh 2009) Management cognition (Volberda et al. 2010)
	KM strategy			Activation triggers (Zahra and George 2002) R&D and cooperation (Fosfuri and Tribo 2008)

Learning mechanisms	Experience (Zahra and George 2002; Todorova and Dursin 2007; Volberda et al 2010)		Ease of learning (Cohen and Levinthal 1990) Knowledge sharing and creation (Volberda et al. 2010)
IT	Knowledge base (Todorova & Dursin 2007; Yeoh 2009)	Degree of socialization (Todorova and Dursin 2007) Social embeddedness (Yeoh 2009)	Social integration mechanism (Jansen et al 2005; Zahra and George 2002) Knowledge base (Volberda et al. 2010; Zahra and George 2002)
Work organization	Involvement in decision making (Jansen et al 2005)	Closeness of interfunctional coupling (Yeoh 2009)	Characteristics of firm's structures and processes (Lane et al 2006) Organization form (Volberda et al. 2010)
Training and development	Knowledge base (Todorova & Dursin 2007; Yeoh 2009)		Knowledge base (Volberda et al. 2010; Zahra and George 2002)
Knowledge-based compensation			Knowledge base (Volberda et al. 2010; Zahra and George, 2002) Individual knowledge sharing behavior (Volberda et al. 2010)

Table 2 Connection between knowledge management practices and absorptive capacity antecedents

What is more, AC is suggested to build firm's competitive advantage (Lane, Koka, and Pathak 2006). What is more, even its original definition itself explicitly implies that its main goal is to apply knowledge to commercial ends (Cohen and Levinthal 1990).

However, the current scope of researches within the field still lacks investigations of financial measures of performance (Lane, Koka, and Pathak 2006). What is more, many studies concentrated on developing innovation as the only outcome of AC, what is inconsistent with seminal work of Cohen and Levinthal who suggested rather general commercial knowledge exploitation, but not the narrow focus on innovation performance (Kostopoulos et al. 2011).

AC allows to produce a greater degree of innovation, while innovation allows to be more flexible in relation to external environment, manage complicated conditions, increase quality of products and customer demand (Prajogo and Ahmed 2006). Subsequently, though the risk of unsuccessful innovation exists (Baker and Sinkula 2005), there are significant positive relationship between firm's innovative and organizational performance (Walker 2005).

Thus, we suggest that absorptive capacity is able to influence over the organizational performance of the firm. Bearing in mind that in our theoretical framework knowledge management practices are used as a source of enhancing AC, we suggest that they would additionally enhance organizational performance.

Therefore, we propose the following theoretical framework of our study. Knowledge management practices connected with supervisory work, KM strategy, learning mechanisms, training and development, IT, work organization and knowledge-based compensation affect particular dimension of AC and increase it through particular antecedents or group of antecedents, at the same time influencing organizational performance. These proposed relationships are presented in Figure 2.

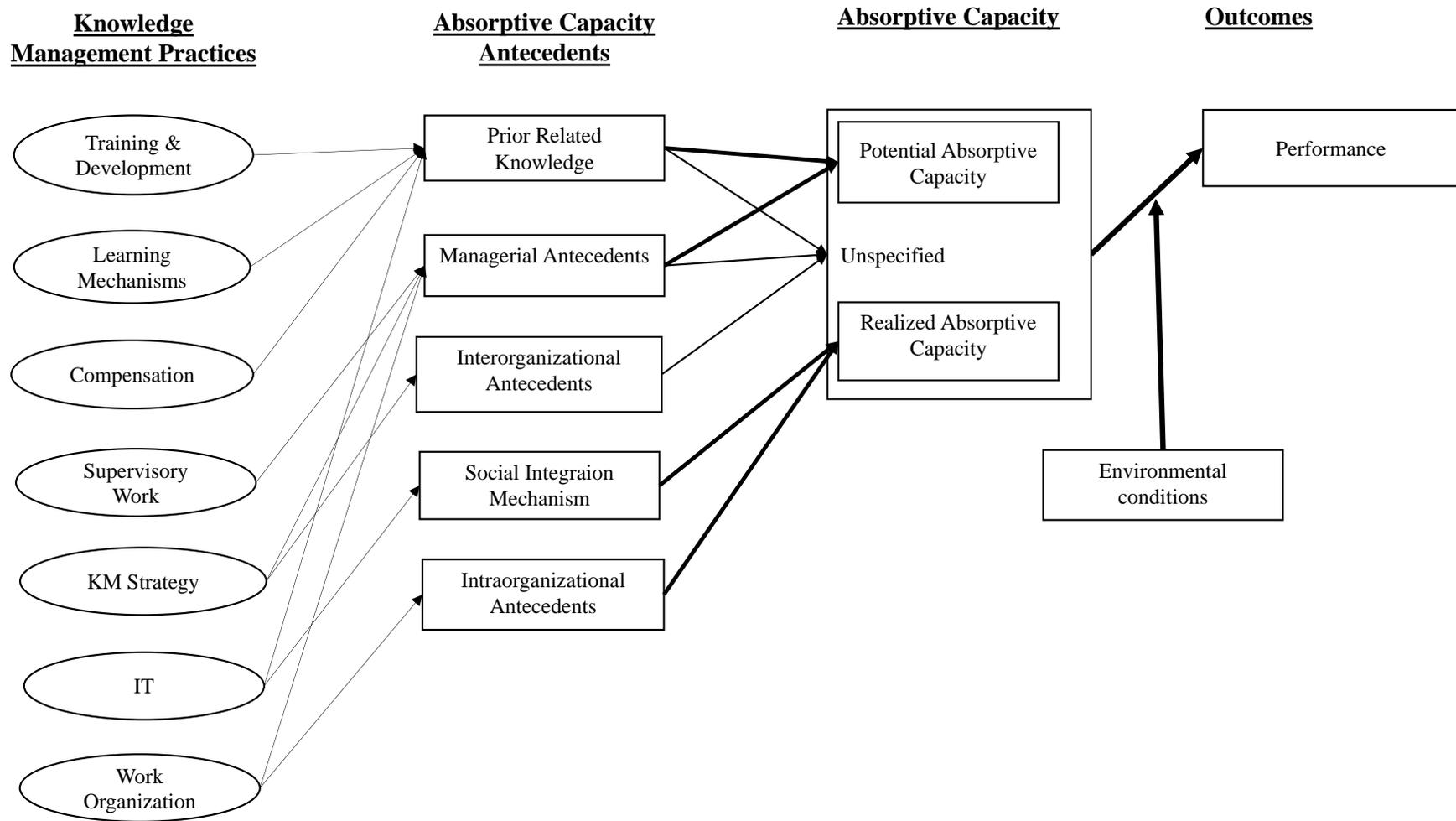


Figure 2 Theoretical Framework of the Research

Summary of Chapter 1

Absorptive capacity development is suggested to be an essential for ever changing competitive landscape and growing complexity of customer demand.

Therefore, firstly, we analyze what factors can serve a source of absorptive capacity, i.e. its antecedents. We recognize the distinction between potential and realized absorptive capacity; various antecedents of absorptive capacity have been investigated, classified and attributed to a particular dimension where possible. Among them we determine managerial, intraorganizational, interorganizational, related to prior knowledge and social integration mechanism ones having integrated the up-to-date papers.

Secondly, knowledge management practices are conceptualized within these studies as conscious and intentional managerial actions aimed at enhancing the effectiveness of knowledge management within the organization. Based on the analysis of the literature we have elaborated the classification of KM practices that is nor either too broad, nor too narrow. It consists of 10 KM practices: supervisory work, knowledge protection, strategic management of knowledge, learning mechanisms, information technology practices, work organization, recruiting, training, and development, performance appraisal, and compensation practices.

What is more, we bridge the gap between KM practices and AC by proposing how specific KM practice affects specific AC antecedent. Those connected with learning mechanisms, IT, training and development are argued to influence a firm's PAC. The ones related to IT, work organization are claimed to be positively associated with a firm's RAC. KM practices connected with learning mechanisms, compensation and strategic KM are also suggested to influence KM, though the special dimension of them haven't been determined. However, have not been able to trace the connection between knowledge protection, recruiting and AC antecedents.

Additionally, we suggest that as knowledge management practices are able to influence absorptive capacity, and greater level of absorptive capacity is associated with higher financial performance, we suggest that these practices would also increase financial performance of the organization, whereas absorptive capacity would serve as a mediator.

Finally, we present a theoretical framework for this research that is presented in Figure 2 and shows the proposed connection between KM practices, AC and firms' performance.

2 EMPIRICAL STUDY OF RELATIONSHIPS BETWEEN KNOWLEDGE MANAGEMENT PRACTICES AND ABSORPTIVE CAPACITY

2.1 Research Strategy

The aim of the research is to investigate knowledge management practices as a source of development of absorptive capacity, additionally, we propose that absorptive capacity plays mediating role between knowledge management practices and performance. The results of the research will allow us to understand which conscious and intentional knowledge management practices a manager should apply in order to increase a firm's performance through increase in absorptive capacity. Additionally, it will identify the amount of effect produced by these practices through absorptive capacity as well as particular dimension it influences.

Deductive reasoning was deployed in the current research. Firstly, we grounded ourselves in the historical theoretical contributions analysis in the fields of knowledge management practices, absorptive capacity and performance. Secondly, based on that analysis, we have formulated the proposed relationships between the aforementioned concepts. At last, we have checked it via survey research strategy.

Beforehand, we would state the purpose of the study that is explanatory one, as with the current research we try to establish causal relationships between the three variables: knowledge management practices, absorptive capacity and a firm's performance.

We propose using survey as a main strategy of the research due to the following reasons. Firstly, for the need of the research relatively big population is required and survey allows collecting vast amount of data in a quite resource-efficient way that is significant as there is no budget allocated for the study (Saunders et al. 2007). Secondly, as an outcome of it a standardized data is obtained that can be easily compared. Thirdly, it allows gathering qualitative data and organizing it in a quantitative way that can be analyzed using different quantitative information processors (Robson 2002) as e.g. IBM SPSS. However, using surveys can be challenging and there are some limitations, mostly concerned about ensuring that the sample is representative and possibly challenging data collection (Bell 2014).

Given the limited time frame of the research and relative difficulty of conducting of the methods other than survey a mono-method is chosen.

Concerning the time-frame of the study, again because of the said time-limitations and explanatory nature of study longitudinal time horizon is not as appropriate as cross-sectional one. Moreover, this research seeks to shed light on less crucial elements and add more understanding to the said variables to existing research on knowledge management and absorptive capacity. The unit of observation is placed at an organizational level, although the unit of analysis is set at an organization-wide level, drawing conclusions on the aforementioned link from data collected from the organizations

The geography of the survey is limited to one country. The data for the research was collected in Russia.

The companies surveyed were chosen according to the following criteria: firstly, the geographical one; secondly, number of employees, as we suppose that a firm has to have more than 20 employees in order to be more representative in using knowledge management practices which is in line with current practice of KM researches; thirdly, legal form, we concentrated on those whose aim was profit maximization.

Three data sources have been exploited during the data obtaining stage:

1. The first is Orbis, multinational database with different financial information about companies. Orbis also allows to export e-mails of companies, after the criteria were met a total of 200 000 companies' e-mails were downloaded and survey was sent out. Due to the fact, that it not always clear whether the letter was actually opened by someone or not delivered due to various reasons, we rather use effective response rate that is equal to approximately 6% that accounted for 35 responses.
2. The second stream of survey mail-out is the alumni database of Graduate School of Management consisting approximately of 3000 graduates of the said school. Given the fact that the mail out is rather targeted and welcomed, the response rate for this source 1% and allowed to obtain 32.
3. In addition, the personal network of the author was used in order to increase the sample size, 29 answers were obtained.

The questionnaire is structured in the following way:

1. Respondent's and company's profile. The section aims at gathering general information of the company including control variables such as export level, number of employees, in order to understand the profile of respondent.
2. AC measurement. This part allows to measure AC as a dynamic capability with a distinction between PAC and RAC. To do so, the already established scale elaborated by Flatten et al (2011) was used.
3. KM practices measurement. This part measures 8 fields of knowledge management practices according to the theoretical framework on the already established scale elaborated by Inkinen, Kianto, and Vanhala (2015).
4. Performance measurement. The last part is aimed at estimation of companies performance. The performance is measured subjectively and the measurement scale is based on that by Khndwalla (1977).

The survey was sent out via e-mail with a text and a link to it. The online survey was made based on SurveyGizmo platform. Before mail-out, the survey was piloted among few industry specialists to ensure its correctness and understandability according to the guidelines (Saunders et al. 2007).

2.2 Measurement of Variables

During the development of the survey we would like to ground ourselves in the already established constructs as much as possible (Churchill 1979), that have already been refined on the big sample and tested for reliability and validity. Thus, we would firstly ensure the validity of the scales both lowering the risk of measurement mistakes and reducing the amount of work to be done. Secondly, we would concentrate more on the results analysis rather than scale elaboration that is beneficial for the goal of the research.

2.2.1 Absorptive capacity measurement

The scale elaborated by Flatten falls under the criteria set, as its reliability and validity of measurement on the set of two large scale German companies. What is more, the is based on the thorough literature review (Flatten et al. 2011). One of the advantages of it is that the scale elaborated embraces aspects beyond ones only applicable for technological firms and thus capturing the greater degree of clarity of AC dimensions. In lines with the previous research and our

theoretical framework, two dimensions of AC are measured in order to provide us with the estimation of PAC and RAC.

As for the first one, PAC, it is measured through surveying a firm’s development in respect of two components: acquisition and assimilation, the processes responsible for absorbing information from external environment. Acquisition, includes three items covering information search within industry, beyond industry and role of management in those activities. Assimilation is addressed by four items: cross-departmental communication and exchange of experience, cross-departmental collaboration, speed of cross-departmental knowledge flow.

As for the second one, RAC, it is also measured with two components, transformation and exploitation, thus representing how absorbed within PAC knowledge is changed according to the needs of the firm and applied to commercial ends. Transformation covers four items: ability of employees to structure and use knowledge, knowledge transformation practice, the ability of employees to connect new and old knowledge and effectiveness of knowledge application. The fourth variable is measured with three items: prototyping practices, technology update and the effectiveness of new technologies update.

The variables are measured on 7-point Likert scale in lines with the previous researches. The summary of the scale is presented in Table 3.

Variables		Scale	Items	References
Potential Capacity	Absorptive	7-point Likert scale	7	(Flatten et al. 2011)
Realized Capacity	Absorptive	7-point Likert scale	7	

Table 3 Absorptive Capacity Measurement Scale

2.2.2 Knowledge Management Practices Measurement

Again, following Churchill we use already established measures to measure extent to which specific knowledge management practices are applied within companies. Inkinen, Kianto, and Vanhalal grounded their scale in theoretical analysis, elaborating 10 knowledge management practices 7 of which we use according to the theoretical framework we have elaborated. Internal consistency of the scale was tested and proven through measurement of construct validity and

convergent validity and discriminant validity. All items were found to measure the specific constructs they intended to (Inkinen, Kianto, and Vanhala 2015).

The set of knowledge management practices is to be measured including those connected with learning mechanisms, training and development, IT, knowledge-based compensation, strategic knowledge management, work organization and supervisory work. To do so, the scale elaborated by Inkinen was adopted.

Learning mechanisms are measured with 3 items concerning the way knowledge is stored and made use of. Training and Development measurement involves 4 items. They are connected with the extent to which employees of a company are able to receive up-to-date knowledge within trainings. IT practices are addressed with 6 items about the broad range of ICT usage to facilitate information search, discovery, improve decision making and communication processes. Strategic KM, measured with 4 items, determines the degree to which company addresses its knowledge competences strategically. Work organization refers to 5 items that declare how daily operations are structured in respect of decision making, meetings, working groups, etc. 7 items related to how supervisors enable knowledge-sharing address Supervisory Work variable. Knowledge based compensation is measured with 3 items and reflect how companies reward knowledge-related activities.

7-point Likert scale was deployed to measure the suggested variables. The summary of the scale is presented in Table 4.

Variables	Scale	Items	References
Learning Mechanisms	7-point Likert scale	3	(Inkinen, Kianto, and Vanhala 2015)
Training and Development	7-point Likert scale	4	
IT	7-point Likert scale	6	
Strategic Knowledge Management	7-point Likert scale	4	
Work Organization	7-point Likert scale	5	
Supervisory Work	7-point Likert scale	7	

Knowledge-based Compensation	7-point Likert scale	3	
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Table 4 Knowledge Management Practices Measurement Scale

2.2.3 Organizational Performance Measurement

Firm performance is generally suggested not an easy task to measure (Flatten et al. 2011). We decided to capture firm performance as a subjective measure with five items, and for each item, the respondents specified their respective level of satisfaction with their firm’s performance relative to its competition (Covin and Slevin 1988; Pelham 1999). Furthermore, the interpretation of subjective, relative performance data tends to be more accurate across diverse contexts, for example, across industries (Covin & Slevin, 1989), and a high correlation between subjective and objective performance indicators has been demonstrated in several studies (Chandler and Hanks 1993)

Organizational performance was measured by six items developed from Khandwalla (1977) and later on adapted to KM by Hsu (2008). The scale reflects a range of performance indicators and included long-run profitability, growth rate of revenues, employee satisfaction, employee productivity, goodwill and product (or service) quality.

It is measured on 7-point Likert scale. The scale is summarized in Table 5.

Variables	Scale	Items	References
Performance	7-point Likert scale	5	(Khandwalla 1977; Hsu 2008)

Table 5 Organizational Performance Measurement Scale

2.3 Results Analysis

To begin with, there are methodological discrepancies in respect to whether Likert-scale surveys results can be analyzed with parametric techniques. However, if analyzing not particular items within the survey, but rather composite variables, such discrepancies can be avoided (Boone and Boone 2012). In our research, these composite variables (e.g. RAC or PAC) are represented with the summation of the items they comprise, which is in line with the aforementioned guideline.

In order to answer the research sub-question one, namely, how do specific knowledge management practices influence the particular dimension of absorptive capacity, the two model has to be built. Since we determined in the theoretical review that AC has PAC and RAC dimensions,

we have to build a model for each of it: the first one connecting KM practices and PAC; the second one connecting KM practices and RAC.

We have conducted hierarchical linear regression with three stages to analyze first two models. This type of the regression allows to estimate how addition of new variables influences the model fit as assessed by R square change. However, the addition of new variables on theoretical grounds (Pallant and Manual 2007). Thus, within first step only control variables were added as predictors; while performing the second step we increased the complexity of model by addition of proposed within theoretical review variables. Lastly, we added the rest of variables still not used within the regression. Based on the results, we compared models' fit and selected the best one. The models of the regression are build according to design presented in Figure 2.

Since this type of regression is quite sensitive to unconditional data, few assumptions have to be met before the test can be performed. The assumptions of it are the following independence of errors, homoscedasticity, normality of errors, absence of multicollinearity and outliers (Tremblay, 2013). Therefore, we checked if the data is correspondent to the assumptions of hierarchical multiple regression analysis and transformed it where required, e.g. through calculating logarithms from age and number of employees to secure normal distribution.

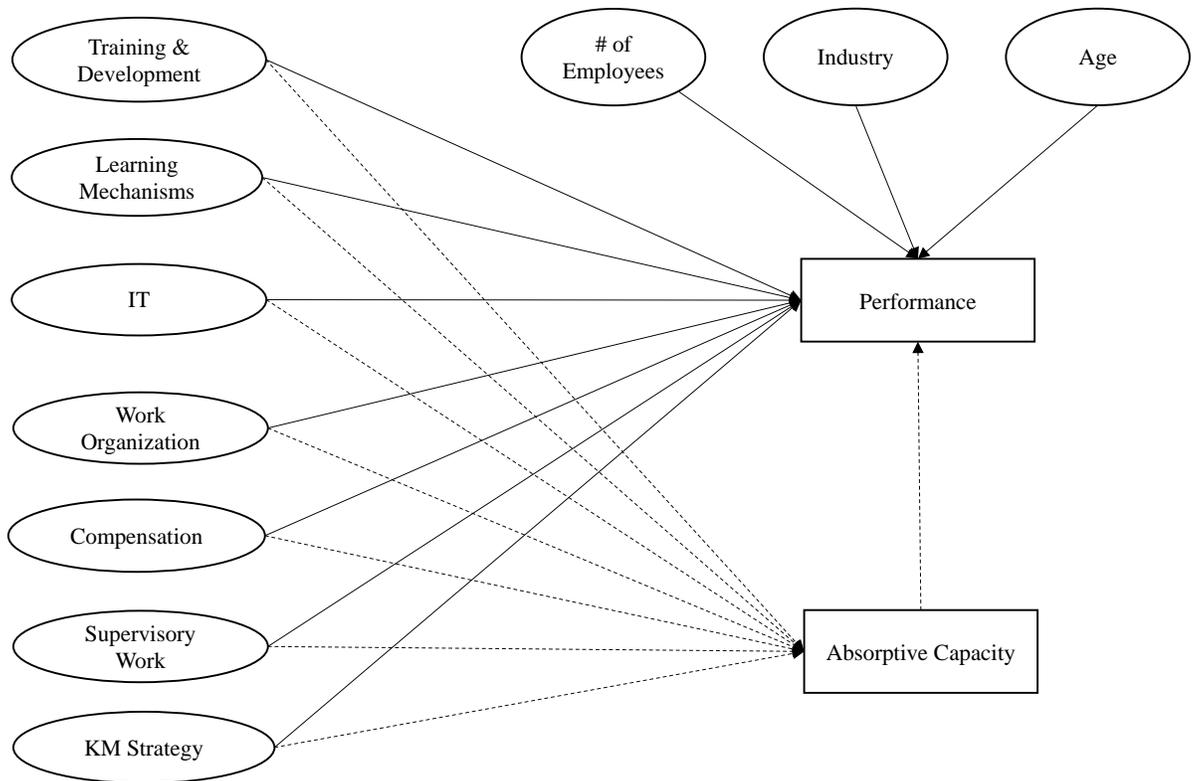


Figure 3 Model of relationships between KM practices, AC and performance

To answer the second research sub-question question, namely, how these knowledge management practices influence performance through absorptive capacity, we have to test for mediation. Though the majority studies follow Baron and Kenny’s approach, probably, the most well-known one, to determine whether the mediation effect presented in any relationships between more than 2 variables (1986), the approach was heavily criticized and proven to be one with the lowest power in determining of the aforementioned mediation effect (Fritz and MacKinnon 2007). Therefore, for the answering the aforementioned research sub-question, the alternative approach was chosen. We did not use Sobel’s test, as it required the distribution of indirect effect to be normal (Sobel 1990). However, the approach involving both structural equation modelling (SEM) and bootstrapping was suggested to be a perfect fit for mediation detection, as it is supposed to have the greater detection power and higher reliability (Hayes 2009). The model of relationship is presented in Figure 3.

The variables used within the three models are approximately the same, therefore they are presented below in Table 6.

Variable name	Variable description
RAC	Measured amount of realized absorptive capacity
PAC	Measured amount of potential absorptive capacity
AC	The cumulative measured amount for PAC and RAC
WO	The extent to which KM practices connected with work organization
Emp	Logarithm of company's number of employees
Age	Logarithm of company's age
Ind	Industry to which a firm belong
TD	The extent to which KM practices connected with training and development are used
LM	The extent to which KM practices connected with learning mechanisms are used
IT	The extent to which KM practices connected with information technologies are used
SKM	The extent to which KM practices connected with strategic knowledge management are used
KBC	The extent to which KM practices connected with knowledge-based compensation are used

Table 6 Variables Description

2.4 Descriptives

Before the analysis, we have screened the data, checked for errors and changed in order to meet the assumptions of the multiple regression, that included ensuring the absence of outliers, independence of observations, linearity of relationship, homoscedasticity of residuals, and absence of multicollinearity (Tremblay 2013).

After the said procedures the sample of 94 observations remained for the further analysis.

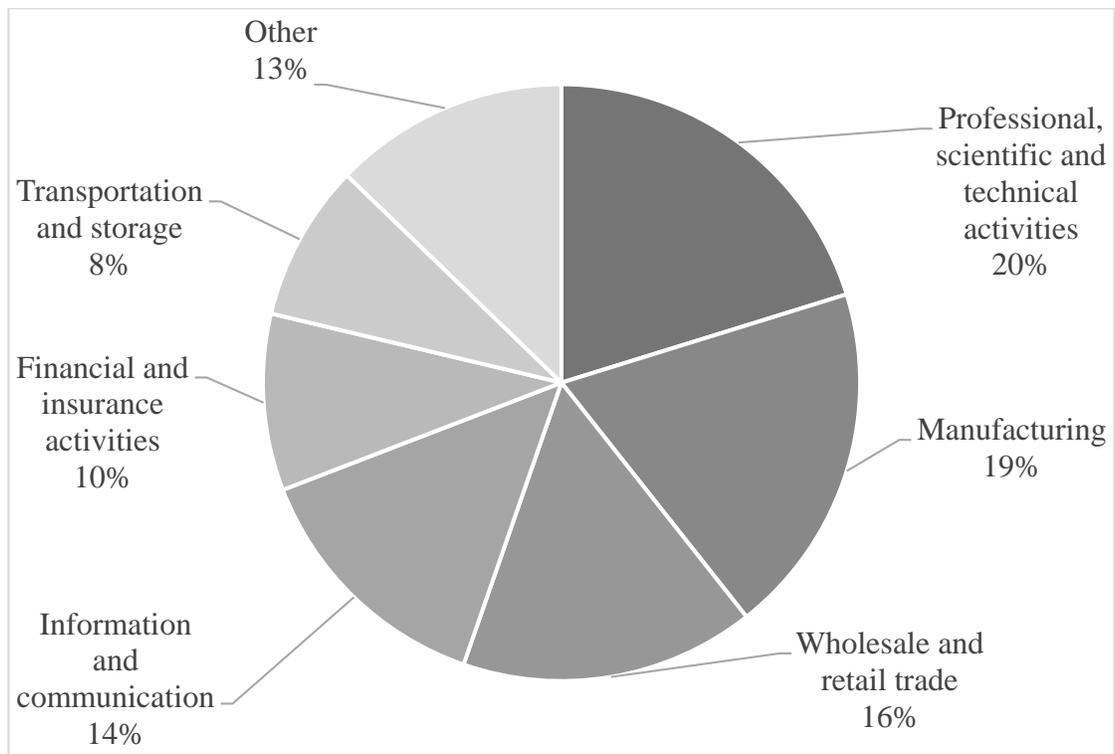


Figure 4 Distribution of responses by industry

In our sample the industries were classified according to European statistical classification of economic activities. Six industries account for approximately 87% of the whole sample. The prevailing one is professional, scientific and technical activities having 20% of all data that can be explained with the fact that more than half of sample belong either to the Graduate School of Management Alumni Database where this industry is major employer or to the authors of this paper to which the same can be applied. The following most responses-heavy industry are manufacturing and wholesale with 19 % and 15 % respectively. These two industries are followed with information and communication industry that accounts for significant part of the sample, 14%. Financial and insurance activities as well as transportation and storage represent fifth and sixth the most responses heavy industries, each accounting for approximately 10%.

Age-wise, most of the firms presented fall into category from 30 to 50 years, their number is 52. As for the category comprising firms younger than 10 years, there are only 15 such firms and they are relatively under-represented within the sample, which may be explained with the fact that they have not possibly met the criterion of more than 20 employees used for survey mail-out. Additionally, the quite large portion of firms, around 30%, are well-established ones with history of more than 50 years.

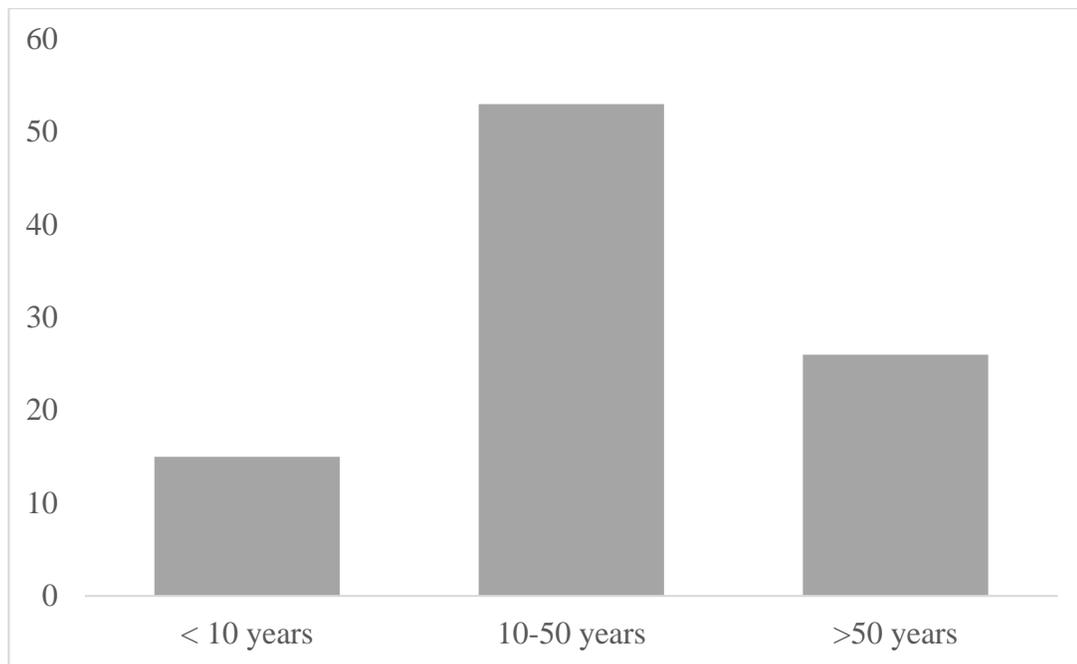


Figure 5 Distribution of response by firms' age

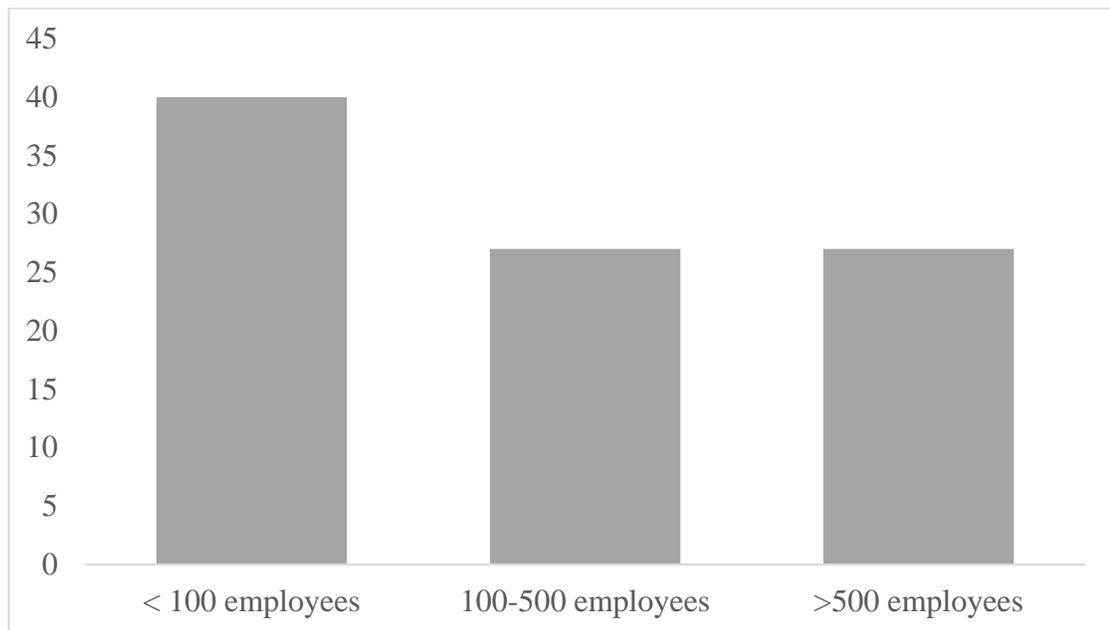


Figure 6 Distribution of responses by number of employees

As it was expected, the prevailing size of firms measured through a proxy of number of employees is less than 100 accounting for approximately 41% of the whole sample. It is worth mentioning, that we have obtained equal number of responses from firms with the number of employees in the range from 100 to 500 and more than 500 with 27% each. The distribution by number of employees within the sample is depicted in Figure 6.

In Table 7 the descriptives of the variables used are presented. The level of PAC among the sample is averagely moderate with mean equal to 32,88 (whereas maximum is 49, so representing 67% of maximum) with minimum as low as 14 (28% of 49 possible) and maximum of 49 (98% of all possible). As for the RAC, the level of it is approximately the same as for PAC, and is equal to 33,26 (68% of 49 possible). The standard deviations for both of the dimensions are relatively low.

Variable description	Variable	Mean	Minimum	Maximum	Std. Deviation
Age of a firm (logarithm)	Age	1,40	0	2,25	0,50
Number of employees (logarithm)	Emp	2,50	1,3	5	1,07
Potential Absorptive Capacity	PAC	32,88	14	48	8,63
Realized Absorptive Capacity	RAC	33,26	17	49	8,15
KM practice: work organization	WO	26,56	10	35	6,34
KM practice: supervisory work	SW	35,47	8	48	10,30
KM practice: strategic knowledge management	SKM	16,60	6	24	4,26
KM practice: training and development	TD	18,15	7	28	5,63
KM practice: knowledge-based compensation	KBC	11,35	3	21	4,85
KM practice: learning mechanisms	LM	13,76	5	21	4,49
KM practice: information technologies	IT	28,37	7	42	8,97

Organizational performance	P	27,31	8	41	7,47
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Table 7 Descriptives of variables

However, as for KM practices they are found to be under-developed within the current sample. Knowledge-based compensations showed the lowest ratio of mean to maximum possible one, that is equal to 54% with minimum as low as 3. The second lowest score according to the said ratio is strategic knowledge management with 59%. These low ratios indicate that these two KM practices field are least developed in Russia, if we allow ourselves to make generalization. Supervisory work belongs to the most developed field of KM practices with the aforementioned ration of 84% followed with work organization and 76% respectively.

Performance-wise, the mean performance represents 76% of possible maximum, thus we can conclude that generally the employees surveyed perceived performance of their companies positively.

Summary of Chapter 2

The survey was deployed as a main research strategy of this study, as it allows to gather relatively large amount of data and can aid shedding light onto casual relationships mentioned in the research questions, at the same time allowing for greater generalizability. The research is explanatory in nature and a cross-sectional one.

The survey was elaborated that consists of four sections: company and respondent's profile, absorptive capacity, knowledge management practices and performance measurement. During the survey preparation, we aimed at the usage of already established concepts and adopted scales from Khandawalla (1977) and Hsu (2008), Inkinen, Kianto, and Vanhala (2015) and Flatten et al. (2011). The control variables included number of employees as a proxy of firm size, industry and firm age.

The three sources of data gathering were used; e-mails for electronic questionnaire send out were obtained from alumni database of the Graduate School of Managements, Orbis database and personal network that allowed to gather 94 responses cumulatively.

The analysis of the responses was conducted quantitatively deploying two statistical processes: IBM SPSS and Amos, add-on module for the IBM SPSS, the former used for the first research sub-question and the latter for the second one.

As for the first research sub-question, the findings revealed that there is a positive association between knowledge management practices and dimensions of absorptive capacity. Namely, potential absorptive capacity can be influenced with the set of two knowledge management practices: those connected with learning mechanisms and those connected with work organization that is in line with the theoretical review. What is more, four knowledge management practices, specifically those connected with learning mechanisms, training and development, work organization and IT, were found to influence firm's realized absorptive capacity.

However, though in the first chapter we proposed that absorptive capacity could mediate the relationship between knowledge management practices and performance, this proposition was proved to be wrong and no significant evidence of indirect effect of knowledge management practices through absorptive capacity over organizational performance was not found.

3 DISCUSSION AND CONCLUSIONS

3.1 Findings

As it was said before, the aim of the thesis was to provide a manager with quite detailed guidelines of what specific management practices he or she should apply in order to increase firm's absorptive capacity and subsequently performance. Within this section we provide the answers according to the set research sub-questions.

1. *How do specific knowledge management practices influence the particular dimension of absorptive capacity?*

KM Practices and PAC

The model is designed to measure whether particular KM practices have significant influence over PAC in order to test the proposed relationships. As it was said before, the model was tested in three following steps:

1. In the first step we tested only control variables, namely industry, number of employees and age.
2. In the second step we added those KM practices that were proposed to affect PAC, specifically those connected to training and development, learning mechanisms, information technology and work organization.
3. In Step 3 we assessed all the KM practices used in the study.

Thus, the regression equation is shown in Equation 1 below, while the description of the variables used within the equation can be found in Table 6.

$$Y = b_0 + b_1 WO + b_2 Emp + b_3 Ind + b_4 TD + b_5 LM + b_6 IT + b_7 SW + b_8 SKM + b_9 KBC + \varepsilon,$$

Equation 1 Regression equation: KM practices and PAC

Having run the hierarchical multiple regression in IBM SPSS we have received the results, summary of which are depicted in Table 8. All the three models proved to be statistically significant ($p < 0,01$). However, variable Age was excluded, as it created unacceptable autocorrelation level as assessed by Durbin-Watson (2,654, whereas acceptable level is from $1.5 < t < 2.5$). Stage 1 model including two control variables is able to explain only 9,6% of variance, within it number of employees was not statistically significant. When the complexity was increased by adding KM

practices connected with learning mechanisms, work organization, IT and training and development, the model fit drastically rises to 54,4%, indicating the correctness of theoretical review made. The subsequent addition of variables only lowers the model fit.

Variables	Coefficients		
	Step 1	Step 2	Step 3
(Constant)	44,12***	14,467***	14,53***
Emp	-1,28	-2,29***	-2,66***
Ind	-1,32***	-0,54	-0,580
TD		-0,10	-0,13
LM		0,71***	0,76***
IT		0,09	0,09
WO		0,64***	0,70***
SW			-0,08
SKM			0,150
KBC			-0,04
R ²	0,116	0,574	0,579
Adjusted R ²	0,096	0,544	0,534
whereas p < 0,1 is “**”, p < 0,05 is “***”, and p < 0,01 is “****”			

Table 8 KM practices and PAC model description

The results suggest that control variable number of employees (if not taken as a logarithm) is positively associated with PAC implying that the bigger the firm is, the higher PAC it might have (-2,29, p < 0,01), whereby control variable industry is not statistically significant (p>0,05).

The influence of variables TD and IT has not proven to be statistically significant (p>0,1). Thus, we have not found statistically meaningful positive relationship between both KM practices associated with training and development and information technologies and PAC.

LM and PAC

KM practices connected with learning mechanisms address the way knowledge is transferred, the way a company stores the lessons learned and the way employees make use of its

exploitation. Knowledge management practices connected with learning mechanisms are positively associated with the firm's PAC (0,71, $p < 0,01$), thus meaning that the greater extent to which these practices are applied within the firm, the greater its AC.

The positive relation of LM and PAC might be explained by the fact that through elaboration of more effective learning mechanisms a firm also develops the ability to acquire and assimilate (that are two main elements of PAC) knowledge (Bosch et al. 2005). Following the logic proposed by Cohen & Levinthal (1990), the prior to learning knowledge limits the scope of knowledge search and acquisition causing path dependency. Therefore, these practices allow to increase the amount and scope of knowledge and to decrease a possible lock-out a firm might have concentrating only on the current knowledge.

As development of learning mechanisms includes the better and more efficient storage of best practices and lessons learned, it must accumulate experience that is one of the antecedents of PAC according to Zahra and George (2003). The broader scope of prior knowledge and experience might allow a firm observe a broader range of opportunities of knowledge acquisition (Cohen and Levinthal 1990). The prior knowledge gathered by firm conditioned by learning mechanisms that are deployed within it and determines the extent to which they allow the firm to get out of path dependency and observe richer environmental landscape.

What is more, learning mechanism must also influence intraorganizational antecedents of AC as they must influence the learning relationships between two firms during knowledge exchange activities (Lane, Koka, and Pathak 2006).

WO and PAC

KM practices connected with work organization are concerned with declaring duties, meetings, interaction between employees and external stakeholders and processes to enhance knowledge management efficiency. The findings showed these practices positively influence the firm's potential absorptive capacity (0,64, $p < 0,01$).

These findings are in line with the previous researches. For example, involvement of employees in decision making is suggested to be one of the antecedents of PAC and within this set of practices such choice is made (Bosch et al. 2005). Through such empowerment, the independency of employees might increase as well as the degree of centralization decrease, thus meaning that

within the frames of daily decisions the greater scope of information from greater number of actors is involved that ensures the higher quality of decisions made.

Additional impact on PAC by these practices can be traced through affecting such items as informal communication and lower degree of formalization. Through increase in informal communication, knowledge flows within firm might increase as well within as well as between departments, and therefore knowledge distribution would change, as more employees would obtain information they never received before. Through lower degree of formalization, the employees might be better able to guide their own activities and more perceptive to external opportunities, as they no longer would have to follow strict routines. Therefore, their ability to acquire and assimilate information from external environment might increase, as these practices might affect individual knowledge sharing behavior.

What is more, KM practices connected with work organization affect firm's structures and processes (Lane, Koka, and Pathak 2006). Within these structures and processes, knowledge flows within are determined. Thus, through improving the efficiency of processes, e.g. through introduction of specific processes connected with meetings, a firm could increase its AC. Lastly, these practices might determine the processes firms apply to dealing with external knowledge sources and thus allows to capture broader scope of knowledge increasing its ability both to acquire and assimilate it.

IT and PAC

KM practices connected with IT determines the extent to which ICT supports and fosters information search and discovery as well as communication within the firm. The findings revealed that there is no statistically significant relationship between such practices and PAC in contrary to our suggestions. Though these practices are claimed to affect prior knowledge base of the firm (Inkinen, Kianto, and Vanhala 2015) that us strongly connected with the firm's PAC (Todorova and Durisin 2007) and lower transaction costs and improve coordination (Alavi & Leidner, 2001), such effect was not found ($p > 0,01$). The possible explanation behind the absence of the effect might be presence of nonlinear relationship between them.

KM practices and RAC

Equation 2 represents the formula for the second model, KM practices and RAC. As with the previous equation, the variables description can be found in Table 6.

$$Y = b_0 + b_1 \text{Age} + b_2 \text{Emp} + b_3 \text{Ind} + b_4 \text{TD} + b_5 \text{LM} + b_6 \text{IT} + b_7 \text{SW} + b_8 \text{SKM} + b_9 \text{KBC} + b_{10} \text{WO} + \varepsilon,$$

Equation 2 Regression equation: KM practices and RAC

The model is designed to measure whether particular KM practices have significant influence over RAC in order to test the suggested relationships. Following the same approach, the model was tested in three steps:

1. In the first step, only control variables such as number of employees, industry and age were used as independent variables for prediction of RAC.
2. In the second step, those KM practices that were proposed to affect RAC were added including those connected to information technology and work organization.
3. Lastly, the rest of variables was added.

On finishing analysis with IBM SPSS, we provided the brief summary of the results of the aforementioned steps of hierarchical multiple regression in Table 9.

Variables	Coefficients		
	Step 1	Step 2	Step 3
(Constant)	39,768***	6,333*	5,484
Emp	0,002	-0,46	-0,729*
Ind	-1,316***	-0,396	-0,341
Age	0,033	0,014	-0,002
IT		0,561**	0,358***
WO		0,525**	0,404***
SW			-0,077
SKM			0,063
TD			0,362***
KBC			-0,042
LM			0,468***
R ²	0,159	0,742	0,827
Adjusted R ²	0,131	0,728	0,807

whereas $p < 0,1$ is “*”, $p < 0,05$ is “***”, and $p < 0,01$ is “*****”

Table 9 RAC and KM practices model description

The results of all the three steps are statistically significant ($p < 0,01$). Step 1 including only control variable is able to explain only 13,1% (as assessed by adjusted R^2) of variance. With the increase in epycomplexity by adding proposed KM practices connected with IT and work organization, the model fit was significantly raised to 72,8%. The addition of the rest of the variables leveraged it until it reached 80,7%. Given the superior model fit of Step 3, it is deployed for further analysis.

Interestingly, the control variable did not show statistical significance, the only one, number of employees, is statistically significant at $p < 0,1$, the level of which we would not accept. Thus, age of the firm and industry it belongs as well as number of employees do not condition a firm's RAC.

As we have determined in the theoretical framework, KM practices connected with IT have positive association with RAC (0,36, $p < 0,01$). It implies that the vaster amount of the IT management practices a manager applies fostering for example information search and discovery or improving communication efficiency, the higher should be the firm's RAC. What is more, we have confirmed positive relationship between KM practices connected with work organization and RAC (0,40, $p < 0,01$). Thus, the extent to which a manager is involved into setting the productive work setting for example involving the employees into decision making or establishing rather flexible work duty for them enhancing their independence.

What is more, on top of the KM practices that were proposed to have influence over RAC in Chapter 1, we have found that two other KM practices had statistically significant influence over RAC, these are the practices connected with learning mechanisms (0,47, $p < 0,01$) and training and development (0,36, $p < 0,01$) which have moderate effect over AC. Though we have not found any evidence of these in the theoretical literature, these relationships are definitely meaningful. Hence, it implies that if a manager contributes to development of information transferring processes between employees (e.g. through mentorship) and its further exploitation as well as to proving them with opportunities to deepen their expertise through various trainings (including those specifically tailored for an individual's needs), he or she will be able to enhance its firm's RAC.

LM and RAC

Knowledge management practices connected with learning mechanisms were also found to be source of RAC (0,47, $p < 0,01$). This relationship has not been suggested initially, as there was no clear link between the antecedent and these practices. However, the evidence found are significant.

We suggest that the link between these practices and RAC exist due to the following reasons. As a brief reminder RAC deals with transformation and commercial exploitation obtained with PAC. Thus, the possible explanation might be that the ability to transform knowledge also depends firstly on the processes and routines that govern dealing with knowledge and secondly on the experience of dealing with knowledge in general, that is obtained within learning mechanisms practices. Therefore, we suggest that the more a manager invests into the development of learning mechanisms, namely, into learning transfer between employees, way it is stored and exploited, the higher RAC his or her firm will have.

WO and RAC

Knowledge management practices connected with work organization were also found to be positively associated with firm's RAC (0,40, $p < 0,01$). This is in line with previous studies that claimed there was a connection between closeness of interfunctional coupling and RAC (Yeoh 2009). The connection between those two variables can be traced to the following reasons. Firstly, work design determined with these practices enables more efficient knowledge transformation. Secondly, the greater interaction between department not only increase knowledge flow, but also contributes to the understanding of business situation and thus enhances one's ability to determine the gaps to be fulfilled and to subsequently fulfill them, Thirdly, it allows to deepen internal networking creating additional links between the employees and increasing their knowledge base.

TD and RAC

Though not being suggested initially, the significant association between RAC and KM practices connected with training and development was found (0,36, $p < 0,01$). Mostly, these practices are claimed to affect the firm's knowledge base (Volberda et al. 2010), which is the antecedent of PAC, not RAC.

However, there can be few explanations to this unexpected finding. Firstly, receiving adequate training and development must increase one's ability to transform existing knowledge to connect it with the new one. Secondly, the general increase in expertise must also attribute to the ability of employees to apply the transformed knowledge to commercial means. They must be able

to better identify product and process innovation opportunities and see ways to improve it with the existing knowledge. Additionally, we claim that the presence of tailored to one's needs trainings must increase employees' motivation to work in specific areas and this motivation coupled with the expertise received must positively affect the ability to exploit the knowledge to commercial ends.

IT and RAC

Knowledge management practices connected with IT were initially suggested and further approved to have a positive association with the firm's RAC (0,36, $p < 0,01$). The influence of these practices goes in the different directions. Firstly, IT practices are able to create a common ground for interaction organization-wise bridging different organizational units and departments. It builds better degree of socialization crucial for RAC (Bosch et al. 2005). Secondly, they are claimed to increase knowledge based of the firm through providing various convenient tools for knowledge storage and retrieval (Inkinen, Kianto, and Vanhala 2015). We suggest that these practices enhances expertise of the employees allowing them to better transform knowledge they possess.

2. Does absorptive capacity serve a mediator in the relationship between knowledge management practices and organizational performance?

Already having in possession the information about which particular variables had statistically significant association with AC, we eliminated those practices that did not have such association from the current model. Hence, only the four of them left: KM practices connected with training and development, learning mechanisms, information technology and work organization.

Following guidelines of Wang and Hu (2010) we performed bootstrapping procedure with 2000 bootstrap samples and 95% bias-corrected confidence interval. The analysis yielded the following result depicted in Table 10, the indirect effect over organizational performance through AC as a mediator is low and insignificant at 95% confidence interval and two-tailed significance test for all the knowledge management practices presented in the model. Thus, we can conclude that there is no indirect effect among KM practices and organizational performance through AC.

		Variables								
Variables		IT	WO	TD	LM	Ind	Emp	Age	AC	
	AC	,000	,000	,000	,000	,000	,000	,000	,000	,000
	P	,004	,006	,001	,005	,000	,000	,000	,000	
	whereas $p < 0,1$ is “*”, $p < 0,05$ is “***”, and $p < 0,01$ is “****”									

Table 10 Estimates of the KM practices, AC and performance model indirect effects

Thus, we did not find evidence that AC mediates the relationship between knowledge management practices and organizational performance within the current sample. There are few possible explanations behind these findings.

Firstly, it might be caused with performance measurement specificity. In the previous literature, the outcome of AC is mostly measured through innovative performance only. Though the correlation between innovative and financial performance was found to be significant in the sample of developed countries (Walker, 2004), it might not be so in the emerging markets context that we are addressing.

Secondly, the sample of the firms within the study is industry-rich and is not limited by only technological companies. Not-technological companies are claimed to be less involved into innovative activities and thus must benefit less from its increase from AC development. And if assume that the main outcome of AC is innovative one, the non-reflection of building AC onto firm’s performance is quite understandable

The other possible reason for the absence of proposed relationship is that the financial performance and innovative performance do not occur at the same time, but are time-lagged. As this study is not longitude in nature, the current research strategy probably was not able to capture the subsequent increase in financial performance after innovative performance enhancement.

3.2 Theoretical Contributions

The crucial problem of lack of practical perspective on how firms’ AC can be approached by managers is attempted to be addressed with this research. The study investigated the relationship between the prominent components of the management literature: knowledge management practices, absorptive capacity and performance. Theoretical implications are discussed further.

Firstly, grounded onto the careful literature review, antecedents of AC were determined and classified. The classification is based on the work of Volberda et al (2010) and enriched with important articles on the topic written later. It comprises 5 groups of factors: managerial antecedents, intraorganizational antecedents, interorganizational antecedents, prior related knowledge, social integration mechanism and environmental conditions. Therefore, with this classification we contribute to the increase of understanding the dynamics of AC concept increasing the variety of factors within it (Zahra and George 2002; Todorova and Durisin 2007; Volberda, Foss, and Lyles 2010; Lane and Lubatkin 1998).

Secondly, we contributed to understanding of the concept of KM practices by highlighting discrepancies in its definition, and bridging one of the most prominent one, that defines KM as intentional management practices that which support the efficient and effective management of knowledge for organizational benefit (Schiuma, Andreeva, and Kianto 2012), with the current theories on actions that correspond to this definition (Husted and Michailova 2002; Massingham 2014b; Gold and Arvind Malhotra 2001) (though sometimes not being called KM practices). Additionally, we have justified and elaborated the benefits of classification of KM practices introduced by Inkinen, Kianto, and Vanhala (2015), proving that it comprises all the relevant elements investigated in the field in the previous researches. Thus, we have defined, justified the usage and enumerated the 10 specific groups of KM practices connected with supervisory work, KM strategy, work organization, training & development, etc.

Thirdly, we developed theoretically and tested empirically the link between particular dimensions of AC and the aforementioned KM practices. The logic behind the connection between the said components is that specific KM practices are able to influence specific antecedent of AC, thus increasing its overall level. The establishment of the link contributes to the theories describing AC as a dynamic capability that can be enhanced (Volberda, Foss, and Lyles 2010; Zahra and George 2002) and also sheds light onto the noted need to find how managerial actions can affect it (Lewin, Massini, and Peeters 2011; Lane, Koka, and Pathak 2006). To establish the links, we used aforementioned KM practices, the majority of which were suggested to have connections with AC through influence over antecedents according to the theoretical review, these connections are mentioned in Table 2. However, not all of the proposed practices were found to comply to our initial suggestions, thus providing a challenge for the topic further development and clarification. Specifically, we found evidence of four practices to affect either a particular or both dimensions of PAC. Additionally, we separate the effect of KM practices on particular dimensions of AC, namely

PAC and RAC, thus increasing understanding of them (Fosfuri and Tribo 2008; Enkel and Heil 2014) through elaborating the reasons behind these influence. What is more, we established the link between particular KM practices and these dimensions, thus showing how managerial actions can influence them, the need to understand which was underlined (Volberda et al, 2010). This connection was established on the micro level and to some extent the said KM practices can be treated as AC routines (Lewin, Massini, and Peeters 2011). Additionally, the link establishment contributes to realization of the wide range of the outcomes that KM practices can have on organization, that is extended from intellectual capital (Inkinen, Kianto, and Vanhala 2015) to AC in the case of the paper.

Lastly, we have investigated the influence over AC over firms' performance and noted the lack of the researches on the topic beyond innovative performance (From intro). Thus, we have proposed to connect AC influence with organizational performance including wide array of parameters assessing both financial and organizational factors. The model built reflected the following reasoning: based on the literature review we understood that AC influences performance; based on the first research question answer we realized which KM practices affect AC, thus we suggested that KM practices might also influence organizational performance whereas AC served as a mediator. However, the empirical findings showed that the indirect effect of KM practices over organizational performance is negligible and insignificant. With the understanding of it, we have contributed to understanding of to what extent KM practices can influence organizational performance through AC. Though the evidence of relationship was not found, the possible explanations behind it should urge the researchers of AC performance outcomes to estimate both innovative and organizational performance or apply longitude design to understand the reasoning behind it.

3.3 Managerial Implications

The managers today face the greater complexity of environment both from side of competitors and customers and also fast-paced technological change. In order to remain competitive one should be able to exploit external sources of knowledge to the maximum, that ability can be described as AC. Therefore, to enhance it, a manager can follow the set of practices described within this research. The set of intentional and conscious knowledge management practices was presented and the effect they have over particular dimensions of absorptive capacity was tested. Though we have not found the presence of indirect impact of absorptive capacity over performance, there are

studies that explicitly tells that there such effect exists (Kostopoulos et al. 2011; Lane, Salk, and Lyles 2001; Fosfuri and Tribo 2008). Therefore, the identified managerial practices can aid a manager in increasing his or her firm's performance.

AC is a multidimensional concept consisting of potential and realized components and these components are claimed to be not just summation (Volberda et al. 2010). As we have discussed before, the effectiveness of AC is also determined with the connection between PAC and RAC that is done through social integration mechanisms (Zahra and George 2002). Therefore, a manager can diagnose the current level of PAC and RAC a firm has and address the opportunities of its enhancement with the knowledge management practices we have tested.

More than that, a manager can also identify which dimension of AC capacity is underdeveloped and address it with the specific KM practices. For example, to address PAC, the two groups of knowledge management practices can be used: those connected to learning mechanisms and those associated with work organization, as our study has found the positive correlation between them and PAC. Concerning the former, they mainly tackle the methods of knowledge transfer from experienced to experienced employees and includes practices such as mentoring. What is more, it addresses the way a firm stores lessons learned and best practices and the way they are further exploited. As for those connected to work organization, they are making use of managers' ability to set the duties for employees, declare the formats of meetings (formal or informal, equal discussion or not), etc. to increase knowledge flow effectiveness. Therefore, a manager establishing knowledge-friendly learning mechanisms and work organization will be able to take advantage of higher PAC and enjoy more efficient knowledge acquisition and assimilation.

If speaking about RAC, set of four KM practices is positively associated with higher level of it. These practices are those connected with IT, work organization, training and development and learning mechanisms. As two of them were already discussed we would continue describing the rest. IT practices includes the improvement the extent to which information technologies foster knowledge search and communication within company. Training and development practices comprises the provision of employees with training (general and tailored to individual needs), their needs discussion. Thus, through provision of training, improving IT systems, enhancing learning mechanisms and increasing efficiency of work organization, one could improve RAC.

3.4 Limitations and Directions for Future Research

There are few following limitations of the research.

Firstly, as it was already mentioned we concentrated on organizational performance outcome of absorptive capacity. The future research might address these gap by also introducing innovative performance in the model, thus being able to judge not only how absorptive capacity increase innovative performance, but also how innovative performance increase financial performance, that would give a greater degree of explanatory power to the model of relationship.

Secondly, the limitation might be also presented with cross-sectional design of the study, as the innovative performance outcomes might not be able to transform into financial ones immediately. Thus, introduction of longitude research might eliminate this limitation, as it can capture the time-lagged nature of this translation.

Thirdly, the generalizability of the results is under question. The results cannot be generalized to all the emerging markets due to the specific features of the environment of Russia Federation. Future research may confirm the results of this study on the other emerging markets and compare them to those of Russia.

3.5 Conclusions

Within this study we tried to elaborate on the answers to the two research sub-questions: how specific KM practices influence particular dimensions of AC and whether AC serves a mediator in the relationship between KM practices and organizational performance.

Having conducted literature review, we provided the integrative model of antecedents of AC based on that of Volberda et al (2010) that combines the relevant up-to-date researches. In addition, we brought the recent definition of KM practices to historical researches and came up with the justified choice of the most appropriate classification based on the comparison of different views, that includes ten knowledge management practices. Lastly, we developed a theoretical connection between KM practices and AC with the following logic: KM practices might influence the antecedents of AC and AC subsequently. Within this relationship, we split AC into two dimensions, PAC and RAC, and traced the influence of a particular KM practice to each.

To reveal the answers for the research questions stated, survey strategy was deployed, the survey that was sent out measures the three said components (AC, KM practices and organizational performance). Having collected the responses, we analyzed them quantitatively and came up with

the following results. As proposed KM practices connected with work organization and learning mechanisms influence PAC through development of knowledge-friendly environment and employees' learning skills and knowledge base respectively. As for RAC, we have found that it could be influenced by four KM practices. Transformation and exploitation of knowledge, two main components of RAC, are affected with learning mechanisms that might increase ability to transform knowledge; work organization that might improve the working environment, IT that might foster knowledge transfer, and training and development that might increase employees' ability to transform and exploit knowledge as well as their motivation to do so. However, we have not found the evidences that AC serves a mediator in the relationship between KM practices and organizational performance, and suggest that in the future researches both organizational and innovative performance should be measured in order to understand the reasons behind it.

What is more, we provided managers with the connection between conscious and intentional actions and AC. Having diagnosed the level of AC within his or her firm, a manager can address particular dimension of it, PAC or RAC, with the set of specific practices. If he or she understands, that, for example, PAC of the firm is relatively low, KM practices connected with learnings mechanisms or work organizations can be applied.

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and Extension.” *Academy of Management Review*. doi:10.5465/AMR.2002.6587995.

APPENDIX 1 SURVEY

Respondent's profile:	Please fill in or select appropriate response
1. Your position	
2. Management level	
3. Years on this position	
4. Country of origin	
5. Age	
6. Gender: Male/Female	

Company's profile:	Please fill in or select appropriate response
7. Industry	
8. Headquarters location (country)	
9. Number of employees	
10. Age (year of foundation)	
11. Geographic scope of operations Global/regional/domestic	

Absorptive Capacity		
Knowledge Acquisition: <i>Please specify to what extent your company uses external resources to obtain information (e.g., personal networks, consultants, seminars, internet, database, professional journals, academic publications, market research, regulations, and laws concerning environment/technique/health/security):</i>		1=Strongly disagree 7= Strongly agree
1	The search for relevant information concerning our industry is every-day business in our company.	1 2 3 4 5 6 7
2	Our management motivates the employees to use information sources within our industry.	1 2 3 4 5 6 7
3	Our management expects that the employees deal with information beyond our industry.	1 2 3 4 5 6 7
Assimilation: <i>Please rate to what extent the following statements fit the communication structure in your company:</i>		

3	In our company ideas and concepts are communicated cross-departmental.	1	2	3	4	5	6	7
4	Our management emphasizes cross-departmental support to solve problems.	1	2	3	4	5	6	7
5	In our company there is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments.	1	2	3	4	5	6	7
6	Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements.	1	2	3	4	5	6	7
Transformation: <i>Please specify to what extent the following statements fit the knowledge processing in your company:</i>								
7	Our employees have the ability to structure and to use collected knowledge.	1	2	3	4	5	6	7
8	Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available.	1	2	3	4	5	6	7
9	Our employees successfully link existing knowledge with new insights.	1	2	3	4	5	6	7
10	Our employees are able to apply new knowledge in their practical work.	1	2	3	4	5	6	7
Exploitation: <i>Please specify to what extent the following statements fit the commercial exploitation of new knowledge in your company (NB: Please think about all company divisions such as R&D, production, marketing, and accounting):</i>								
11	Our management supports the development of prototypes.	1	2	3	4	5	6	7
12	Our company regularly reconsiders technologies and adapts them accordant to new knowledge.	1	2	3	4	5	6	7
13	Our company has the ability to work more effective by adopting new technologies.	1	2	3	4	5	6	7

Knowledge Management Practices							
Supervisory work:							
	Supervisors encourage employees to share knowledge at the workplace	1	2	3	4	5	6 7
	Supervisors encourage employees to question existing knowledge	1	2	3	4	5	6 7
	Supervisors allow employees to make mistakes, and they see mistakes as learning opportunities	1	2	3	4	5	6 7
	Supervisors promote equal discussion in the workplace	1	2	3	4	5	6 7
	Supervisors value employees' ideas and viewpoints and take them into account	1	2	3	4	5	6 7
	Supervisors share knowledge in an open and equal manner	1	2	3	4	5	6 7
	Supervisors continuously update their own knowledge	1	2	3	4	5	6 7
Strategic management of knowledge competence							
	Strategy is formulated and updated based on company knowledge and competences	1	2	3	4	5	6 7
	Strategy addresses the development of knowledge and competences	1	2	3	4	5	6 7
	Strategic knowledge and competence is systematically benchmarked against competitors	1	2	3	4	5	6 7
	The responsibility for strategic knowledge management has been clearly assigned to a specific person	1	2	3	4	5	6 7
Knowledge-based training and development							
	Employees are provided with opportunities to deepen and expand their expertise	1	2	3	4	5	6 7
	The company offers training that provides employees with up-to-date knowledge	1	2	3	4	5	6 7

	The employees have an opportunity to develop their competence through training tailored to their specific needs	1	2	3	4	5	6	7
	The employees' development needs are discussed with them regularly	1	2	3	4	5	6	7
Knowledge-based compensation								
	The company rewards employees for sharing knowledge	1	2	3	4	5	6	7
	The company rewards employees for creating new knowledge	1	2	3	4	5	6	7
	The company rewards employees for applying knowledge	1	2	3	4	5	6	7
Learning mechanisms								
	Knowledge is transferred from experienced to inexperienced employees through mentoring, apprenticeship ,and job orientation, for example	1	2	3	4	5	6	7
	The company systematically collects best practices and lessons learned	1	2	3	4	5	6	7
	The company makes systematic use of best practices and lessons learn	1	2	3	4	5	6	7
IT practices								
	Technology is utilized to enable efficient information search and discovery	1	2	3	4	5	6	7
	Technology is utilized to enable internal communication throughout the organization	1	2	3	4	5	6	7
	Technology is utilized to communicate with external stakeholders	1	2	3	4	5	6	7
	Technology is utilized to analyze knowledge in order to make better decisions	1	2	3	4	5	6	7
	Technology is utilized to collect business knowledge related to its competitors, customers, and operating environment, for example	1	2	3	4	5	6	7

	Technology is utilized to develop new products and services with external stakeholders	1	2	3	4	5	6	7
Work organization								
	Employees have an opportunity to participate in decision making in the company	1	2	3	4	5	6	7
	Work duties are defined in a manner that allows for independent decision-making	1	2	3	4	5	6	7
	Informal interaction is enabled between members of our organization	1	2	3	4	5	6	7
	Face-to-face meetings are organized when necessary. When necessary, working groups with members who possess skills and expertise in a variety of fields	1	2	3	4	5	6	7
	Working groups with members who possess skills and expertise in a variety of fields	1	2	3	4	5	6	7
	When needed, our company makes use of various expert communities	1	2	3	4	5	6	7

Perceived Performance								
1	The company has higher long-run profitability than its competitors.	1	2	3	4	5	6	7
2	The company has higher growth prospect in sales than its competitors.	1	2	3	4	5	6	7
3	The company's employees have higher productivity than those of competitors.	1	2	3	4	5	6	7
4	The company has better goodwill than its competitors.	1	2	3	4	5	6	7
5	The company has better quality products or services than its competitors	1	2	3	4	5	6	7