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ANALYSIS OF MODERN KNOWLEDGE MANAGEMENT PRACTICES ON THE EXAMPLE OF RUSSIAN EDUCATIONAL ORGANIZATIONS

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CONTENTS

INTRODUCTION

Relevance of the research topic

In today's economy, knowledge is a valuable resource for creating a sustainable competitive advantage [Grant, 1996; Davenport, Prusak, 1998; Andreeva, 2009; Panikarova, Vlasov, 2019; Telnov et al., 2022; Dneprovskaya, Shevtsova, 2023].

Knowledge management is an organizational discipline that deals with the collection, development, accumulation, use and/or utilization of knowledge. Knowledge management is a fundamental tool for an organization because it generates value [Oliva, 2014], adds value [Nonaka, 1994], and contributes to the realization of the organization's goals [Milner, 2008; Santoro et al., 2018; Oliva et al., 2019; Santoro et al., 2019; Vrontis et al., 2019].

Knowledge management helps organizations effectively use existing intellectual resources, which allows them to create new products and services, improve the quality of existing products and increase competitiveness in the market. Knowledge-driven organizations are able to deliver better products and services to their customers, increasing customer satisfaction and building brand loyalty. Knowledge management contributes to the introduction of new technologies, methods of work and approaches to solving problems into the production process, which makes such organizations more flexible, able to adapt to changing market conditions and quickly respond to changes in the external environment.

Digital transformation, intensive information flows and processes strengthen the role of knowledge, since they are closely related to another important and scarce resource – time [Raskov, 2007; Katkalo, 2008; Klemina, 2008; Ragab, Arisha, 2013; Klemina, 2013; Telnov et al., 2022; Kainova, Volkova, 2023]. The result of such differentiation is differences in the efficiency of the use of the organization's resources. A number of authors explain the effectiveness of economic entities by the use of knowledge management practices [Dalkir, 2005; Gavrilova and Muromtsev, 2008]. Knowledge management practices are a set of actions performed in each department of the

organization in the context of the involvement of key knowledge processes: acquisition or creation, storage, distribution and use.

According to research [Gavrilova, 2001; Glubokova, 2010; May and Stewarl, 2013, Andreeva and Kianto, 2014; Zhernov, 2020; Kainova, Volkova, 2023], many organizations, going through the stage of their formation through knowledge management, do not fully understand the main elements of the knowledge management system and their functional components [Panibratov, Verba, 2011; Sheresheva, Buzulukova, 2012; Shirokova, Bystrova, 2014; Shirokova, Ivvonen, Gafforova, 2019; Ilchenko, 2022]. With a deeper assessment of key issues in such areas of knowledge management as the systematic accumulation and transfer of knowledge necessary for making managerial decisions, dysfunctional knowledge management in the organization becomes a significant problem that determines the effectiveness of the management apparatus as a whole.

The lack of a knowledge management strategy reduces the company's ability to use knowledge to improve the efficiency of its activities. In this case, the use of technology does not achieve the desired result; Sometimes employees are not sufficiently motivated – they are not interested in sharing their knowledge with others and do not see the value in it. Some employees may even hide their skills, abilities and knowledge. Resistance to changes in the organization's production processes and culture is also important, because if employees resist these changes, they can sabotage any knowledge management activities. In the absence of communication between employees of the organization, there is a situation where they are incompletely informed about the amount of knowledge available in the organization. At the same time, some of the staff may not have access to corporate information at all, which leads to a discrepancy between the level of knowledge of individual employees and the needs of the business.

An important factor is the redundancy and irrelevance, and often the uselessness of some knowledge. To overcome these forms of knowledge management dysfunction, it is necessary to develop adequate knowledge management strategies that will meet the needs of the company, implement effective technologies, motivate employees to share

knowledge, overcome resistance to change and improve communication within the organization, as well as contribute to increasing the innovation of the organization.

The achieved results of the innovative development of Russian organizations are well described in scientific publications [Gavrilova et al., 2004; Foss et al., 2010; Saprykin, Bochkova, 2021; Silakova, Grigoriev, 2021]. However, some authors [Vlasova, Fridlyanova, 2022; Toivonen, 2022] note that there are some enterprises where management innovations are undervalued, which acts as a deterrent to the successful implementation of changes in organizations. The complexity of the problem is exacerbated by the danger of frequent organizational changes, which lead to an overabundance and saturation of information and data [Gavrilova, 2001; Chesbrough, 2003; Gavrilova and Grigoriev, 2004], as well as the tight deadlines for the implementation of knowledge management practices in organizations. Thus, for the effective implementation of a knowledge management system [Knowledge Management Standard ISO/DIS 30401, 2017; Gavrilova and Kudryavtsev, 2009], there is a lack of in-depth analysis, development and study of the application of specific working practices of knowledge management, as well as the subsequent accumulation and systematization of experience within the framework of its application in the organization.

This study aims to identify and fill gaps in the field of research and methodology of knowledge management practices through the theoretical study of existing scientific works, as well as conducting a survey. The presented dissertation meets the direct challenges of previous research [Sheresheva, Buzulukova, 2012; Shirokova, Bystrova, 2014; Shirokova, Ivvonen, Gafforova, 2019; Ilchenko, 2022; Andreeva, Kianto, 2012; Wu, Chen, 2014; Chang, Lin, 2015; Sivakumar, Lourthuraj, 2017; Singh, 2018]. In particular, the work is devoted to the analysis of knowledge management practices in Russian educational organizations. Most modern scientific studies include Russian organizations in the observed samples, but do not focus exclusively on one country, for example, Russia. Also, unlike previous studies, which were mostly conducted at the level of the whole country [Schiuma, 2009; Andreeva, Kianto, 2012; Bigliardi et al., 2014], in the presented study, the analysis was carried out at the organizational level.

In the prevailing majority of existing studies, quantitative analysis methodology is used, which allows you to obtain deep meaningful knowledge about the subject of research and come to an understanding of the features of knowledge management. However, in this dissertation research, qualitative methods were also used, which made it possible to identify the features of the Russian market and its historical specifics of development. The results obtained by qualitative research methods made it possible to understand the mechanisms for the implementation of knowledge management practices in educational organizations and to propose directions for their further research, evaluation and application.

Knowledge is an important resource for organizations [Saprykin & Bochkova, 2021; Silakova & Grigoriev, 2021; Rahman et al, 2018; Ferreira, Carayannis, 2019, Garcia, Sosa-Fey, 2020]. Previous studies [Huang, Chin, 2018; Shehata, 2020] emphasize the importance of knowledge management, showing that it is a significant tactical characteristic of any organizational process [Martinez-Conesa et al., 2017; Shehata, 2020]. As a result, knowledge management has become an integral part of organizational success [Khasanova, 2017; Srinivasan et al., 2020; Boyko, Dmitriev, Ilchenko, 2021]. However, well-known foreign knowledge management strategies are not always sufficient and reliable for use in countries with a different type of economy and with different values [Reshetova, 2019; Kolganov et al., 2022; Toivonen, 2022; Oluikpe, 2012; Henderson et al., 2014; Giglio et al., 2018; Al-Kurdi et al., 2018;]. The researchers note [Giampaoli et al., 2017] that "knowledge management in the education sector is a rather neglected area within the discipline of knowledge management" and justify the need for more research in this area. Such research will expand the scientific field of knowledge management, which will contribute to the further development of the capabilities of educational organizations [Kolganov et al., 2022].

In the literature, there are sometimes contradictions and some misunderstanding of the national specifics of knowledge management practices [Alex et al., 2017; Tuguskina, Rozhkova, Salnikova, 2019]. Some authors note that among the reasons for underestimating knowledge management practices are the lack of strategic leaders involved in the activities, development and promotion of knowledge management, the

presence of a rigid organizational structure, the lack of a developed corporate culture and standard motivation programs [Muqadas et al., 2017, Secundo, Schiuma, Jones, 2019; Srinivasan et al., 2020]. Among the factors hindering the implementation of knowledge management practices in organizations are: the lack of a consistent and planned strategy for the implementation of knowledge management, the lack of consideration of the socio-cultural context, and the underestimation of the role of top management in this process [Gutnikova, 2003; Milner, 2008; Okeke, 2017; Dorofeeva, Zlenko, 2018; Vlasova, Fridlyanova, 2022; Toivonen, 2022]. The literature also notes such individual negative factors as the lack of critical thinking, lack of transparency in the available knowledge and management strategy, authoritarian management style or excessive democracy, insufficient material remuneration for knowledge sharing, and others.

In the presence of such a set of problems, it is important to identify working tools (KM practices) that are applicable taking into account the Russian specifics and to analyze the barriers that are present in the processes of knowledge exchange.

Problem of the research

In this research, the problems of knowledge management are considered at three levels:

- at the market scale,
- at the level of the organization, and
- at the individual level.

a) **On a market scale**, knowledge resources and their application can be used by organizations, including educational ones, to maintain a competitive advantage in the current difficult economic conditions of staff reduction in workplaces, shortage of personnel, increase in the age of the able-bodied population and complication of external economic conditions.

Layoffs in the workplace. In the current economic conditions, the number of vacancies in the labor market is decreasing – since 2022, the first wave has taken place associated with decisions to suspend previously planned hiring [Tabakh, Podrugina, 2022]. This was followed by a reduction in the number of active jobs, as companies are

forced to reduce recruitment to reduce costs [Kolobova, 2022; Mitina, 2022; Demidkina, 2023].

Lack of personnel. In the first quarter of 2023, Russian enterprises recorded a record shortage of personnel since the beginning of observations (1998), which follows from a survey by the Central Bank [Koryakin, 2023]. Manufacturing industries, companies in the fields of water supply, storage and transportation, education faced the greatest problems in terms of providing workers, representatives of trade and the service sector complain less than others about the lack of personnel [Krivkina, 2011; Metelev, 2014; Baykalova, 2016; Manuilova, 2023]. From the point of view of knowledge management, this means that knowledge will flow out of organizations, making it impossible to store and accumulate it, as well as use it in activities to improve organizational development in the current economic environment [Metelev, 2014; Vyakikh, Bakaeva, 2015; Kleiner, 2020; Panibratov, 2021].

Increase in the age of the able-bodied population. The share of workers over 40 years old will exceed 60% in our country by the end of this decade, while the number of citizens of active working age will decrease by about 2.6 million people, as a new study by the Higher School of Economics (HSE) shows [Voron, 2022]. In the next 5-10 years, the Russian economy will face a reduction in the number of able-bodied citizens and a general aging of the population [Denisenko and Varshavskaya, 2017; Dobrokhleb, 2018; Varshavskaya, 2020; Dobrokhleb, 2022; Solovyova, 2022]. However, in Russia, there is not just an aging of the working-age population, but an accelerating depopulation, as noted by scientists from the Center for Interdisciplinary Research of Human Capital at the Higher School of Economics [Denisenko, Varshavskaya, 2017; Varshavskaya, 2020; Voron, 2022]. From the point of view of knowledge management, this means the withdrawal of knowledgeable competent employees from the labor market, the potential impossibility of preserving and accumulating knowledge within the organization in the absence of a knowledge management policy and the use of knowledge management practices, the inability to use knowledge in current activities and improve the results of the organization's activities in the current difficult conditions.

The listed factors unfavorable for the growth and development of educational (as well as other) organizations relate to the external environment [Shakina, Barajas, 2015; Aleinikova, Brazhnikov, 2016; Kleiner, 2020; Shirokova et al., 2021; Lyashok, Varshavskaya, 2022].

b) If we consider **the internal environment of the organization**, then there are a number of typical problems here as well. Before the start of the study, several unstructured interviews were conducted among representatives of Russian organizations in order to substantiate the actual need for the study and confirm the real existence of the research problem. A total of 48 unstructured interviews were conducted among directors and managers of education, marketing, and advertising organizations to determine the current development and extent of knowledge management use in organizations. The following statements describe some of the problematic situations in the organization (key topics voiced by respondents):

- Lack of a single systematized centralized data repository and limited access to information and data, which indicates that organizations do not accumulate incoming data for subsequent use or do not do so in a systematic and orderly manner;
- Lack of effective communication between different units and departments, which indicates weak communication between employees and the lack of channels for the dissemination of information and knowledge, as well as a lack of motivation and rewards for the dissemination of knowledge;
- The presence of mass paper archives and the reluctance to implement/use the electronic/cloud storage format, which entails an increase in the time for processing a request to search for information and necessary knowledge;
- Duplication of R&D tasks and applications, as well as high average age of the researcher or knowledge manager;
- Lack of a unified policy in the field of intellectual property of the organization and the protection of intangible assets.

The designated list of typical problems forms barriers to the proactive behavior of the organization, including in the field of knowledge management. All these features form

the assumption that Russia, as a country with a multidisciplinary innovative economy, has its own ways of development and therefore the use of existing foreign practices of knowledge management may not lead to the desired result. This situation is caused by several reasons: the specifics of the national mentality, partial unpreparedness and unwillingness of the organization to implement practices, underestimation and lack of understanding of the need to specifically deal with knowledge management issues in the organization.

Thus, a set of knowledge management practices should be formed and adapted taking into account the specifics of the Russian reality. Summarizing the identified problem areas, it should be noted that there is a desire of organizations to use and implement knowledge management practices while at the same time not understanding the application of these practices in their daily work.

The main complexity of the study is reinforced by the fact that knowledge management practices naturally arise in an organization, regardless of whether a formal policy has been adopted for their implementation and use or not [Wee & Chua, 2013; Zhernov, 2018; Ryazanov, 2019; Frolov, 2019]. However, without proper control from, first of all, the strategic management of the organization, the development of such knowledge management practices does not lead to an improvement in the organization's performance.

c) In addition to these issues, another significant group of problems related to the human factor is raised in the scientific literature. This group is based on the level of individual managers and employees of the company, i.e. **at the level of the individual**:

- persistent information overload [Zhuang et al., 2011; Soto-Acosta et al., 2014; Lauri et al., 2021; Bink and Corrigan, 2022];
- increasing the required speed of information processing inside and outside organizations [Brockbank et al., 2018; Bhat, Zahid, 2018];
- synergistic effect of collective knowledge [Chuang et al., 2016; Kim et al., 2016; Huang, Chin, 2018; Shehata, 2020], which does not occur when disconnected;

- the need for continuous learning and development of both the individual and the organization as a whole [Kim et al., 2016; Huang, Chin, 2018; Bink, Corrigan, 2022].

Degree of development of the research topic

In the field of knowledge management, a number of fundamental scientific works stand out, in which the conceptual basis for further research was laid. These include:

- knowledge management as structuring the experience of employees [Teylor, 1991], the model of interaction between explicit and implicit knowledge by Nonaka and Takeuchi [Krogh G., Ichijo K., Nonaka I., Nonaka I., Takeuchi H., 1995];
- management of the environment in which knowledge is located, and not by the knowledge itself, by Davenport T., Prussak L. [Davenport T., Prussak L., 1999], Disperse and Chavel [Despres Ch., Chauvel D., 2000];
- the processes of profiting from the applied knowledge of Bukovich and Williams [Bukovich U., Williams R., 2002] and Stewart [Stewart T.A., 1998].

Studies of Russian scientific centers have also been recognized [Milner, 2003; Tuzovskiy, Chirikov, Yampolskiy, 2005; Minina et al., 2010; Bolotnikova, Gavrilova, Gorovoy, 2011; Budlyanskaya, 2015].

Knowledge, innovation and the opportunities they provide are central topics of scientific research devoted to the strategy and organization of the current activities of organizations. In particular, knowledge is the most significant resource for organizations in which innovative developments are developed and/or supported to one degree or another [Budlyanskaya, 2015; Papa et al., 2018; Papa et al., 2022], and are key differentiating factors in real-world activities [Del Giudice and Maggioni, 2014]. Depending on the goals of the organization, knowledge can be used to increase the estimated value of the organization [Andreeva, 2009; Vrontis et al., 2021]; therefore, knowledge resource management is a practice established in an organization to ensure the efficiency of its activities and create high added value in today's dynamic environment [Oliva et al., 2019].

Use of knowledge management practices and processes [Bukovic, 2002; Weber, 2003; Seleim, Khalil, 2011; Del Giudice, Della Peruta, 2016; Xue, 2017; Shams et al.,

2019] represents a significant driver of innovation [Inkinen, 2016] and can be considered as a key indicator of a company's performance. As a result, knowledge management also has an impact on financial performance, in this context, knowledge can be considered as a resource that can be used to benefit from the uncertainty of the external environment [Battisti, Graziano, 2019]. Educational organizations play a key role among consolidated models in the market and in generating innovations that create value for the majority of society [Oliva, Kotabe, 2019; Paoloni, Modaffari, 2021]. In particular, in a highly uncertain global environment [Damilano et al., 2018], in which change is constant, the effectiveness of dispersed knowledge management is a crucial factor in the success of an organization's activities [Kalmykova, 2019; Fischer et al., 2021].

When applying knowledge management practices in an organization, there are obstacles that are called knowledge exchange barriers in science. Barriers to knowledge sharing can arise for several reasons. For example, in some countries there may be restrictions on the transfer of information or on access to sources of knowledge. Organizations may also face difficulties in making decisions, as information may not be available or incomplete. In Russia, the main barriers to knowledge exchange are the lack of automation of knowledge management, the insufficient use of information technologies for storing, analyzing and transferring knowledge, as well as the lack of standardization of knowledge management processes [Kazantsev, 2002; Rudenko and Vinzhegin, 2009].

In Russia, as in many countries, there is no single generally accepted knowledge management system that could be adapted for use in different organizations. The creation of such a universal system is difficult due to the specifics of industries and organizations. Therefore, in Russia, most organizations are forced to apply individual approaches to the development and implementation of knowledge management systems that meet their specific needs and goals [Katkalo, 2008; Skaletsky, Shirokova, Gafforova, 2018; Batkovsky et al., 2015; Telnov et al., 2023]. The main enabling factors are technology, organizational structure, and organizational culture [Lee and Choi, 2014; Kianto, 2011; Tkachenko et al., 2020; Rogozin, 2023].

A number of barriers arise in the creation of such a system. Barriers arise mainly in the transfer of knowledge. Knowledge transfer is one of the processes that is considered more often than other knowledge management processes in modern literature [Blagov, Pleshkova, 2017; Alvarez-Meaza et al., 2020; Aljazzazen et al., 2021].

The results of research in the field of knowledge management also show various relationships between knowledge management and other important areas of the organization's activities. In particular, knowledge management has a positive effect on:

- Innovation [Shujahat et al., 2019; Kianto, 2011; Tkachenko et al., 2020; Rogozin, 2023];
- human resource management, for example, in satisfaction with the working conditions of the organization's employees [Kosheleva et al., 2012; Kianto, Andreeva, 2014; Tkachenko et al., 2019; Kosheleva et al., 2021];
- marketing, for example, to increase value for the consumer [Grant, 1996; Sheresheva, Buzulukova, 2012; Sheresheva, Valitova, Berezka, 2017; Sheresheva, 2014; Shujahat et al., 2017].

The relationship between the use of knowledge management practices and organizational performance has been considered in many works on organizational performance management [Holden, 2013; Kushwaha, Rao, 2015], organizational culture [Holden, 2013] and organizational structure [Ivanov, 2010; Holden, 2013; Kianto, Andreeva, 2014; Kim et al., 2021, Khazieva et al., 2018; Khazieva et al., 2021].

Knowledge management in modern organizations includes two strategies: orientation towards the codification of knowledge and its personalization [Ilchenko, 2006]. Although knowledge management has not yet become widespread and/or a separate type of activity and management in Russian companies, in recent years there has been a general trend towards abandoning the strategy of information systematization (codification) in favor of personalization.

Attempts to combine elements of both strategies are also diagnosed [Cao et al., 2022; Aljazzazen, Schmuck, 2021; Oliveira et al., 2021; Munoz-Pascual et al., 2019]. Abroad, the development of knowledge management for many companies has entered the stage of maturity or active testing of practices and tools. In the context of Russian

organizations, there is a transition from the formation of the field to descriptive analysis and testing of the existing variety of knowledge management practices. At the same time, the relationship with the performance of organizations in different industries is actively considered [Gavrilova et al., 2014; Linzalone, Schiuma, Smmirato, 2020].

The presented study made it possible to identify a number of gaps that exist in the scientific literature on the topic under study, which can be formulated as follows:

1 – lack of a unified methodology for using knowledge management practices in higher education organizations;

2 – lack of understanding of the mechanism of key knowledge management practices and the prevalence of empirical testing;

3 – lack of attention of researchers to the use of rare practices of knowledge management and prevailing attention to practices that are developed in educational institutions abroad;

4 – lack of classification of barriers to knowledge sharing, which play a key role in the use of knowledge management practices in any organization, including educational ones.

The results of the study made it possible to contribute to the theory and practice of knowledge management.

Aim and objectives

The **aim** of the study is to identify the most effective and promising practices of knowledge management in Russian educational organizations. To achieve this goal, the following research **objectives** were set:

o1 – to analyze modern research in the field of knowledge management practices;

o2 – to verify the classical model of knowledge management practices for educational organizations;

o3 – to develop a new classification of knowledge management practices applicable to the use in the activities of an educational organization;

o4 – to identify and describe the variety of the most and least used knowledge management practices in Russian educational institutions;

o5 – to study the barriers to knowledge sharing in the implementation of knowledge management practices.

Object of research: Russian educational organizations (in particular: educational organizations of professional higher and vocational secondary education). **Subject of research**: knowledge management practices. In Russian educational organizations, various knowledge management practices are used, such as: the creation of a unified information environment, training and development of personnel, the use of technologies for knowledge management, the formation of a culture of knowledge sharing, the development of their own knowledge management practices and the use of artificial intelligence methods as an innovative direction. In order to systematize the presented variability in the application of knowledge management practices, the following research questions were formulated in the presented dissertation research:

1 – What knowledge management practices are the most and least developed in Russian educational institutions?

2 – How can the least developed knowledge management practices be used in key processes in an educational organization?

3 – What are the typical barriers and which barriers are the most significant/most critical in knowledge management in Russian educational institutions?

To address these issues, based on the analysis of the literature and a qualitative pilot study, the following set of interrelated assumptions is put forward:

Assumption 1: Russian educational institutions have a different set of knowledge management practices than foreign ones;

Assumption 2: the least developed knowledge management practices bring results and are promising for use in Russian educational organizations.

Research Methodology and Methods

The theoretical basis of the study is the works of Russian and foreign scientists devoted to the issues of knowledge management in modern economic realities, as well as the practices of knowledge management abroad and in Russia, the analysis of knowledge-based theory, and the stages of the knowledge life cycle.

The research methodology is the general scientific methods of cognition, which include logical and theoretical analysis, methods of deduction and induction, analysis and synthesis, the method of comparison and analogy, as well as the system approach. Within

the framework of the entire dissertation research, a mixed method was used. The first chapter uses methods of comparison and systematization of secondary sources of information. In the second chapter, when considering the practices of knowledge management, methods of comparison and systematization, analysis of primary and secondary sources, statistical analysis are used. The third chapter conducts an empirical study of the barriers to knowledge sharing based on the results of interviews and quantitative survey results.

The information base of the study consists of primary data obtained as a result of interviews and surveys of managers, employees of educational organizations as part of the experiment, as well as secondary data: scientific articles and reports of the library scientific bases of GSOM SPbU and HSE University in St. Petersburg and research materials on the topic from open sources of data on the Internet.

Publications on the research

On the topic of the dissertation research, 20 scientific papers were published with a total volume of 16.45 printed sheets, including: in peer-reviewed scientific journals from the list approved by the Ministry of Education and Science of the Russian Federation (HAC) – "4" publications; in publications indexed in the Web of Science and Scopus scientometric databases – "7" publications; other publications on the topic of the study – "9" publications. The results of the study are presented in the 20 publications listed below, which can be divided into three segments::

I. Publications in journals indexed in Scopus and Web of Science databases:

1. Gavrilova, T. Formalizing company KM portrait: pilot study with evidence from Russia / T. Gavrilova, A. Alsufyev, **A. Pleshkova** // Measuring business excellence. – 2018. – Vol. 22, № 3. – P. 315-332. (WoS; Scopus)
2. Blagov, E. Knowledge sharing barriers in Russian Universities' administrative subdivisions / E. Blagov, A. Begler, **A. Pleshkova** // Electronic Journal of Knowledge Management. – 2020. – Vol. 18, № 2. – P. 172-184. (Scopus)
3. Blagov, E. Work experience influence on the knowledge sharing barriers perceived significance by higher educational institutions administrative employees / E.

Blagov, **A. Pleshkova**, A. Begler // Knowledge and Process Management. – 2021. – Vol. 28, № 2. – P. 195-206. (WoS; Scopus)

4. Zhukova K., **Pleshkova A.** Business process modeling: Case of undergraduate program // Communication, Management and Information Technology – Proceedings of the International Conference on Communication, Management and Information Technology, ICCMIT 2016. – Cosenza, Italy: 2017. – P. 179-186. (Scopus)
5. Blagov, E., **Pleshkova, A.**, Begler, A. Work experience influence on the knowledge sharing barriers perception by the higher education institutions' administrative employees // 12th International Forum on Knowledge Asset Dynamics (IFKAD). – St. Petersburg, Russia: 2017. – C. 14-21. (WoS)
6. Leshcheva I., Blagov E., **Pleshkova A.** Towards a method of ontology population from heterogeneous sources of structured data // 2017 IEEE 30th Neumann Colloquium (NC). – Budapest, Hungary: IEEE, 2018. – P. 29-34. (WoS; Scopus)
7. Blagov, E., **Pleshkova, A.**, Begler, A. The influence of knowledge sharing barriers on the performance of administrative subdivisions of Russian universities // Proceedings of the International Conference on Intellectual Capital, Knowledge Management and Organisational Learning, ICICKM, 2018. – Cape Town, South Africa: 2018. – P. 14-21. (WoS; Scopus)

II. Publications in journals included in the list of publications recommended by the Higher Attestation Commission under the Ministry of Science and Higher Education of the Russian Federation:

8. Orlova, E.V. Language and communication teaching at business school: new perspectives / E.V. Orlova, T.A. Martynova, K.V. Zhukova, **A. Yu. Pleshkova** // Vestnik of St Petersburg University. Management. – 2017. – Vol. 16, № 2. – P. 322-339. (ВАК)
9. **Pleshkova A.Yu.** Education management: meaningful perception of learning formats // Education. Science. Scientific personnel. – 2023. – № 4. – P. 170-175. (ВАК)

10. **Pleshkova A.Yu.** Introduction of Additional Communication Means in Higher Education // Components of scientific and technological progress. – 2023. – № 11(89). – P. 49-52. (ВАК)
11. **Pleshkova A. Yu.** Knowledge management practices in Russian educational institutions // Russian Management Journal. – 2024. – №22 (1). – P.113-130. (ВАК)

III. Other publications:

12. Blagov, E. Knowledge sharing barriers in the educational program management administrative processes: a case of bachelor program in a Russian University / E. Blagov, **A. Pleshkova**, E. Soldatkin, N. Koritckiy // Electronic Journal of Knowledge Management. – 2017. – Vol. 15, № 2. – P. 113-125. (ядро РИНЦ)
13. **Pleshkova A. Yu.** Ontologies in the management of educational process // Онтология проектирования. – 2022. – Vol.12, №4(46). – P.506-517.
14. Blagov E.Yu., Zhukova S.V., **Pleshkova A.**, Koritskiy N., Soldatkin E. Knowledge sharing barriers at administrative level of undergraduate educational programs // GSOM Emerging Markets Conference 2016. International Conference. St. Petersburg State University, Graduate School of Management. – Saint Petersburg: 2016. – P. 42-44. (РИНЦ)
15. Gavrilova T., Alsufyev A., **Pleshkova A.**, Mailov E. The impact of knowledge management practices upon performance of Russian companies // ANNUAL GSOM EMERGING MARKETS CONFERENCE 2017. Book of abstracts. St. Petersburg State University, Graduate School of Management. – Saint Petersburg: 2017. – P. 423-425. (РИНЦ)
16. Blagov E., **Pleshkova A.**, Begler A. Knowledge sharing barriers employee perception determinants in higher education institutions' administrative processes // ANNUAL GSOM EMERGING MARKETS CONFERENCE 2017. Book of abstracts. St. Petersburg State University, Graduate School of Management. – Saint Petersburg: 2017. – P. 41-43. (РИНЦ)
17. Blagov E.Yu., **Pleshkova A.Yu.**, Begler A., Soldatkin E. Influence of knowledge sharing barriers on knowledge sharing performance in Russian higher educational

institutions' administrative subdivisions // ANNUAL GSOM EMERGING MARKETS CONFERENCE 2018. Conference Proceedings. St. Petersburg State University, Graduate School of Management. – Saint Petersburg: 2018. – P. 94-97. (РИНЦ)

18. Gavrilova T.A., Leshcheva I.A., Pleshkova A.Yu., Grinberg E.Y. On the issue of analysts' training in the era of digital business transformation // XXII International Scientific and Practical Conference "System Analysis in Design and Management". - St. Petersburg, Russia: Federal State Autonomous Educational Institution of Higher Education "St. Petersburg Polytechnic University of Peter the Great" (St. Petersburg), 2018. – P. 347-356. (РИНЦ)
19. **Pleshkova A.**, Grinberg E., Kubelskiy M. Three roles of knowledge managers in Russia // GSOM EMERGING MARKETS CONFERENCE 2018. Conference book. St. Petersburg State University, Graduate School of Management. – Saint Petersburg: 2018. – P. 207-209. (РИНЦ)
20. Grinberg E.Ya., Selivanovskikh L.V., **Pleshkova A.Yu.** Emergence of knowledge management in Russia: towards legitimacy for practice // ANNUAL GSOM EMERGING MARKETS CONFERENCE 2019. Conference book. St. Petersburg State University, Graduate School of Management. – Saint Petersburg: 2019. – P. 163-166. (РИНЦ)

The author's personal contribution consists in the implementation of work on the theoretical and empirical stages of the study: systematization of foreign and Russian experience in the use of knowledge management practices, conducting structured interviews with subsequent coding and interpretation of the results, systematization of the material obtained, substantiation of research hypotheses, collection and processing of statistical data, conducting an experiment with recording the results, and in the part of the study devoted to the analysis of barriers to knowledge exchange: statement of the problem, development of the concept of analysis, work mainly with a part of the review of literature, methodology and results; tabular presentation of research results, formulation of conclusions, proposal of recommendations.

Research content outline

The presented dissertation research is devoted to the analysis of the applicability of well-known promising practices of knowledge management in Russia on the example of educational organizations. It is divided into three components: an analysis of existing knowledge management practices, a study of the use of least developed practices in the organization, a study of barriers and is presented in Figure 1.

Figure 1 – Research design and methods

Scientific novelty

The scientific novelty of the dissertation research is based on three aspects: theoretical, methodological and empirical. From a theoretical point of view, the thesis contributes to management in the field of knowledge management, complementing and modifying the classical model of knowledge management practices for educational organizations. The scientific novelty of the work is also related to the methodology of the research and, in turn, consists of two aspects. First, the paper proposes a new way to classify knowledge management practices. Secondly, the author proposes ways to use the least developed practices of knowledge management, which can improve the quality of educational services provided. Empirical results based on a survey of 387 employees of the largest Russian educational organizations made it possible to form the following new results:

- One of the serious technological barriers is the low compatibility of document management systems;
- Among the organizational barriers, the following were revealed: insufficient awareness and lack of instructions from the management;
- The most important individual barriers are: lack of time and the importance of the requested knowledge for the owner. Also, the employee's small work experience (less than 1 year) can increase the negative effect when implementing knowledge management practices.

Theoretical and practical contribution of the research

The theoretical and practical significance of the dissertation research is associated with the expansion and further development of scientific ideas about the object under study. The topics of the field of research devoted to the study of knowledge management practices were also expanded. From the point of view of theoretical significance, the thesis supplements and develops the classical model of knowledge management practices. At the same time, the dissertation research takes into account internal factors, namely the barriers to knowledge exchange in the implementation of knowledge management practices, and for the first time proposes their classification. The results obtained by the author provide an opportunity for further study of the proposed model, taking into account the Russian specifics. The results can be used in the development of models for assessing

knowledge management practices with individual performance indicators (for example, financial), improving the structure of knowledge management practices used in the organization and building models of knowledge management practices in other similar areas of the market.

The practical applicability of the research results includes the use of the research results in the development of knowledge management systems for organizations of various profiles (educational and intellectually intensive organizations). The proposed model can be used to improve knowledge management systems or individual tools, which is important in the developing environment of modern Russian education. The results of this study can be implemented in the curricula of training courses within the disciplines "Management", "Knowledge Management", "Information Management", "Business Informatics", etc. for students of the direction "Economics" / "Management".

Correspondence of the dissertation to the Passport of the scientific specialty

The dissertation is carried out in accordance with the passport of scientific specialty 5.2.6. Management, direction of research: "18. Knowledge Management: Theory, Methodology, Technology and In-House Practices. Management of Intangible Assets of the Firm".

Degree of reliability and approbation of results

The reliability and validity of the research results is ensured by compliance with the methodology of scientific research, compliance with the provisions of management theory, and the reliability of the statistical and factual data used. The validity of the results is confirmed by their publication in leading peer-reviewed scientific journals. Articles reflecting the results of the dissertation research were presented at the following leading Russian and international conferences: Communication, Management and Information Technology – Proceedings of the International Conference on Communication, Management and Information Technology, ICCMIT 2016 (Cosenza, Italy, 2016), 10th Annual International Academic Conference "Modern Management: Problems, Hypotheses, Research", Higher School of Economics, Moscow, 2017, 12th International Forum on Knowledge Asset Dynamics (IFKAD) (St. Petersburg, Russia, 2017), XXII International Scientific and Practical Conference "System Analysis in Design and

Management" (St. Petersburg, Russia: Federal State Autonomous Educational Institution of Higher Education "Peter the Great St. Petersburg Polytechnic University" (St. Petersburg), 2018), IEEE 30th Neumann Colloquium (NC) (Budapest, Hungary: IEEE, 2018), International Conference on Intellectual Capital, Knowledge Management and Organisational Learning, ICICKM, 2018 (Cape Town, South Africa, 2018), GSOM EMERGING MARKETS CONFERENCE (St. Petersburg, Russia, 2016, 2017, 2018, 2019) (see Table 1).

Table 1 – Approbation of the results at the conferences

Title, authors	**Approbation at the conference**
Analysis of existing knowledge management practices: Formalizing company KM portrait: pilot study with evidence from Russia / T. Gavrilova, A. Alsufyev, A. Pleshkova // Measuring business excellence. – 2018. – Vol. 22, № 3. – P. 315-332.	Pleshkova A.Y. Practice of Knowledge Management in Russian Companies: Pilot Research // 10th Annual International Scientific Conference "Modern Management: Problems, Hypotheses, Research". – Higher School of Economics, Moscow: 2017. Gavrilova T.A., Leshcheva I.A., Pleshkova A.Yu., Grinberg E.Y. On the issue of analysts' training in the era of digital business transformation // XXII International Scientific and Practical Conference "System Analysis in Design and Management". - St. Petersburg, Russia: Federal State Autonomous Educational Institution of Higher Education "St. Petersburg Polytechnic University of Peter the Great" (St. Petersburg), 2018. P. 347-356. **Scopus**
Research on the use of least developed practices in the organization: Language and communication teaching at business school: new perspectives / E.V.	Leshcheva I., Blagov E., Pleshkova A. Towards a method of ontology population from heterogeneous sources of structured data // 2017 IEEE 30th Neumann Colloquium (NC). – Budapest, Hungary: IEEE, 2018. – P. 29-34. **WoS, Scopus**

Title, authors	Approbation at the conference
Orlova, T.A. Martynova, K.V. Zhukova, A. Yu.	Zhukova K., Pleshkova A. Business process modeling: Case of undergraduate program // Communication, Management and Information Technology - Proceedings of the International Conference on Communication, Management and Information Technology, ICCMIT 2016. – Cosenza, Italy: 2017. – P. 179-186. **Scopus**
Exploring the barriers to knowledge sharing in the implementation of knowledge management practices: Knowledge sharing barriers in Russian Universities' administrative subdivisions / E. Blagov, A. Begler, A. Pleshkova // Electronic Journal of Knowledge Management. – 2020. – Vol. 18, № 2. – P. 172-184. Work experience influence on the knowledge sharing barriers perceived significance by higher educational institutions administrative employees / E. Blagov, A. Pleshkova, A. Begler // Knowledge and	Blagov, E. , Pleshkova, A. , Begler, A. Work experience influence on the knowledge sharing barriers perception by the higher education institutions' administrative employees // 12th International Forum on Knowledge Asset Dynamics (IFKAD). – St. Petersburg, Russia: 2017. – C. 14-21. **WoS** Blagov, E. , Pleshkova, A. , Begler, A. The influence of knowledge sharing barriers on the performance of administrative subdivisions of Russian universities // Proceedings of the International Conference on Intellectual Capital, Knowledge Management and Organisational Learning, ICICKM, 2018. – Cape Town, South Africa: 2018. – P. 14-21. **Scopus**

Title, authors	Approbation at the conference
Process Management. – 2021. – Vol. 28, № 2. – P. 195-206.	

The structure of the thesis is determined by the general scheme of the study, the purpose and objectives of the study. The dissertation consists of an introduction, the main part (including 3 chapters), a conclusion, a list of references, 5 annexes, and also contains 13 figures and 34 tables compiled by the author. The list of references contains 326 sources on the topic of the dissertation research, including 163 Russian-language and 163 foreign sources (including English-language publications of Russian authors). The manuscript is set out on 195 typewritten pages (179 for English version). The original language of the work is Russian.

Main scientific results

1 – On the basis of a systematic literature review, the analysis of existing practices of knowledge management is carried out, the theoretical and methodological foundations of knowledge management are presented, and the differences in the development of the field of knowledge management abroad and in Russia are considered. The described results are presented in the first chapter of the dissertation research, pp. 30-56 and published in the works [224, 226, 231, 257, 286] of the list of references/works [1, 6, 15, 19, 20] of the list of publications. The degree of personal participation of the author in obtaining/achieving this result consists in the implementation of work in the theoretical areas of the study, including the systematization of foreign and Russian experience in the use of knowledge management practices, conducting a systematic literary analysis, structured interviews with subsequent transcription of the results, coding and deciphering the results, systematizing the material obtained, substantiating the research hypotheses.

2 – The practices of knowledge management and their use in Russian educational organizations are studied and described, a study of the use of the least developed practices in the organization is carried out. The obtained results are presented in the second chapter of the dissertation research, pp. 57-109 and published in the works [37, 118, 119, 120, 281, 285] of the list of references/works [8, 9, 10, 11, 13, 18] of the list of publications. The degree of the author's personal participation in obtaining/achieving this result

consists in carrying out work in theoretical and empirical areas of research, including conducting a systematic literary analysis of structured interviews with subsequent transcription of the results, coding and deciphering the results, systematizing the obtained material, collecting and processing statistical data, conducting focus groups and an experiment with fixing positive results.

3 – Based on the study, a classification is proposed and key barriers to knowledge sharing in the implementation of knowledge management practices are identified. The results obtained are presented in the third chapter of the dissertation research, pp. 110-131 and published in the works [182, 183, 184, 185, 186, 187, 188, 189, 326] of the list of references/works [2, 3, 4, 5, 7, 12, 14, 16, 17] of the list of publications. The degree of personal participation of the author in obtaining/achieving this result consists in the implementation of work in the empirical areas of research, including the formulation of the problem, the development of the concept of analysis, work mainly with part of the literature review, methodology and results; tabular presentation of research results, formulation of conclusions, and proposal of recommendations.

Provisions for the defense

The main assumptions of the dissertation research, that in Russian realities there is a different set of practices from foreign ones, and that the least developed practices of knowledge management (which are not so popular abroad) are promising and can bring results in the management of an educational organization in Russia, were confirmed by the study. The following provisions are submitted for defense:

1 – based on the analysis and systematization of secondary sources of information, a new classification of knowledge management practices by stages of the knowledge life cycle is proposed, supplemented by knowledge management tools for each stage;

2 – the most and least used knowledge management practices in Russia were identified and substantiated on the basis of a descriptive (desk) study and literature review; at the same time, the role of information technologies in the process of applying the most developed practices is clarified and ways of using the least developed practices are proposed;

3 – Based on the empirical study, the definition and classification of barriers to knowledge exchange in the implementation of knowledge management practices is proposed, while the perceived importance of barriers to knowledge exchange in the implementation of knowledge management practices is revealed, and the most critical barriers are identified.

CHAPTER 1. FUNDAMENTALS OF KNOWLEDGE MANAGEMENT: THEORY AND PRACTICE

1.1. Theoretical aspects of knowledge management

Since the mid-1980s, the discipline of knowledge management has been separated from the theory of general management into a separate scientific field. If we consider the global development of knowledge management, we can conditionally divide this global process into three stages: the development of information technology, the addition of the role of human resources and corporate culture, and then the stage of introducing taxonomy and content management. The first stage of the active development of information technology was the reason for the emergence of knowledge management in organizations in the form of knowledge management systems (KMS). Developed Internet communications became a tool for cooperation and knowledge transfer, and the organizational concept of intellectual property acted as a kind of framework for this system. At this stage of the development of information technologies, the following concepts are introduced – "best practices" and "lessons learned" – those knowledge management tools that help to disseminate the best examples of the use of knowledge through the Internet environment and other means of communication. These tools are still used today in organizations that pay attention to working with knowledge, they are popular both abroad and in Russia.

At the second stage of development, in addition to the use of communication tools and Internet resources, human resources and the corporate culture of the organization are involved – people, employees of the organization, that is, living and thinking individuals. The primitive use of information technology has ceased to provide a sufficient and effective level of information and knowledge exchange. Organizations began to understand that it is necessary first of all to involve the people themselves, the cultural aspects of their communication and interaction. This is where "communities of practice" are born. The main events that illustrated the transition from the first stage to the second stage and confirmed the existence of a new development in the field of knowledge

management were the attendance of scientific conferences by representatives of specialists from human resource management departments, as well as the further prevalence of the number of such specialists over conference attendees from the field of information technology. This was followed by the stage of systematization and content management, namely, the implementation of the processes of ordering, complete and sufficient description, structuring of information, data, and knowledge of the organization. Leaders of organizations have begun to realize that having information alone is not useful if it is not possible to quickly find the necessary data and knowledge. This is how the terms "taxonomy" and "content management" appeared in knowledge management field of study. The topics of content and knowledge resource management began to be touched upon at scientific conferences and were accompanied by the development of these topics in the scientific literature of foreign and Russian scientists.

The current, modern fourth stage of the development of the field of knowledge management is due to two main factors: the growing digitalization of the economy and the need to enrich the discipline of knowledge management with interdisciplinary research [Molodchik, 2017]. The current stage of development in the field of knowledge management can be called the transition to maturity and reaching deeper levels of analysis of the processes of increasing the competitiveness of the organization through working with knowledge. One approach to such analysis is "to identify and test specific mechanisms to identify factors that enhance or hinder the transformation of knowledge into the competitiveness of an organization; specific mechanisms aimed at intensifying knowledge resources" [Molodchik et al., 2017]. For Russian organizations, the search, testing, and use of such mechanisms is of paramount importance, since empirical studies show that bridging the gap in knowledge resources can have a positive impact on reducing the gap in other indicators of the competitiveness of Russian organizations in comparison with foreign competitors [Shakina et al., 2017, Shakina et al., 2021].

Knowledge is the lifeblood of an organization, and it is identified as a critical element for the survival of organizations in today's dynamic and competitive environment. Knowledge management is as important to an organization as the management of other assets. Organizations of any market, type, and size depend heavily

on knowledge, which becomes a resource and a determinant of success (Grant, 1996; Nahapiet & Ghoshal, 1998; Yi, 2009]. The reason for the increased academic focus on the importance of knowledge is that effective knowledge management in an organization brings positive outcomes that take the organization to the next level: knowledge is an important prerequisite for continuous innovation [Drucker, 1999; Kogut & Zander, 1992; Nonaka & Takeuchi, 1995], increased productivity and improved capabilities for the organization's operations [Cummings, 2004; Lin, 2007; Mesmer-Magnus & DeChurch, 2009].

There is a general consensus among researchers [De Long and Fahey, 2000; Chawla and Joshi, 2010; Hussinki et al., 2017; Prusak, 2014; Saifi, 2015] that the application of knowledge management in an organization should be considered holistically to make it easier for the organization to create, obtain, structure and use intellectual assets to achieve long-term sustainable strategic advantage. A well-known rationale for the emphasis on knowledge management is intangible knowledge, which makes it difficult or impossible for competitors to imitate or duplicate [Adams and Lamont, 2003; Meso and Smith, 2000]. To demonstrate the benefits of using knowledge in an organization, a substantial and large body of the scientific literature tends to focus on business processes and organizational development.

Knowledge management can be divided into knowledge management processes and knowledge management practices, but this division is conditional, since practices are inextricably linked to processes. The presented dissertation research is mostly concerned with the practices of knowledge management. Although the definitions of these practices may differ from study to study [Afacan Fındıklı, Yozgat, & Rofcanin, 2015, Alegre et al., 2013], knowledge management practices are some organizational actions and tactics based on the application and use of knowledge, and they can be found in any area of the organization's activities - marketing, production, sales, information and communication environment, etc. Initially, early concepts of knowledge management practices were centered around the processes of creating and transferring knowledge, dividing the latter into tacit and explicit knowledge [Dalmarco, Maehler, Trevisan, & Schiavini, 2017; Nonaka, 1994]. Recent and more modern concepts describe knowledge management

practices in different ways. Some studies define knowledge management practices focused on dissemination and storage processes [Alegre et al., 2013], while others define acquisition, assimilation, transformation, and use as more comprehensive aspects of knowledge management practices [Xie, Zou, & Qi, 2018]. For example, Lai and Lin (2012) identified (a) knowledge creation and acquisition, (b) knowledge dissemination and integration, and (c) knowledge storage as three dynamic processes that relate to knowledge management practices. Al-Emran, Mezhuev, Kamaludin, and Shaalan (2018) identified the creation, transfer, and application of knowledge as key knowledge management processes. Knowledge creation activities are typically internal initiatives of a firm that can create new knowledge through R&D activities. This may include creating new content or replacing old content in the organization's implicit and explicit knowledge pool [Donate & Pablo, 2015].

Theoretical basis of the research

The knowledge theory of organization is a continuation of the development of resource economic theory, which is more modern in comparison with other economic concepts. The subject of each of these concepts is an important aspect of the firm's activity: for example, production (in neoclassical theory), transactions (in transaction cost theory), or innovation (in evolutionary economics). From the point of view of resource theory itself, an organization is something more than an administrative unit. An organization is a collection of productive resources distributed among different users by means of certain administrative and/or economic decisions. Knowledge-based organization theory, on the other hand, is an organizational-level theory of analysis that classifies organizations as a collection of heterogeneous knowledge assets that can give an organization a competitive advantage [Denford, 2013, Grant, 1996]. However, this requires that two conditions be met. First, the organization's knowledge must be valuable, unique, and rare [Curado and Bontis, 2006, Merat and Bo, 2013] and be data- and information-based (see Figure 2).

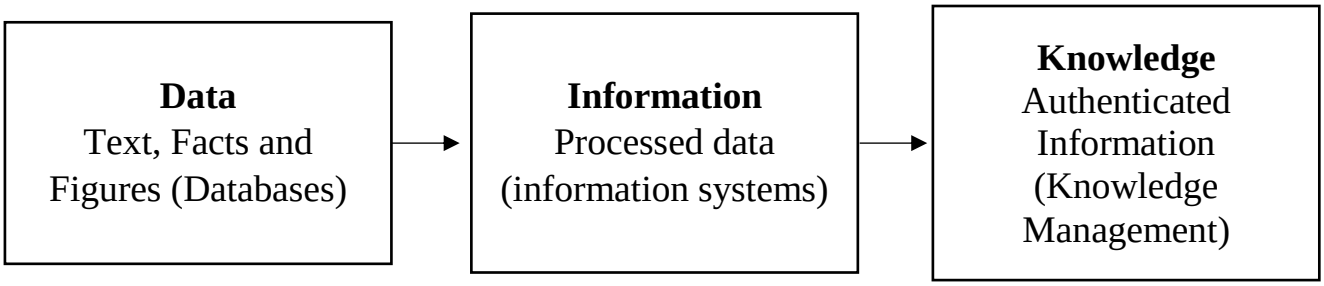

Figure 2 – Data, information and knowledge

Second, the organization must also structure and represent the processes for creating, transferring, and applying knowledge [Alguezaui and Filieri, 2014, Erden et al., 2014, Grant, 1996, Shujahat et al., 2017]. Due to the relevance and importance of knowledge, practitioners' interest has shifted to scholars who have approached the field of knowledge management not only as a field of research but also as a discipline [Alegre et al., 2013; Darroch, 2005; Gaviria-Marin et al., 2018; Swan, Newell, Scarbrough, and Hislop, 1999]. This is due to the strengthening of the role of knowledge in increasing the productivity of the organization, in creating a sustainable competitive advantage of the organization, in creating and protecting the intangible assets of the organization [Alegre et al., 2013; Gaviria-Marin et al., 2018; Lopes, Scavarda, Hofmeister, Tome and Vaccaró, 2017] (see Figure 3).

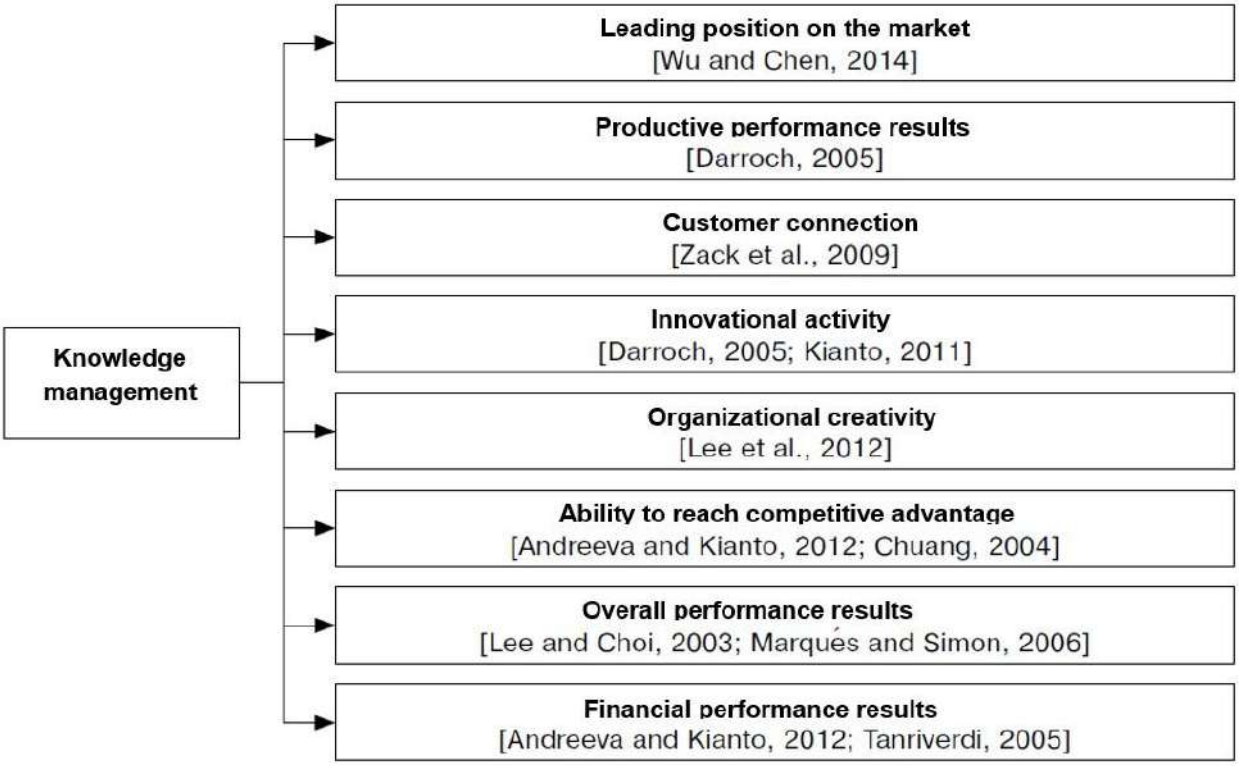

Figure 3 – The positive relationship of knowledge management to organizational performance

But even with the growing interest in knowledge management this concept is still elusive, as there is still no universally accepted definition of knowledge management [Darroch & McNaughton, 2002]. Nonaka (1994), p. 15) describes knowledge as "a multifaceted concept with multi-layered meanings." Darroch (2005), p. 211) defines knowledge management as "a management function that creates or locates knowledge, manages the flow of knowledge within an organization, and ensures that knowledge is used effectively and efficiently for the long-term benefit of the organization." Lai and Lin (2012) used knowledge management to describe "how members of an organization acquire and create knowledge inside and outside the organization. Knowledge management describes how knowledge is acquired, created, systematized, and used in organizations" [Shujahat et al., 2017].

Also, since any research on knowledge management is interested in the people involved in the implementation of knowledge management practices, Drucker's theory of the effectiveness and productivity of the knowledge worker is exploited. There are about 6 determinants of his/her behavior: orientation of responsibilities to work with

knowledge, autonomy, responsibility for innovation, continuous learning and transfer of experience, a common perception of quality and quantity, and such an employee is equated with the intellectual capital of the organization [Drucker, 1999, Huang and Jim Wu, 2010, Iazzolino et al., 2017, Palvalin et al., 2017, Turriago-Hoyos et al., 2016]. It was Drucker who introduced the term "knowledge worker" into scientific use.

The dissertation research also uses the concept of knowledge life cycle [Clemina, 2013], which includes the principal phases of knowledge management: selection of knowledge, its technical support, measurement, transfer and use in a given context (according to GOST R 54147-2010: Strategic and Innovation Management. Terms and Definitions; GOST R 53894-2010: Knowledge Management. Terms and Definitions). In accordance with the methodology of system analysis [Peregudov F.I., 1976], there are three main processes (stages) in the knowledge life cycle, as well as in the life cycle of any field of activity: - identification of the need for knowledge; - production (creation) of knowledge; - consumption (utilization) of knowledge (see Figure 4). In the extensive literature on this issue, as well as in the Guide to Good Practice in Knowledge Management, Part 1, there are five stages (processes) of the life cycle. Between the system structuring of the LCZ and the one shown in Fig. 4. Some of them are detailed. Thus, in the process of "knowledge production" there are two sub-processes – "knowledge creation" and "knowledge storage". In the process of "knowledge consumption", there are also two sub-processes – "dissemination of knowledge" and "use of knowledge". [Mertins K., Heisig P., Vorbeck J. (eds), 2003]. The stages of the knowledge life cycle are considered in the dissertation research as segments for more logical filling with knowledge management practices.

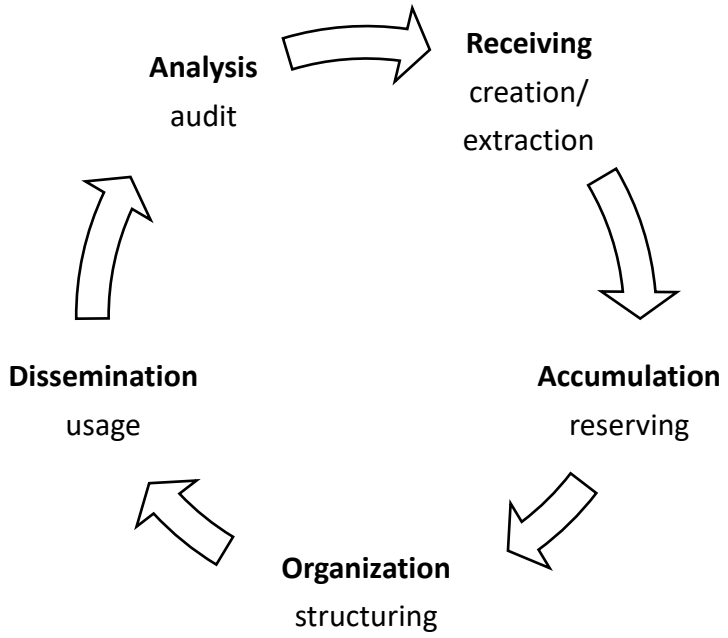

Figure 4 – Knowledge life cycle in an organization

The research is also based on W. E. Deming's System of Profound Knowledge (SoPK), which consists of an understanding of the system, an understanding of the theory of variability, the basics of the theory of knowledge, and some knowledge in the field of psychology. One of the results of the study confirms the strength of the importance of strategic knowledge and competence management and, accordingly, the role of the leader, from which changes in the organization, including those related to knowledge, begin.

1.2. Knowledge management development abroad and in Russia

If we consider the development of knowledge management in Russia and abroad (see Figure 5), the differences in the development of the knowledge management sphere are visible to the naked eye. Until the 1980s, 3 main approaches to knowledge management dominated abroad: European (the main emphasis is on measuring knowledge and the benefits it brings to the organization), American (direct knowledge management as one of the effective resources of the organization), and Japanese (based mainly on the creation of knowledge). The first mentions of knowledge in the Russian scientific literature date back to 1970 during the creation of an information base for knowledge management by Russian theorists: the problems of knowledge management

were reflected in the works of V. M. Glushkov, Y. A. Shreider, R. F. Gilyarevsky, L. S. Kozachkov.

The main differences in the sphere of development are as follows: a traceable time lag of 7-10 years (which can be noted by landmark events, for example, the creation of a conference on knowledge management) [Glukhov, 1981; Grinberg and Pleshkova, 2018], a certain shift towards information technology and a kind of substitution of knowledge management and the use of software in the organization's activities [Klimov, 2002; Grinberg and Pleshkova, 2018; Glubokova, 2010], as well as historical replication foreign experience [Grishin, 2006; Kosheleva, 2018] (see Figure 5).

Foreign organizations use the following knowledge management tools to improve work efficiency and solve various problems that arise in the process of the organization's activities: building knowledge maps, analyzing and assessing knowledge, using expert systems, data mining, building knowledge models, as well as developing management decision support systems. Research on the application of knowledge management also presented the results of the developed validated measurement scales of the main constructs of the field (questionnaire questions, constituent parts of definitions), which are used by Russian scientists. However, copying and repeating knowledge management practices in Russian organizations may work with varying success or in principle do not bring results at all. The point is in different cultural, social and economic contexts, as well as in the conditions mentioned in the research problem. Thus, it is necessary to adapt and modify the experience gained in the field of knowledge management practices.

One of the key areas of development of organizations is the construction of a knowledge management system and the formation of a knowledge management strategy [Katkalo et al., 2023]

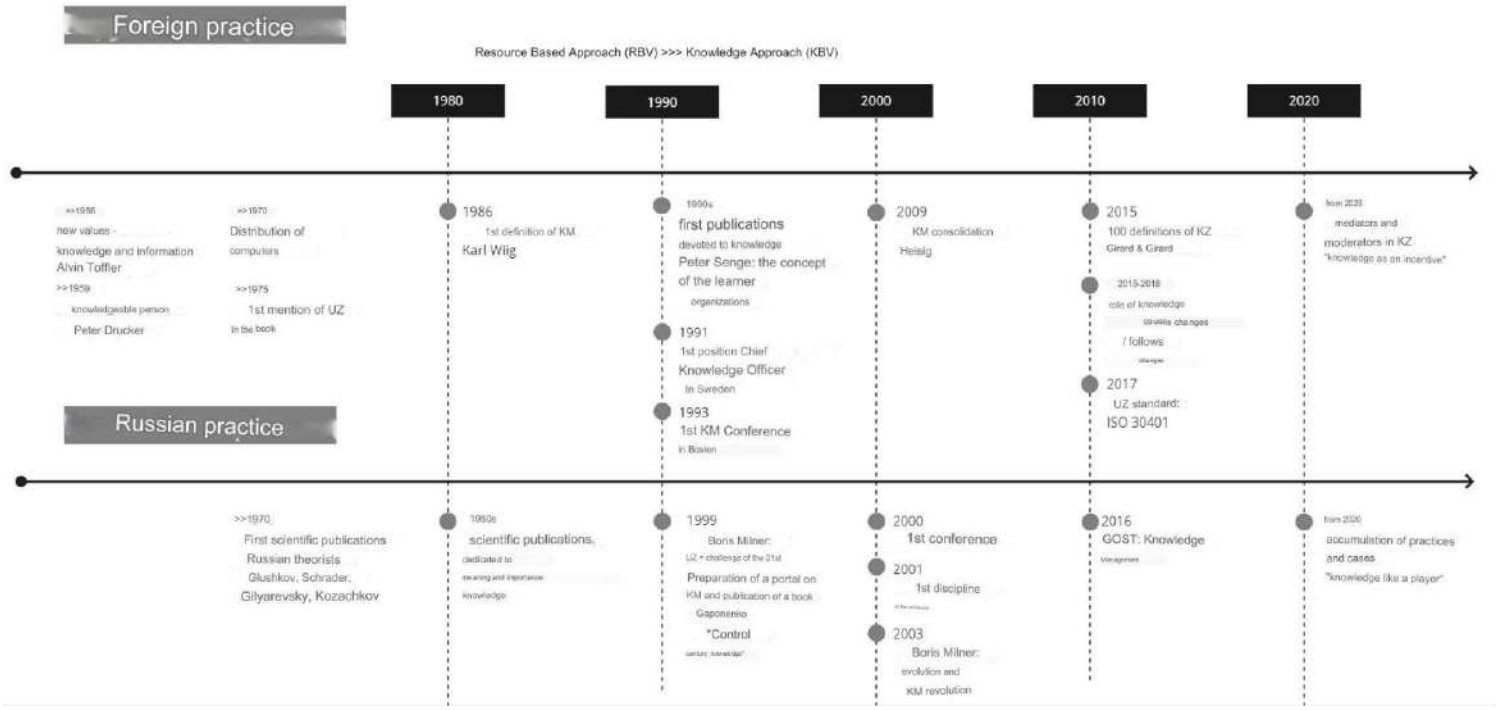

Figure 5 – Knowledge management development abroad and in Russia timeline

Foreign knowledge management practices can be both simple and complex in terms of their practical application. The main practices that are used abroad include the use of various tools: knowledge mapping, knowledge analysis and assessment, the use of expert systems, data mining, the construction of knowledge models, as well as the development of systems for decision support and knowledge management. Most foreign organizations use knowledge management tools and methods to improve performance and solve various problems that arise in the course of the organization's activities.

To date, Russia has begun to apply project knowledge management practices, which are used to solve various problems related to the sustainable development of businesses and organizations [Dneprovskaya and Shvetsova, 2017; Lunev et al., 2022]. Among them, the practices are the same as abroad, since the country is characterized by the adaptation or direct use of existing strategies, but the practice of working with experts to build a knowledge base, as well as the use of intelligent systems for knowledge management, is especially developing.

Although conceptually, knowledge management practices in Russia are at an early stage of development, they are superior to practices in foreign countries in many respects. In Russia, more attention is paid to building knowledge models and analyzing data than in foreign countries. Also, in Russia, more attention is paid to building decision support systems and knowledge management. For example, Russia uses special intelligent systems for data analysis and decision-making. In foreign countries, simpler knowledge management technologies, such as document management systems and search systems, are mostly used. All knowledge management practices help organizations manage information and knowledge effectively, reducing costs and improving the quality of products and services.

In modern Russian organizations, 2 typical knowledge management strategies dominate: the first strategy is focused on the codification of knowledge, the second is focused on the personalization of knowledge [Zavyalova et al., 2017; Zavyalova, Sokolov, 2021].

A knowledge codification strategy is the process of creating formal structures and systematizing tacit and explicit knowledge within an organization, thereby improving the accessibility, transfer, and use of knowledge within the organization. This is due to the active use of information technology tools. Such a strategy plays a key role in knowledge management, ensuring the effective retention and dissemination of knowledge within the organization. The development of a knowledge codification strategy includes a number of important steps and principles:

1. Identification of goals and needs: The initial phase involves defining the organization's goals and priorities in the context of knowledge management. The organization needs to understand what knowledge needs to be codified and for what purpose.

2. Identify key knowledge: Identify valuable and strategically important knowledge that needs to be codified to ensure the success of the organization.

3. Develop methods for codifying knowledge, such as the creation of databases, documentation, standards, procedures and tools for the organization and transfer of knowledge.

4. Infrastructure Design: Creating the necessary tools, technologies, and systems to store, manage, and disseminate coded knowledge within the organization.

5. Deploy and train staff: Implement a knowledge codification strategy in the organization and provide training to staff in the use of codification methods and tools.

The key principles of the knowledge codification strategy are purposefulness (knowledge codification should be focused on achieving the strategic goals and needs of the organization), systematization (knowledge should be systematized and organized in structured forms to ensure easy access and use), accessibility (codified knowledge should be easily accessible to staff at all levels of the organization, facilitating effective knowledge sharing) and Continuous updating and improvement (the knowledge codification strategy should include mechanisms for regularly updating and improving coded knowledge in accordance with changing needs and requirements). A well-defined and implemented knowledge codification strategy contributes to the creation of valuable knowledge and resources within the organization, promotes innovation, and increases the efficiency and competitiveness of the organization in the market through knowledge assets.

In contrast, a knowledge personalization strategy is an approach to knowledge management that aims to create individualized and contextually meaningful knowledge for an organization's employees or customers. It is based on the idea of adapting information and knowledge to the unique needs, preferences and abilities of a particular person. Developing a knowledge personalization strategy involves a number of important steps and principles:

1. Audience research: Analyzing the target audience, their needs, preferences, and behavioral characteristics to understand the degree of personalization needed in a particular context.

2. Creating customized content: Developing content, training materials, or knowledge tailored to the needs and interests of a particular user.

3. Implementation of personalized solutions: Implementation of personalized knowledge through various communication channels, learning platforms, or knowledge management systems.

4. Evaluation and improvement: Continuously measure the effectiveness of off-the-shelf solutions, collect feedback from users, and make changes to improve knowledge personalization.

The key principles of the knowledge personalization strategy are understanding needs (analyzing the needs and preferences of employees or customers to determine which knowledge has the most value and significance in their individual context), segmentation, and personalization (grouping users by common characteristics or behavioral patterns to personalize content and offerings according to their unique needs), technology (applying innovative technologies such as artificial intelligence, data analytics, and automated systems to adapt and deliver personalized knowledge), and participation and engagement (involving employees or customers in the process of creating and adapting knowledge, taking into account their feedback), communication and suggestions to improve personalized experiences). A knowledge personalization strategy promotes better learning, increased efficiency and employee satisfaction, and a better customer experience and experience based on their unique needs and preferences.

A certain technocratic bias is characteristic of many Russian organizations and represents the desire to solve problems and manage the organization exclusively through the use of technology, without due consideration of external factors of interaction and cultural characteristics of the organization's employees. Potentially, there is a risk of problems and limitations, such as excessive trust in technology and the secondary importance of human working relationships. There is a lack of flexibility in solving problems in such organizations, since a technocratic approach that does not take into account the context and variability of the situation can lead to the inability to respond to new challenges and circumstances. Human capital is neglected: the resources and skills of employees can be undervalued in an environment where the idea of solving all problems is reduced to the use of technical tools, and communication: technocratic bias can lead to a lack of effective communication within the organization and a reduction in the importance of interpersonal relationships. Shifting to a balanced mix of technology and human resources contributes to the effective management of the organization, improving employee interaction and increasing the overall productivity of the

organization. The goal of a knowledge management strategy from the point of view of the technocratic idea should be balanced based on current conditions and taking into account the interests of the organization and its individual employees. Examples of different approaches to the formulation of such tasks are given in Table 2 [Gavrilova, Alsufiev, Pleshkova, 2018].

Table 2 – Approaches to defining knowledge management objectives

Karl Wiig, Robert de Hoog, Rob van der Spek	**Excalibur Technologies approach**	**PWC approach**
1. Diagnostics and evaluation of activities 2. Diagnostics and analysis of knowledge 3. Selection and planning of Actions 4. Actions a. Knowledge development b. Dissemination of knowledge c. Combining Knowledge d. Integration of knowledge	1. Access/Search 2. Collaborate 3. Innovate 4. Create 5. Implement 6. Evaluate 7. Improve 8. Storage	Tactical Processes 1. Knowledge Acquisition Knowledge Use 2. Training 3. Knowledge Dissemination Strategic Processes 1. Intellectual Capital (IC) 2. Assessment 3. Creation and Maintenance of IC 4. Disposition of Knowledge Assets

In the presented dissertation study, practices that are mentioned more often in foreign studies than others (also see Appendix 3)are complied relying on the so-called "success factors" of the organization in Heisig's classification [Heisig, 2009]. For the sake of uniformity and ease of understanding, both abroad and in Russia, knowledge management practices are named after their domain, i.e. the place of their main application (see Table 3) [Gavrilova, Alsufiev, Pleshkova, 2018].

Table 3 – Sets of foreign knowledge management practices

Success factors of organization	**Examples of knowedlge management practices**
Person-oriented: Culture People ЛLeadership	Organizational Culture Recruitment, Development, Appraisal, Compensation, Learning Mechanisms Decentralization & Executive Work
Organization oriented: Processes Structure	Organizational design
Technology-oriented: Infrastructure Applications	Information and communication technologies
Management-oriented: Strategy Purposes Measurement	Strategic management of knowledge and competencies

Knowledge management practices help solve various problems of an organization, from strategic to operational. There is a set of tasks that are aimed at working with information to find, obtain and disseminate knowledge. Another set of tasks is aimed at training and collaboration of staff and assessing the intellectual capital/performance of the organization. At the same time, it cannot be said that this kind of task does not belong to the field of knowledge management. The answer lies in the interdisciplinary position

of the discipline of knowledge management, a field of science at the intersection of three disciplines [Gavrilova, 2001; Gavrilova & Strahovich, 2020] (see Figure 6).

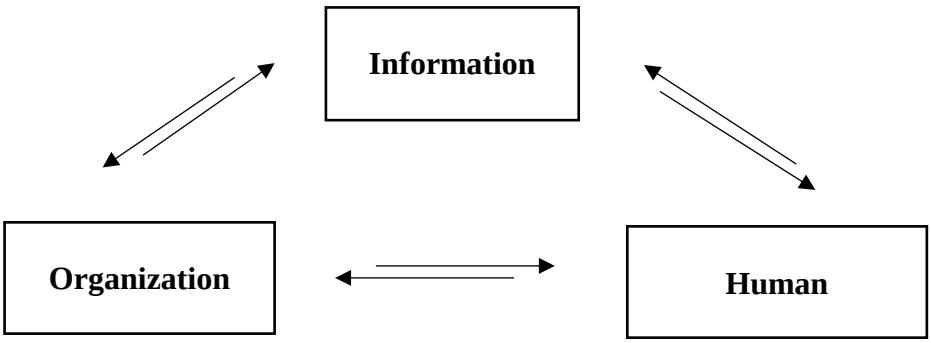

Figure 6 – The three facets of knowledge management

1. Management or business management is a field that answers the question from the point of view of knowledge management "How to create added value and provide a competitive advantage based on knowledge?" from the point of view of knowledge management. [Bukhvalov, Katkalo, 2012]. The main object of management in this area is the organization as an open socio-economic system;

2. Information sciences, which, from the point of view of knowledge management, answer the question "How to work effectively and efficiently with information?"

3. Humanities, which, from the point of view of knowledge management, answer the question "How to ensure the necessary behavior of people?". The main object of study in this field is human.

Thus, the three different facets of knowledge management encourage different ways of considering and formulating knowledge management tasks in relation to the object under consideration [Grinberg, Pleshkova, 2018]. At the same time, all the selected disciplines also interact with each other, forming multidirectional connections. For example, from the perspective of the "Information" object, the following relationships can be distinguished:

"Information-to-Organization" and "Information-to-Person": The organization (or its management) articulates the needs for the content of knowledge, since knowledge is a source of value that allows the creation of products and services, providing a competitive advantage in relations with stakeholders. It is the responsibility of the person who both uses and creates the knowledge to describe and form the information provided. A person

dictates the requirements for the content and format of information, which affects the subsequent methods of working with it. Information technology is a key element in the link between information and knowledge, providing a variety of data processing tools (e.g., neural networks), knowledge modeling (e.g., ontologies, frames) and software (e.g., portals, collaboration software, electronic document management systems) [Weber, 2003].

From the point of view of the object "Person", there are also the following connections [Grinberg, Pleshkova, 2018]:

"Person – Organization" and "Person – Information": Within the framework of the interaction between the person and the organization, the latter contributes to the creation of conditions for the processing, exchange and application of knowledge, following the principle of Larry Prusak, according to which it is necessary to manage the environment where knowledge is concentrated. In human interaction with information, the information received and formalized knowledge, as well as the ways in which it is presented and transmitted, affect the formation of non-formalized knowledge and experience of the individual. The knowledge used and the tools to represent it can determine the requirements for people, for example, knowledge of the MS Office software package can be a necessary skill for employment.

A key element in supporting the human connection with other aspects of knowledge management is culture, which includes values, principles, norms, motivations, rules and ways of working. This culture is formed, first of all, on the basis of psychological and sociological principles, and contributes to effective communication and interaction within the organization.

From the point of view of the organization, the following connections are obvious [Grinberg, Pleshkova, 2018]:

"Organization-Person" and "Organization-Information": Within a company, a person carries out actions that turn knowledge into products and services, that is, people give life to knowledge and bring value. The level of knowledge and the ability to train employees (a set of new knowledge) determine the effectiveness of processes in an organization and its competitiveness. The information and formalized knowledge contained in a company,

like a person, affect the quality of processes in the organization and its competitiveness. A key element in supporting the organization's interaction with other aspects of knowledge management is the organization of activities, which includes the processes, the structure of the organization and the distribution of responsibilities by functional area.

One of the key challenges in setting up and managing a knowledge management system in an organization is the requirement for coordination between the person, the organization, and the information, which can lead to duplication of functions between different departments or employees, making it difficult to manage and align processes in the organization.

For the majority of Russian organizations, the following can be distinguished: the area of strategic planning (development) in the organization belongs to the "Organization", the sphere of competence of the employees of the HR department is defined as "Person", and the information technology department deals with "Information". Rarely, however, are these three components considered together. With such an arrangement of internal structures, the presence of a knowledge management department will contribute to the optimal distribution of competencies and eliminate redundancy in the system. In the generally accepted life cycle of a knowledge management system, 4 stages can be distinguished: diagnostics and analysis, knowledge collection, creation of a knowledge management system, and use of the system (Gavrilova, Khoroshevsky, 2000).

However, in order to successfully implement and work with a knowledge management system, as mentioned above, you need an employee or specialist in the knowledge management of the organization. One of the key tasks of the current stage of development of the education system in Russia is the task of increasing the practical orientation of training such specialists for the modern labor market [Gasparian, Lebedev and Telnov, 2017]. The growing demand of organizations for the skills of modern knowledge management professionals requires a corresponding supply from the education sector. At the moment, in general, this demand is not properly satisfied. The main criticisms in foreign literature and practice are aimed at the content of the taught content, which does not reflect the connection of knowledge management with cross-

disciplines, for example, personnel management, or has no basis in reality and does not cultivate in future employees the necessary abilities to create and disseminate knowledge, problem-solving skills [Handzic et al., 2016].

The main need is to systematize the existing definitions of employees who can deal with knowledge management issues in the organization. In foreign literature, this type of employee is called a "knowledge manager", and in Russian practice there are many possible translations and invented definitions for employees who are responsible for the field of knowledge management, such as: "knowledge coordinator", "analyst", "knowledge manager", "knowledge management specialist", "intellectual asset management specialist", etc. knowledge, where there are many translated definitions, as well as due to the richness of the Russian language, there are many meanings similar in meaning (see Table 4).

Table 4 – Typical distribution of roles and functions of employees related to knowledge management [Grinberg, Pleshkova, 2018]

Job Title	**Role in the knowledge management system**	**Main functions**
Director of Knowledge Management	Development and implementation of a knowledge strategy	The organizational part of knowledge management, the development of basic ideas among employees, personnel training in a single network information space of the company, as well as the development of innovative methods for the use of corporate knowledge, the protection of the company's knowledge, increasing the usefulness of their use, the creation and improvement of organizational knowledge

Job Title	Role in the knowledge management system	Main functions
Knowledge Worker	Control of the control object	Applying existing knowledge and creating new knowledge
Knowledge Coordinator	Content Management	Intranet, web site, database and other storage management
Knowledge Manager/ Knowledge Management Specialist	Managing People (Knowledge Employees) and Processes	Organization of knowledge management processes; including: mastering the key knowledge of the company by new employees, acquiring the competencies and qualifications necessary for working with knowledge, developing the company's knowledge of business processes through the development and inclusion of enterprise standards in the activities, collecting and analyzing lessons learned and best practices built on the basis of
Intellectual Asset Management Specialist	Intellectual Property Management	Bringing the results of intellectual activity to the stage of commercialization. Reduction of the company's losses from non-compliance with security rules regarding the management of the company's intellectual assets, compliance with the trade secret regime, clarification and

Job Title	Role in the knowledge management system	Main functions
		control of the application of patent legislation
Systems Analyst / Knowledge Engineer	Extraction, structuring and codification of knowledge	Development of a single thesaurus to ensure effective communication between stakeholders. Collecting, analyzing, and verifying requirements for changing knowledge business processes, regulations, and information systems. Use of analytical methods in working with heterogeneous knowledge in order to identify problems and potential for business growth

Thus, the variety of existing job definitions may cause a general misunderstanding in the distribution and regulation of employee responsibilities related to knowledge management in Russian practice. The situation is further complicated by the existence of certain professional requirements for employees related to knowledge management, which should also be taken into account; Such specialists need a variety of skills and abilities to competently and efficiently conduct the processes of extraction, conceptualization and formalization of knowledge (see Figure 7).

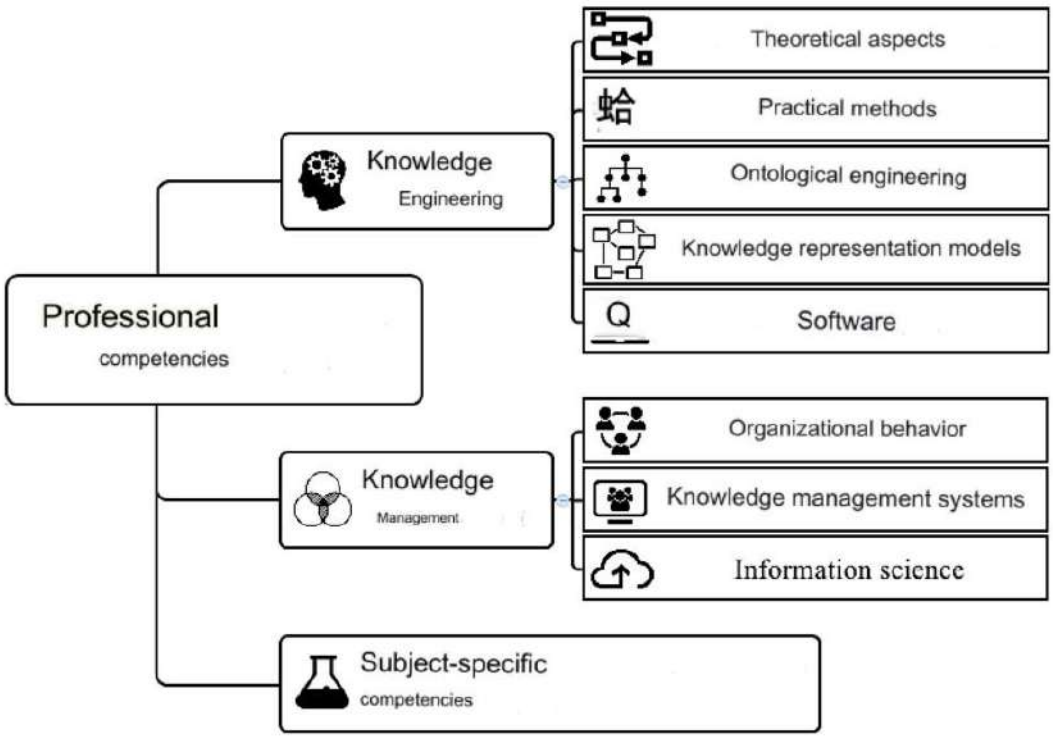

Figure 7 – Mind Map of Analyst's Professional Competencies

These competencies [Gavrilova, Leshcheva, 2016] are mainly related to knowledge and experience in the development of intelligent systems, from theory and ontological engineering to software implementation. Despite the fact that both the knowledge manager and the analyst require advanced communication skills, the competencies of the latter have a number of specific characteristics (see Table 5).

Table 5 – Specifics of knowledge management in the era of digital business transformation

	Key Objectives of Knowledge Management (KM)	Key Objectives of Knowledge Management (KM)	Key Employee Skills		
			Communication	Technical	Analytical
Traditional approach to doing business	Process, Technology, and People Management	Key Objectives of Knowledge Management (KM)	***	*	*

	Key Objectives of Knowledge Management (KM)	Key Objectives of Knowledge Management (KM)	Key Employee Skills		
			Communication	Technical	Analytical
Digital Business Transformation	Codification and structuring of knowledge	Analyst, Knowledge Engineer	***	***	***

It turns out that the demand market in the current conditions remains unsatisfied, since the supply market presents options that do not fully meet the needs of the market [Vlasov, Panikarova, 2016].

1.3. Typology of the research object

Within the framework of this study, the object is Russian organizations of the following type: Russian organizations in the field of education (namely, educational organizations of higher education, professional educational organizations, organizations of additional professional education) (according to the Federal Law of 29.12.2012 N 273-FZ (as amended on 17.02.2023) "On Education in the Russian Federation"). They can take the form of an institute, an academy and a university, the main activity of such organizations is the implementation of educational programs of higher education, as well as scientific activities, they can be public or private [Barankov et al., 2016]. Additional possible activities include the implementation of basic general education programs, educational programs of secondary vocational education, vocational training programs, additional general education programs, and additional professional programs [Laskina et al., 2014].

In this study, two large higher education institutions of federal importance appear in more detail – the Graduate School of Management, St. Petersburg State University and the Higher School of Economics, St. Petersburg, it was in these higher educational institutions that the author carried out the second stage of the presented study. The third

phase of the study was centered around University Y, looking at the main barriers to the implementation of knowledge management practices. Knowledge management in any organization is the process of creating, storing, organizing, using, and sharing information/data in an organization [Gavrilova, Kudryavtsev, Kuznetsova, 2019]. When information/data that comes into the organization from outside or inside is centralized, the search process is facilitated and communication between departments is improved. It also contributes to more effective and efficient training and development of employees and allows you to use the results of previous developments, documents, algorithms, rather than creating the same data and documents.

Historically, organizational knowledge management systems were developed by business information systems specialists and were used and popular primarily in the field of customer support, sales, information technology, marketing, operations, etc. [Gaponenko, 2001]. In modern times, this distinction has been erased and knowledge management is necessary in all processes of managing an organization, from routine management to strategic management.

In the environment of educational organizations, the introduction of knowledge management systems (not in the pedagogical/educational process) is a significant change and rejection of traditional types of storage and dissemination of 3 main trends: the complexity of transferring tacit knowledge, the integration of computer solutions with business processes within educational organizations, and the desire for rapid innovation. Looking at each of these trends in more detail, the following can be noted:

1. Shift towards the use, application and transfer of tacit knowledge: There are two different types of knowledge in knowledge management: explicit and tacit. Explicit knowledge refers to knowledge that is easy to record, share, and otherwise articulate, such as graphically, when constructing the steps of a process. Tacit knowledge is the application of explicit knowledge, such as the types of skills that can be transferred from one job to another, or the ability to follow the steps of a particular process. Tacit knowledge is what a person learns from personal experience, and tacit knowledge is much more difficult to express and reliably communicate. While more traditional forms of knowledge management can only capture the explicit, a knowledge engagement platform

will help you capture all two types of knowledge. For example, a frequently updated Q&A section or recorded videos and phone calls can help newly hired staff at a university get up to speed quickly;

2. Interest in integrating all software solutions: Today, higher education institutions are leveraging the power of dedicated software, such as enrollment management tools, digital communication platforms, and other e-business solutions, to streamline processes and support evolving goals. This makes it possible to meaningfully modernize knowledge management and transfer with the right software – especially if it can be integrated with other technical tools.

3. Striving for rapid innovation: Competition in higher and vocational education is growing every year, and now more than ever, it is important to stand out from the competition. Knowledge management based on a knowledge engagement platform fosters innovation by making information widely available.

1.4. Main conclusions of Chapter 1

A global step in the development of knowledge management took place during the transition from the resource to the knowledge theory of organization. When the heads of organizations began to understand that in the course of time and technological progress, changes occur in the market and the conditions of activity become more complex, knowledge (about the production of goods and the provision of services, about competitors, about possible new markets and their features, etc.) became a priority tool in the organization's activities. Next, painstaking work took place to streamline everything that scientists and practitioners know about current and promising practices of knowledge management. Due to the variety of definitions of the discipline of knowledge management, including knowledge management practices, there is a division by markets, countries, and types of economy.

There are important differences between foreign and Russian approaches and methods of knowledge management, which are important to consider when planning knowledge management operations, implementing knowledge management tools,

conducting training and finding knowledge management experts for the organization. At the moment, two typical strategies of knowledge management prevail in Russia – codification of knowledge and personalization of knowledge.

Educational institutions of higher education are full-fledged representatives of the economic market. Like other companies, they share their knowledge management practices with other similar areas of the market, where there is an element of education in one way or another (to varying degrees of representation – training, self-education, employee education, professional development, etc.), and often come up with innovative approaches.

This chapter analyzes the current state of research in the field of knowledge management practices. Based on the analysis and systematization of secondary sources of information, a new classification of knowledge management practices by stages of the knowledge life cycle is proposed, supplemented by knowledge management tools for each stage. The importance of conducting research in the Russian context is also confirmed, sets of foreign knowledge management practices are restructured, and a version of the Russian set is proposed.

CHAPTER 2. KNOWLEDGE MANAGEMENT PRACTICES AND THEIR APPLICATION

2.1. Knowledge management practices and results of the organization's performance

An organization's competitive advantage depends not only on the resources it possesses, but also on the competencies and utilization of its resource base (Barney, 1986; Conner, 1991]. The conceptual differentiation of capabilities from "standard" resources is that capabilities are used to use other resources [Makadok, 2001]. In essence, an organization is likely to outperform its competitors and potential rivals if it has the ability to obtain and deploy the best resources to achieve the desired outcome [Amit and Schoemaker, 1993; Conner, 1991]. It is through the combination of different resources that value is created, and these possibilities of combination are mostly so specific, because of their deep embedding in the processes of the organization, that their replication and removal outside the boundaries of the organization is difficult and hardly possible [Makadok, 2001]. This also applies to the knowledge assets of the organization, the policy of working with knowledge, the set of knowledge management practices.

Knowledge management practices are organizational and managerial activities that allow an organization to use its accumulated intellectual capital to create value [Kianto et al., 2014]. As stated in Chapter 1, knowledge management practices are considered separately from more general knowledge management processes, such as the acquisition, creation and sharing of knowledge, which are spontaneous and knowledge-based activities that exist in an organization even without managerial control.

Organizations are increasingly interested in knowledge management as they recognize that the effective use of their knowledge assets and resources can enable them to innovate, respond to customer demands and, to a large extent, and thus survive in the marketplace [Schiuma, 2009; Bigliardi et al., 2014; Celenza and Rossi, 2014]. Despite the growing interest in knowledge management, issues related to the practice of its implementation, both from a theoretical and empirical point of view, remain insufficiently studied, at least compared to the overwhelming body of work on the philosophical

foundations of knowledge, taxonomies of knowledge, and the role played by information and communication technologies [Foss et al., 2010]. Moreover, a number of previous studies offer a comprehensive theoretical framework that would synthesize the level of maturity of an organization's knowledge management, both in terms of knowledge management strategy and knowledge sources, and absorptive capacity [Galati, 2015]. Knowledge creates a new sustainable competitive advantage for all global companies, but there is a significant difference in the means of ensuring competitiveness between foreign and Russian enterprises [Shakina and Barajas, 2015]. Only a few studies focus on knowledge management in the Russian context, and even fewer have created a conceptual framework or explained how organizational characteristics affect its implementation [Wang et al., 2015]; Thus, this section of the study has tried to fill this gap.

Based on the analysis of the literature (the search for scientific articles was carried out in the leading databases of scientific periodicals ScienceDirect, Emerald, EBSCO, Taylor & Francis and Wiley Online Library) and the systematization of the content of 57 articles (which met the search parameters), a set of knowledge management practices was formed, which are most often mentioned and popularized in the scientific foreign literature, namely: the work of a manager (in some literature sources you can find a definition of supervisory work), knowledge protection, strategic knowledge and competency management (strategic knowledge management), learning mechanisms, practice in the field of information technology, organization of the work of a leader and several practices in human resource management, For example, knowledge-based recruitment, training and development, performance appraisals, and compensatory practices [Pleshkova, Grinberg, 2018]. A comparison of the most popular and therefore developed foreign knowledge management practices is presented in Appendix 3. These practices have already proven to be effective in organizations abroad (not only in the field of education), but even existing studies suggest that a different set of practices will work in a different geographical context and/or type of economy. The assumptions of the submitted dissertation research take these assumptions into account.

2.2. Study of knowledge management practices on the example of Russian educational organizations

The purpose of this stage of the study is to verify the classical model of knowledge management practices in Russian educational institutions. The question of this stage of research can be formulated as follows: How are knowledge management practices distributed in Russian educational institutions? As mentioned above, the first step was to conduct a thorough selection and review of academic papers on the relationship between knowledge management and organizational performance – based on this review, a generalized conceptual model of all interconnections and a set of knowledge management practices (also referred to as classical in this study) was proposed. Next, descriptive statistics tools were used to understand whether there are differences in the sets of knowledge management practices and to verify the model in the context of Russian educational organizations. In this case, the sample was 120 heads of administrative divisions of Russian educational organizations, and a survey was conducted on the basis of this sample. At the same time, the criteria for selecting organizations for the sample were: at least 100 employees who are engaged in the field of administrative support (the teaching staff is not considered in this dissertation study); variability of the presented educational programs in the amount of at least 10 programs; availability of scientific laboratories in the amount of at least 5. At the same time, the respondents who fell under the sampling criteria were included in the following proportion: 53% of respondents from state universities, 36% from non-state universities, and 11% from professional educational organizations. It is in this proportion that during the period of this area of research (2017-2018) the organizations of St. Petersburg, which are the object of the study, were presented. All selected respondents had higher education and had been the head of the department for more than 3 years.

The survey of 16 blocks of questions was created on the basis of previously adapted and validated scales developed by leading scientists in the field [Giampaoli et al, 2017; Inkinen et al, 2015; Kianto & Andreeva, 2014]. The survey included 12 sets of questions on knowledge management practices and 4 blocks of demographic questions. The survey

was distributed through an online questionnaire website with an active link and in person. The questions were translated into Russian with the involvement of experts in the field of knowledge management, and back into English in order to prevent the loss of meaning of the questions asked. Respondents were asked to rate questions on knowledge management practices according to the degree of agreement with the proposed statements on a Likert scale from 1 to 6 (the middle value was not provided intentionally, the six-point Likert scale was not chosen by chance, since in this case there is no option of average choice (which is in odd scales), and allows us to conditionally divide the received answers into "negative" from 1-3 and "positive" in the interval from 4-6), where 1 – strongly disagree/practice is not used at all in the organization, and 6 – completely agree/practice is used in the organization on a regular basis (the variability of the assessment depended on the question/statement asked). Examples of question constructs are provided in more detail in Appendix 1. For example, questions on internships looked like this, for example, questions on recruitment practices (recruiting employees with knowledge creation and sharing competencies):

«Please indicate how much you agree with the following statements:

– In recruitment, the organization focuses on competencies that meet the needs of the organization (1) (2) (3) (4) (5) (6)

– In recruitment, the organization focuses on the employee's ability to learn and develop (1) (2) (3) (4) (5) (6)

– Employees and/or teams from within the organization who achieve goals or solve complex problems, are recognized by the organization and/or are financially rewarded (1) (2) (3) (4) (5) (6)

– Employees have the opportunity to develop their competencies through training that is tailored to their needs (1) (2) (3) (4) (5) (6)"

Within the framework of the survey of the heads of educational organizations, the redistribution of key working knowledge management practices was determined, as well as promising (and not popularized abroad) knowledge management practices were identified (see Table 6) [Gavrilova, Alsufiev, Pleshkova, 2018].

Table 6 – Knowledge management practice sets

Success factors	**Key foreign knowledge management practices**	**Structure of adapted Russian knowledge management practices**
Person-oriented: Culture People ЛLeadership	Organizational Culture Recruitment, Development, Appraisal, Compensation, Learning Mechanisms Decentralization & Executive Work	Recruitment Compensation Learning Mechanisms
Organization oriented: Processes Structure	Organizational design	Training & Development* Performance Management* Organizational structure & culture
Technology-oriented: Infrastructure Applications	Information and communication technologies	Information Technology Knowledge Protection
Management-oriented: Strategy Purposes Measurement	Strategic management of knowledge and competencies	Strategic management of knowledge and competencies Leadership and managerial work

* – least developed knowledge management practices in the Russian context

Practices related **to strategic knowledge and competency management** can be explained as strategic planning, implementation, and activities related to knowledge-based assets in a firm [Kianto and Andreeva, 2014]. A knowledge-based strategy builds on an organization's core strategic knowledge [Dalkir, 2005; McKeen et al., 2005].

Strategic management of both knowledge and competencies can enhance innovation and organizational effectiveness through the following mechanisms: allowing the organization to focus on the most value-creating activities of the company, which is important because researchers assume that knowledge as an intangible asset is a source of sustainable competitive advantage [Kushwaha and Rao, 2015]; and enabling the organization to make strategic decisions about the proper allocation and use of the company's competency base that follows its strategic goals [Shujahat et al., 2017].

The practice of **"decentralization and management work"/"leadership and managerial work"** can be the most decisive factor for the development of organizational culture. The level of management has a direct impact on the company's performance and determines the scale of its growth. Top-level support combined with local freedom at the departmental level is offered as a good combination for the development of the company. A leader is a master of inspiration, a mentor who sets trends and creates a working atmosphere of communication and knowledge sharing, respect and trust [Carson et al., 2004; Macdonald, 1978; Lu et al., 2013]. Therefore, this block of decentralization and management work is considered as a tool for creating an innovative atmosphere in the organization.

There is strong evidence supporting the role of the practice of **"organizational culture"** on the effectiveness of innovation introduction to an organization [Nam Nguyen and Mohamed, 2011]. Various aspects of organizational culture, such as organizational structure, education and training, rewards and incentives, open communication, employee engagement, and workforce flexibility, can enable organizations to overcome knowledge management barriers and achieve competitive advantage [Patil and Kant, 2012]. Organizational culture is a critical factor in creating and strengthening knowledge management in organizations, and improvements in its practices, in turn, improve both innovation and organizational performance [Rai, 2011]. Organizational culture has a positive impact on the intention of employees to participate in knowledge-related processes, especially in knowledge creation; this, in turn, leads to more innovative solutions and productivity, while a tightly controlled organizational culture has negative consequences [Chang and Lin, 2015]. Work organization practices include organizational

structure issues that facilitate the use of knowledge. They imply decisions concerning the distribution of work and responsibilities, as well as the coordination of work (Mintzberg 1992). For example, the distribution of authority and decision-making rights among knowledge-based workers has been proposed to accelerate organizational performance and encourage innovation (Davenport and Prusak 1998). Learning mechanisms in an organization can be explained through learning by doing, learning by doing, or social learning (by observing the behavior of others and their consequences). Организационное обучение повышает уровень инновационности организации за счет внедрения знаний, полученных из усвоенного опыта или передовой практики [Gherardi, 2009; Lave, 2009]. Используя различные методы обучения, компания стимулирует сотрудников к обмену и развитию знаний, поскольку компания находится в постоянном поиске лучших Solutions. Practices linked to HR services/"recruitment practices" play a significant role in knowledge management and, obviously, in the overall effectiveness of the organization [Hislop, 2003; Scarbrough, 2003; Wong, 2005]. In foreign studies, knowledge management practices related to the activities of HR services are divided into four components: finding the right people who will share their unique knowledge – recruitment, training and development of employees – learning and development, evaluation of their performance and ability to communicate with other participants in the flow of knowledge – certification, rewarding employees financially or otherwise for disseminating their knowledge and valuable ideas within the organization – reward. Knowledge management practices that are the responsibility of HR services can improve innovation through four main mechanisms (Scarbrough, 2003). First, by paying attention to candidates' knowledge and social skills in the hiring process, a company can increase the availability of a literate workforce to efficiently and effectively perform knowledge-intensive tasks [Chen and Huang, 2009; Currie and Kerrin, 2003]. Secondly, training and development have a significant impact on the firm's knowledge base; Active planning and organization of seminars and courses keep the knowledge base competitive and up-to-date [Scarbrough, 2003]. Thirdly, appraisal is a regular analysis of the performance of employees to understand the progress of their careers and shape future directions; In our study, we analyze the results of the work in terms of interactions and

activities within the framework of the main knowledge management processes (creation, ...обмен, использование, документирование и т.д.). Fourthly, a reward scheme based on these activities increases the likelihood that staff members will engage in such activities. In principle, positive knowledge management practices, which are the responsibility of HR services, retain competent employees in the organization, using both intangible and material motivations.

Information and Communication (ICT/IT) practices can be used to change performance metrics. Nowadays, the amount of information available to organizations is enormous, and this can be seen as both a threat and an opportunity. Organizations that see the positive side of market conditions take advantage of information and communication technologies in finding, collecting, and analyzing information to support decision-making and key performance indicators. Information and communication technologies can also assist in open innovation by providing platforms for co-innovation with external parties, as well as creating various communication channels for internal and external stakeholders [Andreeva and Kianto, 2011]. Thus, managers should view information and communication technology not only as a support system, but more specifically as a tool for gaining a competitive advantage.

Innovation, considered in foreign studies and not considered in this dissertation research in relation to the use of knowledge management practices, can be described as the implementation and application of new discoveries and inventions, in the course of which new units of outcomes emerge, be they products, systems or processes [Williams, 1999]. A few case studies demonstrate that knowledge management systems support innovation [Jang et al., 2002; Suh et al., 2004]. Large-scale quantitative research in this area is scarce, but it also supports the idea of a positive relationship between knowledge management and innovation [Gloet and Terziovski, 2004; Darroch, 2005; Kiessling et al., 2009; Kianto, 2011].

Organizational effectiveness, which is also considered in foreign studies and is not considered in this dissertation research in relation to the use of knowledge management practices, from the point of view of knowledge management, is presented in the form of a perceived assessment of key metrics and performance indicators: financial

savings, time savings, and increased revenue and organizational efficiency. Studies by foreign scholars examine how organizations use their capabilities to complete a task and plan for exiting their processes [Choong, 2013].

Financial performance also often appears in conceptual models related to the study of the effectiveness of knowledge management practices. Significant investments in knowledge management in the Russian context will not necessarily lead to an improvement in financial performance [Kalling, 2003], but are likely to have an impact on a set of intermediate variables, which in turn should influence it [Lee and Choi, 2003]. Therefore, the actual outcome of knowledge management practices is difficult to predict [Yahya and Goh, 2002], although the model below shows these relationships between several variables and organizational and financial indicators.

Knowledge management processes are also built in their own way in Russian educational organizations, which differs from the standard knowledge management processes in foreign organizations, where all processes (1-2-3-4) are built alternately (see Figure 8) [Gavrilova, Alsufiev, Pleshkova, 2018].

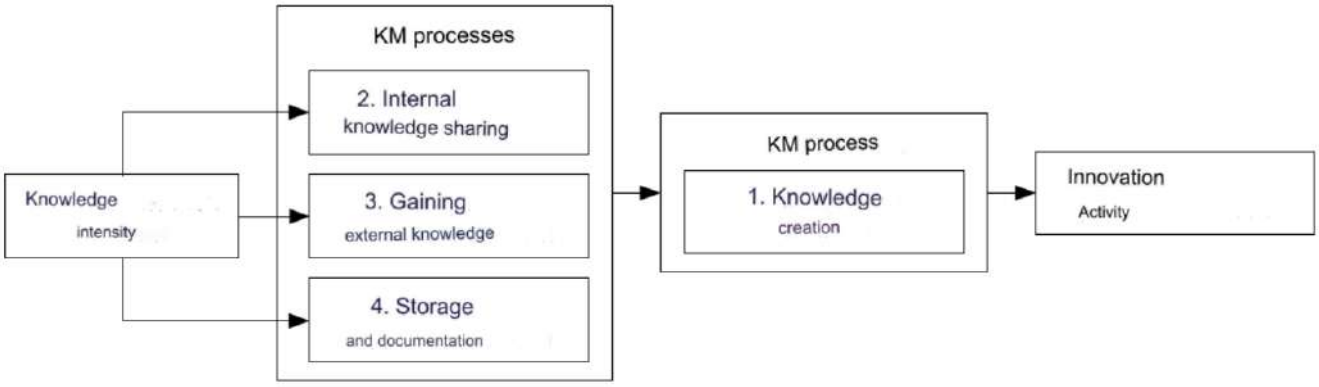

Figure 8 – Knowledge management processes

The intensity of external knowledge flows from an organization is related to three knowledge management processes: internal exchange (the movement of existing knowledge between different departments or actors, hierarchical levels and divisions [Bhatt, 2001; Szulanski, 1996]), the acquisition, use and storage of external knowledge. In Russian educational institutions, the creation of new knowledge follows the above processes, due to the tendency to replicate past successful experience.

In foreign literature, the most developed and popular practices are human resource management, compensation, and organizational culture. Earlier, the presented study made the assumption that there is an excellent set of working knowledge management practices in Russia (in particular, in the market of educational services). After analyzing the respondents' answers, the model of knowledge management practices was verified based on descriptive statistics of variables and analysis of mean values of responses, which serves as a basis on which to make assumptions about which knowledge management practices work or are most engaged, and therefore most popular in an educational organization, and which practices are not used and therefore not developed. As can be inferred from these averages (see Figure 9) based on the results of descriptive statistics, the most developed practices are: strategic knowledge and competence management, recruitment practices, knowledge sharing practices, and knowledge retention practices. This means that an atmosphere of trust and interaction is maintained, the willingness to share knowledge is appreciated, and interaction between different departments is encouraged. Russian educational institutions use instructions for employees and other informal means and measures to preserve accumulated knowledge. Organizations also check whether a person is willing to work on tasks in a group that includes people from other departments. At the same time, the least developed practices were training and development, which includes the development of new services or products based on working with existing knowledge, and the practice of performance management, where knowledge management tools should be actively used to improve the quality of services provided.

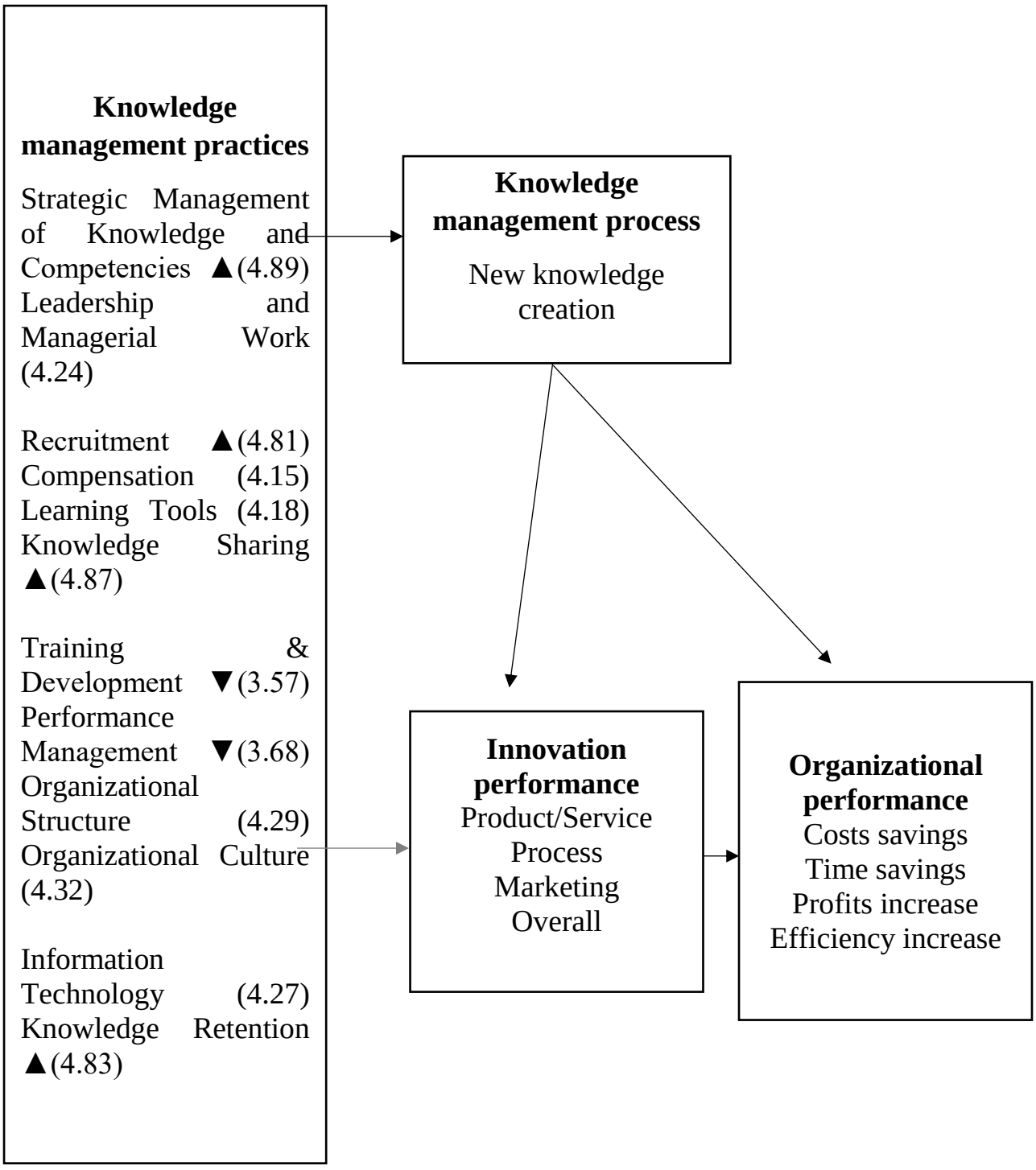

Figure 9 – A Model of knowledge management practices in an educational organization

In this way, the Russian reality has a different set of practices than abroad. For a logical representation of the practices that are implemented in Russian educational organizations. In addition, for each of the stages of the knowledge life cycle, knowledge management tools and targeted methods of influence are presented, with the help of which it is possible to enhance the effect of using knowledge management practices (see Table 7).

Table 7 – Classification of knowledge management practices by knowledge life cycle

Knowledge Lifecycle	**Knowledge Acquisition (Extraction)**	**Accumulation of knowledge**	**Knowledge Distribution (Structuring)**	**Knowledge Dissemination (Use)**	**Knowledge Analysis (Audit)**
Russian Knowledge Management Practices	Work of management IT	Learning Mechanisms Compensation Performance Management	Organizational Structure Training & Development	Organizational Culture Knowledge Sharing Recruitment	Strategic Management of Knowledge and Competencies Knowledge Retention
Knowledge Management Instruments	•Brainstorming •Surveys and questionnaires •Collecting and managing ideas •Crowdsourcing •Content analysis •Interviews •Observation •Reflection and learning tools (debriefing, debriefing) •Extract knowledge and data from text	•libraries and knowledge bases (projects, lessons learned, model solutions...) •Best/Good Practices (Instructions, Techniques, Regulations, Policies...) •Taxonomies / Rubricators / Ontologies •Metadata Standards •Knowledge Structuring Methods •Automatic Classification and Clustering Methods •Knowledge Representation Methods (Semantic Networks, Rules)	•Information retrieval tools •proactive provision of information (notifications, mailings, digests, recommendations) • Knowledge packs • Training materials/courses •Infographics	• Storytelling • Peer Help •Knowledge Café •Social Networking Services •Expert Selection Systems • Communities of Practice •Collaboration/Projects •Staff Rotation	• Knowledge maps • Analysis of knowledge transformation processes • Self-assessment models of the maturity level of KM

An additional observation was the result of the analysis of the relationship between information technologies and the most developed knowledge management practices in Russian educational institutions. Since, as presented in Chapter 1, there is a peculiarity of IT bias in Russia, it was analyzed how the use of information technologies can strengthen the effectiveness of practices. A statistically significant result was found only in the relationship between information technology and strategic knowledge and competence management (the moderation effect is not significant in other relationships) (see Table 8, Figure 10).

$$Y = \beta_0 + \beta_1 SMK + \beta_2 KS + \beta_3 KR + \beta_4 R + \beta_5 IT + \beta_6 SMK*IT + \beta_7 KS*IT + \beta_8 KR*IT + \beta_9 R*IT + \varepsilon$$

Table 8 – IT moderating effect

		Most developed practices	**β**	**P**
Organizational performance	←	Strategic management of knowledge	,412	***
	←	Knowledge sharing	,238	***
	←	Knowledge retention	,240	***
	←	Recruitment	,424	***
	←	IT	,292	***
	←	Strategic management of knowledge _x_IT	,157	**
	←	Knowledge sharing_x_ IT	-,085	,145
	←	Knowledge retention_x_ IT	-,067	,303
	←	Recruitment_x_IT	-,023	,598

Note: * p < 0.1; ** p < 0.05, *** p < 0.01

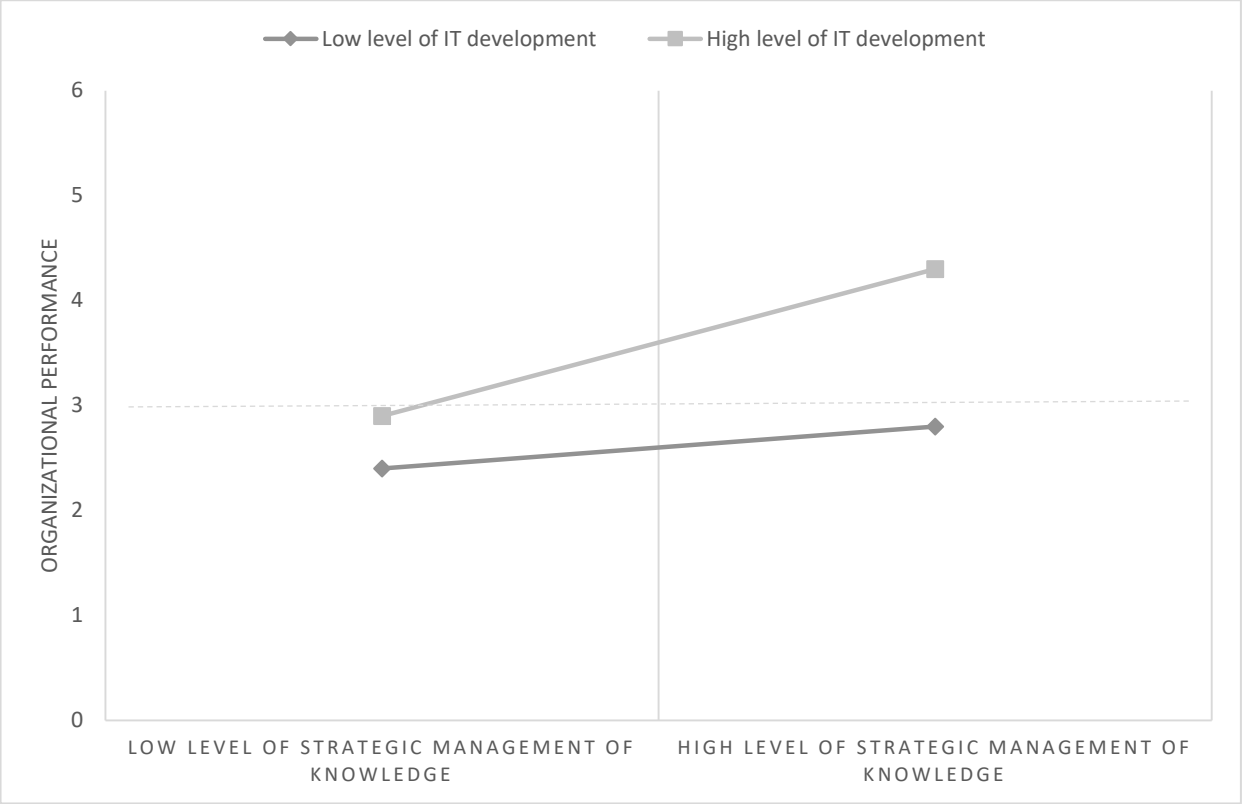

Figure 10 – Differences in the use of advanced IT technologies at different levels of strategic knowledge management

Based on the descriptive statistics obtained, the following features that are potentially present in an educational organization can be considered [Gavrilova, Alsufiev, Pleshkova, 2018]:

– the main indicators of innovation and organizational activity are determined by the general climate created by the organizational culture adopted in the organization;

– the company has a sense of its own innovation, which serves more as a motive for further actions and is weakly reflected in innovative activities (development of new products and services, application of new management and marketing practices, repositioning of the business model);

– the main driver of the dissemination of key valuable knowledge in the organization is the people who give away the knowledge they have (it is selected by the HR department);

– emphasis is placed on internal knowledge sharing and there is little use of learning from outside as well as from areas related to the organization's activities;

– there is a technocratic bias and dependence on the use of information technology.

2.3. Application of knowledge management practices in the activities of Russian educational organizations

The identified least popularized and used knowledge management practices (1 – training and development, 2 – performance management) were considered in more detail in the current study. The main question in this case was whether the use of these knowledge management practices brings results in organizational activities, even despite their low popularity. Since these practices have not been stated to be widely used, do they benefit the organization at all, or do they really fail to produce results in organizational activities and therefore do not receive sufficient attention? As part of this audit, the above-mentioned knowledge management practices were applied in two practical tasks in the educational activities of higher education organizations:

1 – "training and development" practice – in the formation of a new curriculum of the Institute of the Graduate School of Management, St. Petersburg State University;

2 – Performance Management practice – in the use of additional tools for knowledge creation as part of teaching at the Higher School of Economics, St. Petersburg.

2.3.1. “Training and development” practice

As part of the study, the use of the first least used practice – training and development – was studied. The study was carried out on the basis of the structural subdivision of St. Petersburg State University, the Institute of the Graduate School of Management. The main focus was the transformation of the business English curriculum.

In 2014, the transition to a new 3-year language and communication program for GSOM SPbU undergraduate students began. The following key factors were identified as having a major impact on the language curriculum development process (see Table 9) [Orlova et al., 2017].

Table 9 – Factors influencing the process of developing a language program [Orlova et al., 2017]

Factor	Description
Factor 1: Introduction of a new educational standard in a foreign language	In 1993–2003, the first language programme was developed for the Faculty of Management of St Petersburg University. It was based on intensive methods of teaching English for special purposes, namely English for the development of business skills of GSOM and SPbU students. In 2001, the Department of Foreign Languages of the Faculty of Management was established and the principle of language proficiency levels was introduced, corresponding to "international certification and international assessment of language competence" [Grigoriev, Rebikova, 2003].
Factor 2: Internationalization of the GSOM SPbU School	The number of students from the Graduate School of Management of St. Petersburg State University who go to study at academic business schools as part of exchange programs is increasing. In this regard, it is necessary to revise the language program with an emphasis on the development of language and communication skills for effective interaction in an international academic environment. The implementation of the new strategy of the GSOM Institute for the modernization and internationalization of the educational process coincided with the start of research by the Department of Languages of Academic and Business Communication (LABC) on the development of a language and communication program for a business school.
Factor 3: Higher level of English proficiency of GSOM SPbU	In the 2013/14 academic year, the proportion of students proficiency in English at the B2 level at admission reached 56.2 percent. This has led to a corresponding change in

Factor	Description
students upon admission	students' needs and expectations in terms of language proficiency and communication skills. This has intensified the process of rethinking the existing approach to teaching and learning.
Factor 4: Expectations of GSOM SPbU Faculty	GSOM faculty members have demonstrated higher expectations of students' communication skills in English. They expressed interest in further interdisciplinary cooperation as a prerequisite for teaching their disciplines in English.
Factor 5: Expectations of GSOM SPbU Corporate Partners	GSOM corporate partners provided feedback, which contributed to the definition of a new skills development program aimed at the quality of communication of GSOM graduates. There are new competencies that corporate partners require from GSOM graduates.
Factor 6: New Academic Directions for the development of Language Programs for business schools	Teaching English at an international business school is an additional responsibility that puts additional pressure on educators and curriculum developers (Coelho, 2012). This situation requires not only the attention of researchers, but also concrete measures to ensure the sustainable progress of the educational program. Traditional methods of language teaching no longer bring the desired results and do not contribute to the academic progress of students.

These 6 factors have formed the need for the development of a new program [Orlova et al., 2017]. The main purpose of this research was to present a variant of using one of the least developed knowledge management practices "training and development" on the example of changing the language and communication program of GSOM SPbU, introduced by the Department of Languages for Academic and Business Communication of the Graduate School of Management, and to justify the new design of the language and

communication program as part of the analysis of interviews with key stakeholders of the program.

The following objectives were formulated: 1) to present evidence (conclusions) for changing the design of the program: analysis of the needs of the school's stakeholders (students and key stakeholders); 2) present a new skills development program; 3) present the results of a comparative analysis of the objectives and procedures of teaching two types of language and communication programs: thematic and skills-based; 4) To conclude what type of language and communication program meets the needs and expectations of the school's stakeholders.

A competency-based approach to language teaching [Auerbach, 1986; Mrowicki, 1986; Docking, 1994; Richards, Rodgers, 2003; Nunan, 2007; Orlova et al., 2017] is central to teaching at St. Petersburg State University. A large and growing body of literature has investigated the concepts of "competence" and "competence", which underlie the competency-based approach to language teaching [Chomsky, 1972; Schenck, 1978; Grognet, Crandall, 1982; Docking, 1994; Llurda, 2000; Boyatzis, 2008]. The complexity of the modern interpretation of these terms shows the need to clarify what is meant by "competence" and "competence". "Competence" is defined as a set of knowledge and skills that are formed in the process of studying a subject, as well as the ability of a person to do something adequately based on the acquired knowledge and skills, while "competence" describes the personal qualities that determine a person's ability to apply or use a set of relevant knowledge and skills [Azimov and Shukin, 2009, p. 107]. Another interpretation of the term "competence" emphasizes the purpose aspect of its definition. For example, competency is the ability to apply acquired knowledge and skills to successfully perform "critical job functions" or tasks in a specific work environment. This area of research is based on the concepts of "communicative competence", "communicative competence" and "communicative skill" [Orlova et al., 2017]. Communicative competence is what learners know to be able to communicate effectively, and communicative competence refers to learners' ability to apply knowledge, language, and communication skills appropriately to achieve the goal of communication in a particular situation [Thornbury, 2006, p. 37]. The term "communication skill" is

generally understood as "the ability to effectively and efficiently convey information to another in order to be known or understood by others." From the point of view of language teaching methodology, a communicative skill is an acquired way of performing an action based on knowledge and previous experience [Azimov and Shchukin, 2009, p. 320]. For the purposes of this study, communicative competence refers to the outcome of activities: the ability of GSOM SPbU students to apply the knowledge, language and communication skills, attitudes and behaviors necessary for successful activities in academic and professional contexts, and communicative competencies relate to the main goal of learning and help us determine the organization of content in the language and communication program [Orlova et al., 2017]. Researchers [Hutchinson and Waters, 1987; Nunan, 2007; Richards and Rodgers, 2003] note that the approach to learning largely determines the design of the program. As part of a competency-based approach to language and communication teaching that focuses on student performance and demonstration of achievement of learning goals, program developers strive to create a product-centric program. There are two productively-oriented types of language programs: thematic and skill-based [Kolesnikova and Dolgina, 2001, p. 224]. Despite the common goal of learning (in both types of programs, it is about the results of students' activities or the key competencies that they must master and demonstrate), the ways in which the goal is achieved in the thematic and skill types of programs are different. This applies, for example, to the organization of the course content, the methods of presentation of the teaching material, the evaluation criteria and the analysis. In the thematic type of program, the content is built around a set of topics (e.g., work and motivation, company structure, managing different cultures, recruitment). In contrast to the thematic type of the program, in a skills-based program, the topic takes on secondary importance, and the content is built around the core competencies, which are the main learning objectives.

To determine and concretize communication skills for GSOM students, qualitative research methods were used: content analysis of language and communication programs, a survey of two groups of GSOM stakeholders, a comparative analysis of the types of language and communication programs, professional expertise at international

conferences, observation [Orlova et al., 2017]. In order to clarify the modern approach to the development and implementation of programs and to better understand the stage of program design, a content analysis of the types of language and communicative programs was carried out [English for Specific Purposes..., 2005; Sloane, Porter, 2009; Basturkmen, 2010; Orlova et al., 2016]. Traditionally, it is believed that the process of program development begins with the study and analysis of the needs of stakeholders, which underpin the further stages of program design and implementation [Sloane and Porter, 2009; Basturkmen, 2010]. The language and communication programme for academic and/or professional purposes is generic in nature and transferable to different majors, thereby providing a standardised basis for a range of courses and curriculum development. In addition, program development and implementation require the definition of the program life cycle [Scheirer, 2012], which includes: 1) the program design process; 2) program development: pilot implementation; 3) program development: full-scale implementation; 4) program development: continuous full-scale implementation; 5) the phase of the program's evolution: transition to a new quality. In the process of developing the program at GSOM, it was necessary to answer the following key research questions:

? What are the needs identified by the main stakeholders?

? Does the skill-based type of language and communication program meet the needs of stakeholders?

In order to answer these questions and clarify the needs of GSOM SPbU stakeholders, an analysis of the needs of two groups of GSOM SPbU stakeholders was carried out: GSOM SPbU corporate partners and students who participated in the international semester [Orlova et al., 2016].

Group 1. Corporate Partners. The companies were selected based on their recruiting activity. In 2015, these companies were among the main employers for GSOM SPbU graduates. 16 corporate partners of GSOM SPbU took part in the survey (Questionnaire for corporate partners..., 2015). Its goal was to get answers to the question that determines skills: what language and communication skills should be demonstrated by GSOM SPbU graduates at the initial stage of their careers? Out of a total of 36

responses from corporate partners, twenty work-related language and communication competencies that they expect from GSOM SPbU graduates were identified (see Table 10) [Orlova et al., 2017].

Table 10 – Percentage of answers in the survey of GSOM SPbU corporate partners

%	**Communication Skill**
90%	solve non-standard communicative tasks and be ready to do it autonomously
88%	communicate with senior staff and communicate the results of the analysis to them
85%	see alternative solutions
83%	answer provocative questions
83%	take responsibility for results
80%	networking in larger and smaller occupational groups
77%	communicate and promote the position
75%	communicate and promote their position, even if it is contrary to the generally accepted order of things
75%	request urgent information from colleagues
73%	use separate data to develop a coherent and reliable argument
70%	have a conversation
70%	build a persuasive argument and deliver it
69%	"read" the interlocutor
65%	listening to others and being part of the discussion
60%	assess the risks to which your business sector is exposed, as well as communication risks
60%	communicate in uncertain situations
60%	coping with fear and anxiety
60%	communicate logically, structurally and concisely highlight the main idea and convey its importance to the audience
60%	be quick in perceiving information

Group 2. Students who participated in the international semester. 60 students of the GSOM SPbU Bachelor's program, who returned from the international semester at GSOM SPbU academic partner universities, took part in the survey. Her goal was to answer three skill-defining questions:

1) What communication tasks did you have to perform?

2) What language and communication skills do you need to demonstrate?

3) What language and communication skills are you struggling with?

From the students' answers, 20 language and communication skills necessary for academic communication were identified (see Table 11) [Orlova et al., 2017].

Table 11 – Language and Communication Skills Required for Academic Communication of GSOM SPbU Students

%	**Language and communication skills**
93%	define and communicate the main idea
93%	speak logically
92%	build a coherent argument
91%	monitor the quality of speech during a long presentation, as well as the coherence and structure of thinking
91%	speak impromptu on complex topics
89%	use functional grammar
88%	perform in a variety of academic formats
87%	use academic language to convey a precise idea
87%	write for academic purposes
86%	make links
84%	speak in the following academic formats: presentations, cases, projects, essays
84%	speak in front of a large audience
83%	communicate in a balanced and calm manner
82%	don't feel anxious
81%	find interesting and valuable information for presentation and discussion

%	**Language and communication skills**
81%	hold the audience's attention
80%	keep in touch with the audience
80%	be persuasive and impressive (emotional)
79%	build long, coherent arguments
78%	keep communication under control
78%	interact, participate in q&a sessions
77%	read scientific articles and participate in research-related discussions
76%	read scientific articles and participate in research-related discussions
76%	structure information from scientific articles; do it quickly and professionally

An interesting observation revealed by comparing the data is that GSOM SPbU corporate partners do not distinguish between language and communicative competencies, since language skills are considered a means, not an end, of business communication, while GSOM SPbU students must develop both their language skills and communicative competencies. In addition, the findings point to the need to switch to a new type of language and communication curriculum and to introduce a new skills program.

An analysis of the types of programs showed that the skills-based type is more beneficial to meet the academic and professional needs of GSOM students, as it helps to develop their competencies in a more practical and integrated way [Orlova et al., 2017]. Conclusions based on the results of empirical surveys. Studying the answers to the questionnaire helped to formulate competencies related to the language and communication program for GSOM undergraduate students [Orlova et al., 2017]. The work-related competencies defined by GSOM's corporate partners (expectations for the language and communication skills of GSOM graduates) have been reformulated into the competencies of the Language and Communication Program. GSOM graduates should be able to: Use language tools and communication strategies: communicate with senior staff in response to questions about status, registry and other questions communicate the results

of the analysis to the attention of alternative solutions indicate and communicate alternatives (functional language) respond to provocative questions deal with aggressive audiences establish contacts in larger and smaller professional groups communicate with different audiences communicate and promote the position, Even if it is contrary to the generally accepted order of things, implement conflicting ideas, request urgent information from colleagues, request information (both verbally and in writing). Work-Related Competencies Identified by GSOM Corporate Partners and Competencies for the Language and Communication Program The competencies identified by GSOM Corporate Partners and Students after the International Semester helped to define a new competency program for the Language and Communication Program and clarify specific courses within the program: "Academic Communication Skills in English", "Academic Communication Skills in English: Subject Specifics" and "Business Communication Skills in English". Based on the analysis of the competencies, the identified skills were distributed among the courses of the three-year program, which involve the stages of introduction, development and/or mastering of these competencies [Orlova et al., 2017].

Table 12 – Embedding skills in a business English language training program

Students can use English language tools and communication strategies to:	Year 1. Academic Communication Skills in English	Year 2. Academic Communication Skills in English: Subject-Specific	Year 3. Business Communication Skills in English
Demonstrate active listening techniques when participating in discussions	*	**	***
Develop consistent and reliable arguments from different sources of information	*	**	
Request information (both orally and in writing)	*	**	

Students can use English language tools and communication strategies to:	Year 1. Academic Communication Skills in English	Year 2. Academic Communication Skills in English: Subject-Specific	Year 3. Business Communication Skills in English
Be able to communicate the results of the analysis	*	**	**
Be able to work with an aggressive audience	*	**	**
Be able to communicate with different audiences	*	**	
Be able to identify alternative ideas (functional language)	*	**	
Present ideas that conflict with the opinion of the majority	*	**	**
Communicate the status	*	*	
Communicate the idea of responsibility	*	*	
Coping with the fear and anxiety of public speaking	*	**	

Note: * – introduction, ** – development, *** – mastering.

Answers to the questionnaire and direct observation (defense of theses, completion of interactive tasks) helped to identify a new communicative gap: students have difficulties getting out of stressful situations so as not to harm their reputation. Thus, a new skills agenda has emerged (see Table 13).

Table 13 – Redesign of the teaching program objectives within the “training and development” knowledge management practice

Students can use English language tools and communication strategies to:	Year 1. Academic Communication Skills in English	Year 2. Academic Communication Skills in English: Subject-Specific	Year 3. Business Communication Skills in English
Strengthen positive relationships	*	**	**
Have a valuable impact on your interlocutors	*	**	***
Help your interlocutors realize their potential	*	*	**

Note: * – introduction, ** – development, *** – mastering.

This combination of outcomes is essential for the development of a new type of skills-based program, as it provides an opportunity to respond to the current needs and expectations of GSOM stakeholders. These results also mean that communication skills can be developed gradually and sequentially, from the first year, when students are introduced to communication skills, to the third year, when students are expected to develop and/or master the communication skills they have begun to learn. This interconnected way of developing skills can help students become more effective communicators. The main limitation of this area of research is the early stage of the program. In the pilot phase, only initial data were obtained, allowing conclusions to be drawn for the evaluation and adaptation of the program. In order to answer the question of whether the program is being implemented as intended, additional data collected in the post-realization of the programme.

2.3.2. “Performance management” practice

An example of the use of the second least developed practice of knowledge management in an organization – performance management – was carried out while

teaching the author at the master's program "Management and Analytics for Business" at the Higher School of Economics, St. Petersburg [Pleshkova, 2022].

Modern management processes are associated with the processing of large information flows. The digitalization and computerization of society expands the information field and, thus, complicates the process of finding the best solution [Katkalo, 2022; Maksimov, 2021]. Additional information helps to prepare a solution, but makes it difficult to find the necessary data, integrate different types of information, link the solution to goals, etc. As a result, a paradoxical situation arises: the lack of necessary knowledge/information with its abundance, which makes information processing a problem in all areas of management, including educational processes.

Ontology, philosophically, is the part of science that studies what it means to exist. Within the discipline of artificial intelligence, ontologies connect the names of the entities of the universe and formal axioms that limit the understanding and correct use of these terms [Gavrilova, Kudryavtsev, Muromtsev, 2016; Gavrilova, 2009]. Thus, in the sciences of ontology, reference is made to the philosophical concept of the digital representation of the reality of a subject area or knowledge [Gavrilova, 2009; Gavrilova and Muromtsev, 2008]. The definition of ontologies in this context has not been fully agreed upon and finalized, however, among the most common definitions, ontology is an explicit specification of conceptualization or a kind of engineering artifact consisting of a certain vocabulary to describe a specific reality [Gavrilova and Leshcheva, 2014; Borgest, 2018].

To construct ontologies, it is necessary to represent knowledge of the domain in such a way that it is easy for a computer to read, consistent, and has the ability to be reused in different contexts [Borgest, 2018; Borgest, 2013; Akhmedyanova & Pishchukhin, 2022]. It is for these reasons that ontology is used to reduce the terminological and conceptual confusion that often arises between individuals and organizations, as well as in computer systems, especially now that the above problem of information overload is exacerbated. The main direction of artificial intelligence is the construction of knowledge-based systems. The ontological approach is the basic means

of adapting the education system to the growth of knowledge, data and information and the urgent need for their formalization and structuring.

Ontologies have been used in educational systems for a long time [Akhmedyanova & Pishchukhin, 2022; Borgest, 2019; Kulikov, 2015; Gasparian, Lebedev, Telnov, 2016] and, conventionally, such use can be divided into the following categories [Pleshkova, 2022]:

1. Modeling of the curriculum of the academic discipline – presentation of the curriculum, curriculum, development of the curriculum plan, analysis of the prospects of implementation, assessment of the implementation of the curriculum, determination of the presence of mandatory basic elements of the curriculum, connection of these elements with the tasks and results of the academic discipline and with other elements of the system, etc.;
2. Curriculum management – managing the processes of the curriculum (intermediate control, preparation for reporting activities, conducting reporting activities, grading and receiving feedback);
3. Description of subject areas of disciplines – ontology of a certain subject area, construction of the ontology of the learning task;
4. Assessment of student data assimilation – based on individual and group progress of students, as well as on the basis of the results obtained.

Ontologies are predominantly used in the following areas of the educational process: in program scheduling, in curriculum development for key courses and resource planning, learning outcomes management and curriculum management modeling; Knowledge technology experts apply the semantic network and ontologies to personalize educational aspects such as training and courses; to overcome the heterogeneity and difficulty of processing a large amount of data from the Internet, assisting students and academics in their choices based on the semantic web of technology.

The relevance of using the ontological approach in the educational process is due to [Pleshkova, 2022]:

- the regular need to transform tacit knowledge into explicit knowledge;
- improvement of educational processes;

- the unprecedented growth in the volume of information and the need for its compression;
- the problem of preserving intellectual capital.

The purpose of this part of the research was to build an improved ontological model of one of the most important parts of the educational process – "preparation for the reporting event", which allows complementing the main trajectory of individual professional development of students of specific training profiles within the framework of the use of "performance management" practice.

In the analysis of the practice of foreign teaching as a fundamental process of knowledge transfer and management, an earlier (in comparison with Russian practice) use of the ontological approach is noted (see Table 14) [Pleshkova, 2022].

Table 14 – Knowledge management and ontologies

Studies (classical and contemporary)	**Description (key focus of research)**
Theory and Ontologies [Poli, 2002; Sugumaran, Storey, 2002; Guarino, 1997; Smith, 2003; Noy, McGuinness, 2001]	ontologies from the point of view of philosophy; boundaries, types, and structures of ontology; database design methodology for creating and managing domain ontologies; principles of using formal ontology and ontological engineering for real-world knowledge engineering; a new area related to the design and use of ontology
Development of ontologies [Corcho, Fernandez-Lopez, Gomez-Perez, 2003; Seng, Lin, 2007; Hult, 2003; Gilyarevsky, 2009; Yim, et al., 21]	demonstration of using prote'ge to develop an ontology; overview and comparison of the main methodologies, tools, and languages for building ontologies; description of a number of ways in which ontologies act as a schematic description of the content of a knowledge domain
Examples of the use of ontologies [Fuchs,	using schemas with ontologies and semantic resolution in business process alignment;

Studies (classical and contemporary)	Description (key focus of research)
Hofkirchner, 2015; Rowe, 2015]	desired properties of ontologies; how simple and complex ontologies can be to be used in supporting different processes
Knowledge management and engineering [Edington et al., 24, Chernigovskaya et al., 2005; Gavrilova & Strakhovich, 2020; Telnov, Kazakov, Danilov, 2015; Gavrilova, Kokoulina, 2019; Bezginova et al., 2018; Gafiyatullina, 2019]	transforming social facts into data, data into information, and information into knowledge; using a viable system model to create a knowledge management assessment; developing a metaphor to explain knowledge; inventing a method to facilitate the link between knowledge management initiatives and the achievement of the organization's strategic goals and objectives
Knowledge and ontologies [Pavlov & Efremov, 2017; Antonov et al., 2021]	Using examples to describe embedding ontologies in knowledge management

To further confirm the relevance of using the ontological method when planning preparation for a reporting event, let us consider the use of the ontological approach within the framework of four different teaching methods (see Table 15). And although the advantages of building ontological models can be seen in each of these methods, the need for implementation is most clearly observed in problem-based and team-based learning methods due to the prevalence of instantaneous learning elements (control, feedback, application).

Table 15 – Modern teaching methods

Teaching method	**The presence of elements of self-control by the student**	**The presence of contradictory Knowledge**	**Availability of the possibility of instant application of the acquired knowledge**	**Availability of instant feedback**
Blended learning	+			
Problem-based learning		+	+	+
Team-based learning	+	+	+	+
Online learning	+			

Within the framework of the implementation of the modern approach to the teaching process, there is a mixture of events of different characteristic orientation – differentiated and homogeneous events are divided between two players in this process – students and teachers (see Figure 11). The tasks that are assigned to students are differentiated – search and analysis of information from various sources, verification of the reliability of the information received, creation of new knowledge, combination of research methods, etc. Therefore, the use of traditional teaching tools is not goal-oriented and the only source of knowledge transfer in the modern multifaceted environment.

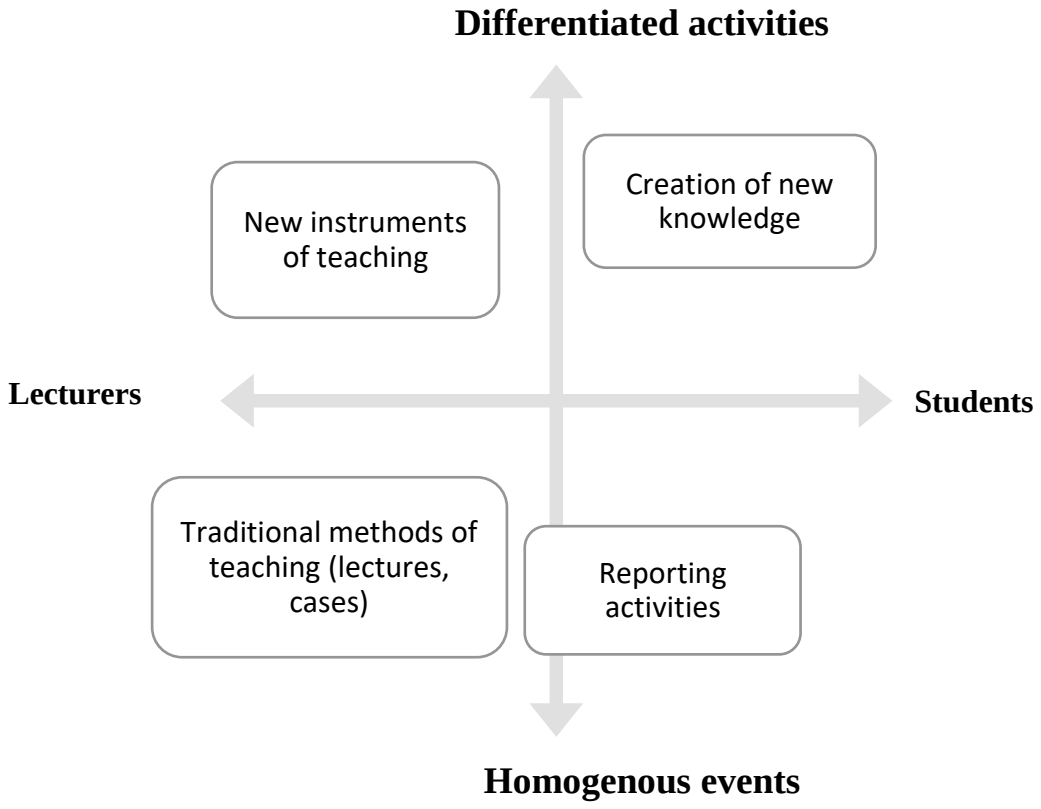

Figure 11 – Scheme of multifaceted orientation of training

Any work on interaction with students and, in particular, the preparation of students for the reporting event, should be tied to both components of the structure of cognition (see Table 16) [Radaev, 2022, 2023]. This means a balance of formalized and non-formalized information/knowledge in the learning process and dictates the use of diverse techniques/approaches/methods in the educational process.

Table 16 – The structure of cognition

Sensory (experiential) cognition	**Rational (practical) cognition**
relies on images through the senses	**is based on abstract thinking and theoretical knowledge**
Sensation Perception Performance	Concept Judgment Inference

As part of the construction of the ontology of the educational process "Preparation for the reporting event", it is necessary to take into account the direct relation of this process to the sphere of scientific knowledge.

When constructing an ontological model, a number of strict requirements must also be met (see Figure 12) in order for the model to be perceived and replicated with the preservation of logic for other disciplines of a humanitarian nature.

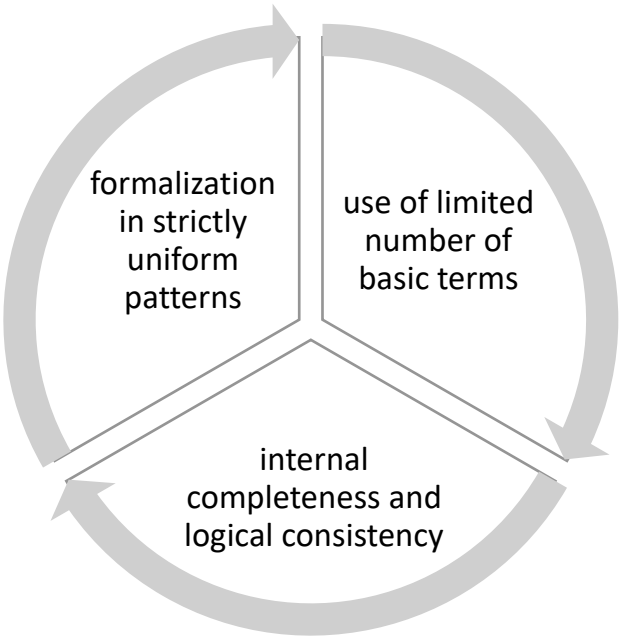

Figure 12 – Principles of constructing developed ontological systems

In this line of research, an example of the application of the ontological method in the framework of building the process "Preparation for the reporting event" at the research seminar (NIS) at the master's programs of the National Research University Higher School of Economics (St. Petersburg) is given. Within the framework of this discipline, a number of seminars, intermediate control measures and reporting activities (pre-defense and defense) are provided for the formalization of the assessment of students' progress. In the theoretical transfer of knowledge, a phenomenon called "not invented here" arises – students find it difficult to perceive knowledge that is abstract and not individualized. This serves as a prerequisite for modifying the existing model of the "Prepare for the reporting event" process. The ontological model of the process "Preparation for the reporting event" can be reduced to the following form (see Table 17) [Pleshkova, 2022]:

Table 17 – Original model

Ontology (partonomy) of the process "Preparation for the reporting event"
"Preparation for the reporting event" process >Lecturer

Ontology (partonomy) of the process "Preparation for the reporting event"

- >>Teaching instruments
  - Knowledge transfer
    - Theory
    - Cases
- >>Skills
  - Competence
    - Ecucation
    - Profile suitability
  - Expertise
    - Own experience
    - Colleagues experience
  - Involvement
    - Low
    - Moderate
    - High
- >>Teaching evaluation
  - Students feedback
    - Teaching grades
    - Free form
  - Students progress
    - Low
    - Moderate
    - High

>Discipline

- >>Preparation
  - Regulations
    - Presentation duration
    - Presentation format
    - Obligatory content
  - Theoretical recommendations
    - Presentation formatting
    - Typical mistakes
  - Practical recommendations
    - Last year examples
    - Pieces of advice
  - Presentation rehearsal
- >>Grading

Ontology (partonomy) of the process "Preparation for the reporting event"
Grading criteria Regulated Free form Reporting event Inetrim assessment Pre-defense Defense >Students >>Cognition Scientific Non-scientific >>Progress Low Moderate High >>Involvement Low Moderate High

As part of the teaching of the dissertation research of this discipline, the author provides: conducting a number of seminars, internal intermediate control measures and external reporting activities (pre-defense and defense) to assess the progress of students. The reporting event serves to evaluate the research individual or group project of students, presented in the form of a presentation. "Preparation for the reporting event" includes the following sequence of actions:

1) students receive information about the upcoming reporting event, the main requirements for the presentation and advice on completing the task;

2) students prepare a presentation for the reporting event;

3) the presentation is evaluated at the seminar by a group of teachers (rehearsal of the reporting event);

4) at the seminars, the analysis of the presented result, its analysis and the formation of conclusions are carried out.

Over the course of three years in the first year of the Master's program with the participation of 287 students, in addition to the main theoretical presentation of the material and requirements (at stage 1), the teacher also introduced additional tools for working with knowledge (at stage 4). In order to compare the effectiveness of the tools used in the experimental and control groups, the quality of presentations was assessed at stage 3 (before using the tools) and at the reporting event itself (after using the tools). The quality of the presentations was assessed by three teachers on a 10-point scale used at HSE University according to the following criteria: originality of the idea; the quality of the research (the breadth and depth of the study of the chosen topic, the quality and quantity of the analyzed sources); logic, elaboration and completeness of the chosen research topic. To track the effectiveness of presentations in the control group, data from previous years were used, where the introduction of tools for the creation and application of knowledge was not carried out, but the same stages of preparation for the reporting event were in effect. Since the teaching process should be ethical in relation to all students without exception, and the conduct of the experiment, nevertheless, dictates the rule of mandatory presence of a control group, the comparison of the results was carried out in this way [Boriskina, 2019].

Research seminar in Master's programs serves the purpose of helping students write term papers and master's theses. The discipline, as noted above, can be conditionally divided into several processes: conducting seminars, preparing for reporting events, conducting reporting activities (pre-defense and defense of term papers and master's theses). The reporting event serves as an assessment of the current research individual/group project of students, presented in the form of a pre-prepared presentation in .ppt format. As part of the three-year improvement of the NIS curriculum, based on the strength of foreign knowledge management experience (which is additionally stimulated by the growing percentage of foreign students in Master's programs and in NIS as well) and the results of past case studies, the directions of the tools used ("Transfer"/"Application"/"Creation" instead of "Transfer") were introduced, and the following additional tools were added.

The experience of conducting a research seminar has shown that it is difficult for students to perceive knowledge that is abstract and not individualized (such as: general recommendations, description and explanation of formal requirements, etc. at stage 1). In the process of preparing a presentation at stage 2, many questions arise for discussion on the part of students – there is a growing need for a detailed study and analysis of those presentations that have already passed the reporting procedure in previous years (see Table 19). At the same time, students also have a lack of observation [Rogova, Kochetkova, 2022] – there are few examples of high-quality presentation that can be used as a model. Tools for applying and creating knowledge can help to address these challenges (see Tables 18, 19).

Table 18 – Knowledge management tools to overcome major challenges

	Creating Knowledge				Application of Knowledge				
Student Challenges	Extract data from text	Brainstorming	Process Monitoring	Gathering and managing ideas	Help from colleagues	Group Discussions	Retrospective analysis	Lessons learned	Best Practices
Difficulty perceiving abstract information	+								
Difficulties in Abstract Thinking		+							
Difficulties of detailed study		+							
The Difficulty of Common Understanding			+						
Difficulty aligning requirements to your project				+					
Immediate Enforcement Issues					+	+	+		
Lack of observation								+	+

Table 19 – Added teaching tools to prepare for reporting events

Domain	Instrument	Description	Application
Application of knowledge	Best practices	Professional practices (procedures) that are accepted or prescribed as correct or most effective imply that there is one "best practice" for each situation.	Sorting and selection of the best presentations of previous years in preparation for the reporting event
	Lessons learned	The Lessons Learned Database captures and shares knowledge and experience that has been gained in the course of operational activities, but is not subject to documentation as part of standard procedures. In the context of knowledge management, the emphasis is usually on collecting data personally from stakeholders, i.e. turning tacit knowledge into explicit knowledge.	Analysis and analysis of advantages and omissions, inaccuracies, disadvantages and typical errors in the presentation of last year's presentations in preparation for the reporting event
Knowledge Creation	Retrospective analysis	Analyze data with respect to change over time, from the current point in time to a past period of time. Retrospective analysis differs from other types of analysis in that it compares the planned results	Analysis and discussion of the reasons for advantages and omissions, inaccuracies, disadvantages and typical errors in the presentation of last year's

Domain	Instrument	Description	Application
		with the achieved results, and also takes into account past experience, which allows the company to optimize all processes and manage risks in the future.	presentations in preparation for the reporting event
	Group discussions	A method of group psychological work that allows influencing attitudes (worldview, beliefs, stereotypes, etc.) and motivation of participants during a joint discussion of a certain problem.	Discussion and formation of new knowledge in preparation for the reporting event

To compare the two groups and to use a paired sample t-test, a test was performed on the normality of the distribution of the variables used. The Kolmogorov-Smirnov test was used and it was found that the asymptotic significance (bilateral) of the Kolmogorov-Smirnov values was greater than 0.05. Therefore, all variables used in this study obey the normal distribution, and the use of the t-test for pairwise sampling is allowed. For the main variables, a paired sample t-test was used, the results are presented in Table 3, where the numbers are correlated with the score of the results: 2 – after the implementation of the tools, 1 – before. According to the results of the control group, the average value of KnowledgeCreation2 is higher than that of KnowledgeCreation1, the average value of KnowledgeApplication2 is higher than that of KnowledgeApplication1. However, according to the results of the t-test, the difference on average is insignificant, which shows that for the control group, Creation_of_Knowledge, Application_of_Knowledge before and after the test did not change significantly. For the experimental group, the

average value of Application_of_Knowledge2 is higher than that of Application_of_Knowledge1, which is significant at the level of 0.01. The average value of KnowledgeCreation2 is higher than that of KnowledgeCreation1, which is significant at 0.05. The results in the Application_of_Knowledge and Knowledge_Creation of the experimental group have changed significantly, indicating the beneficial effects of the use of application and knowledge creation tools (see Table 20).

Table 20 – Group comparison

	Control group			**Experiment group**		
Comparison	Mean	SD	t	Mean	SD	t
Application of _knowledge2 – Application of _knowledge1	0,178	1,010	1,604	**0,220****	0,749	2,673
Creating _Knowledge2 – Creating _Knowledge1	0,139	0,761	1,658	**0,181***	0,754	2,183

Note: **p < 0.01; *p < 0.05

Thus, it can be concluded that it is effective and expedient to use knowledge management tools when conducting a research seminar in the humanities and social sciences.

Based on past case studies [Telnov, Kazakov, Danilov, 2015; Bezginova et al., 2018; Gavrilova, Kokoulina, 2019; Radaev, 2022, 2023] and improving the curriculum of the NIS academic discipline, the directions of the tools used ("Transfer" / "Application" / "Creation") were proposed and additional tools for applying and creating knowledge were added during the process "Preparation for the reporting event" [Pleshkova, 2022]. In the context of improving the teaching process, parts of the proposed model have undergone some changes in the "Lecturer" field (see Table 21):

Table 21 – Modified model

Ontology (partonomy) of the process "Preparation for the reporting event"
"Preparation for the reporting event" process >Lecturer >>Teaching instruments

Ontology (partonomy) of the process "Preparation for the reporting event"

Knowledge transfer
Theory
Cases
Knowledge application
Best practices
Lessons learned
Knowledge creation
Retrospective analysis
Group discussion
>>Skills
Competence
Education
Profile suitability
Expertise
Own experience
Colleagues experience
Involvement
Low
Moderate
High
>>Teaching evaluation
Students feedback
Teaching grades
Free form
Students progress
Low
Moderate
High
>Discipline
>>Preparation
Regulations
Presentation duration
Presentation format
Obligatory content
Theoretical recommendations
Presentation formatting
Typical mistakes
Practical recommendations
Last year examples
Pieces of advice
Presentation rehearsal
>>Grading
Grading criteria

Ontology (partonomy) of the process "Preparation for the reporting event"

Regulated
Free form
Reporting event
Inetrim assessment
Pre-defense
Defense
>Students
>>Cognition
Scientific
Non-scientific
>>Progress
Low
Moderate
High
>>Involvement
Low
Moderate
High

When knowledge is transferred through the tools of best practice analysis or analysis of lessons learned, the abstraction of knowledge is reduced, which leads to an increase in the assimilation of knowledge and its application in practice. Institutions of higher education focus on knowledge; almost all of their actions generate key information that can be used by those who participate in training and those who teach processes and manage decision-makers [Afanasyev, 2016; Babin, 2018, Belyaev, 2019]. However, due to the limited/asymmetrical information on how ontologies can be applied in educational settings to represent/transmit knowledge and what are the main vocabularies used to describe academic knowledge; it is difficult for researchers interested in visualizing/transmitting knowledge to obtain useful information that summarizes the benefits of applying ontologies in educational scenarios. In this area of research, the need to rethink the key elements and the general concept within the framework of the educational process is on the part of the Teacher. A combination of various tools focused on the creation, transfer and application of knowledge, the transformation of tacit

knowledge into explicit knowledge is of great value in the preparation for reporting activities.

The main methodological result of the work is the proposed algorithm for the use of "additional" tools. The algorithm includes the following steps:

1. Analysis of existing training tools for reporting activities;
2. Formation of "additional" directions that provide differentiation between instruments;
3. Proposals for a new model of a participant in the educational process.

A practical illustration of the application of the developed algorithm demonstrates its suitability for solving problems and increasing engagement among students. The use of additional tools in teaching can also be motivated by the shortcomings of the traditional format of education: isolation of students from communicative dialogue with each other; stereotyped, monotonous and lack of opportunities for critical thinking on the part of students; Weak feedback.

The main conclusions that can be formulated within the framework of the study are as follows:

- These tools are valuable for the implementation of the teaching process, since all the tools show a positive trend in the provision of results by students;
- The most significant contribution is made by the use of the "lessons learned" tool, where not only successful presentations/projects are analyzed, but also presentations with less successful results are analyzed for the presence/presence of typical errors/shortcomings/omissions. In this case, students are visually presented with what factual errors may look like and ways to find a solution to the problem are discussed.

Thus, these tools make it possible to build differentiated trajectories of individual professional development of students; Also, the use of the ontological approach as a tool can be used to improve the teaching methodology as a whole in the direction of increasing logic, consistency and integration using practical experience.

The main limitations of this area of research include the following points:

1. applicability to humanities subjects (this article presents the result of an experiment on the example of teaching the subject of NIS);
2. applicability to disciplines that are taught in a seminar format to ensure group dynamics.

The practical significance of the presented direction of research can be attributed to the use of additional tools for the application and creation of knowledge, described in the example in this article, which can also be carried out at the NIS of other humanities disciplines, seminars, language practices, etc healthy group dynamics, a focus on foreign teaching practices and practices in the use of knowledge management tools in Russian companies.

Another complementary example of the use of the practice of "performance management" was implemented through the use of additional tools to attract applicants to the master's program [Pleshkova, 2023]. As part of attracting applicants to the HSE Master's programme 'Data Analytics for Business and Economics', an additional tool was used to create a 'knowledge base' – a group in the Telegram messenger. The group was initiated by the current track supervisors of the educational programme and was formed around the key topics of questions that applicants may have. The answers to these questions formed a base, having familiarized himself with the content of which the applicant could get the information he needed. This tool continues to be used in the present tense and serves as a great way to: increase group awareness (since all messages are published at the same time for all group members at the same time), provide an opportunity for instant clarification of information (applicants can ask related questions at the same time as the publication of the news on admission or requirements), as well as increase personal attention to applicants (which is important in the development of communication and attracting applicants). These points were identified on the basis of a survey among applicants who were considering admission to the program (173 people) (see Appendix 4).

The third example of using the practice of "performance management" to improve performance was a focus group as part of the assessment of two learning formats – online and traditional [Pleshkova, 2023]. 4 focus groups were conducted, each of which had 6

students. Participants were invited to discuss in a free form the critical points of online learning, as well as the positive and negative properties and aspects of the perception of online and traditional learning (see Appendix 4).

2.4. Main conclusions of Chapter 2

In this chapter, the classical model of knowledge management practices for educational organizations was verified; a new classification of knowledge management practices applicable to the use in the activities of an educational organization has been developed; The variety of the most and least used knowledge management practices in Russian educational organizations is identified and described.

When verifying the model of knowledge management practices in Russian educational organizations, the most and least used practices in educational organizations were identified. This set turned out to be different from the foreign set of knowledge management practices, where the most popular practices are the practices of strategic management of knowledge and competencies, compensation and information and communication technologies.

In the Russian version of the set, the following knowledge management practices were noted:

- strategic management of knowledge and competencies,
- knowledge retention,
- recruitment and
- knowledge sharing.

And the least used and developed – training and development; performance management.

An additional result of the study was the identification of the relationship between information technologies and the most developed practices of knowledge management. The moderating effect of information technologies between strategic knowledge management and the effectiveness of the organization's performance was manifested (at

the same time, the moderation effect was not significant in other relationships with other developed practices).

The least used knowledge management practices (1 – training and development, 2 – performance management) were considered in more detail using examples of their use in educational activities:

A) practice "training and development" – in the formation of a new curriculum of the Graduate School of Management, St. Petersburg State University;

B) the practice of "performance management" – when using additional tools for the creation/exchange of knowledge as part of the teaching of the author of the dissertation at the Higher School of Economics, St. Petersburg.

At the same time, in both cases, the practices showed positive results of application in Russian educational organizations.

CHAPTER 3. ANALYSIS OF KNOWLEDGE SHARING BARRIERS

3.1. Types of knowledge sharing barriers

When implementing knowledge management practices, there are factors that hinder or slow down the implementation process [Blagov et al., 2017]. Barriers to knowledge sharing in the implementation of knowledge management practices, i.e. factors of various nature that impede the implementation of knowledge management practices in organizations, are a fairly popular subject of research in the field of knowledge sharing, and represent one of the most developed areas of research in the field of knowledge management in general [Blagov, Begler, Pleshkova, 2020]. Of the various industries to which the enterprises belonged, the educational industry in general and higher professional education in particular seems to be quite specific and poorly studied separately (according to the research results presented in the literature), since the organizational culture is favorable for the introduction of knowledge management practices [Chandra, Vashisth, Kumar, 2011; Fullwood, Rawley, Dambridge, 2013] greatly attenuates the impact on the implementation of practices typical of other industries.

However, it should be noted that in the works devoted to this subject of research in higher education institutions, the exchange of knowledge within the faculty or in the relationship between the faculty and students is mainly considered, while the administrative processes and the work of administrative units in such scientific works are touched upon, if at all, then again from the point of view of the exchange of knowledge within the framework of the research and teaching activities [Kumaraswamy, Chitale, 2012].

The study of the barriers to knowledge exchange in the implementation of knowledge management practices in the administrative divisions of higher education institutions seems to be a rather interesting area of research, since the organizational culture of higher education institutions is considered in the literature as in principle favorable for the exchange of knowledge within the framework of the activities of the

teaching staff and students, while the study of administrative processes and units in higher education institutions institutions indicate that there are significant problems in knowledge sharing [Fullwood, Rawley, Dambridge, 2013; Zhukova, Pleshkova, Mihnevich, Pehtin, 2016]. Accordingly, the purpose of this area of research is to identify the main barriers to knowledge exchange in the implementation of knowledge management practices in the administrative units of higher education institutions, as well as to develop recommendations for reducing the impact of these barriers. Since the administrative divisions of higher education institutions have not previously been a specific object of research, the methodology of this study is based on the principles of "grounded theory", which involves the formation of a theory based on the analysis of semi-structured empirical data [Blagov, Begler, Pleshkova, 2020].

In accordance with these principles, within the framework of this study, first of all, in-depth unstructured interviews were conducted with employees of administrative departments of one of the leading Russian universities (hereinafter referred to as the "University", in Appendix 4 – University "U") involved in the administrative processes of managing a specific educational program of the bachelor's degree level (hereinafter referred to as the "Program"). The name of the university is encrypted for a reason – it was done specifically to conduct research in compliance with ethical standards, as well as due to the possible negative results that can harm and damage the reputation of the university. In this case, it is the results obtained that make sense, and not the belonging to a specific object of research. Based on the results of the interviews, the constructs of the first and second levels are formulated from the respondents' answers, reflecting the main barriers that the respondents face in their daily work activities. Based on the formulated constructs, practical recommendations are offered to improve the use of knowledge management practices in the administrative units of higher education institutions.

Long-term research (e.g., a fairly detailed review of knowledge sharing barriers by Riege, 2005) allows us to divide these barriers into a number of categories according to the criterion of the main causes of these barriers. For example, in the above-mentioned work [Riege, 2005] it is proposed to divide the barriers to the implementation of

knowledge management practices into individual (related to the psychological traits of persons participating in exchange processes), organizational (related to the features of the organizational structure of the organization under study) and technological (related to the characteristics of the information technology infrastructure that supports the process of introduction and use of knowledge in the organization) [Blagov, Begler, Pleshkova, 2020]. [Blagov, Zhukova, Pleshkova, 2016] proposes a similar three-part classification: barriers are divided into information technology and organizational and managerial barriers (corresponding to technological and organizational barriers in the classification [Riege, 2005]), as well as organizational and economic barriers, based on the fact that knowledge is an economic resource and a source of economic rent both for the organization as a whole and for individual structural units within the organization organization or individual employees of the organization who possess this knowledge.

According to this logic, if the possession of a rare, valuable, and irreplaceable resource for a competing organization in the market serves as a source of economic rent [Barney, 1991], then for specific employees of the organization, the possession of resources with similar properties (and knowledge resources – relating to both professional expertise and the political situation within the organization – can certainly have such properties) can serve as a source of internal status rents, in particular, higher bargaining power. The presence of such an annuity may allow an employee, firstly, to achieve a high position in the informal organizational hierarchy, which does not always coincide with the established formal hierarchy [Bratianu, Orzea, 2012; Goduscheit and Knudsen, 2015], and secondly, to limit the transfer of rent-seeking knowledge to a degree that could be detrimental to the functioning of the organization as a whole [Knudsen, 2007].

If we talk about the sectoral focus of empirical studies of barriers in knowledge management presented in the literature, it should be noted that, due to the importance of this issue for research in the field of knowledge management in general, the attention of barrier researchers has been attracted by a very wide range of different industries, including, among others, the field of higher professional education, on the materials of which a number of significant empirical studies have been carried out [Cranfield, Taylor, 2008; Chandra, Vashisth, Kumar, 2011; Kumaraswamy, Chitale, 2012]. However, as

stated earlier, these studies do not take into account the connection between knowledge exchange processes and the implementation of knowledge management practices, but rather focus on knowledge exchange processes in scientific, teaching, and research activities [Bondarenko, Shpak, 2021].

3.2. Analysis and classification of key barriers

As mentioned earlier, the methodology of this area of research is based on the principles of "grounded theory", which implies as the initial stage of empirical research the identification of patterns from unstructured or poorly structured material, on the basis of which theoretical constructions are already formulated for subsequent stages of research (as in this study, empirical testing) [Blagov, Begler, Pleshkova, 2020]. Accordingly, the most relevant method of the initial stages of empirical research, according to this methodology, is to conduct in-depth unstructured interviews, starting with a conversation on the most abstract topic with the possible further concretization of the interview with the help of clarifying questions that help to isolate the main constructs from the respondent's speech. On the basis of the comparison of these constructs between different respondents in the sample, hypotheses can subsequently be formulated or constructs can be formed for further stages of the study, implying the use of more rigorous quantitative methods. Such a methodology seems to be relevant for the present study, since administrative processes in higher education institutions, as noted above, receive rather little attention in the existing literature on the problems of barriers. Accordingly, before proceeding to a quantitative study with already specified variables, it is necessary to find out which factors can serve as a basis for the formulation of such variables. The respondents of the study described in this direction are the heads of the administrative divisions of the University involved in the management of the educational program, namely: the Directorate of the Educational Program, the Service for the Provision of the Educational Program, the Office for Admissions, the Office for Youth Affairs, the Department of International Relations, etc. Do you think about what factors hinder knowledge sharing when implementing knowledge management practices in the workflows that you are involved in when you take part in the management of an

educational program?" The duration of each interview ranged from 30 to 50 minutes. A total of 45 interviews were conducted with the heads of the University's administrative divisions. Executives were selected as respondents because they are most aware of the challenges of knowledge sharing in the implementation of knowledge management practices and can provide the most comprehensive and diverse knowledge in the process of forming a common list of barriers. Excerpts from the interview are given in Appendix 4.

The most frequently cited organizational obstacle or barrier in the first-level constructs is the lack of clarity of the job responsibilities of employees. The reason for this problem may be the presence of double subordination of administrative units involved in the management of the Program (such units are subordinated, firstly, to the rector's office, and secondly, to the corresponding faculty of the University). This situation of dual reporting can complicate the distribution of responsibilities between different units and employees, thereby making it difficult to understand which employees and/or units have which knowledge resources [Blagov, Begler, Pleshkova, 2020]. This understanding is further complicated by the high frequency of organizational changes in the architecture of the University's business processes, in which most of the processes of managing an educational program (for example, enrolling students in an elective course or distributing students among academic supervisors) undergo changes at least once an academic year, which leads to a rapid obsolescence of knowledge about which employees have certain knowledge resources. and reduces the time it takes to develop job descriptions of satisfactory quality and level of detail (which can further increase perceived mutual uncertainty about which employees have access to which knowledge). The next construct can be formulated as "lack of motivation to share knowledge due to the lack of it in formal job duties." The existence of such a barrier is confirmed by empirical studies presented in the literature, showing the negative impact of the lack of formal job responsibilities for knowledge exchange on the intensity of knowledge exchange [De Clercq, Dimov, Thongpapanl, 2013; Willem, Buelens, 2009]. A rather specific organizational and managerial problem is the problem of "excessive centralization of organizational communications", which indicates contradictions with

most other first-level constructs, which describe predominantly "horizontal" communications between line personnel of similar organizational levels; The presence of such a construct may indicate that that such excessively centralized acts of communication as described herein may still take place in the administration of the Program with greater frequency than may be required by the objectives of those particular acts. The problem of excessive centralization of organizational communications deserves interest also because it is associated with a number of first-level constructs that reveal barriers of an information and technological rather than organizational and managerial nature. In particular, such constructs include the following constructs, which are associated with "poor compatibility of document management systems used by different departments". Continuing the consideration of constructs related to information technology problems, after the above-mentioned second-level construct, which reveals the problems of interaction between different units and specific document management systems, it is logical to consider the constructs associated with systems that integrate different departments. In particular, a fairly large number of first-level constructs describe "problems in the use of the university-wide electronic document management system used by all departments of the University in communication with its administration." It seems that the second-level construct that combines these constructs of the first level can be formulated as the possibility of losing the documents edited in the system. A similar construct of the second level can be formulated on the basis of such constructs of the first level, united by the statement of "the problem of the impossibility of simultaneous editing of documents by several users" in various document management systems used by the respondents; Interestingly, in similar constructs, respondents note the desirability of creating a common document management system or "knowledge sharing environment based on a local network or other information systems." Also close to the problem of the inability to edit documents at the same time are second-level constructs that also reflect sources of increased time-consuming knowledge sharing, such as "no conferencing equipment" combining first-level constructs, and "no officially recognized electronic signatures" combining first-level constructs. It should be noted that all the formulated second-level constructs, reflecting the barriers of an information technology nature, can

be considered not only as purely technical problems, but also as consequences of the organizational and managerial problems described above and reflected in the corresponding constructs. In particular, the construct of "possible loss of editable documents in the university-wide electronic document management system" can be associated with the construct of "excessive centralization of communications", since, according to [Willem, Buelens, 2009], in large organizations there is a negative relationship between the level of centralization of the organizational structure and the satisfaction of ordinary users with corporate information technology systems. Other second-level constructs that reveal information technology barriers can also be seen as consequences of a high level of centralization of communications, which leads to the underdevelopment of horizontal communication between employees and line-level units, which is quite typical for functional organizational structures in large organizations [Willem, Buelens, 2009]. With regard to the "individual" barriers from the classification [Riege, 2005] or a narrower category of "organizational-economic" barriers from the classification [Blagov, Zhukova, Pleshkova, 2016], it should be noted that none of the constructs of the first or second level belong to these categories "in their pure form", without a significant connection with barriers of an organizational-managerial or information-technological nature. However, such elements can still be identified in such a second-level construct as the lack of motivation to share knowledge due to the absence of this in formal job duties. For example, this construct describes an individual decision made by a particular person, which makes it possible to attribute it to individual barriers from the classification [Riege, 2005]. The decision to participate in the exchange of knowledge with certain expectations of the employee regarding the remuneration for this exchange directly depends on the extent to which the employee's perceived value of the knowledge resources belonging to him correlates with these expectations [Pierce, 2012], which is directly related to the organizational and economic barriers from the classification [Blagov, Zhukova, Pleshkova, 2016].

Thus, when analyzing and identifying the constructs of the first level, we can move on to the second level and identify the following segments of barriers to the implementation of knowledge management practices [Blagov, Begler, Pleshkova, 2020]:

- Technological (e.g., compatibility of electronic document management systems used by different departments, inability of multiple users to edit documents at the same time);
- Organizational (e.g., over-centralization of communications and insufficiently clear job descriptions of administrative staff);
- Individual (e.g., lack of motivation to share knowledge due to lack of this in formal job duties).

The identified barriers are mainly either of an organizational and managerial nature, associated with the peculiarities of the organizational structure of the educational institution in which education is carried out on this program, or of an information and technological nature, associated with the features of the information infrastructure serving the surveyed educational program. For the most part, organizational and managerial barriers stem from the combination of elements of a functional organizational structure and the dual reporting of administrative staff in the organizational structure of a given institution, which leads to an over-centralization of communications and a lack of clarity in the job descriptions of administrative staff. Information technology barriers are largely a consequence of the above-mentioned centralization of communications of the higher education institution in question; Such barriers include the lack of interoperability of electronic document management systems used by different offices, the inability of multiple users to edit documents at the same time, the lack of conferencing equipment and the lack of formal recognition of electronic signatures. In addition, information technology barriers include a number of shortcomings of the university-wide electronic document management system, first of all, the possibility of spontaneous deletion of entered documents.

3.3. Empirical testing of the perceived importance of the barriers

Further, the identified and segmented barriers were empirically tested on a sample of higher education institutions in St. Petersburg. In the first case, the sample was represented by 104 administrative employees of the University of Wu, which is approximately 5% of the total number of administrative staff working at the University of U – on this sample, a study was conducted on the relationship between work experience and the perceived importance of the identified barriers. In the second case, the sample was expanded to 283 administrative employees of 6 leading universities in St. Petersburg (according to data for 2020-2021) and a study was conducted on the relationship between barriers to knowledge exchange in the implementation of knowledge management practices with an assessment of the speed and quality of exchange. In both cases, the employee's role was divided into a knowledge recepient, i.e. an employee who requests knowledge, and a knowledge holder, i.e. an employee who transmits knowledge. In this area of research and in both cases, the names of universities are also not disclosed due to the possible negative results that can damage the reputation of universities, as well as to comply with the ethics of the research conducted.

The research methodology is quantitative, based on regression analysis of the relationship between independent variables (identified barriers) and dependent variables (parameters of knowledge exchange: employee experience, perceived importance of knowledge, speed, quality) [Blagov, Pleshkova, Begler, 2021]. A Likert scale from 1 to 7 was used, and respondents were asked to rate the parameters of knowledge sharing in relation to a given list of barriers, where "1" meant the minimum relationship, and "7" meant the maximum interconnection.

The independent variables were constructs formed earlier during the qualitative stage of this area of research (see Appendix 4 for more details):

Technological barriers:

1. Low compatibility of document management systems used by the respondent and colleagues;

2. Inadequacy of document management systems used by the respondent and colleagues;

3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;

Organizational barriers:

4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;

5. Lack of clarity of instructions given by senior management to the respondent and colleagues;

6. Excessive regulation of the job duties of the respondent and colleagues;

7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;

8. No financial reward for knowledge sharing;

9. No intangible reward for knowledge sharing;

Индивидуальные барьеры:

10. The meaning of the requested knowledge for its holder;

11. Personal animosity between respondent and co-workers;

12. Lack of time to share knowledge due to workload.

In the first case, the dependent variables are the employee's work experience and the perceived importance of barriers, in the second case, the speed and quality of knowledge received or, conversely, transferred between employees. Knowledge plays a key role here, because in knowledge management practices, regardless of where they are applied, exchange plays a key role (see Tables 22, 23) [Blagov, Pleshkova, Begler, 2021].

Table 22 – Results of regression analysis (answered by the respondent requesting knowledge)

Independent variable	**coefficient**
1. Low compatibility of document management systems used by the respondent and colleagues;	-0,029

Independent variable	coefficient
2. Inadequacy of document management systems used by the respondent and colleagues;	0,674
3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;	0,090
4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;	-0,070
5. Lack of clarity of instructions given by senior management to the respondent and colleagues;	-0,581
6. Excessive regulation of the job duties of the respondent and colleagues;	-0,119
7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;	-0,125
8. No financial reward for knowledge sharing;	-0,622
9. No intangible reward for knowledge sharing;	-0,346
10. The meaning of the requested knowledge for its holder;	**-1,480****
11. Personal animosity between the respondent and her colleagues;	-0,581
12. Lack of time to share knowledge due to workload.	0,413

Note: ** $p < 0.05$

A statistically significant result is visible only in the individual barrier "The value of the requested knowledge for its owner".

Table 23 – Results of regression analysis (answered by the respondent – the owner of the knowledge)

Independent variable	coefficient
1. Low compatibility of document management systems used by the respondent and colleagues;	0,151
2. Inadequacy of document management systems used by the respondent and colleagues;	0,840

Independent variable	coefficient
3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;	0,061
4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;	-0,433
5. Lack of clarity of instructions given by senior management to the respondent and colleagues;	-0,869
6. Excessive regulation of the job duties of the respondent and colleagues;	-0,675
7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;	-0,265
8. No financial reward for knowledge sharing;	-0,588
9. No intangible reward for knowledge sharing;	-0,110
10. The meaning of the requested knowledge for its holder;	**-1,674****
11. Personal animosity between the respondent and her colleagues;	-0,663
12. Lack of time to share knowledge due to workload.	0,648

As in the previous case, a statistically significant result is visible only in the individual barrier "The meaning of the requested knowledge for its owner". The negative coefficients of the explanatory variable in both equations mean that the decline in the importance of knowledge is negatively correlated with the processes of knowledge exchange with little experience of both the owner of the knowledge and the requester of knowledge. The first explanation is that as the experience of working in the organization increases, the employee becomes more aware of how his position can be protected if he shares confidential (in his opinion) information or knowledge. Another explanation may be related to the employee's lack of awareness in principle and his unwillingness to admit it. To summarize these two assumptions, as the work experience increases, the knowledge of both the requester and the knowledge holders is better communicated and

more systematically stored, thereby reducing the sensitivity of the exchange of specific knowledge assets.

Another explanation could be that with increased work experience, an employee may increase confidence in their position in the organization, become more confident in their qualifications, and thus be less afraid to share or transfer knowledge.

The sample of the next line of research was made up of employees of administrative divisions of 6 Russian universities, who, due to the sensitivity of the research issue and to comply with the ethics of information disclosure, wished to remain anonymous. Respondents were contacted via corporate email addresses via messages containing a brief explanation and motivation for the study, an approximate survey time (about 3-5 minutes), and a link to a questionnaire created using Qualtrics' online platform with anonymous data collection.

Also, in this area of research, as mentioned earlier, the roles were divided into the possessor of knowledge and the recipient of knowledge. The questionnaire contained two sections for the role of the knowledge requester and the role of the knowledge holder, with 20 questions each: 2 for dependent variables, 12 for explanatory variables, and 6 demographic questions. Responses to questions on variables were presented using Likert scales from 1 to 7, where in questions with a dependent variable, answer option "1" indicated the respondent's perception of complete dissatisfaction with the speed or quality of knowledge exchange (in terms of the role of the requester of knowledge and the role of the owner of knowledge); Answer option "7" indicates perceived complete satisfaction. In the explanatory variable questions, answer option 1 indicates the perceived absence of barriers on the dependent variable, and 7 indicates the perceived maximum impact. The data were validated using linear regression equations in the statistical package IBM SPSS Statistics 22 (see Tables 24-27) [Blagov, Pleshkova, Begler, 2021].

Table 24 – Model 1.1. The connection between knowledge management barriers and the speed of knowledge acquisition (knowledge recipient answered)

Independent variable	coefficient
1. Low compatibility of document management systems used by the respondent and colleagues;	**-0,5347*** **
2. Inadequacy of document management systems used by the respondent and colleagues;	0,1454
3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;	-0,1072
4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;	0,02976
5. Lack of clarity of instructions given by senior management to the respondent and colleagues;	**-0,2154** **
6. Excessive regulation of the job duties of the respondent and colleagues;	-0,0222
7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;	-0,1226
8. No financial reward for knowledge sharing;	0,01500
9. No intangible reward for knowledge sharing;	0,02868
10. The meaning of the requested knowledge for its holder;	0,04543
11. Personal animosity between the respondent and her colleagues;	0,08667
12. Lack of time to share knowledge due to workload.	-0,1740

Note: * $p < 0.1$; ** $p < 0.05$, *** $p < 0.01$

Table 25 – Model 1.2. The connection between knowledge management barriers and the quality of knowledge acquired (answered by the knowledge recipient)

Independent variable	coefficient
1. Low compatibility of document management systems used by the respondent and colleagues;	-0,0815
2. Inadequacy of document management systems used by the respondent and colleagues;	-0,1100

Independent variable	coefficient
3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;	-0,0935
4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;	0,0091
5. Lack of clarity of instructions given by senior management to the respondent and colleagues;	-0,1864
6. Excessive regulation of the job duties of the respondent and colleagues;	0,0281
7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;	-0,1236
8. No financial reward for knowledge sharing;	-0,1771
9. No intangible reward for knowledge sharing;	0,1225
10. The meaning of the requested knowledge for its holder;	**0,2234****
11. Personal animosity between the respondent and her colleagues;	-0,0738
12. Lack of time to share knowledge due to workload.	**-0,3553*****

Note: * p < 0.1; ** p < 0.05, *** p < 0.01

Table 26 – Model 2.1. The connection between knowledge management barriers and the speed of knowledge transfer (knowledge owner answered)

Independent variable	coefficient
1. Low compatibility of document management systems used by the respondent and colleagues;	0,1764
2. Inadequacy of document management systems used by the respondent and colleagues;	-0,0186
3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;	**-0,4110***

Independent variable	coefficient
4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;	-0,1304
5. Lack of clarity of instructions given by senior management to the respondent and colleagues;	**-0,3289****
6. Excessive regulation of the job duties of the respondent and colleagues;	0,0758
7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;	-0,1439
8. No financial reward for knowledge sharing;	0,0440
9. No intangible reward for knowledge sharing;	0,0184
10. The meaning of the requested knowledge for its holder;	0,0912
11. Personal animosity between the respondent and her colleagues;	-0,1013
12. Lack of time to share knowledge due to workload.	-0,0211

Note: * $p < 0.1$; ** $p < 0.05$, *** $p < 0.01$

Table 27 – Model 2.2. The connection between knowledge management barriers and the quality of knowledge transferred (knowledge owner answered)

Independent variable	coefficient
1. Low compatibility of document management systems used by the respondent and colleagues;	-0,2026
2. Inadequacy of document management systems used by the respondent and colleagues;	0,02144
3. Difficulty in learning how to work in the document management systems used by the respondent and colleagues;	-0,1987
4. Insufficiently strict regulation of the job responsibilities of the respondent and colleagues;	0,0093

Independent variable	coefficient
5. Lack of clarity of instructions given by senior management to the respondent and colleagues;	**-0,2327***
6. Excessive regulation of the job duties of the respondent and colleagues;	-0,1509
7. Insufficient level of delegation of decision-making authority from senior management to the respondent and colleagues;	0,0195
8. No financial reward for knowledge sharing;	-0,0895
9. No intangible reward for knowledge sharing;	0,0955
10. The meaning of the requested knowledge for its holder;	-0,0175
11. Personal animosity between the respondent and her colleagues;	-0,0743
12. Lack of time to share knowledge due to workload.	-0,0724

Note: * $p < 0.1$; ** $p < 0.05$, *** $p < 0.01$

Negative coefficient signs in 1.1 models. and 2.1. On the barrier "5. Lack of clarity of instructions given by senior management to the respondent and colleagues" may indicate that job descriptions in educational organizations do not adequately describe a significant proportion of situations faced by administrative staff, including, but not limited to, knowledge sharing. The explanation for this may be that the levels of formalization and centralization in educational organizations are too high for such situation-specific activities as knowledge sharing.

A statistically significant result (and the most notable result) is the variable "lack of clarity of instructions." This result, while supporting the conclusions [Blagov, et al., 2017], may seem somewhat illogical, since the organizational culture and procedures in the top administrative units of educational organizations tend to be highly formalized and centralized [Haas and Collen, 1963; Billing, 1998; Zhukova et al., 2016]. However, negative signs of the coefficients may indicate the absence of job descriptions in the studied institutions. The explanation for this may be that the levels of formalization and centralization in the organizations under study are too high for such situation-specific

activities as knowledge sharing. Indeed, if, due to the high level of centralization and formalization, most of the communication between the relevant departments and employees is under the direct supervision of the top management, then some activities, such as knowledge sharing, that are not described in the job descriptions of employees, may be reluctant for employees to perform for fear of punishment for performing unauthorized actions [Chow, 2012].

Both models, in which "lack of clarity of instructions" is significant, are based on the rate of knowledge exchange as a dependent variable, rather than the quality of knowledge exchange. A possible explanation for this could be that by requesting the necessary knowledge, the requestor has a fairly good understanding of what exactly it wants to receive and through what channels it can obtain it. Thus, despite the lack of clarity on the part of the top management or direct instructions from the authorities, the requesting party will get what it wants according to its own reasoning, which may be more accurate and adequate to the necessary knowledge than the guidance of the elders, thereby increasing the perceived quality of the general knowledge from both the requestor's point of view and the holder's point of view [Ramaya, Yep and Ignatius, 2013].

This logic may also explain the lack of statistically significant coefficients in the 2.2 model. (the relationship between barriers and the quality of knowledge that respondents share on request). In addition, a smaller number of statistically significant coefficients in knowledge owner models (Model 2.1. and Model 2.2.) may be a sign of respondents' general tendency to overestimate their willingness to share knowledge compared to the perceived friendliness of their knowledge-sharing colleagues [Afshar-Jalili and Ghaleh, 2018; Fuchs, et al., 2019].

Such an alleged bias may be quite an interesting subject for further research, probably compared to the objective characteristics of knowledge sharing. Given the significant coefficients in model 1.2., an interesting result is the significance of the "requested value of knowledge for its owner" with a plus sign that refutes the hypothesis. It can be assumed that the possessor of the knowledge, aware of the importance of a certain knowledge, the resource for it is familiar to senior management and the actual or

potential requester of knowledge, may fear that its reluctance to share important knowledge may be interpreted by them as a sign of a lack of loyalty to the organization as a whole [Blagov, Pleshkova, Begler, 2021].

Recommendations for general management and dealing with barriers to knowledge sharing when implementing knowledge management practices can be formulated as follows:

1 – Take into account psychological aspects, which include loyalty to the organization (which helps employees share knowledge in a calm and safe manner), the balance of internal and extrinsic motivation of employees to share knowledge, as well as factors related to the so-called "cultural dimensions", i.e. the employee's perceived appropriateness to express and share their knowledge;

2 – Improve the quality and depth of the organization's internal knowledge repositories, using which new employees or employees with less than 1 year of work experience can delve into the main organizational processes, independently understand the structure of certain processes and understand the distribution of roles in these processes;

3 – Work with the organizational culture of the organization, in particular, conduct thematic sessions on the experience of sharing knowledge in the organization, encourage employees to share their knowledge in an open manner;

4 – Improve document management systems and their interoperability with the organization's internal systems to ensure that the necessary data, information and knowledge are quickly accessed and used;

5 – Carry out additional explanatory work to explain and discuss the duties assigned to employees (which can be carried out at special sessions for employees), such work will make more sense in a collective gathering of employees;

6 – Form a group of experts on the main organizational processes who could have the necessary knowledge and algorithms for obtaining this knowledge.

3.4. Main conclusions of Chapter 3

This chapter presents the results of a study of the barriers to knowledge sharing in the implementation of knowledge management practices. As part of the analysis, both qualitative and quantitative research methods were used. Thus, the main barriers to knowledge exchange in the field of Russian higher education organizations were identified, which were segmented into the proposed groups: technological, organizational, individual. For each group of barriers to knowledge sharing, recommendations were developed to mitigate the negative consequences in the organization's activities. The proposed recommendations can also be applied to organizations in other areas (for example, the service sector), since they are typical in the activities of the organization and are not strongly tied to the field of higher education.

As part of the quantitative study, the list of the main barriers to knowledge exchange was considered and expanded, and two roles of an employee were identified: as a knowledge owner and as a knowledge recipient. In empirical testing of the relationship between the main barriers to knowledge sharing, the variable "work experience" in the organization was introduced as determining the importance of the perception of barriers. The results obtained showed the existence of a relationship between work experience and the perceived importance of knowledge.

Recommendations for interaction with new employees of the organization were also developed, which, as well as recommendations from the qualitative stage of the study, can be used in organizations in other areas. Also, as part of the second stage of the quantitative study, the relationship between the barriers to knowledge exchange in the implementation of practices in knowledge management and two dependent variables: the speed and quality of the process of such exchange was considered. The analysis revealed several barriers that can be attributed to the most critical, namely:

- technological barriers: low compatibility of document management systems used by the respondent and colleagues, difficulty in training to work with document management systems used by the respondent and colleagues;

- organizational barriers: lack of clarity of instructions given by top management to the respondent and colleagues,
- individual barriers: the importance of the requested knowledge for its owner, lack of time for knowledge exchange due to workload.

The results of the analysis of barriers to knowledge exchange should be considered in conjunction with the practices of knowledge management, which are described in the first and second chapters of the dissertation research.

CONCLUSION

Thus, organizational knowledge becomes a key factor in competition, effectiveness and increased cooperation between organizations. Knowledge plays an increasingly important role in the conditions of the information (post-industrial) society. Many countries are striving to become knowledge economies, where the main source of wealth is not manual but intellectual labor. In this context, knowledge becomes the main asset of organizations, as it enables them to make effective decisions and act. Increasing access to knowledge will contribute to the development of people in the organization by providing them with easy access to information accumulated by other people.

Organizations can no longer rely on the natural diffusion of knowledge to keep up with the pace of change. Instead, knowledge must be created, applied, and reused at a rate faster than the rate of change. The introduction and use of knowledge management practices helps in this.

An explicit assumption of knowledge-based theory is that knowledge is an organization's most valuable resource for creating a competitive advantage. Thus, knowledge resources, as well as knowledge-related policies, practices, processes, and technological tools, are essential components for a firm's survival and success in today's volatile, uncertain, complex, and ambiguous world.

Organizations, given the current economic, political and social trends that are significantly changing the business landscape, cannot remain globally competitive by basing their strategy mainly on "traditional" material resources. The developing forces of globalization, digitalization of business, technological evolution, etc. – all these exogenous factors contributed to the emergence and formation of knowledge management.

The growing popularity of the topic of research in the field of knowledge management over the past decade stimulates the need to pay attention to the rationality of the use of knowledge management and related practices in countries with transforming economies [Tkachev et al., 2021], including those based on Russian organizations.

Overall, this study contributes to knowledge management theory and provides valuable insights into the impact of practices on organizational development vectors.

Results of the research

Within the framework of the dissertation research, the following objections were set and solved:

o1 – the analysis of the current state of research in the field of knowledge management practices was carried out (Chapter 1);

o2 – the classical model of knowledge management practices for educational organizations was verified (Chapter 2);

o3 – a new classification of knowledge management practices has been developed, applicable to use in the activities of an educational organization (Chapter 2);

o4 – the variety of the most and least used knowledge management practices in Russian educational institutions has been identified and described (Chapter 2);

o5 – the barriers to knowledge exchange in the implementation of knowledge management practices were studied (Chapter 3).

In the presented dissertation research, 3 main results were submitted for defense:

1. **Based on the analysis and systematization of secondary sources of information, a new classification of knowledge management practices by stages of the knowledge life cycle is proposed, supplemented by knowledge management tools for each stage.**

The importance of conducting research in the Russian context is also confirmed, sets of foreign knowledge management practices are restructured, and a version of the Russian set is proposed.

2. **The most and least used knowledge management practices in Russia are identified and substantiated on the basis of a descriptive (desk) research and literature review.**

At the same time, the role of information technologies in the process of using the most developed practices is clarified and ways of using the least developed practices are proposed. When verifying the model of knowledge management practices in Russian

educational organizations, the respondents identified the most and least used practices in educational organizations.

The resulting set turned out to be different from the foreign set of knowledge management practices, where the most popular practices are strategic knowledge and competence management, compensation, and information and communication technologies. In the Russian recruitment, both strategic management of knowledge and competencies and knowledge retention, recruitment and knowledge exchange were noted. The least used in Russia were trainings, the development of competencies and performance management.

An additional result was the observation of the relationship between information technology and the most developed knowledge management practices, namely the moderating effect between strategic knowledge management and the effectiveness of the organization's performance (at the same time, the moderation effect was not significant in other relationships).

The least used practices of knowledge management are identified (Practice 1 – training and development, Practice 2 – performance management). These have been discussed in more detail in this study. The main question in this case was whether the use of these knowledge management practices brings results in organizational activities, even despite their weak popularity. Since these practices have not been declared to be widely used, do they benefit the organization in principle, or do they really fail to produce organizational results and are therefore not well received? As part of the audit, the above-mentioned knowledge management practices were applied in two practical tasks in the educational activities of higher education organizations.

Practice 1 (Training and Development) was used to form a new curriculum at the Graduate School of Management of St. Petersburg State University in the development of a new language and communication program for GSOM SPbU undergraduate students. The program was created taking into account the results of a study of the needs of two groups of stakeholders in a business school. A comparative analysis of the learning goals and content of two types of language and communicative programs – thematically oriented (the previous type of program) and skill-oriented (the current type of program)

is carried out. The analysis concluded that the latter best meets the academic and career needs of students, contributing to a more integrated development of skills with a practical focus.

Practice 2 (performance management) was tested as part of teaching at the Higher School of Economics, St. Petersburg, with the introduction and use of new tools for working with knowledge in teaching (identifying the main difficulties of students; building an ontological model; conducting an experiment; supplementing the ontological model). After three years of experimentation, proposals were made to supplement the original model of the subject "Teacher". The changes have had a positive impact on the quality of the educational process for both teachers (professional development and motivation) and students (increasing academic performance and motivation).

3. **Based on the empirical study, a classification is proposed and key barriers to knowledge exchange in the implementation of knowledge management practices are identified.**

The interrelations of barriers to knowledge exchange were empirically tested. The following variables were statistically significant: low compatibility of document management systems used by the respondent and his colleagues; lack of clarity of instructions given by top management to the respondent and colleagues; the significance of the requested knowledge for its owner; lack of time for knowledge sharing due to workload. Recommendations have been developed for working with the identified key knowledge shares. At the same time, the perceived importance of employees' knowledge and work experience is revealed.

An initiative division of the role of an employee into a knowledge owner and a knowledge recipient is introduced and described. The effectiveness of the knowledge sharing process is proposed to be monitored by 2 indicators: assessment of the speed of knowledge transfer/receipt and assessment of the quality of knowledge transferred/received. Thus, 4 models were formed. The proposed classification divides the main barriers to knowledge exchange into groups: technological, organizational and individual.

The following segments of barriers are considered and identified in more detail:

- technological (for example, compatibility of electronic document management systems used by different departments, lack of the ability to edit documents simultaneously by several users);
- organizational (e.g., over-centralization of communications and lack of clarity in the job descriptions of administrative staff);
- individual (for example, lack of motivation to share knowledge due to the lack of this in formal job duties).

In general, the study showed that in Russian realities there is a different set of practices than those declared in foreign literature, namely, the preservation of knowledge, recruitment and knowledge exchange. Ways to use the least developed practices of knowledge management to improve the effectiveness of communications in the activities of educational organizations were also proposed.

Brief recommendations for educational organizations:

a) It should be kept in mind that the use or replication of foreign experience may not work in Russian realities, including in educational organizations, an area that is now experiencing an era of change. Before implementing knowledge management practices, it is necessary to make sure that they are distributed in the organization in the same domains in which they are presented in the theoretical studies, then the applicability of the practices will correspond to the problem areas and will bring results. Before starting implementation, it is necessary to analyze the use of knowledge management practices, find out whether the barriers to knowledge sharing identified in this study are present in the organization, take them into account in order to anticipate and eliminate possible organizational problems.

b) In any educational organization (if we consider administrative departments) there are knowledge management practices that are more developed, which means that they are used on a regular basis, and practices that are less developed, which means that they are practically not used, or are used occasionally. This dissertation research shows that information technology is one of the most popular tools for knowledge management. It was suggested that information technology could

regulate the relationship between activities. At the same time, options were also proposed for how to apply less advanced practices, which often give favorable results. Sometimes you should focus on them.

c) Within the framework of the presented study, the practice of "strategic management of knowledge and competencies" showed the highest ratings for use. This may mean a strong importance of the strategic vision for the development of the knowledge management system in the organization and a kind of dependence on the course adopted by the head of the department/organization for the development of the knowledge management system.

d) The purpose of implementing knowledge management practices in the organization should be clearly stated, as well as correlate future application with the main knowledge management processes. The classification of knowledge management practices by the main stages of the knowledge life cycle proposed by the author can help in this. In this classification, certain tools for knowledge management are proposed, such as point methods of influencing emerging organizational problems.

e) Knowledge specialists should be welcome in the educational organization, as well as communities of experts/practitioners should be developed. This will help to preserve and accumulate internal knowledge that helps to speed up routine work processes, as well as improve their quality.

f) According to the proposed classification, barriers to knowledge sharing vary in nature and manifestations, they are determined by technology, organization or individual. While organizational barriers are difficult to overcome (especially in educational institutions with a long history of existence), technological and individual barriers can be leveled (for more information on how to work with barriers, see Chapter 3).

Limitations of the research and prospects for further development of the topic

The presented dissertation research has certain limitations, namely:

- by market sector: the applicability of the research results obtained relates to educational organizations or organizations related to educational services;

- by sample size: medium and small sample size of organizations participating in the empirical study (~5% of the calculated population);
- by context: Russian geographical context (in this study, educational organizations in St. Petersburg were considered).

As the main directions of future research, it is planned to expand the existing sample with subsequent repeated testing on the updated sample. It is also possible to conduct studies that will take into account the costs and investments in the field of knowledge management of the organization to create a complete picture of the effectiveness and usefulness of the use of knowledge management practices. The geographical context constraint presented in the observed sample can be overcome by applying comparative analysis to different groups of countries (e.g., BRICS) that are conceptually classified on the basis of a number of economic and social indicators. It is also interesting to conduct a comparative analysis of individual emerging or transition economies to identify new factors at the macro and company levels.

In the presented dissertation research, the level of analysis is the organization, another level of analysis of the study can be both market/country (if you plan a larger study) or vice versa, the individual level of analysis of employees or students of educational organizations (if you conduct a more focused study). It also makes sense to look at the level of development of employees in an educational organization to understand how they follow the adopted knowledge management policy and how they act in the workplace in accordance with it. This will lead to an additional direction - the analysis of psychological factors that form/motivate the behavior of an employee in each analyzed practice of knowledge management. In the current modern realities, it is also possible to consider the direction of research on knowledge management practices using artificial intelligence tools.

Each organization, as a living organism, requires an individual systematic approach to the application of knowledge management practices and an understanding of the purpose of applying a particular knowledge management practice to achieve the desired result. For the effective implementation of knowledge management practices and working with barriers, the presence of a developed culture of knowledge exchange, generation and

application in the organization is necessary. Knowledge and work with it is so unique that it requires specific study in each individual organization. At the same time, these decisions and changes in organizational policy should be translated, implemented and supported, first of all, at the strategic level, or at the level of the organization's management. This study recorded the leading role of this factor in the practices of knowledge management.

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APPENDICES

Appendix 1 – Key definitions of the research

In this work, a number of definitions are used, which are related to the field of knowledge management and developed by leading specialists in the field, which has a number of specific features, namely: the lack of a unified interpretation of definitions, problems of translation from English into Russian, merger with other organizational terms and concepts.

Table 28 – Study definitions used (sorting by meaning)

Term	Definition	Authors
Knowledge management	A formal set of procedures and techniques used to maximize the value of an organization's knowledge asset	Teece, 2000
Knowledge	A human or organizational asset that enables good decision-making and effective action in the context of Information plus meta-information (information about information).	Knowledge management standard ISO/DIS 30401(2017)
	Knowledge is practical information that actively drives the processes of completing tasks, solving problems, and making decisions. At the same time, knowledge management means systematically, accurately and thoughtfully forming, updating and applying knowledge in order to maximize the efficiency of the enterprise and the return on knowledge-based assets	Milner, 2003
Data	Data is a set of objective facts about objects, events, phenomena, processes, it is everything	Knowledge

	that is registered, described, and perceived by a person. Data can be digital (facts, measurement results), graphic, audio, video, etc. They can be described in different languages (symbolic, mathematical, graphic, etc.).	management standard ISO/DIS 30401(2017)
Information	Data in a specific context (necessary for the user, useful for the solution) "Data endowed with meaning and purpose". It is not unreasonable to define information as data plus metadata containing its description (data about data)	Drucker, 1993
Knowledge management processes	A comprehensive review by Costa & Monteiro, 2016 (2016) identifies receiving, storing, codifying, sharing, applying, and creating as key knowledge management processes	Costa and Monteiro, 2016
Knowledge management practices	A set of management measures aimed at effective and efficient management of the organization's knowledge resources	Andreeva and Kianto, 2012
Knowledge resources	Human resources, organizational resources, innovation resources, relational resources	Stuart, 2007
Knowledge potential of the organization	An organization's ability to create knowledge-based value	Molodchik, 2010
Knowledge sharing barriers	Factors of different origins that hinder the adoption of knowledge management practices	Husted and Michailova, 2002

The following meanings were also used in the dissertation:

Effective (effectiveness) corresponds to the word effective, actual, present, modern, effective [Cambridge dictionary]

Perspective (perspective) – from the English perspective (perspective) having opportunities, capable of successfully developing in the future [Cambridge dictionary]

Table 29 – Constructs of knowledge management practices used (sorted alphabetically)

Name and source	**Description and typical survey statement**
IT [Inkinen et al, 2015]	Promoting the creation and analysis of knowledge; acquisition of external knowledge about competitors, customers and the environment; knowledge sharing, interaction with external players using information and communication technologies "Information technologies that the organization creates for collaboration and interaction in the remote workplace" "Information technology used by the organization: ensure the transfer of information and knowledge to suppliers, customers, partners and other stakeholders remotely help to analyze knowledge that will help to make more informed decisions. Solutions help develop new products and services, and help spread new ideas to improve workflows."
Compensation [Giampaoli et al, 2017]	Adherence to a policy of financial incentives for new ideas of employees that benefit the entire organization "The organization has a regulation of financial incentives for effective ideas and developments, and employees are informed of such rules" "The organization encourages and systematically notifies employees of new ideas from colleagues"
Knowledge sharing [Giampaoli et al, 2017]	Creating a policy for active knowledge sharing in the organization

Name and source	Description and typical survey statement
	"The organization systematically motivates employees to share knowledge" "The organization has developed and uses a scheme for sharing knowledge between departments" "Employees are financially rewarded for sharing knowledge" "Employees are rewarded for sharing knowledge intangibly"
Learning Mechanisms (Use of Best Practices) [Inkinen et al, 2015]	Create, share and reuse knowledge by storing and using best practices "The organization systematically collects and/or uses 'best practices' and lessons learned from previous experiences" "The organization regularly obtains and collects knowledge accumulated from other industry sources, e.g.: industry associations, competitors, etc." "If the traditional way of working is no longer effective, the organization develops a new way"
Organizational culture [Kianto and Andreeva, 2014]	Creating conditions for the exchange of knowledge between employees and between different departments; attitude towards employee initiatives and new beginnings and a general atmosphere of trust "Employees who like to experiment and take reasonable risks are recognized by the organization, even if their decision may lead to a mistake" "The organization encourages collaboration between different departments" "Knowledge is transferred from experienced employees to less experienced ones through mentoring, mentoring, training, profile orientation"
Organizational structure	Creation of multidisciplinary teams, support cross-functional collaboration and interaction of different levels of the hierarchy

Name and source	Description and typical survey statement
[Kianto and Andreeva, 2014]	"There are permanent teams in the organization that are responsible for achieving goals and solving problems" "The organization has special mechanisms responsible for involving employees in the problem-solving process" "Employees of the organization are systematically notified of changes in procedures, instructions and regulations"
Recruitment [Kianto and Andreeva, 2014]	Recruiting employees with knowledge creation and sharing competencies "When recruiting, the organization focuses on competencies that meet the needs of the organization" "In recruitment, the ability to work together with different groups is assessed" "When recruiting, the organization focuses on the employee's ability to learn and develop" "Employees and/or teams that achieve goals or solve complex problems, are recognized by the organization and/or are financially rewarded" "Employees have the opportunity to develop their competencies through training that is tailored to their needs"
Supervisory work [Giampaoli et al, 2017]	"Senior management in my organization: understands how knowledge management affects business success is interested in knowledge management and takes appropriate action on rules, guidelines and practices, periodically reviews the effectiveness of knowledge management"
Knowledge retention [Giampaoli et al, 2017]	Developed mechanisms for the preservation of explicit and tacit knowledge in the organization "The organization uses instructions for employees to preserve their strategic knowledge"

Name and source	Description and typical survey statement
	"The organization encourages new ideas and methods from knowledge preservation officers" "The organization conducts thematic sessions to discuss accumulated knowledge and ways to preserve it" "The organization appoints experts in a particular field of knowledge who accumulate organizational knowledge"
Strategic management of knowledge and competencies [Kianto and Andreeva, 2014]	Use of knowledge in the process of creating and developing an organization's strategy and strategic approach to knowledge management "The organization's strategy is formed in accordance with the competencies and knowledge of the organization" "The organization's strategy is formulated and updated on the basis of the knowledge and competencies of the organization" "The area of responsibility for strategic knowledge management is clearly defined and is under the responsibility of a specific specialist" "The organization clearly recognizes knowledge as key element of strategic planning" "Top managers and management encourage employees to share knowledge in the workplace" "Top managers and management share knowledge openly and fairly" "The organization has an employee who is responsible for managing knowledge resources"
Training and development [Giampaoli et al, 2017]	Creation and development of the organization's key products or services using the knowledge potential "In my organization, the following are used: decision support systems, systems for searching for experts/conducting additional expertise,

Name and source	Description and typical survey statement
	group discussions (including online), an open dialogue of employees with each other and management to make better decisions"
Performance management [Giampaoli et al, 2017]	Creating a set of processes and/or systems aimed at developing employees to perform their work to the best of their ability "In my organization: The search for new solutions based on secondary sources and observation methods is encouraged There is a base of successful experience information is used to generate new ideas the creation of manuals or other documentation on products or services is encouraged to create documents based on managerial or technical information"
Organizational performance [Giampaoli et al, 2017]	Innovation, Agility, Problem Solving, and Financial Performance "Compared to your competitors, how successful has your organization been in the following areas in the last 6 months? – Saving money (time/money) of found and implemented solutions – Prompt implementation of the adopted solutions to overcome problems – Ability to meet market demands – Sales – Profit»

Appendix 2 – Variety of "knowledge management" definitions

Table 30 – Definitions of "knowledge management"

Author/s	Definition
Davenport, 1994	"Knowledge management is the process of extracting, disseminating and using knowledge effectively"
Duhon, Gartner Group, 1998	"Knowledge management is a discipline that provides an integrated approach to finding, identifying, extracting, evaluating, and sharing all corporate information. Such information may include databases, documents, policies, procedures, and the already known knowledge and experience of individual employees."
Hoffman, 1998	"Knowledge management is the management of intellectual capital for the benefit of the enterprise"
Alavi, Leinder, 2001	"There is no single clear approach to the development of knowledge management systems – it is a multifaceted process. Knowledge management is a dynamic, continuous organizational phenomenon consisting of interdependent processes of different nature and characteristics. Information technology can be used for knowledge management in addition to the traditional storage and retrieval of encoded knowledge."
Onge, 2001	"Knowledge management is the intelligent process by which raw data is collected and transformed into information. The resulting pieces of information are collected and organized into context-sensitive structures that represent knowledge."
Duffy, 2001	"Knowledge management is a formal process that involves people in an organization, and processes and technology are combined into a solution that can find knowledge and deliver it to those who need it in a timely manner."

Author/s	Definition
Bukovic, Williams, 2002	"Knowledge management is a process that enables an organization to capitalize on the amount of knowledge or intellectual capital it has at its disposal. Profits can be made if the organization uses its knowledge to create additional value for the consumer."
Information Week, 2003	"Knowledge management is a concept in which information is turned into actionable knowledge and easily delivered in a convenient way to those employees who can use this knowledge"
Accenture, 2005	"Knowledge management is a discipline that allows people in an organization to collectively acquire, share, and use knowledge to achieve business goals."
Bertels, 2014	"Knowledge management is a type of organizational management that aims to continuously update the organizational knowledge base; this includes, among other things, the establishment of appropriate organizational structures, the promotion of staff and the use of IT tools that emphasize teamwork and knowledge sharing."
Young, 2017	"Knowledge management is a discipline that helps individuals, teams, and the organization as a whole collectively and systematically create, share, and use knowledge to better achieve their goals."

Appendix 3 – Diversity of perceptions of knowledge management practices in scientific research

Table 31 – Titles of knowledge management practices in research by different authors

	Strategic level	Culture	Organizational design	IT	HR
Delen et al, 2013	Leadership	Culture	Org. structure	Technologies	Human capital
Kianto et al., 2014	KM strategy Knowledge protection	Culture	–	ICT	HR Learning
Lee, Choi, 2014	–	Culture	Structure	ICT	Employees
Villar et al., 2014	–	Knowledge Dissemination Practices Information Exchange Mechanisms	–	Disseminating information to employees, customers and suppliers Explicit Knowledge Codification Systems Knowledge storage practices Global Information Collection and Processing Systems	Methods of employee participation, such as interdisciplinary teams, quality circles, improvement groups, etc.
Inkinen et al., 2015	Knowledge protection	–	Org. design	ICT	Compensation Awards Recruiting Corporate Training
Giampaoli et al., 2017	–	Culture	Decentralization Work Design Work Management Work	IT	Training & Development Award
Ode, Ayavoo, 2020	Knowledge Generation	–	–	Knowledge Dissemination Knowledge Storage	Use of Knowledge
Singh et al., 2021	The Value of top management knowledge	Exchange Practices	–	–	–

Appendix 4 – “Performance management” practice usage: research materials

Table 32 – Composition of focus groups in the analysis of the use of the practice of "performance management"

Parameters	**Descriptive statistics**			
	1	**2**	**3**	**4**
Number of participants (people)	6	5	7	6
The prevailing learning style according to David Kolb	Divergents	Assimilators	Convergents	Accommodators
Age (full years)	21-22	21-22	21-23	21-23
Duration of the discussion (minutes)	105	90	125	105

Table 33 – Summary of key results

The KM process	**Key findings/ideas/challenges**			
	1	**2**	**3**	**4**
Identification	+ On average, lecture materials have become more interactive	No significant differences with the traditional format are stated	No significant differences with the traditional format are stated	No significant differences with the traditional format are stated
Creation	There are no individual difficulties	+ The use of new online tools, which has had a	There are no individual difficulties	– Difficulty with real-time work in

The KM process	Key findings/ideas/challenges			
	1	2	3	4
	associated with the format of training	positive effect on the generation of ideas/knowledge	associated with the format of training	a remote format of interaction
Gathering	– Difficulty in identifying relevant searches and collecting information/data	– Difficulty in identifying relevant searches and collecting information/data	+ Ease of search and navigation through the found material	+ Ease of search
Organization	– Strong dependence on the quality of the material presented by the teacher	+ Ease of organization and the presence of a visual range	+ The presence of several sources of information and knowledge at the same time	– Strong dependence on the quality of the material presented by the teacher
Storage (the key idea is a new format of data storage)	+ Links to the locations of the necessary files – A large number of links for different subjects	– An abundance of different places for storing lectures and seminars + With their orderliness	– Non-centralized storage of the necessary materials + At the same time, their internal order	+ Convenient format + Creation of unified repositories/ archives
Dissemination	+ Ability to compare results in real time	+ Ability to compare results in real time	There are no individual difficulties associated with the format of training	+ Quick and easy process
Application	– "Lack of touch of the teacher" – Personal attention	– Individual feedback	– Clarity of requirements – Teacher's attention to detail	– the high importance of the teacher's personal attention

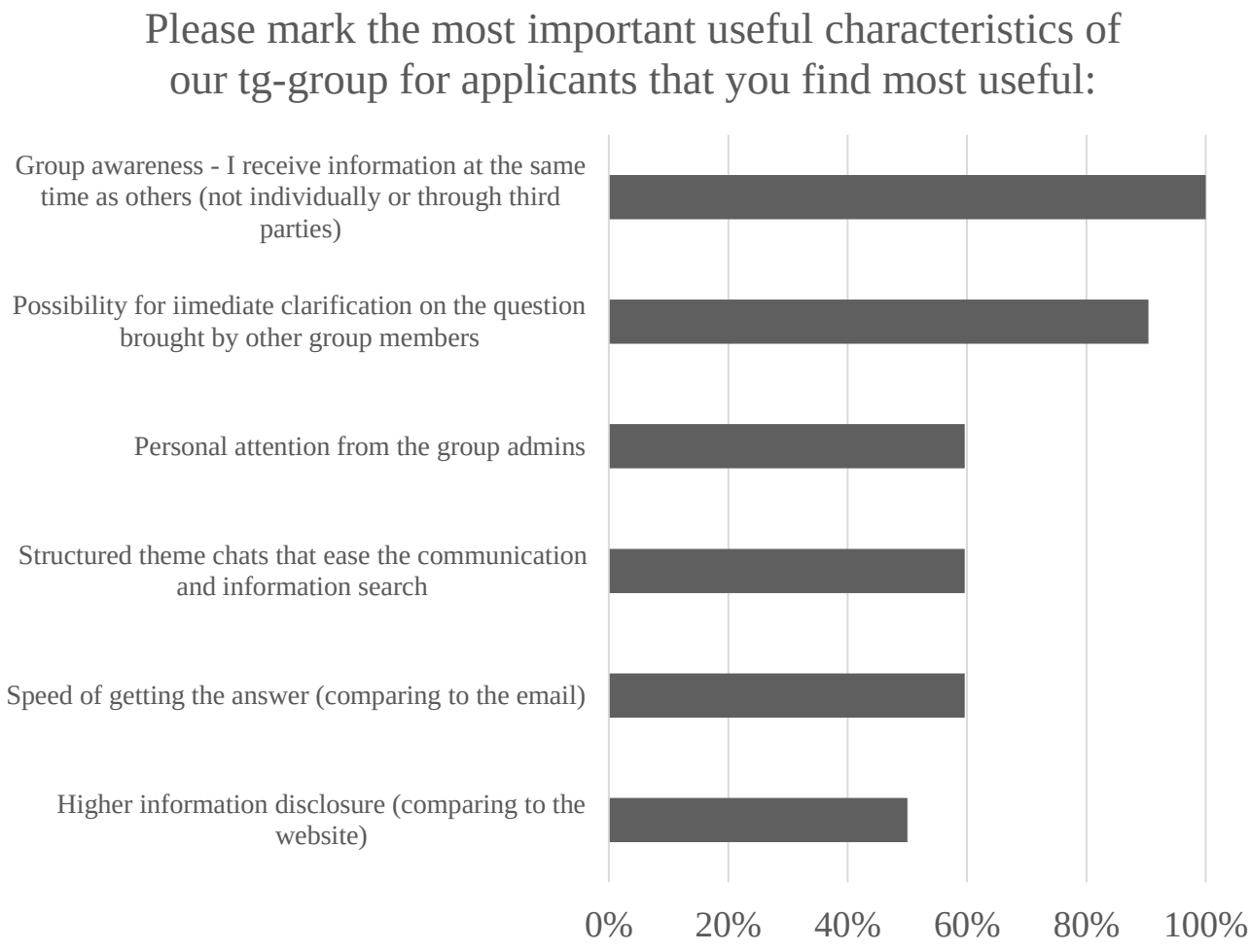

Figure 13 – Survey result

Appendix 5 – Qualitative study of knowledge sharing barriers

Table 34 – Excerpts from interviews with representatives of the University's “Y” administrative departments

Administrative department	**First-level constructs (excerpts from interviews)**
Office of Curriculum Work	"... It's hard to get people from different departments together for a face-to-face meeting. It is necessary to implement conferencing systems for regular meetings with the participation of employees working in geographically remote offices..." "... The need to use Skype to display validated exam tests off-campus..." "... When connecting by e-mail, often the recipients to whom the e-mail should be sent are placed as the primary recipients. As such, it's often hard to figure out which emails are important and which aren't..." ".. Will it be possible for different users to edit documents at the same time? This is convenient so that versions of documents are not sent by e-mail..." "... Ambiguous job descriptions that don't always make people understand why they have to do certain job tasks..."
Admissions Office	"... Problems with the university-wide mandatory electronic document management system: frequent loss of documents due to an imperfect assortment of documents; no email notifications; Processed documents are not deleted. It is not possible to work with documents "retroactively..." "... Problems of hierarchical subordination: administrative employees do not know to whom they should report, since many

Administrative department	First-level constructs (excerpts from interviews)
	functions are not described in the organizational structure of the university and job descriptions..."
Program Directorate	"... Problems with the university-wide mandatory electronic document management system, in which documents can be lost after uploading..." "... The need for a common knowledge-sharing environment based on a local Area Network or other solution..." "... The introduction of an electronic signature with its official recognition would solve many problems..." "... Conferencing equipment will become a convenient means of communication to minimize the time spent on travel between geographically distributed offices..."
Department of Extracurricular Activities	"... Social networks are used to communicate with students more often than the university's corporate communication tools, which is not optimal, since communications are not combined into one IT system..." "... The university-wide system of mandatory electronic document management is quite inconvenient (poor properties of the assortment of documents, the possibility of documents subject to loss)..." "... Deadlines, even if documented, are poorly observed by employees..." "... Superiors also sometimes fail to comply with agreements reached in inadequately documented telephone conversations..."
Office of Curriculum Work	"... Students don't always check their corporate emails, and messages via social media don't have the status of official documents..."

Administrative department	First-level constructs (excerpts from interviews)
	"... The information entered into the university-wide mandatory electronic document of the manual management system cannot be used in the future due to lack of access..." "... The defendant is subordinate to a superior person residing in the territorially disconnected facility, which complicates operational communication; One solution to this problem may be the introduction of an electronic signature system..." "... It is difficult to download documents from the university-wide mandatory electronic document management system..."
International Contacts Office	"... The preparation of documents through the university-wide mandatory electronic document management system is too time-consuming, so documents that do not require the participation of senior management are prepared using e-mail communication..." "... The Office of International Contacts, the Directorate of the Bachelor's Programme and the Directorate of the Master's Programme use different document management systems for the same processes (e.g., the admission of students to elective courses), thereby increasing the time spent on these processes..." "... Formal recognition of electronic signatures would be convenient to save time..." "... In addition, it is possible to save time by implementing any type of conferencing system..."
Office of Curriculum Work	"... The hierarchical system of subordination (e.g., who reports to whom) changes quite often (e.g., from academic year to academic year or even from semester to semester) even within the same business processes..."

Administrative department	**First-level constructs (excerpts from interviews)**
	"... A fuzzy system of job descriptions (leading to the same problem of not knowing who is accountable to whom and what knowledge is needed, which leads to employees often doing things they don't need or not doing what they should..." "... There is almost no integration between the document management systems used by different departments..." "... The inability to edit documents online by several users at the same time, the ability to see who is doing what when editing a document..." "... There is no documentary evidence of verbal or telephone agreements, so it is necessary to transfer most of the requests to an electronic system in which the requests can be stored..."
Office of Curriculum Work	"... Communication between different departments happens too often between department heads, which slows down processes significantly..." "... In the development of supporting IT systems, the voice of the direct users is not taken into account, and thus the systems do not perform all the functions directly of the users' needs (e.g., it is difficult to obtain the necessary information from the systems)..."