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Master's in Management Program

Study of the Knowledge Management tools in Russian enterprises

Master's Thesis by the 2nd year student

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Заявление о самостоятельном характере выполнения выпускной квалификационной работы

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28.05.2021   (подпись студента)

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I, David Zurabovich Osipov, second-year master student of the program «Master in Management», state that my Master's thesis on the topic «Study of the Knowledge Management Tools in Russian Enterprises», which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism.

All direct borrowings from printed and electronic sources, as well as from master theses, Ph.D, and doctorate theses which were defended earlier, have appropriate references.

I am aware that according to paragraph 9.7.1. of guidelines for instruction in major curriculum programs of higher and secondary professional education at St. Petersburg University «a master's thesis must be completed by each of the degree candidates individually under the supervision of his or her advisor», and according to paragraph 51 of the Charter of the Federal State Institution of Higher Education Saint-Petersburg State University «a student can be expelled from St. Petersburg University for submitting of the course or graduation qualification work developed by other person (persons)».

28.05.2021   (student's signature)

АННОТАЦИЯ

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Описание цели, задач и основных результатов	Данное исследование направленно на изучение использования систем управления знаниями (СУЗ) в российских средних и крупных предприятиях. Главным исследовательским вопросом, на который старается ответить исследование, является: «Как используются системы управления знаниями в российских предприятиях для поддержки организационного обучения?». Чтобы достичь цели исследования, автором были установлены следующие задачи: • Определить, что является управлением знаниями и из чего оно состоит; • Определить, что такое системы управления знаниями (СУЗ); • Оценить, как системы управления знаниями используются в российских предприятиях и кем; Чтобы достичь обозначенных исследовательских задач, было проведено 13 полуструктурированных интервью с профессионалами из российских компаний. Результаты теоретической части показывают, что существует необходимость в научном сообществе достичь консенсуса по общепринятой терминологии управления знаниями, чтобы уменьшить путаницу как в научном сообществе, так и в бизнес-сообществе, которое может улучшить обмен знаниями в компаниях. Это, в свою очередь, потенциально положительно повлияет на организационную и финансовую эффективность компаний. Результаты эмпирической части показывают, что сценарии использования систем управления знаниями, в основном, плохо

	соотносятся с теорией управления знаниями и теоретически эффективным использованием систем управления знаниями для поддержки обмена знаниями внутри компаний. Это открывает возможности диагностики и устранения проблем неэффективного управления знаниями в российских компаниях.
Ключевые слова	Управление знаниями, системы управления знаниями, СУЗ, СУЗИ, система распространения знания, корпоративная память

ABSTRACT

Master Student's Name	David Osipov
Master Thesis Title	Study of the Knowledge Management Tools in Russian Enterprises
Educational Program	Management
Main field of study	Master in Management (MiM)
Year	2021
Academic Advisor's Name	Ioannis Christodoulou, Academic Director of CEMS MiM Programme, Associate Professor of Strategy
Description of the goal, tasks and main results	This research study is aimed to explore the Knowledge management tools (systems) usage in Russian medium and large enterprises. The main research question of the study: «How can knowledge management tools be used in Russian enterprises to facilitate organizational learning?». To archive the research goal and answer the research question, the following objectives were set: • To define what Knowledge management is and what it consists of; • To define what are Knowledge management tools; • To assess how KM tools are used in Russian enterprises; The qualitative exploratory research has been constructed. The primary data has been collected by running 13 semi-structured interviews with professionals from Russian companies. The theoretical part's results show that there is a need for the scientific community to reach a consensus on generally accepted terminology of Knowledge management to reduce the confusion both within the scientific community and with the business community, which could improve the knowledge sharing within companies, which in turn would positively affect the organizational performance. The empirical part's results show that the Knowledge management tools (systems) usage scenarios are mostly poorly related with Knowledge management theory and theoretical usage of KM tools, thus opening up possibilities to diagnose and fix the problems with knowledge sharing in Russian companies.

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1   INTRODUCTION

Although Knowledge Management (KM) is not a new answer to the information-centric world, each evolution and the way it grows can be the answer because, in a modern-day business environment, it is essential to be ahead of current and future competitors, substitutes, potential disruptors; to find ways to mitigate the impact of devastating financial crises and political instability such as trade wars. However, the scientific consensus on what knowledge management precisely is, what practices, processes, and information tools are included in the notion, is still to be reached. Researchers face the need to analyze just a certain amount of KM tools or processes, but there is no article analyzing the synergy of both tools and processes. Some knowledge management practices could improve the financial performance of a company (T. Andreeva & Kianto, 2012), like KM – human resource management (HRM) and information and communication technologies (ICT). However, in Russia, KM practices and tools are used separately and selectively by companies (Gavrilova et al., 2017). However, the further analysis of the causes of KM fragmental usage in Russian companies is not a scope of this paper primarily because, in periods of political-economic instability, the historical causes of certain events fade in front of an urge to change adapt and survive.

Research problem. There is no consensus in the scientific community of what KM tools are being used and how they are being used in Russian companies; no codification of KM tools has been introduced by scientific and business communities, preventing further research in this field. There are papers on performance evaluation of KM processes of Russian firms (T. E. Andreeva et al., 2015; T. Andreeva & Kianto, 2012; Gavrilova et al., 2017; May et al., 2005; Michailova & Hutchings, 2006), however:

- There seems to be a mix-up and a lack of agreement on what exactly are the KM tools and practices, which leads to confusing them with Information & Data management system and practices, potentially preventing the business community from effectively practicing Knowledge management, and at the same time devaluating the KM notion itself, especially in our information-centric world. This paper aims to suggest to both scientific and business communities the unified definitions of what exactly are the KM processes and tools.

- There seems to be a limited number of studies on Knowledge management, especially when it comes to Russia. The quantitative observatory research (survey) on KM usage in Russian companies (Gavrilova et al., 2017) is only a shallow overview of KM lifecycle in

Russian companies, which goal was to check hypotheses on which factors influence the KM and at what particular stage of KM lifecycle companies find themselves.

- There seems to be only one research that studied financial outcomes of two Knowledge management processes (T. Andreeva & Kianto, 2012) in Chinese, Russian and Finnish companies, which can be a solid basis for further study by fellow researchers.

This paper addresses this research gap and lays a foundation for further research.

The research goal is to explore the KM tools (systems) and their usage in Russian enterprises.

The research objectives are:

- To define what Knowledge management is and what it consists of.
  - Within the scope of this research, we will also define what Knowledge is and what organizational learning is. This part is crucial for separating Knowledge from Information.
  - This objective is crucial for separating Information from Knowledge management.
  - It is crucial to define what KM processes exist to determine KM processes and how KM tools facilitate organizational learning.
- To define what are Knowledge management tools;
  - This objective is crucial for separating solely Information-oriented systems from systems that can or designed to facilitate KM processes.
- To assess how KM tools are used in Russian enterprises;
  - This objective is crucial for reaching the research goal.

The research context is the medium and large-sized enterprises operating in the Russian Federation, both multinationals and mononationals.

The research subject is Knowledge Management systems (tools).

The research question is «How can knowledge management tools be used in Russian enterprises to facilitate organizational learning?»

Scientific relevance. This paper aims at suggesting the scientific community definitions of notions like Knowledge, Knowledge management, Organizational Learning, and Knowledge management tools to be generally accepted and used for the sake of reducing confusion both within the scientific community itself and with the business community. For more than 20 years of Knowledge Management research, there is a codification research gap in KM tools and practices that Russian

companies use. Moreover, there is a research gap between how KM tools can be used and their actual usage in Russian companies.

Practical relevance. As a hypothesis, fragmented usage of KM tools in Russia (Gavrilova et al., 2017) is due to a lack of understanding of what KM is and why it is needed, codification of KM tools, and overview of common practices. Thus, the management of Russian companies could diagnose common practices in working with KM tools, fix the problems with knowledge sharing that lead to an impact on the financial performance of companies (HINDASAH & NURYAKIN, 2020; Idowu, 2013).

2   WHAT IS KNOWLEDGE MANAGEMENT?

In the information-based economy, innovation is vital to have the upper hand over competition and other challenges. Accordingly, it is high on the plans of government officials to try to make conditions more appealing to the business sector, more innovation-driven. However, innovation could be a new method of business processes optimization or anything. Information and thus Knowledge is all around perceived as a critical predecessor to advancement, and how it is created, spread, oversaw, and applied will keep on being a distinctive factor among the most successful economies. While the KM is commended as a methodology that will encourage innovation and financial development, it is encircled by disarray and poor comprehension of its utilization, and this has constrained the degree to which the business community has utilized effective KM practices and tools. In order to explain what is KM, the author suggests starting from the knowledge notion itself and as a general explanation would take the line from the paper by Lisa G.A. Beesley and Chris Cooper:

> Knowledge is considered to be that which is embedded within individuals and occurs either as a result of experience or is generated through thinking or reasoning; otherwise it remains as data or information. From this perspective knowledge can be seen as an activity; data and information are objects. (Beesley & Cooper, 2008)

Thus there are two types of knowledge:

- **Explicit knowledge** is the captured facts, figures, data, and information that physically exist in documents, repositories, databases.
    - o Explicit knowledge relates to capturing and storing physical data and information in specific formats, files, and compositions. Explicit knowledge needs to be managed via effective document management systems that allow people to find the knowledge they are looking for easily.
- **Implicit knowledge** is the knowledge acquired over time through experience and education, which only exists in people's heads.
    - o The management of implicit knowledge can happen in different ways. As there is a vast amount of critical knowledge in the heads of people, the goal cannot be to capture it all in documents or systems such as wikis, memos, or learning. A way of managing this knowledge is by creating an expert network, where people can easily find experts that can help them in doing their job. Effective tools such as expert locator link people

in a company to their expertise and contact details. Another way of managing implicit knowledge is to transfer to a broader group of people via mentoring, lunch seminars. (Deloitte, 2015)

This categorization of knowledge is more or less universal among researchers, but the KM topic is still under debate (Koenig, 2018), the author will use this definition and categorization of knowledge. Now it is needed to identify what KM consists of:

Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously uncaptured expertise and experience in individual workers. (Duhon, 1998)

Knowledge management is concerned with the exploitation and development of the knowledge assets of an organisation with a view to furthering the organisation's objectives. The knowledge to be managed includes both explicit, documented knowledge, and tacit, subjective knowledge. Management entails all of those processes associated with the identification, sharing and creation of knowledge. This requires systems for the creation and maintenance of knowledge repositories, and to cultivate and facilitate the sharing of knowledge and organisational learning. (Rowley, 1999)

However, KM is regarded as a process for the flow of knowledge among individuals as an instrument for innovation in processes, products and services, effective decision-making and adapting the organization to a dynamic and competitive marketplace. (Rezaei et al., 2020)

Again, there is a conflict, whether KM is attributed to Knowledge, Information, or both. The author would take Rowley's and Rezaei's approach of defining KM, where only Knowledge is essential in KM, but not Information.

The main stages of a KM process are also under debate, and some researches are adding new stages (Jafari Navimipour & Charband, 2016), others are creating the whole structure from scratch (Chang & Lin, 2015). The author suggests to stick to a simple one, which was created from a mix of other structures:

- Knowledge accumulation
- Knowledge storage
- Knowledge improvement
- Knowledge share

In general, the authors define very well the various knowledge processes, but they make little distinction between practices and technologies supporting KM, promoting some conflict in understanding the concept of KM, negatively influencing KM practitioners in organizations. (Marques Júnior et al., 2020). For example, in the article «An evaluation of knowledge management tools: Part 1 – managing knowledge resources.» the author suggests analyzing "tools" of knowledge management. However, the author actually analyzes processes and frameworks (Massingham, 2014), which is even more confusing, bearing in mind, that the Knowledge Management could consist of **processes** (methods, processes, and frameworks of KM) and **tools** (actual software tools like databases, wikis and other). Article written by Massingham could help to collect different frameworks on KM, but it dates back to 2014, which is currently outdated, considering the rapid change of the world with one more enormous economic crisis, economic and political changes, and accelerating development of technologies. The rapid development of technologies is based on the previously collected knowledge; the more the knowledge pool collected by humanity, the faster is the progress. Although there is no current complete study of KM process and/or tools, the author could use the framework of analyzing sources, proposed by Cerchione Roberto and Esposito Emilio (Cerchione & Esposito, 2017):

1. KM-Tools supporting the knowledge creation process;
2. KM-Tools supporting the knowledge storage process;
3. KM-Tools supporting the knowledge transfer process;
4. KM-Practices supporting the knowledge creation process;
5. KM-Practices supporting the knowledge storage process;
6. KM-Practices supporting the knowledge transfer process.

And modify it to include Knowledge improvement and elimination processes:

1. KM-Tools supporting the knowledge creation process;
2. KM-Tools supporting the knowledge storage process;
3. KM-Tools supporting the knowledge improving process;
4. KM-Tools supporting the knowledge transfer process;
5. KM-Practices supporting the knowledge creation process;

6. KM-Practices supporting the knowledge storage process;
7. KM-Practices supporting the knowledge improving process;
8. KM-Practices supporting the knowledge transfer process;
9. KM-Practices supporting the knowledge elimination process.

The author suggests using the following definition of the KM tools:

KMSs are developed to support and enhance knowledge-intensive tasks, processes, or projects of, for example, knowledge creation, organization, storage, retrieval, transfer, refinement and packaging, (re)use, revision, and feedback, also called the knowledge life cycle, ultimately to support knowledge work. In this view, a KMS provides a seamless pipeline for the flow of explicit knowledge through a refinement process. (Schwartz & Te'eni, 2011)

The author suggests defining what is organizational learning and learning organization. One of the most notable authors on Knowledge management, Anders Örtenblad, in his paper «What does "learning organization" mean?» presented five interpretations of a learning organization, stating that the scientific consensus is yet to be reached in the future. For this paper, the author suggests using the definition for organizational learning «Organization as learning unit»; according to Anders Örtenblad, most scholars define organizational learning by this definition:

… what the individuals learn, as agents for the organization, is stored outside single individuals in a form of organizational memory. The organizational memory is continuously updated and functions as a basis for conducting work tasks and further learning. In this case, the organizational aspect is that the organization learns as if it were an individual and the organization becomes a learning unit in itself. (Örtenblad, 2018)

The scientific articles by nature are poorly designed to be used by practitioners, especially articles in the field of KM. Thus, the author suggests that his fellow researchers improve this research by creating a practitioner's guide to KM tools and processes adapted for different levels of enterprises. Solely theoretical work with literature would be unacceptable because of the varied efficiency of KM frameworks after being applied in practice.

2.1 Key takeaways

In this paper, the author would work with the following definitions of knowledge and related notions:

- Knowledge is defined as that which is ingrained in people and arises either as a consequence of experience or as a result of thinking or reasoning; otherwise, it is referred to as data or information.
- Knowledge management is concerned with exploiting and developing an organization's knowledge assets to further the organization's objectives.
- Organizational learning is a process of constant transfer of individuals' tacit knowledge to organizational explicit knowledge storages as a form of organizational memory, which is continuously updated and functions to conduct work tasks and further learning. (Örtenblad, 2018)

3 KNOWLEDGE MANAGEMENT PROCESSES AND TOOLS

Standard ISO 9001:2015 Quality management systems, for the first time, introduced the importance of KM implementation. According to this standard (Abuhav, 2017), KM implementation would be as follows:

The goals of KM:

- Developing an organizational infrastructure for the management of knowledge to serve relevant parties in the organization
- Becoming a learning organization—training human resources in order to have the right knowledge and skills
- Developing processes needed to collect, store, retrieve, share, and leverage knowledge assets
- Allowing access to knowledge infrastructures
- Providing the required knowledge and information as resources for the operation of processes
- Obtaining necessary external knowledge
- Maintaining and preserving the necessary knowledge required for the operation of processes
- Integrating knowledge of employees with knowledge of systems
- Fostering innovation and collaboration

Applying knowledge management achieves the following objectives:

- Allowing codification and categorization of knowledge
- Relating business aspects to their knowledge issues
- Allowing the support of human resources in how to translate knowledge into process outputs, goods, or services
- Maintaining knowledge relations with external parties of the organization such as customers, suppliers, stockholders, or governmental issues

In practice, knowledge management is a collection of activities for

- Capturing the organization's collective expertise on any media (database, paper, or intellectual)
- Developing channels for sharing of knowledge

- Provisioning of knowledge to interested parties at the right situation

3.1 Knowledge management tools overview

The author of the research identifies general groups of KM tools. Here, the author focuses solely on KM systems as KM tools, whereas in some scientific papers, a Corporate University is considered a KM tool (Scarso, 2017) as a whole.

According to the research (Ochieng et al., 2018) related to the Oil&Gas industry in the United Kingdom and Nigeria, several KM tools groups have been identified as part of information and communication technologies (ICT):

1. Knowledge Management Systems (KMS)
   a. "KMS" refers to a class of information systems that is applied to manage organizational knowledge. In other words, KMS are information systems built upon the knowledge infrastructure that support and enhance the activities of knowledge management. (Le Dinh et al., 2013)
2. E-collaboration systems
   a. An "e-collaboration system" is a computerized system or software which is designed to help individuals and organizations involved in a common task in order to achieve specific goals. E-collaboration is considered as an area of both research and industrial development and can be conceptualized as encompassing six basic elements: the collaboration tasks, e-collaboration technology, individuals involved in collaborative tasks, the mental schemas possessed by these individuals and the physical and social environments that surround them. (Le Dinh et al., 2013)

According to Ochieng's research, web search, web blogs, and instant messengers are considered KMS and the UK employees preferred them. There is no description and additional information in the article on what are these instruments exactly, are they hosted in the Intranet or extranet, what kind of search tools they used (Google, DuckDuckgo or an intranet search engine). The Nigerian employees preferred E-collaboration systems like "intranets". The author would like to disagree with the researcher on terminology and concepts – if an intranet is a collaborative

system, then the Internet is also a collaborative system. Both systems are just networks of computers – platforms for collaboration and exchange of information activities.

The second "theme", according to Ochieng's paper, consists of "web 2.0-folksonomies and tagging clouds", "web 2.0-social networking", "case-based reasoning systems" and "web 2.0-wikis". These are more interesting items for this chapter of the research, but again there was no description of what exactly these items are, for example, the "web 2.0-folksonomies and tagging clouds". Any tagging cloud cannot exist all by itself. It needs to be embedded in some database, website, wiki, or anything else. A tagging cloud is just a mere subtool for tools like wiki's, webpages. It is unclear what social networking systems were used by employees in the research, external ones (Facebook, Linkedin), or internal ones, hosted in an intranet and cannot be accessed from the Internet.

The third "theme" of the research referred to document exchange systems, communication and collaboration systems, content management system, and knowledge mapping tools. The researcher should be very careful in separating two different Content Management Systems (CMS) paradigm – one is a web development tool, like opensource Wordpress, which provides templates, designs, web libraries, plugins to change the content of a website easily without the need to rewrite the code of a site. The other one is "about gaining control over the creation and distribution of information and functionality. CM is also about knowing what value you have to offer, who wants what parts of that value, and how they want you to deliver it. From different perspective, content management either distributes business value; balances organizational forces; combines content-related disciplines; collects, manages, and publishes information or is a technical infrastructure. CM is and does all these things." (Vu et al., 2018) There is also Collaborative Management System (Gou et al., 2019), also referenced in scientific literature as CMS. One should be careful not to mix them up. There is no clear description of what is a Collaborative Management System exactly. Is the Slack communication tool a Collaborative Management System or just a collaborative tool? Moreover, the researcher has not given any real-life example of a Collaborative Management System, referencing only Beijing Seeyon Internet Software Corporation's solutions without naming the actual solution.

According to the description of KM, KM only deals with Knowledge, not Information, thus information systems like ERPs (Enterprise Resource Planning) are definitely not KM tools. The CRM (Customer Relationship Management) tools are mainly used as an information system, but could be also used as a KM tool. For example, an employee leaves a note in a CRM about a customer, his/her tastes, history with the company, strategies and tactics to satisfy this customer

more efficiently. In this example, a CRM serves as a KM system, where the "note" is a condensed knowledge (transformed through experience information on the customer) of an employee. Such examples make KM tools definition and search a working piece of software/hardware much more difficult, whether an Information tool could serve as a KM tool in the same time. There are collaborative tools in the market like Slack, Onenote, Dropbox, Yammer, and others (Kukhnavets, 2019). The author proposes to use a simple rule of thumb – if a tool is not designed to facilitate the transformation of an organization into a Learning organization (Örtenblad, 2018), then it is not a KM tool; and a definition from the «Encyclopedia of Knowledge Management»:

KMSs are developed to support and enhance knowledge-intensive tasks, processes, or projects of, for example, knowledge creation, organization, storage, retrieval, transfer, refinement and packaging, (re)use, revision, and feedback, also called the knowledge life cycle, ultimately to support knowledge work. In this view, a KMS provides a seamless pipeline for the flow of explicit knowledge through a refinement process. (Schwartz & Te'eni, 2011)

There is a description of KM tools in a thesis by Torgeir Dingsøyr (Dingsøyr, 2019), which the author finds useful, including the framework of a KM tool analysis "Tools, Usage Situations and User Groups triangle.":
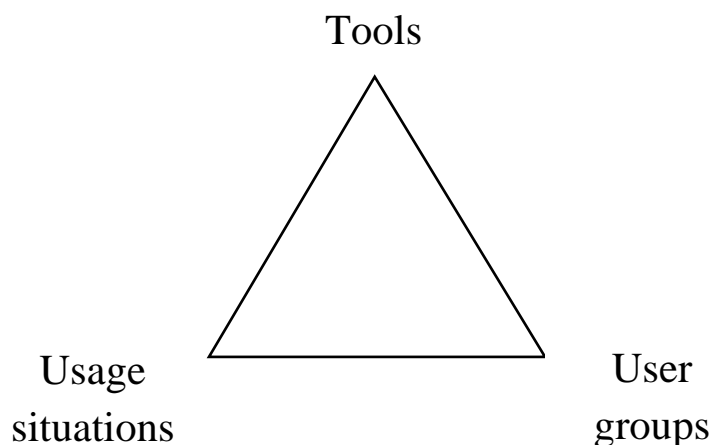

Figure 1. Tools, Usage situations, User groups triangle

The author is to use this framework and methodology of research of the KM tools, which includes:

- Presentation of a tool,
- Description of a tool's usage,
- General assessment of a tool (what particular KM processes and practices are being facilitated by this particular tool)

- Description of a tool's users

In the reviewed scientific literature, there was no description of a particular KM tool, only general explanation of them (Centobelli et al., 2019), such as Web 2.0 blogs, Wikis, "data mining", "charts creation software" (Marques Júnior et al., 2020), intranets and others, except in (Dingsøyr, 2019) research. These general terms are useless for practitioners and prevent understanding what particular software or hardware tools can be implemented to support KM practices and processes. A good example would be – the KM tool for storage knowledge should be a No-SQL database in a backend with a user-friendly frontend, used to store strategy insights documentation, presentations, cases, stories, project management best practices, or any other valuable knowledge of an organization. It should not be a SQL database because of a wide variety of virtual formats of knowledge. A good example of a KM tool's software implementation would be a MongoDB database connected via API with a separate frontend. There is no such example in the scientific literature, confusing practitioners and rending the KM field of scientific knowledge useless for them in this particular field.

All in all, the author suggests using the approach of William R. King, Peter V. Marks Jr. to KM tools in their paper «Motivating knowledge sharing through a knowledge management system» (King & Marks, 2008), in which they suggest analyzing tools that facilitate «knowledge sharing», in other words, the sharing of knowledge where a potential recipient is unknown, whereas «knowledge transfer» is sharing of knowledge to a known recipient. This is to be done to refine the scope of the research because in the case of «knowledge transfer» - every communication system, for example, instant messengers, email services, would be considered potential KM tools. It depends on the nature of communication between two or more persons if a communication system plays a role in the KM process, and the KM processes analysis is outside of the scope of this particular paper.

3.2 Knowledge management processes and practices overview

Here the author is to identify and separate KM tools from KM practices. According to prof. Henri Hussinki, Aino Kianto, Mika Vanhala and Paavo Ritala (Hussinki et al., 2017), KM practices consist of ten groups:

1. Supervisory work
   a. Supervisors pave the way for any KM agenda by creating a trustful, respectful atmosphere and creative culture
2. Strategic KM
   a. Strategic KM comprises strategic planning, implementing and updating activities that consider knowledge assets to be the focal point. Strategic KM is concerned with the organization's current and future strategic knowledge; building the organization based on a knowledge-based strategy; establishing activities for monitoring and measuring the knowledge assets in the firm; and appreciating their development needs in relation to the business environment.
3. Knowledge protection
   a. Knowledge protection mechanisms and practices can be broadly divided into two categories: formal and informal.
      i. The formal protection mechanisms include intellectual property protection, contracts, and other formal means to protect knowledge, and they facilitate its firm-specific appropriability.
      ii. The informal protection mechanisms, such as secrecy and the tacit nature of knowledge, allow firms to keep proprietary core knowledge safe from imitation.
4. Learning mechanisms
   a. Firms emphasizing learning invest in transferring knowledge from experienced employees to less experienced employees through activities like mentoring, apprenticeships, and job rotation.
5. IT practices
   a. Here, IT practices, according to the authors, are much similar to KM tools of the author of this particular research paper.
6. Organizing work
   a. Practices for organizing and dividing up work relate to how the organization should structure power and communication relationships

And four HRM practices:

7. Dealing with recruitment
8. Training and development
9. Performance appraisal
10. Compensation practices

KM practices vary from culture to culture, from country to country (Hussinki et al., 2017; Marques Júnior et al., 2020; Oliva & Kotabe, 2019; Teixeira et al., 2019), but the categorization of groups stays the same.

Professor Peter Massingham conducted the most recent study-evaluation of KM practices in 2014 (Massingham, 2014), almost six years have passed since then. There is a risk of outdated practices, but it is the only scientific research available on KM practices catalogization on the moment of writing this particular paper. Further research is needed both in scientific papers as well as in industry best practices standards if there are any. The author hopes to find the codification of best practices similar to other fields, for example, Project management with Project Management Institute (PMI) and a guide to PM Best practices PMBok.

There is definitely more scientific knowledge available on KM practices than on KM tools. The author is to encourage the fellow researchers to explore the various KM practices, because the most relevant research paper is dated back to 2014, introducing the risk of outdated information usage. Thus, a further research could be conducted by fellow researchers to determine the world or country level (Russia) best practices, which are dependent on the national culture, traditions.

3.3 Key takeaways

The key findings of the theoretical part are:

1. There is no one universal Knowledge management description, but at least there is a scientific consensus on Knowledge and the general items of a KM framework. There is still a need to choose the most promising definition.
2. KM's researchers frequently mix up Knowledge with Information, confusing Information systems with Knowledge management ones, confusing KM tools with KM practices. The author of this paper should be careful, especially in defining KM tools, which could be used for Information management and Knowledge management.
3. There are no documented and codified world and country-level best practices for KM tools or their usage. The Standard ISO 9001:2015 introduced only general guidelines.
4. There is information on KM practices and processes in the scientific literature. The relevant best practices are fragmented into several scientific papers and should be

defragmented, analyzed, and codified. The relevant framework for identifying KM practices has been researched and proposed. The latest codification attempt of the KM practices was undertaken in 2014.

5. What are Knowledge management Tools (systems)? Knowledge Management tools are «developed to support and enhance knowledge-intensive tasks, processes, or projects of, for example, knowledge creation, organization, storage, retrieval, transfer, refinement and packaging, (re)use, revision, and feedback, also called the knowledge life cycle, ultimately to support knowledge work.» (Schwartz & Te'eni, 2011). A more simpler rule of thumb the author proposes is that any tools not designed to turn a company into a Learning organization, is not a KM tool.

6. In this paper, the author suggests analyzing only KM tools that are dealing solely with Knowledge or Knowledge + Information, which facilitate «knowledge sharing» - «knowledge sharing» is a process of sharing knowledge where a potential recipient is unknown. The tools that are engineered to deal only with information should not be analyzed in this paper. However, if a particular user group utilizes an information system as a KM tool, this case can also be noted and analyzed.

4 METHODOLOGY

The research reported in this thesis has been conducted in interactive with interviewees manner; there have been two stages of the research:

- Literature study stage of Knowledge management, KM processes, and tools;
- The empirical study of KM tools used and their usage scenarios using ethnography and grounded theories.

What research methods are appropriate for the research question we have posed? The literature study is obviously done as any literature study in the scientific community. In the empirical part, the author wants to research particular issues with the KM tools usage that take part in actual companies. The amount of scientific knowledge published in this study area is quite limited, especially for Russian companies, so the author cannot rely solely on published papers. Also, the author suggests that fellow researchers conduct more studies in the field of KM management research to fill the gap of KM tools codification and what particular KM processes are used by Russian companies in order to diagnose space for improvement for the business community. Although, because of the rapidly changing world, particularly IT systems and KM practices, the researches in this field should be much more frequent. In order to answer the research question, a qualitative study has been conducted. However, it lacks the quantitative overview of the most used KM systems in Russia, or at least KM systems usage by industry, which could have significantly benefited the scientific community by providing a systematic approach to KM study. However, this paper also aims to present the KM tools usage "as is" in Russian companies; as a result, the author chose not to conduct controlled experiments but conduct exploratory case studies. In general, the author wanted to glimpse into real-world usage scenarios, which would help build further theories on the efficiency of KM tools usage.

Nevertheless, why hasn't the author use questionnaires and have chosen a more quantitative approach? This is due to several factors. In order to compose an effective questionnaire, one should deeply understand the domains under investigation, which is not the case for a Master's student. As discussed in the research problem statement, it seems the number of case studies in this particular knowledge domain is somewhat limited; even information provided by consulting companies or posted on websites on the Internet is limited to a relatively shallow description of IT systems that can be used as KM tools, mainly their features. However, this situation probably arose because there is no generally accepted definition of what KM tools are, and probably because the KM tools are being used within companies without the incentive to

share the user experience to both scientific and business communities. The other factor is that there is more practical relevance for the business community in this research than on a purely quantitative overview of the KM tools used.

To get the primary empirical data, a number of semi-structured interviews have been conducted to uncover KM tools and their usage by Russian medium and large-sized companies. It can be justified for the following reason: this study is exploratory because there is a need to explore and codify KM tools in use, user groups, and usage scenarios. A semi-structured interview approach has been used to ensure the identification and usage of KM tools to ensure maximum dive-in for unusual KM tools usage scenarios. However, this research is limited due to the increased amount of workload and lack of free time for an interview by professionals due to the COVID-19 pandemic. The other negative factor is the limited network of professionals that can be contacted. Another one is the tendency to ignore interview requests via communication systems, stated in the Data collection paragraph.

4.1 Literature review sources selection

In the literature study, which has been conducted in chapters 2 and 3, the author selected a set of papers that has been found in such databases as Springer, Web of Science, Emerald Insight, Elsevier, Scopus, Elibrary, SPbU Institutional Repository or found via Google Scholar and EBSCO search engines. The search has been done with the help of keywords and logic operators, tags, dates, and types of papers. The keywords have been searched for in titles and annotations to scientific papers. The author keywords such as «knowledge management, knowledge sharing, information and knowledge, corporate memory, organizational learning, управление знаниями, системы управления знаниями, СУЗ, системы управления знаниями и инновациями, СУЗИ, системы распространия знаний, корпоративная память» in searches. The limitation of the theoretical part is that 1756 articles, 17 books, and six conference papers were filtered out to analyze the scientific literature, and only 37 sources were used and referenced. Also, the limitation of the theoretical part is possible to be reliance on the particular keywords set that describe the KM topic the author was interested in.

However, another limitation is that the scientific papers were written for a purpose that did not always correspond to the purpose of the current thesis. As a result, the papers may contain incomplete information, or the information may be reported using terminology that differs from what the author has expected.

4.2   Empirical study sampling

Due to the limited networking capabilities of both the author and the educational institution, the high workload of professionals possibly due to COVID-19 and other inner corporate or personal reasons, the lack of willingness to participate in an interview process by a student concluded in a roughly 25% response rate. Thus the author analyzed the companies of persons answered and were willing to cooperate by a set of criteria like if a company operates in Russia, company size, annual company revenues, if the professional has experience working with KM tools (the notion has been explained to the professional if he/she lacked the understanding of what particularly KM and KM tools are). The author uncovered that 10 out of 13 professionals were confused by what the Knowledge and KM tools (systems) are. The professionals from the management consulting industry named KM tools correctly, but they assumed several tools for calendar entries management as KM tools.

There are also several limitations of the empirical part research design:

- There is a probability of cognitive biases introduced by the interviewed professionals;
- The professionals have not correctly presented the usage scenarios of the KM tools for various reasons;
- On average, only one professional per company has been interviewed, which also decreases the accuracy of the current situations in a company;
- The professionals have been limited to sharing their experience due to information sharing restrictions of their companies.

4.3   Data collection

The methodological goals of the research have been reached by utilizing the GSOM SPbU networks of alumni, LinkedIn, Facebook, Telegram research for relevant contacts and direct mail proposals. The interview process has been conducted via exchanging text or a call in messengers or exchanging voice messages. The author does not have an exact number of interview requests he sent. However, this number should be more than 50, with a roughly 25% response rate, out of which the author filtered our the professionals by criteria, stated in paragraph 4.2. In other words, 13 professionals have been interviewed, and four professionals have been excluded from the research for the reasons that they worked only with Information sharing and analytics systems such as Tableau, marketing analytics systems, and others.

5 EMPIRICAL INVESTIGATION OF KM TOOLS

A brief overview of companies would be presented along with the KM tools overview they use. After that, the user groups that use these tools and particular usage cases would be described. The company names are kept anonymous; instead, they would be addressed as Company A-H.

5.1 Companies overview

Company A

Company A is a provider of a broad range of retail, corporate, private, and investment banking solutions to individuals, corporate, small businesses, and institutional customers. Its products' portfolio consists of savings accounts, deposit accounts, pension funds, investment products, payment cards, SME loans, and overdraft loans. Also, it offers services such as private banking, brokerage, investment banking, asset management, cash management, advisory, electronic banking, factoring, overdrafts, international settlement and bank guarantees, foreign exchange, custody, real estate, and structural financing. It has a presence in Europe, Asia, North America, and Africa; it is headquartered in Moscow, Russia. (*Overview | MarketLine Intelligence Center*, 2021)

Number of employees: ~ 97 000

Company B

Company B offers retail, and corporate banking, and related financial services. Retail banking solutions comprise cards, loans and mortgages, deposits and savings, payments and transfers, investments, and insurance. It offers banking solutions to SMEs and corporates such as loans, overdrafts, currency exchange, asset management, and insurance. It offers loans such as consumer loans, working capital loans, business start-up loans, project and refinance loans, and car, real estate, and equipment loans. Company A serves individuals, SMEs, corporates, and institutional clients through branches, representative offices, subsidiaries, ATMs, and online

portals in Europe and Asia. It is headquartered in Moscow, Russia. (*Overview | MarketLine Intelligence Center*, 2021)

Number of employees: ~ 278 000

Company C

Company C is a global management consulting firm. The company provides consulting services to various industries including advanced electronics, aerospace and defense, agriculture, automotive & assembly, capital projects & infrastructure, chemicals, consumer packaged goods, electric power & natural gas, financial services, media & entertainment, healthcare systems & services, high tech, metals & mining, oil & gas, paper & forest products, pharmaceuticals & medical products, retail and semiconductors. It has operations across the North and South Americas, Europe, the Middle East and Asia Pacific. The company is headquartered in New York City, New York, the US (*Overview | MarketLine Intelligence Center*, 2021)

Number of employees: ~ 28 000

Company D

Company D is a financial service provider that offers information, consulting, training and portfolio management services. It is a Russian investment company, which is a part of a business group. The company has high ratings according to Russian credit rating agencies and the Moscow exchange. Company D is headquartered in Novosibirsk, Russia, and has an office in Moscow.

Number of employees: ~ 5000

Company E

Company E is a vertically integrated oil company primarily engaged in oil and gas exploration and production, refining, and the production and sale of petroleum products. The company also produces fuel cards and motor fuel, aviation fuel, bunkering, lubricants and other oil products. Its services including exploration and production of oil and gas, refining of oil and gas, marketing of crude oil and petroleum products for export, and retail distribution of oil

products. The company is headquartered in Saint Petersburg, Russia. (*Overview | MarketLine Intelligence Center*, 2021)

Number of employees: ~ 70 000

Company F

Company F is a financial service provider that offers information, consulting and implementation services. The company offers real-time transaction data and proprietary analysis, data-driven consulting, and marketing services. Its information service offers real-time transaction data and proprietary analysis services. Company F offers consulting services such as payments strategy development, product strategy and management, functional diagnostics, competitive assessment and best practices, portfolio optimization, business case development, card acquisition, and others. The company serves consumers, merchants, government and public sector; business, and issuers and other partners. Company F is headquartered in the US. (*Overview | MarketLine Intelligence Center*, 2021)

Number of employees: ~ 200

Number of employees in parent company: ~ 20 000

Company G

Company G is a management consulting firm. The firm provides analytics, digital business, innovation, marketing and sales, mergers and acquisitions, operations, organization, and transformation services. It also offers procurement, strategic IT, strategy, and sustainability services. The company serves aerospace and defense; automotive, chemicals; communications, media, technology; consumer products and retail; and utility industries. It provides services to private, governmental, and non-profit organizations. The firm operates in the US, Europe, the Middle East, Africa, and the Asia Pacific. Company G is headquartered in the US. (*Overview | MarketLine Intelligence Center*, 2021)

Number of employees: ~ 4000

Company H

Company H is an IT company specializing in Business Support System (BSS) and Internet of Things (IoT) platforms mainly for telecom operators. The company's operations include a broad range of products and services for catalog management, billing, online charging, real-time rating systems, payment management. Company H is headquartered in Russia.

Number of employees: ~ 800

5.2   Results of the research

5.2.1   Confluence

«Confluence is a team workspace where knowledge and collaboration meet. Trusted for documentation, decisions, project collaboration, Jira integrations.» (Atlassian, n.d.-b)

«Create, collaborate, and organize all your work in one place. Confluence is a team workspace where knowledge and collaboration meet. Dynamic pages give your team a place to create, capture, and collaborate on any project or idea. Spaces help your team structure, organize, and share work, so every team member has visibility into institutional knowledge and access to the information they need to do their best work.

Confluence is for teams of any size and type, from those with mission-critical, high-stakes projects that need rigor behind their practices, to those that are looking for a space to build team culture and engage with one another in a more open and authentic way.

Equipped with Confluence, your team can make quick decisions, gain alignment, and accomplish more together.» (Atlassian, n.d.-a)

Confluence can be used via Atlassian Cloud, hosted on hosting providers like Amazon Web Services (AWS) or Microsoft Azure, or hosted on an owned server. It is a wiki-like tool utilizing XHTML as a markup language. In Confluence, everything is organized in pages and spaces. Here the pages are documents themselves, and the spaces are repositories of documents. Typically, a space is devoted to a project team. There are 88 templates for easy document creation

like templates for "90-day plan", "business plan one-pager" and more, reducing time for creating and designing new documents. For easy search, the pages can be labeled. Also, advanced search is in place and a pages tree hierarchy, which makes surfing among documents intuitively easier. Typically, a space consists of an Overview section with Goal, Useful links, Core team, Roadmap paragraphs; a Blog section; a Space settings section; a Shortcuts section, and Pages section. Confluence allows real-time page editing and versioning, commenting, and notifications, along with macros support and apps integration. Confluence also offers a way to integrate custom-made apps.
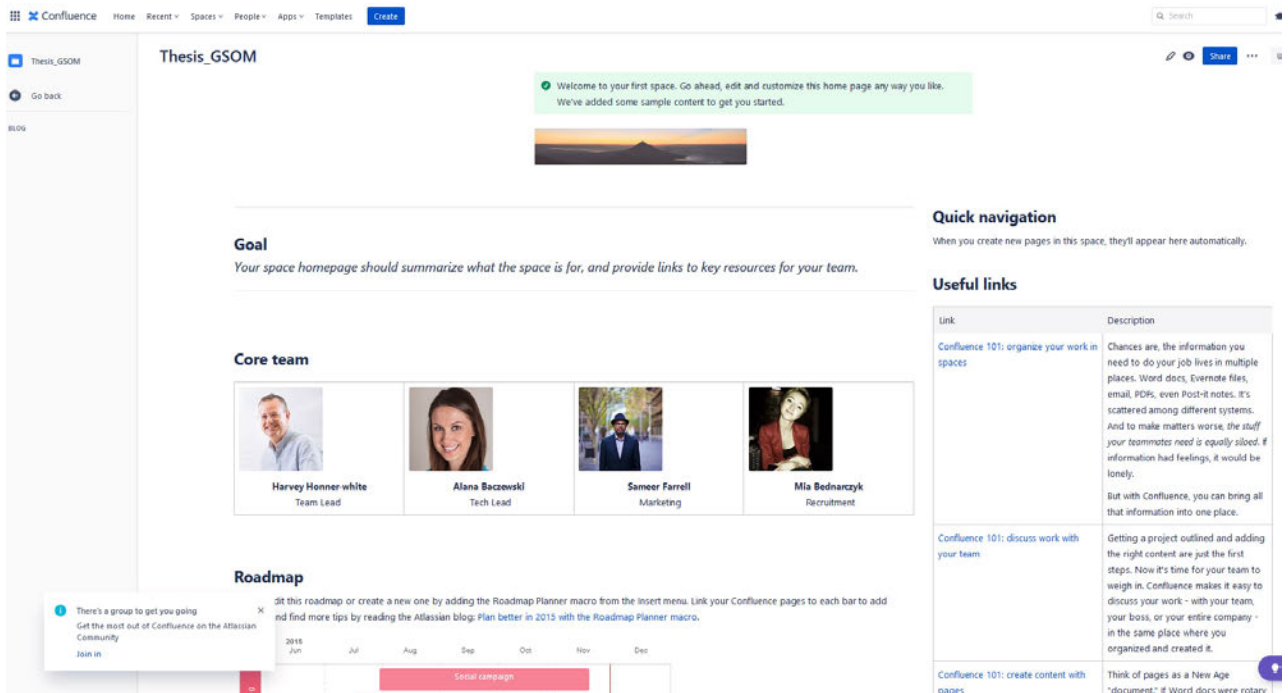

Figure 2. Confluence space's main menu

Five hundred forty-seven (547) apps can be integrated into a space, and most of them are part of Marketplace's bug bounty program, which assures their security and integrity.
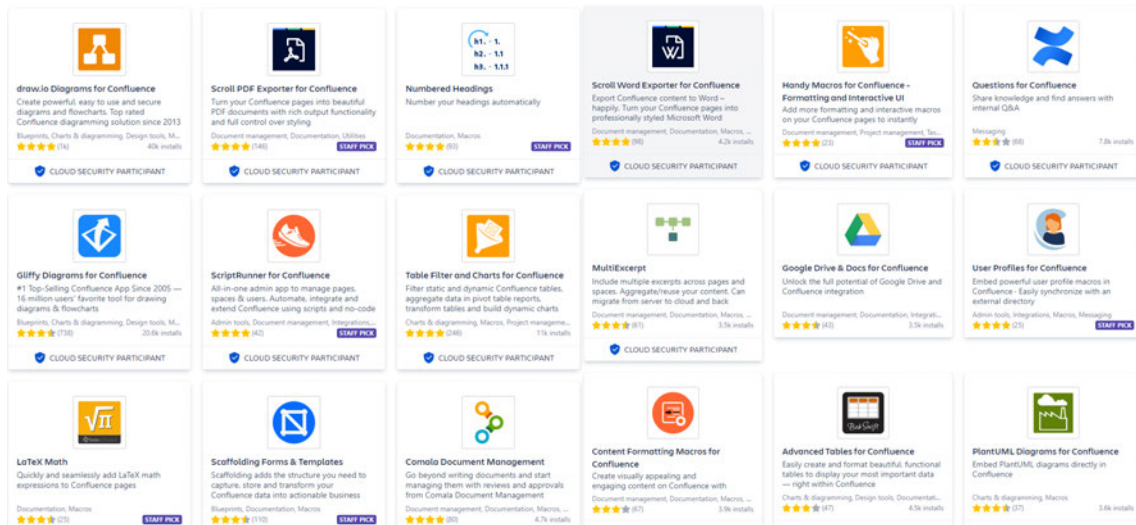

Figure 3. Confluence's apps

According to Capterra's review (*Confluence Review*, n.d.), the complete list of Confluence's features is:

Access Controls/Permissions

- Alerts/Notifications
- Archiving & Retention
- Assignment Management
- Brainstorming
- Calendar Management
- Cataloging/Categorization
- Collaboration Tools
- Commenting/Notes
- Content Management
- Customizable Templates
- Discussions / Forums
- Document Classification
- Document Generation
- Document Management

Additional features are:

- Document Retention
- Drag & Drop
- Due Date Tracking
- Full-Text Search
- Gantt/Timeline View
- Goal Setting / Tracking
- Idea Management
- Idea Ranking
- Ideation / Crowdsourcing
- Information Governance
- Knowledge Base Management
- Milestone Tracking
- Mind Maps
- Mobile Access
- Prioritization
- Product Roadmapping
- Progress Tracking

- Project Management
- Project Planning/Scheduling
- Real-Time Editing
- Release Planning
- Reporting/Analytics
- Requirements Management
- Resource Management
- Search/Filter
- Self Service Portal
- Status Tracking
- Surveys & Feedback
- Task Management
- Template Management
- Text Editing
- Third-Party Integrations
- Version Control
- Workflow Management

Thus, the Confluence software should facilitate:

- Knowledge creation via collaboration and document generation tools, forums and discussions, and the wiki-like overall structure.
- Knowledge storage via Knowledge Base management, Document Management, Cataloging/Categorization, archiving.
- Knowledge improving is mainly a KM process, but Confluence facilitates it via Advanced Search, Version control, Status tracking, Idea Management, Commenting features.
- Knowledge sharing via wiki-like structure, Permission controls, Document management, and sharing options.

5.2.1.1 User groups

The tool is being used in Companies A-D, F, G, H.

Users interviewed by company:

- Company A: Business analyst at Strategy department
- Company B: Project manager at Strategy department
- Company C: Associate consultant
- Company D: Project manager and Financial analyst
- Company F: Project manager
- Company G: Senior business analyst
- Company H: Marketing analyst

5.2.1.2 Usage situations

In Companies A and B, the Confluence software is mainly used as a tool for «knowledge transfer» facilitation, where a recipient is already known. As a professional said, «I mainly use it as a file-sharing tool… I do have access to some boards, and I also can view what people in other departments are doing… We store project documentation in Confluence, but it is more official documents like project charters, which are useless for my colleagues and me… However, these documents are valuable, for example, for management reviews and external consultants».

Professionals from Companies A and B value Confluence for:

1. File sharing and storage – ease of access to these files;
2. They are able to see what other department do;
3. The tool facilitates communication with business partners, business consultants;
4. A way to demonstrate to their respective management their work.

The professionals from the Strategy departments, in general, stated that they use Confluence several times a week but not every day. They are confident that IT departments use the tools much more often. The differences between Companies A and B are mainly in access authorization. In Company A, there is a need to request authorization to access Confluence, making strategic knowledge sharing much more challenging because people do not have incentives to contribute to knowledge storage. The professional from Company A is sure that if an experienced colleague leaves the company, his/her knowledge will not remain in the company. The professional from Company B stated that people in the company do not have such restrictions as in Company A. However, the employees in her/his department use Confluence less often and only for «knowledge transfer». The professional from Company B is also confident that the knowledge retention rate in the company is relatively low.

The professionals from Companies C, F, G stated that several collaborative and KM tools are being used in their companies; databases of best practices, implemented solutions are being maintained by Project managers, edited and updated by Associate consultants. They are confident that experience and knowledge are being saved and updated. The explanation to the fact that consulting companies are using and maintaining their Knowledge is that these companies are

Knowledge-intensive firms, companies that are heavily dependent upon the expertise of their employees, and the employees are heavily dependent on stored and maintained Knowledge. However, the professionals from Companies C and F underline that the search is still quite tricky in Confluence, and they will benefit from a more valuable and powerful search function. The professional from Company F underlines that several systems are used at once, like Confluence, Microsoft (MS) Sharepoint, Microsoft Teams for knowledge sharing and transfer. The tools' functionality is mixed up; for example, a wiki-like page in Confluence could transfer a user to MS Sharepoint's file and vice versa; knowledge transfer is mainly done via MS Teams. The professional does not know if this mixed-up usage of different systems is harmless or beneficial; however, he/she stated that it is harder to find appropriate knowledge, but the employees of Company F are already used to working like that. The professional from Company G noted that the company stores presentations for clients and rarely best practices. If a consultant needs to find out more, he/she should find a way to contact a member of consulting team who worked on the project. If the expert is not working in the company anymore, he/she could be found in the company's Alumni network.

The professionals from Company D stated that employees from their company are using Confluence as a KM tool, but only partly, depending on a project manager (PM). Some project managers try to store the Knowledge from projects they completed, but some do not have time to do that. Also, the Project manager was sure that PMs, who use the stored knowledge, are those who store the knowledge themselves, and this knowledge correlates with the domain the Project manager is specializing in. Mainly, PMs use Confluence for team and project management, such as Gantt charts, document storage and collaboration, and communication. Both professionals from Company D have been confident that the Knowledge of experienced employees can be stored and shared only if these employees wish to invest their time in these operations. Even the professional from Company D shared that he/she does not have enough spare time due to the company's rapid growth and a high number of pending projects.

The professional from Company H stated that employees in his/her company are utilizing the Confluence as KM tools for knowledge sharing and transfer. The marketing department mainly uses it for storing best practices (texts and videos), industry overview, communication. All file editing is done in Confluence using an appropriate app (addon); the employees are pleased with the versioning feature so that they can track mistakes, improve knowledge without fear of losing the previous edit, and they can restore it if something goes wrong. The professional is confident that the KM tool facilitates organizational learning. All the knowledge would remain within the organization even if key employees leave the company. However, the professional shared a

concern that employees maintain knowledge by themselves. They tend to forget to update and structure knowledge items, create high-quality wiki-like pages due to the lack of time because Knowledge management is their side activity. There is a need for a KM specialist who would check, moderate, improve, and manage knowledge. The professional lacks information on how knowledge is being managed in the IT department.

5.2.2 Microsoft SharePoint

Microsoft SharePoint is a cloud-based service that helps organizations share and manage content, knowledge, and applications to:

- Empower teamwork
- Quickly find information
- Seamlessly collaborate across the organization (kaarins & MikePlumleyMSFT, n.d.)

Microsoft SharePoint is primarily a web-based collaboration tool that uses workflow applications. It is seen as an Intranet platform, which seamlessly integrates with Microsoft Office 365, Microsoft Teams, and other Microsoft products. It can be enhanced with plugins like connectors, library and others. Documents can be viewed and edited both on a web page and via MS Office 365 apps; the documents' metadata like the name of the file, description, authors, and other properties can be viewed and search for also. It can be stated that MS Sharepoint has a «Metadata Architecture». (Grysiuk, 2018; W., 2020)
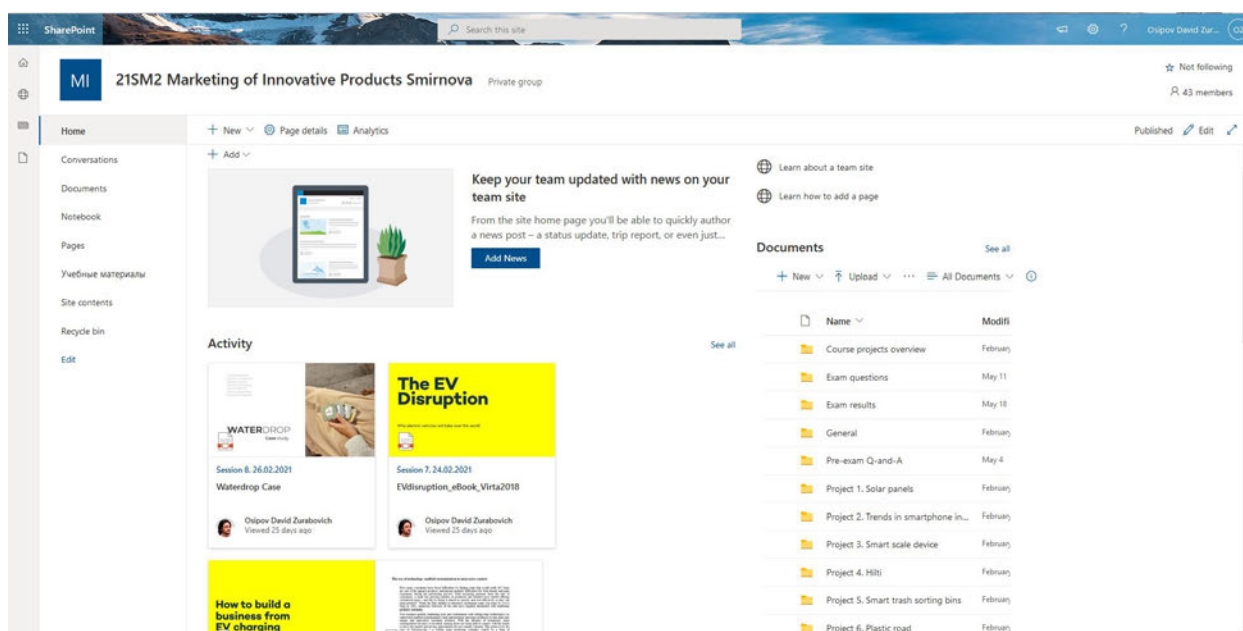

Figure 4. Microsoft SharePoint's interface

Overall, Microsoft Sharepoint is mainly a tool for collaborative work with documents; in other words, it is document-centric. The search function is limited only to meta information and auto-created tags for files. Its advantage is seamless integration with other Microsoft software solutions, including CRM and ERP systems. This advantage is much more valuable due to the omnipresent use of Microsoft file formats like .docx, .xls, and others. The Microsoft solution is a more vast and coherent ecosystem; its UI/UX is more customizable. It offers much more storage space, and employees can create fully functional websites, which can be accessed from Intranet and the Internet. Employees of a company are able to create wiki-like pages, but the pages could not be collaborated on. Also, Sharepoint lacks the robustness and ease of information search due to its document-centric approach; the collaboration functionality is limited to one file editor at once. The tool also allows the integration of custom-made plugins, which makes it even more flexible.

5.2.2.1 Usage groups

The tool is being used along with the Confluence tool in Company F. Every employee is a user of this tool.

5.2.2.2 Usage situations

Company F mixes up Confluence and Sharepoint tools. According to the professional from Company F, they built up a wiki system in Confluence, but some pages transfer users to Sharepoint's resources. The employees value the seamless integration of Microsoft's ecosystem, but the Knowledge is mainly stored in the Confluence app; communication, file sharing, and file collaboration are done mainly in SharePoint. There are few exceptions when Knowledge is stored in files in SharePoint. However, in general, employees tend to create and update wiki-like pages in Confluence, which would relate to specific files in SharePoint. On the downside, the professional underlined that the employees could not benefit from advanced search features in Confluence if a page in Confluence has few text fields and mainly relates to MS SharePoint. The professional shared a concern that only consultants update and maintain knowledge entries in Confluence; because of that, knowledge entries are created and updated irregularly after the project has been completed, or knowledge entries are just created and updated one or two times. If the knowledge entry does not contain the necessary information, a consultant can reach the author of

the entry and interview him/her via MS Teams, booking a timeslot beforehand. In case the author of the knowledge entry left Company F, a consultant can search for him/her in the Alumni network and interview him/her. Thus, the professional from Company F is confident that his/her company performs well as a learning organization.

5.2.3 Custom-built «Knowledge sharing system of the exploration and mining department»

This Knowledge Management system is custom-built for Company E (Zubareva, 2020). It consists of 16 modules:

1. Exploration and geology;
2. Drilling and well intervention
3. Production, Infrastructure, and Operations
4. Advanced and New Technologies
5. Capital construction
6. Gas
7. Energetics
8. Geology and Development
9. Idea collection system
10. Licensing and Subsoil Use
11. Work Zones
12. Knowledge Library
13. Industrial Safety
14. Engineering and Reengineering
15. SPE One Petro
16. Corporate University

The main principles of the system are (Komkov et al., 2016):

1. Knowledge accessibility within each department's functional unit
2. Information/knowledge search
3. Q&A sessions with experts

The goals of the system are:

- Open access of employees in various departments of the company to the latest technical, analytical, scientific, methodological information;
- Sharing of information on adopted technological solutions among subsidiaries;
- Facilitating the exchange of best practices;
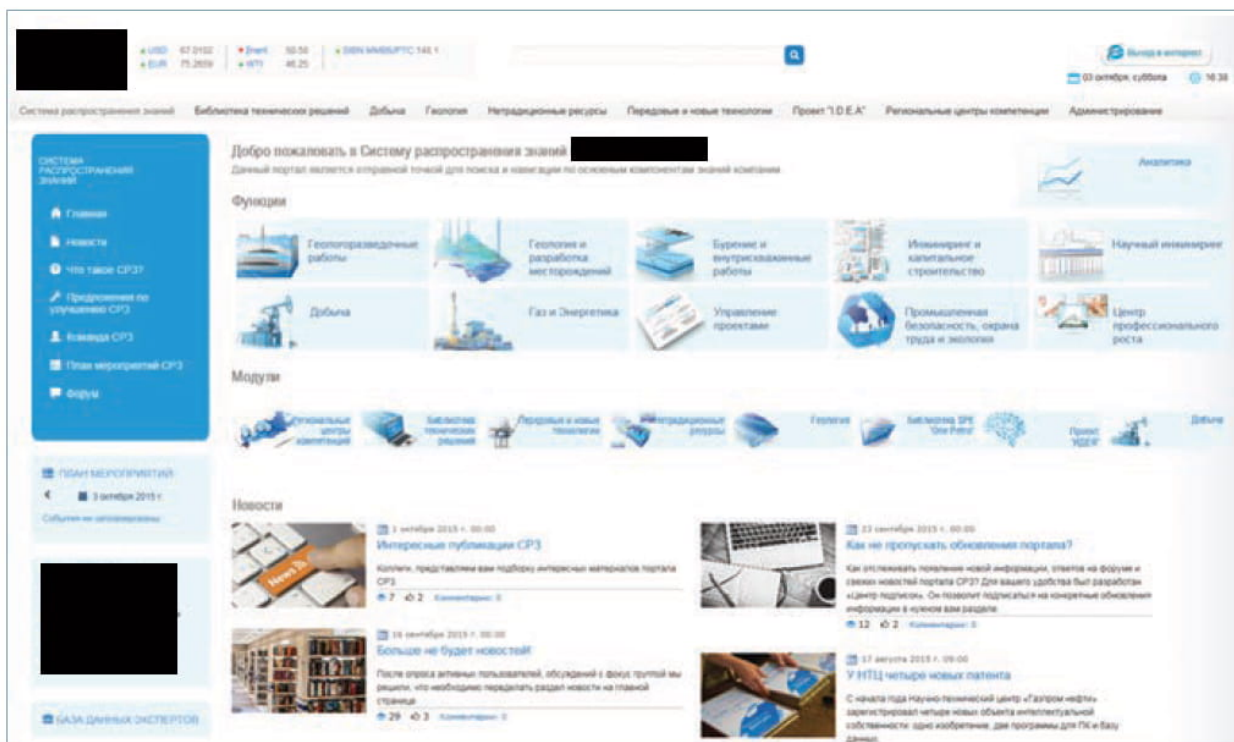- Unification with knowledge management systems.

Figure 5. The KM tool's interface

Generally, the Knowledge Library module is often used on the initial planning stages, including investment, and allows the preliminary calculation of the necessary value indicators for future oil deposits. The knowledge items consist of decomposed fragments of a specific technical object and its requirements in the module. All finished solutions have the completeness of the logical structure and exclude the moments of the variability. Variability of technical solutions, if necessary, can be obtained by creating a mixture of several different technical solutions. All required information, including technical parameters, graphs, accompanying materials, are automatically shown in the passport of a particular technical solution. Each section of the Knowledge library module is systematically constructed to contain guidelines on regulatory and methodological requirements of various mining activities. If necessary, one can display a web page in an MS Word document format, automatically form a technical task for predetermined parameters of mining solutions. The cost estimates of a technical solution can be created based on available designs. For further development of the KM tool, it is planned to create features to form value parameters automatically; for this to come true, the Knowledge library should be integrated more deeply with other Information systems of Company E.

The Knowledge library module allows in a short time to select suitable solutions according to the specified parameters, draw up the basis of the investment project, conduct an expert assessment, and form a ready-made technical task for further stages of work. Moreover, the

Knowledge Library is used for storing best practices, unordinary technical designs, documented guidelines on lessons learned.

Another module, Corporate university, is maintained to facilitate knowledge transfer and sharing. The knowledge sharing could be achieved by posting messages on the forum, request permission to update certain knowledge items in the Knowledge Library, interview inner experts, participate in daily activities of one of many expert communities (debate over new technologies, processes, and other activities). The system is based on a level system and acts like a social network similar to LinkedIn with extended features. An essential feature of the module is the involvement system in learning and exchanging knowledge (gamification). The game system is built in such a way that it motivates employees to fill in their profile (similar to LinkedIn profiles), then stimulates them to chose and study online courses by their taste; After that which an employee would involve in processes of interaction and exchange of knowledge, for example, the system stimulates subscribing to a professional forum, write a publication or subscribe to another online course, write a comment on the document and many-many more. The level system is supported by virtual currency "barrels", which the employees can spend in a virtual shop, and an activity rating system. To facilitate the use of the module, apps for Android and iOS have been created. The HR back office is working in SAP HR, which is also integrated into the custom-built system.

5.2.3.1 Usage groups

The tool is being used in Company E by various specialists that mainly operate in explorations and drilling.

An HR Business Partner has been interviewed. The professional is not a direct user of some modules of the system, namely modules related to exploration and mining.

5.2.3.2 Usage situations

According to the professional, Company E has built its own KM system, supporting operations and other activities. This KM system is deeply integrated with Information management systems, thus enriching the capabilities of the KM system. Company E has dedicated KM

specialists who manage and moderate knowledge storages in Knowledge Library. Only with their permission, knowledge items are being stored and updated by employees in Knowledge Library. On the other hand, the inner-corporate expert communities also share the function of moderation of recent posts like news, analytics posts, and others. This is made possible by a system based on gamification principles. The Idea collection system works on the principle of proposing well-written ideas with short and long descriptions, what problem the idea is to solve, the possible financial impact, possible results of implementation, if the author can implement the idea by himself/herself. The idea harvesting and implementation are out of the scope of this research. The professional was sure that the KM system is fully dedicated to improving organizational learning. However, the professional shared concern that it is still a bit challenging to search for knowledge due to weak search function, especially for new employees. The management of Company E promotes knowledge sharing passively through the KM specialists.

6 ANALYSIS OF FINDINGS AND DISCUSSION

We will now discuss our findings in perspective towards the paper's research question. The general incentive for this Master's thesis was to study the KM tools usage in Russian companies, mainly the research question: «How can knowledge management tools be used in Russian enterprises to facilitate organizational learning?»

In the theoretical part, namely chapters 2 and 3, the author outlined the proposed definitions of Knowledge, Knowledge Management, and Knowledge management tools to the scientific and business communities in an attempt to reduce the confusion with different terminologies used to define the mentioned notions. Also, in the theoretical part, it was uncovered that the KM tools and E-collaboration systems had been seen as separate IT systems, whereas the empirical study results suggest that both systems tend to mix up as it is presented in the Confluence system. Even an E-collaboration system such as Microsoft Sharepoint is used by Company F as an extension to the Confluence system and can be used as a sort of inefficient knowledge repository on its own. Thus a line, which separated KM tools from E-collaboration systems, became much vaguer. The limitations of the theoretical part are formed by limitations of literature sources used, literature review strategy, and methodology. In other words, more appropriate definitions of the notions mentioned above can be either found in literature or constructed by fellow researchers. The theoretical part also played the role of a theoretical basis for an empirical part so that the author has exact guidelines and definitions to seek and work with while conducting the empirical research.

The empirical part presents the overview of KM tools and their usage in Russian multinationals and mononationals enterprises. Seven companies out of eight are using Confluence as a KM tool, one company uses both Confluence and Microsoft Sharepoint as KM tools, and one company uses its own custom-build KM tool. The professionals from the banking sector shared that their respective companies' employees are using Confluence only to transfer knowledge, thus rendering a long-term organizational learning not effective due to the fact that employees' tacit knowledge is not shared with the company (transferred to explicit organizational knowledge), but it can be transferred to other employees through, for example, mentoring. However, the risk of completely losing some knowledge is relevant to such companies. A partially effective knowledge-sharing process in Company D also renders the company vulnerable to losing some knowledge due to employees leaving the company. The companies from managerial consulting and IT industries are using the KM tools for knowledge sharing, but they lack the overall guiding of KM specialists. The professionals share a concern that the knowledge is stored and updated by

employees themselves, and they are responsible for moderating it, which invites risks of having a piece of knowledge in a knowledge repository and the other piece is still a tacit knowledge of an employee. The author hypothesizes that the managerial consulting companies heavily rely on tacit knowledge and expertise of employees, having high loyalty even after they leave a consulting company; another point is that employees in consulting companies lack spare time to dedicate to the transformation of tacit into explicit knowledge. It is unclear if a theoretically correct KM tool usage would benefit such companies, thus rending a field for additional studies. The employees from Company F are using Confluence and SharePoint at the same time, utilizing Confluence's structuring approach with SharePoint's powerful file editing capabilities, seamless integration with such popular systems like Microsoft Teams and others. According to this paper, only Company E has met the theoretical criteria of effective usage of KM tools for knowledge sharing under the guidance of KM specialists.

This particular paper presents that seven out of eight companies does not meet theoretical criteria for effective KM tools usage for knowledge sharing (bearing in mind research limitations). The research findings support fellow researchers' from the Graduate School of Management of St. Petersburg University point on the fragmented use of Knowledge management in Russian companies (Gavrilova et al., 2017) and complement it by presenting the usage of KM tools and potential ways of improving the usage of KM tools.

During the interview process, the author noted that the professionals are limited to sharing their experience due to information sharing restrictions of their companies. Moreover, the professionals have not shared any unusual or specific only to their companies usage of KM tools; this could probably be to the limitations of the research strategy of this particular paper or the research design. The author suggests that fellow researchers come up with more insightful research strategies for similar researches.

6.1 Theoretical part contribution and impact

According to the literature review, the consensus in the scientific community is to be reached upon the exact and general-accepted definitions of the above-mentioned notions, which renders young researchers and the business community in confusion. The fact that 10 out of 13 interviewed professionals, including management consultants, still confuse Information and Knowledge management only stresses how deeply rooted the problem is. The impact of this problem on the business community is potentially decreased efficiency of Knowledge

management due to incorrect management of knowledge, which does probably impact companies' organizational learning, which in turn possibly negatively impacts companies' competitive advantage. The claim that Knowledge Management directly positively impacts organizational performance, and of course, financial performance, has been observed by numerous studies by fellow researchers. (Alhassani & Almarri, 2020; T. Andreeva & Kianto, 2012; Campanella et al., 2020; Payal et al., 2019; Zack et al., 2009). However, the claim that poor understanding of what exactly Knowledge management is by a company's employees, which possibly negatively affects the organizational performance, is still to be thoroughly studied by fellow researchers. If this claim is or has been proven by academia (bearing in mind this paper's literature review limitations), then this Master's thesis relevance contributes to the acceptance of generally accepted terminology by both scientific and business communities, which in turn would indirectly affect companies' performance by using one generally accepted terminology, concepts, possible standards. These benefits would contribute to organizational learning by implementing a complete set of Knowledge management processes, theoretically correct use of KM systems, and employment of KM specialists for facilitating the processes.

6.2   Empirical part contribution and impact

A poorly managed knowledge sharing renders a company vulnerable to losing employees' tacit knowledge, especially of knowledgeable employees, if they decide to leave a company for whatever reasons. This inefficiency can negatively impact organizations' financial performance (HINDASAH & NURYAKIN, 2020; Idowu, 2013), which is researched thoroughly in scientific literature. The research findings have been shared with interviewed professionals that also represents the practical relevance of the study. Also, as stated in the Introduction, the findings can present interest for practitioners in a way that the empirical study usage scenarios are mostly poorly related with Knowledge management theory and theoretical usage of KM tools, thus opening up possibilities to diagnose and fix the problems with knowledge sharing in Russian companies.

7   CONCLUSION

This research paper made an attempt to suggest the scientific community accept a generally accepted terminology on Knowledge management. Also, it made an attempt to explore the usage of KM tools in Russian enterprises and compare the actual usage with the Knowledge management theory. The findings show that there is a probability of ineffective use of Knowledge management tools, which potentially negatively affects the organizational performance of Russian companies. Ambiguity in terminology most probably leads to confusion, lack of understanding, and ineffective implementation of Knowledge management practices even in knowledge-intensive companies. There is a vast space for further researches in this field; the author suggests fellow researchers more actively study the Knowledge management field, especially within the Russian context, to find whether the Russian companies make efficient use of Knowledge management and help the business community by reducing confusion and helping them diagnose and fix the common bad practices in Knowledge management implementation and usage.

8 APPENDICES

8.1   Appendix 1. Interview Guide

Background information:

Q1. What kind of work do you do in your company?

Q2. How long do you work for your company?

Q3. Does your company employ Knowledge management practices in everyday activities?

Q4. Have you heard about Knowledge Management systems (tools)?

   a.   If no, state the appropriate definitions from paragraphs 2.1 and 3.3

Q5. Do you have a chance to work with Knowledge Management systems (tools) in your company?

Knowledge management tools:

Q1. What Knowledge Management systems (tools) do you use in your work?

Q2. Do you know what your colleagues in other departments are using as KM systems (tools)?

Knowledge management tools usage:

Q1. What do you think are the most crucial pieces of knowledge in your work?

Q2. How do you use your KM tools for (1) receiving and (2) sharing knowledge? Do you know whom you are sharing knowledge with?

Q3. What particular features in a KM tool are you using? How often and how is it beneficial for your work?

Q4. How do you personally benefit from using the KM tools and what particular knowledge pieces do you often retrieve from the KM tools?

Q5. Imagine an experienced employee has left your department/company. Do you think that his/her wisdom, experience, best practices, life hacks would stay in your company? How easy would it be for you and your colleagues to access this experienced employee's knowledge?

Knowledge management attitude:

Q1. Do you know what is the attitude of management toward the KM and KM tools?

Q2. Some people say that KM tools are a waste of time; others do not think so. What is your opinion? Do KM tools help you in your work, or are they useless or even harmful? Elaborate, please, a bit.

Q3. How do you score the quality of knowledge stored in the KM tools you are using?

9   TABLE OF FIGURES

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