



KNOWMAN

**Report - Knowledge Management Challenges in Knowledge
Intensive Business Services SMEs**

December 2022

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Contents

- 1. Introduction..... 3
 - 1.1 Background to the report..... 3
 - 1.2 Objective of this report 3
- 2. Background literature..... 4
 - 2.1 KM in KIBS..... 4
 - 2.1.1 *Why is KM relevant for KIBS?* 4
 - 2.1.2 *KM approaches in KIBS* 5
 - 2.1.3 *KM and its Components*..... 5
- 3. Methodology 7
- 4. Findings and discussion 8
 - 4.1 General information about the firms’ knowledge 8
 - 4.2 Areas of KM Challenges..... 9
 - 4.2.1 *External sources of knowledge identification and acquisition* 9
 - 4.2.2 Knowledge documentation and storage 13
 - 4.2.3 Knowledge Sharing 14
 - 4.2.4 Knowledge Protection 16
 - 4.2.5 Knowledge Application..... 18
 - 4.2.6 Knowledge Overview..... 19
- 5. Recommendations for KIBS companies..... 22
- References..... 23

1. Introduction

1.1 Background to the report

The 25 months Erasmus+ project (01.11.2021 - 30.11.2023) entitled “Knowledge Management Training for KIBS SMEs” (short: Knowman), of which this report is part of, aims to develop, test and launch Knowledge Pills; an e-learning training module devoted to knowledge management (KM) in knowledge-intensive business services (KIBS) small and medium-sized enterprises (SMEs). In addition to the e-learning module, an Interactive Guide (covering best practices, success factors, risks and innovative solutions) on KM in KIBS SMEs will be produced.

The introduction of Knowledge Pills in a training module on KM supports the digitalization of KIBS SMEs so that they are able to execute digital learning-training activities without any hassle. Also, the KM focus can assure the resilience and competitiveness of SMEs to remain the driving force of the European economy. Past research suggests that members of KIBS SMEs often miss a basic understanding of KM but at the same time cannot afford to fill this skill gap.

The project’s consortium has been carefully selected. It has a diversified, multidimensional character which is correlated with the project goals. It includes four Higher Education Institutes (HEIs) (i.e., GDANSK UNIVERSITY OF TECHNOLOGY from Poland, SCOALA NATIONALA DE STUDII POLITICE SI ADMINISTRATIVE from Romania, TALLINN UNIVERSITY OF TECHNOLOGY from Estonia, and UNIVERSITÀ DEGLI STUDI DI PADOVA from Italy), and two business partners (4Experience company from Poland and the Estonian Chamber of Commerce and Industry from Estonia). All partners are coming from countries with different levels of inclusiveness and digital advancement in education.

The primary target groups of Knowman are individuals working in KIBS SMEs such as owners, managers, and/or employees in all partner countries and beyond.

1.2 Objective of this report

To reach the aims mentioned in the previous section, the Knowman project is divided into two work packages (intellectual outputs), namely *Interactive guide* and *E-learning training module*. The findings presented in this report refer to the first work package “Interactive guide (covering best practices, success factors, risks and solutions)”. This work package is divided into two components: Component 1) Mapping of KM challenges and Component 2) Guide development. Component 1 aims to identify specific problems and successful approaches regarding KIBS SMEs’ KM strategies and actions. This mapping will allow a better understanding of the challenges that are specific to KM strategies in KIBS SMEs based on that be able to highlight possible solutions to address these challenges. Thus, the outcomes, i.e., the lessons learned, of Component 1 form the necessary basis for Component 2, i.e., the Interactive guide.

The findings of Component 1 are presented in this report.

2. Background literature

2.1 KM in KIBS

2.1.1 Why is KM relevant for KIBS?

KIBS denote those companies that create and transfer professional knowledge to their clients, therefore promoting technological progress and innovation (Miles et al., 1995). KIBS are active in various fields like technology (t-KIBS), professional services (p-KIBS), or creative services (c-KIBS) (Miles et al., 2021) and KIBS examples include companies that develop IT business software, provide consultancy or offer digital marketing services. According to Eurofund (2005), some of the key drivers of KIBS are the tendency of firms to outsource services, the increasing need on the market for specific technological knowledge, the increased need for other types of knowledge falling under the regulatory umbrella of different domains, the internationalization and globalization tendencies in business and others. Therefore, KM is central to their activity and effective knowledge management is expected to lead to increased organizational performance.

KIBS are recognized as key players in modern economies. In particular, they are deemed to exert a positive influence on the innovativeness of businesses and societies. According to Bolisani *et al.* (2022), the common characteristic of KIBS companies is that they generally consider knowledge as their most important competitive resource. For this reason, it can be expected that KM is also deemed vital, and KM is operated strategically. Research suggests that they are aware of the KM implications of their activity and have adopted KM solutions. However, they also declare that they have no employees explicitly assigned to KM roles. Lack of time for KM and limited financial resources are cited as major barriers to the introduction of KM practices (Durst and Edvardsson, 2012; Durst *et al.*, 2022).

Assigning specific responsibilities in KM, and developing job openings associated with it would lead to a wide range of benefits for those KIBS. The variety is related both to internal processes, such as making resources available, increased competitiveness, ensuring strategic analysis, or increased innovation and agility, but also to the external environments, such as better relationships with clients and as well as other external stakeholders (Edvardsson and Durst, 2013). The KM benefits might also refer to identifying knowledge gaps, expanding enterprise knowledge and avoiding knowledge loss, better decision-making, increasing efficiency, collaboration, and communication (IBM Cloud Education, 2020), building learning organizations, stimulating cultural change and innovation (Forbes, 2012), up-skilling and re-skilling employees and promoting a feeling of contributing to the teamwork (Deloitte, 2021), developing greater business insights and agreement around company goals, encouraging a culture of collaboration and motivating staff (Slack, 2019).

As such, knowledge and its mobilisation can be seen as the competitive engine of KIBS. The results of a comprehensive study on more than 200 small KIBS in four different European countries (Italy, Poland, Spain, and Romania) prove that this type of company recognizes knowledge as the main competitive asset and knowledge sharing as the primary KM process (Alexandru *et al.*, 2019).

2.1.2 KM approaches in KIBS

For KIBS, KM is a necessary component of business strategy and not optional because in KIBS the intangible resources are dominant. Therefore, when KIBS management is subjected to the classic management of tangible resources, not all specificities, needs, and peculiar processes are considered. Therefore, in the case of KIBS Knowledge strategies constitute the central vein of Business strategies.

A study by Bolisani *et al.* (2022) revealed three types of KIBS, considering their relationship with KM: KM eagers, KM indifferents, and KM pragmatists. The first group has a proactive attitude towards KM, integrating it across processes and activities. The second group, the smallest, is not attentive to KM, probably also due to less awareness and understanding of this concept and its benefits. The third group, the largest, has implemented a large number of KM processes, they see it useful in certain situations but do not believe in the transformative power of KM. The first and the last groups of companies are the ones most familiar with the associated concepts and using KM. Leadership is an important factor in adopting KM, especially in the case of indifferents.

Another research by Zięba *et al.* (2018), presents KM approaches manifested by KIBS companies together with their potential determinants (size, type of services offered, and organizational structure). In particular, two types of approaches have been selected and examined, i.e. emergent KM approach and the deliberate KM approach. The first type of approach characterizes more small organizations, while the second is more associated with medium-sized KIBS. Emergent KM is an organic form of KM, developed by employees as a reaction to specific job challenges. Passing the test of effectiveness, these practices become the norm in organizations.

2.1.3 KM and its Components

Knowledge is the most important strategic resource for business nowadays, as it is the foundation of technology and innovation and the enabler of competitive advantage (Grant, 1996). Knowledge is often classified into two categories, tacit and explicit. Tacit knowledge comes from personal experience and insights and is difficult to capture and store. Explicit knowledge is expressed in words, numbers, and symbols and can be stored and processed (Nonaka and Takeuchi, 1995). Another way of seeing knowledge is based on the theory of knowledge fields and sees knowledge as a triad of rational knowledge-emotional knowledge-spiritual knowledge (Brătianu & Bejinaru, 2020). Knowledge is created by individuals and is integrated at the organizational level through leadership, management, technology, and organizational culture (Brătianu, 2022). Knowledge management is paramount for developing dynamic capabilities such as organizational learning but also for enabling sound decision-making.

KM covers organizational processes such as knowledge identification, acquisition, creation, organization, storage, dissemination (transfer) and protection, which underlines that KM is more than knowledge creation and knowledge transfer (Durst & Bruns, 2018). The knowledge base accumulated by an organization can be administered within a knowledge management system (KMS), allowing easy access, enabling operational efficiency, and avoiding knowledge loss and subsequent financial costs while increasing performance (IBM Cloud Education, 2020). KM practices can range from onboarding new employees to operational tasks, to providing self-serve customer services.

Deloitte's Global Human Capital Trends (2020) places KM in the top three factors that affect a company's success, as perceived by 75% of the inquired organizations. Despite that, few firms feel prepared to tackle KM-related issues such as knowledge transfer, which has become paramount in the Covid-19 pandemic context, when the workforce was scattered because of the isolation measures (Miles *et al.*, 2021). Additionally, job seekers and employees favor companies that develop a knowledge-sharing environment as revealed by Deloitte's European Workforce Survey (Deloitte, 2021). Though technological advancement is booming, staff finds it difficult to retrieve the necessary knowledge from repositories (1 in 3 respondents) when relevant knowledge is not stored or updated in information systems in those organizations which are not knowledge-focused. On the other hand, 1 in 5 people indicated that it was difficult to obtain information from colleagues or that information was not accurate or valuable. Most respondents agreed that knowledge sharing and preserving for future use are the most important practices, while knowledge silos were perceived as the main challenge for KM. Based on the replies to the questionnaire, it is forecasted that the ability to adapt, as well as teamwork and collaboration, will amp up the role of organizational KM. Companies must, therefore, set up KM strategies and encourage an organizational culture that values knowledge sharing.

A concise presentation of Deloitte's KM framework can be found here: https://www.youtube.com/watch?v=RXbb87_M3vc. It stresses the need for aligning the KM strategy with the business strategy; involving top management in the governance of the KM strategy; building a KM culture of collaboration and knowledge sharing; classifying knowledge to be relevant and accessible to users; knowledge needs to be managed and quality control is required; technology has to support functions like search, collaboration, and sharing. More practical aspects for implementing the KM framework are presented here: <https://www.youtube.com/watch?v=hHBuClbd5L8>.

A plethora of technologies stands as KM tools, allowing the management of various information and knowledge resources: documents, digital media, data warehouses, intranets, wikis, etc. Popular tools for accessing, organizing, storing, collaborating, and sharing knowledge in companies are Google Drive, Dropbox, Slack, Confluence, etc.

There are multiple and various instruments the companies employ for storage, usage, and sharing of their knowledge management base. One of the most complex and easy-to-use tools to help organizations translate strategy into practice proved to be Confluence, which was mentioned as the main tool by one of the research companies as well:

<https://www.atlassian.com/software/confluence> Confluence allows teams to build, create and share knowledge in a common and well-organized virtual space, being a knowledge base for documentation and project plans. Its integration with other project applications, such as Jira, makes it convenient to use and share knowledge across teams, within the same organization.

3. Methodology

To gather the necessary information needed for mapping the KM challenges faced by KIBS SMEs, a mono-methods approach was selected. More precisely a qualitative research approach involving a series of semi-structured interviews was used.

The partners used an interview guideline that was developed by them taking into consideration extant research on KM in SMEs. This interview guideline was divided into several topics covering different aspects/processes of KM such as knowledge needs identification, knowledge documentation and storage, knowledge sharing, knowledge protection, knowledge application and a general perception of KM in the company. Several questions were assigned to each KM topic. To support the subsequent analysis process, an excel file was created that captured the questions of the interview guide. This helped the researchers to compare the data, find similarities or differences, and draw conclusions (Miles and Huberman, 1994). Consequently, each project partner collected the data, prepared transcripts of the interviews and filled the excel file accordingly. The filled files were then sent to the Estonian partner (Tallinn University of Technology) that was in charge of this work package. Thus, the overall approach to data analysis followed the notion of thematic analysis.

Data was collected, offline and online, between May - September 2022 from KIBS SMEs in the four participating partner countries (Estonia, Italy, Poland and Romania). Table 1 provides an overview of the number of KIBS SMEs and interviews conducted.

Country	Number of KIBS SMEs	Number of interviews
Estonia	13	16
Italy	13	16
Poland	10	24
Romania	4	16

Table 1. Overview of number of firms and interviews by country

The data collected involved KIBS SMEs from different branches, such as different types of consultancies (i.e., technology, management, ICT, strategy, marketing, tax, human resources (HR), research and development (R&D); advisory (legal, fiscal, financial, services); education and training; construction and design; software engineering; advertising, digital marketing and public relations (PR). Regarding the size of the companies involved, there was a range between 3-249 employees. The companies were founded between 1967 and 2020 and the interviewees were either SME owners, managers or employees who had detailed insight into the firm's KM.

4. Findings and discussion

In this section, the main findings of each KM aspect are presented and discussed afterwards.

4.1 General information about the firms' knowledge

The respondents were asked to define their understanding of knowledge by taking a business perspective. A variety of answers were received which can be summarized by viewing knowledge as an input, a throughput and an output.

Knowledge as an input, in the sense of "activating the business in which it operates". Knowledge as a "shared memory/shared brain", set of experiences/good practices. The competencies and skills of people. Knowledge as a throughput. For example, one interviewee mentioned that knowledge "represents the basis of the relationship between performance and effort made by the employees". It has been described as "the way the company does things and how it is transposed", as something that is "processed during the organization's activities" or that ensures that creative products reach its purpose ". Another interviewee stated that "knowledge is certainly something that allows a company to function in the communication context - it is something that is a shared memory, a shared brain of a given company and a fuel for the entire company to be able to coexist and participate with each other". Knowledge is seen as an "ability to use in practice the understanding"; something that "enables the implementation of the task in the shortest, optimal time and accurate way", thus bringing it close to a routine. Finally, knowledge as an output, to achieve results, deliver final outputs, to serve customers better, to make improved decisions, that determines the company's competitiveness and that also secures survival.

The interviewees also made a differentiation between types of knowledge such as technical knowledge, business knowledge, administrative knowledge, financial knowledge, marketing knowledge, organizational culture knowledge, personal growth knowledge. Some of them highlighted a differentiation between tacit and explicit knowledge, theoretical knowledge and experience, individual and relational knowledge or information and know-how. While other interviewees clarified that knowledge means know-how to them (the firm). Others, however, emphasized practical or useful knowledge, thus highlighting the applicability of knowledge so that it can be applied to achieve results, to make improved or specific decisions. The interviewees appear to acknowledge that different types of knowledge are needed to reach the companies' objectives.

Certain interviewees regard knowledge as an asset, an (economic) resource, something valuable, and unique. It can represent the foundation of the firm's business model. The dynamic character of knowledge has also been stressed by some interviewees, something that is "constantly evolving" but also something that is limited in the organization and thus calls for collaboration with external stakeholders, e.g., universities.

Not surprisingly in an SME setting, knowledge is closely related to the employees, the people in the organization and those people the companies are working with. Knowledge resides in the minds of people. It also resides in processes, structures, systems, methods, guidelines, databases, documents in general addressing the companies' structural or organizational capital. Knowledge is acquired by the colleagues through their activities, flows in from clients, is documented and must be passed on to the employees.

The interviewees were also invited to specify whether there is any kind of knowledge that is especially critical for the company's competitiveness. The findings suggest that critical knowledge is primarily in the heads of people which in turn enables them to perform fast and efficiently. The results also indicate that different types of knowledge are important. Thus, the combination of different types of knowledge seems to be essential. However, their concrete relevance can depend on the situation. And

certain answers indicated that there is a preference for substantive Knowledge that is often found in leadership. This knowledge allows them to run and manage the company as a whole. It has also been stressed that Knowledge alone is not enough, but it must be translated into action.

Given the focus on KIBS SMEs, it came as no surprise that it is important to have experienced and well-trained staff with specialized knowledge.

4.2 Areas of KM Challenges

The areas of knowledge identification and detection, documentation and storage, sharing as well as protection, application and a general overview of KM challenges are described in the following subsections.

4.2.1 External sources of knowledge identification and acquisition

The questions corresponding to this section and addressed in the interview refer briefly to four items, which include the most recurrent external sources of knowledge, the person responsible for identifying these external sources, the practices and tools used, and the challenges faced.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Institutions ● Audits ● E-learning courses ● Online resources (Newsletters, podcasts, market reports, surveys) ● Leading Companies in the industry ● Partners ● Suppliers ● Conferences ● Training courses ● Competitors ● External meetings (discussions panels) ● Contacts, stakeholders ● Paid licences ● Customers ● Statistical report 	<ul style="list-style-type: none"> ● Partners ● Online resources (trainings) ● Paid Subscriptions ● Customers ● Competitors ● Industry reports ● Public resources (databases) ● Press 	<ul style="list-style-type: none"> ● Online resources (international databases, academic research) ● Customers ● Institutions ● Leading companies in the industry ● Regulations, ISO ● Market reports 	<ul style="list-style-type: none"> ● Customers ● Institutions ● Data banks ● Conferences ● Journals, newspapers ● Consultants ● Training courses ● Universities ● Technology providers ● Partners ● Communities of professionals/industry associations ● Online resources (Internet)

Table 2. External sources for knowledge acquisition by country

The findings show that online resources are the most used external source for accessing necessary and useful knowledge among the companies interviewed. These resources refer to well-known search engines, which provide access to information for everyone, and to those servers which require paid licences. The latter include materials such as presentations, statistical data reports and market situations. At the same time, online resources are seen as an external source of knowledge that allows participation in training and e-learning platforms. Also, it is worth mentioning as external sources the observations of trends in the sector itself. For instance, the activities carried out by partners, competitors and companies are considered as benchmarks in the industry in which they operate.

According to the interviewees from Romania, companies tend to seek critical knowledge from their competitors. In addition, for all the interviewees the institutions are a source of external knowledge. Indeed, in some cases, it refers to specific resources that come from institutions, such as public reports

and regulations that directly provide guidance for companies, as in the case of Estonia. Finally, the figure of customers appears in the responses as an important element too, especially in the case of Italian KIBS, which derive information from clients on their emerging needs. Compared to other countries, a distinguishing trait of Italian KIBS is also that they exploit connections with local Universities as relevant external knowledge sources. While the companies from Poland make a strong use of external knowledge acquired through training and participation in conferences, training or meetings.

As far as Polish examined companies are concerned, the main sources of external knowledge are external training (incl. webinars), people / specialists from the industry: in-person relations, online groups, discussion panels, online resources (newsletters, market reports, surveys, industry-related websites), consortium members (a business entity that has its own team), universities, clients (and their requirements), as well as purchased databases. One can notice high diversification of various external sources for Polish KIBS firms, which can be related to the diversified needs for knowledge among the examined firms.

In general, it can be observed that some knowledge sources are common to all the companies, while others are more linked to the business sector where they operate

Next, the interviewees were asked to indicate if there is a person/persons responsible for identifying new knowledge and possible sources and if so, who these persons are. The persons names are summarised in Table 3.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Board members ● no person is assigned ● Owner ● Communication manager ● Head of departments or seniors ● Recruitment manager ● All employees ● Customers ● Project manager ● R&D manager 	<ul style="list-style-type: none"> ● Board members ● Senior management team ● Project lead ● Head of departments ● Performance manager ● Project manager 	<ul style="list-style-type: none"> ● All employees ● no person is assigned ● Recruitment manager ● Senior team ● Owner, CEO ● Medical manager ● Project manager ● Head of department 	<ul style="list-style-type: none"> ● All employees ● Functional managers (tech., R&D, marketing, quality) ● Top management/ CEO ● Dedicated teams

Table 3. Persons responsible for detecting external sources for knowledge acquisition by country

The findings indicate people in managerial positions, such as project, quality, and research and development managers, are responsible for identifying and detecting knowledge from external sources. Also, the responses place responsibility in owners, senior employees, customers and all employees. From the Italian interviewees' responses, it appears that these responsible members in managerial positions belong to departments or areas that are considered in part more responsible for knowledge management but more or less involved in searching for new knowledge. On the contrary, in the Polish KIBS, it is more common for companies to indicate the client as the person responsible

for the identification of this knowledge, while for the rest of interviews the reality is that quite often there is no specific person designated for this purpose, as in Estonian KIBS.

The Romanian interviewees, on the other hand, place the responsibility around the figure of the leader, senior and the person in charge of projects or strategic decision-making in the company. All of them seem to share the opinion that the person responsible for detecting or identifying knowledge must have experience, decision-making power or that the responsibility lies with the company's CEO.

In Polish KIBS, the top persons dealing with detecting external sources for knowledge acquisition are: head of departments / seniors / managers, recruitment managers, R&D department, experts working on a given project, but also all employees for some companies. This can be related to the fact that in some KIBS firms, knowledge acquisition is such a common procedure that all employees must have competences and skills to do it and perform it on a regular basis.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Lack of knowledge (result systematic error of the same nature) ● Accessibility to knowledge ● Knowledge concentrate in one person ● Lack of time ● Lack of willingness to dedicate time ● Constant changes ● Lack of motivation, costly ● Resistance to think beyond the area of responsibility ● The attitude of young people is generally a barrier. ● Employees rotation ● The age-old dilemma of when to invest and how much to invest ● Breaking with old school practices ● Handling new employees ● Time management ● Financial ● Awareness of the relevance 	<ul style="list-style-type: none"> ● Knowledge gaps (new employees) ● Communicating the knowledge gap ● Motivation ● financial ● Access to knowledge ● Implementation ● Time management ● Growth makes difficult control and handling knowledge (accelerated growth) ● Constant change ● School standard ● Identifying knowledge gaps 	<ul style="list-style-type: none"> ● Awareness of relevance ● Idiomatic barriers ● Lack of time ● Identify critical knowledge ● Reach a common understanding ● Lack of motivation 	<ul style="list-style-type: none"> ● Time ● Identify and select valuable knowledge ● Info overload ● Identify critical knowledge ● Identify people with specific knowledge ● Reach a common understanding ● Unify technology ● Excess of sources and knowledge ● Constant change ● Face new practices due to varying and ever changing needs

Table 4. Challenges perceived regarding knowledge identification by country

In terms of challenges, several interviewees mentioned mainly the issue of time and the idiosyncrasies of employees. Mainly, time is a challenge that interviewees point out both because of the lack of time

and the low importance that companies give to the time dedicated to identifying business-critical knowledge. In short, the lack of willingness to dedicate time to this activity is a major challenge. This, in turn, is described as a lack of motivation of the employees themselves to carry out this activity. In addition to the constant changes in the market, the large number of technological tools, excess of sources and available knowledge, which interviewees name as variables that pose a challenge to know what knowledge is critical or to achieve a common understanding, which in turn implies a high cost for all activities related to the identification of knowledge.

The interviewees in Italy reported as main challenges the (over)excess of available information and based on that the challenge of not knowing how to define critical knowledge that allows the company to cope with the constant changes in the market and also adapt to them. As a consequence, it is difficult to find people with specific knowledge.

In Estonia, the interviewees pointed at lacking awareness of what is relevant and also missing common understanding as their most mentioned challenges. In the case of this country, the language barrier is also considered a challenge by the interviewees, i.e., they face this problem when they decide to grow and seek knowledge beyond the country or in neighbouring countries.

With the Romanian's responses the biggest challenge is to identify knowledge gaps, and once identified, to know how to communicate them. Moreover, an issue appears to be to break away from standard schools. On top of this, they highlighted the loss of control when the company starts to grow which makes it even more difficult for them to communicate and identify these knowledge gaps.

The informants from Poland reported the largest number of challenges, where resistance to thinking beyond the area of responsibility, and the attitude of young newcomers to the company are viewed as barriers. The main reported challenges were: lack of time (e.g. to attend the training), not sufficient motivation (loyalty agreements which discourage; some effort is needed), employees rotation and the age-old dilemma of when to invest (in terms of new employees) and how much to invest, financial challenges - hiring experts to fill important knowledge gaps is very expensive, finding good, highly qualified and willing to cooperate experts (and unwillingness to share knowledge from people who have valuable knowledge), project-specific challenges (implementing different projects requires different capabilities).

4.2.2 Knowledge documentation and storage

Another set of questions dealt with the company's documentation and storage of knowledge. The findings are summarized in Table 5.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Manuals, training (videos and animations), tests and process descriptions (e.g., for a salesperson) ● Intranet ● Workspace ● Templates ● Databases ● SharePoint 	<ul style="list-style-type: none"> ● SharePoint ● Database ● Email ● WhatsApp group ● trainings and workshops ● Cloud ● SharePoint 	<ul style="list-style-type: none"> ● SharePoint ● Memo file ● Follow-up meetings ● Templates ● CRM ● Customer listing ● ISO system ● Workspace ● Procedure materials 	<ul style="list-style-type: none"> ● Workspace ● SharePoint ● Document management system ● Standard procedure ● Client data ● Cloud server ● Questionnaires ● CRM ● Asana

Table 5. Tools and practices regarding knowledge documentation and storage by country

The interviewees responded that their documentation and storage practices and tools are primarily shared through online workspaces as SharePoint. Where, materials or templates can be found offering standard procedures for employees or customer data which are stored in software as CRM. The interviewees further clarify that there is no specific person assigned to documentation and knowledge storage activities. In some Romania's responses, the firms seem to regard responsibility in a more hierarchical way, apparently meaning that the person in charge of these activities coincides with the person responsible for projects. The findings suggest that either all employees are, or it is in the hands of the managers or the owner.

For Polish KIBS, the key tools and practices were: cloud technologies: SharePoint, CRM, databases, virtual disks, shared folders with previously developed reports, publications, etc., databases (that are essential for the project). It can be expected that for example KIBS from the IT sector will be more advanced in those technologies and solutions, while KIBS from other sectors will use them in a simpler form.

For Italian KIBS, the main challenges related to knowledge documentation and storage are related to the problem of organizing internal document systems, making knowledge easily retrievable, stimulating people to contribute to the common repositories, archiving contents that must be really exploitable, and updating contents. In general, all employees and managers are required to contribute to knowledge storage, but in different ways and with different tools depending on their specific role and function.

4.2.3 Knowledge Sharing

Table 6 summarizes the approaches regarding knowledge sharing found in the KIBS SMEs involved in the study.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Special policy in the company, always 2 head managers in each project ● Streamlining activities ● Meeting ● Interaction during projects ● Facebook ● Trainings ● SharePoint ● Exchange experience ● Slack ● Internal programs 	<ul style="list-style-type: none"> ● Coaching sessions ● Meeting ● internal programs ● On boarding programs ● Services for interaction ● Slack ● Communities (PM, QA, TLs) ● SharePoint ● Cross teams ● Presentations ● Debates, with opponent figures 	<ul style="list-style-type: none"> ● Meetings ● Coaching sessions ● Teamwork ● Experience of the senior ● Unplanned meetings ● ERP system ● Mentoring 	<ul style="list-style-type: none"> ● Meetings (technical, stand up, ...) ● Training ● Teamwork ● Mentoring/coaching ● Video pills

Table 6. Tools and practices regarding knowledge sharing by country

The most common practices reported by Romanian interviewees are coaching sessions, meetings, internal programs, on boarding programs, interaction and slack services, as well as the use of communities, SharePoint, cross-teams and discussions. These practices and tools are shared by the rest of the countries. In addition to making use of ERP systems or mentoring tools. The interviewees from Romania and Poland highlighted that they complement the meetings and interactions with materials such as presentations or special policies already established by the company to share knowledge. The responsibility for this KM activity is placed on all organisation members with customers highlighted in some Rumania’s responses as the party responsible for sharing knowledge. For Polish KIBS, the top knowledge sharing tools and practices were: employee group chats: Messenger (Facebook), Slack, team meetings / internal workshops, interaction during projects, phone calls and email. It is worth mentioning that normally those knowledge sharing tools and practices are tailored to the needs of the project.

Almost all Italian companies make use of different kinds of (more or less formal) meetings to share knowledge internally. Teamwork is another diffused practice used to share knowledge regarding the service providing process, while training and coaching are used to transfer knowledge to new hires.

As before, the interviewees were also invited to report about the challenges associated with knowledge sharing. The findings are presented in Table 7.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Taking care of the information, result duplication task ● The perception of knowledge differs in each employee ● People don't act systematically ● Have an owner able to see the thing due he is the bottleneck ● Get Knowledge that it is as accessible as possible and easily remembered. ● Holding knowledge, someone goes to the training themselves or reads the material and does not share it further ● 'it's hard to switch from this existing knowledge to something completely new ● Adjust the knowledge to need when is shared ● Lack of time ● Disturbing communication ● Used fairly the knowledge by competitor ● Decide which knowledge should be given to which group, some people don't speak in meetings ● Communicating information, face new changes ● Lack of formalizations of the KM activities, missing time ● Transmit knowledge to new people 	<ul style="list-style-type: none"> ● Immaturity of some colleagues, technical limitations ● Lack of time ● Lack of leadership skills ● Lack of access ● Remote work 	<ul style="list-style-type: none"> ● Get more active attitude from employees ● Share wise and not be focused just in our area ● What to share ● Get attention from the rest of employees when you are sharing ● Keeping knowledge for themselves ● Concentration of knowledge in specific areas or people ● 'People don't find it easy to fill up CRMs for example, to store every communication with customers. Get people use to new program that helps to share knowledge ● culture barriers ● Ensure everyone got the understanding of the message ● Time ● Leadership skill from owners 	<ul style="list-style-type: none"> ● Remote work, less presence in the company ● Personality of the people (jealousy, closed behaviour, habits, hoarding, ...) ● Missing opportunities because people are not willing to share the knowledge and they repeat mistakes ● Knowledge asymmetry between expert and new hires ● Spread the knowledge to everyone ● Common language, could happen between technicians and economist ● Get the people involve sharing knowledge ● Habit, routine, not familiar with the tool available to share knowledge ● close behaviour of some employees ● Share knowledge across different professional specializations ● The size of the company ● Time ● Different attitude

Table 7. Challenges associated with knowledge sharing by country

As part of the closing of the knowledge-sharing section, the interviewees presented challenges they associate with knowledge sharing, as well as the possible consequences derived from them. The most frequent challenges mentioned are time, diverse professional backgrounds, what to share, spread well the knowledge and holding knowledge. The findings across countries indicate that missing time is the most critical aspect that challenges knowledge sharing in KIBS SMEs. When the findings are looked at more closely, the following can be seen.

There are several Polish interviewees that stressed that the perception of knowledge differs for each employee since people tend to act in a non-systematic way, hence this situation sometimes leads to duplication of tasks and recurring mistakes that could be easily avoided. Many of the challenges mentioned by them are directly related to when each employee joins the company, which poses a challenge when it comes to sharing knowledge. For instance, some interviewees stress that it involves an effort to ensure that knowledge is properly transmitted to new employees or adjust knowledge to the needs of each employee when it is shared. Therefore, communication is disrupted, and the biggest challenge emerged is to decide what knowledge should be given to each group or to involve those people who do not participate in meetings. Beyond that, it seems that another major challenge refers to how to manage knowledge sharing and fight holding knowledge at the same time. For instance, the interviewees exposed that if someone attends training alone or reads the material and does not share it, they are limiting the entire company in accessing that new knowledge. Other important challenges are: the danger of using shared knowledge by competitors, the lack of formalisation of the whole knowledge sharing process, the high complexity of some projects and the difficulty in transferring knowledge to other team members.

The Romanian interviewees pointed out that they face challenges due to immaturity from colleagues, technical limitations, lacking leadership skills, time and the access to critical knowledge. For them, sometimes remote work is a main factor contributing to other challenges regarding knowledge sharing. Also, remote work is found to be a key challenge in the Italian companies since it means lower presence of employees in companies. In addition, the Italian's KIBS fight knowledge asymmetry between experts and new hires which they identify as one of the biggest challenges faced making difficult spreading knowledge to all. Thus, when the asymmetry mentioned above increases, companies, according to the interviewees, lack a common language of understanding hindering knowledge sharing between different areas of expertise, i.e., between people with different career paths within the company.

While for Poland, Romania and Italy interviewees poor management of challenges such as knowledge asymmetry and employees' own idiosyncrasies give rise to errors which could be prevented, for Estonian's KIBS their challenges are related to cultural barriers and motivation to share knowledge. Therefore, interviewees from these companies located in Estonia, consider it a key challenge to get both a more active attitude from employees and knowledge sharing in an intelligent way not focused on a closed area, as well as to find out what to share. The tendency in Estonian KIBs is to blame the lack of leadership on the part of the owners for these challenges.

4.2.4 Knowledge Protection

The firms interviewed were also asked about their approaches to protecting relevant knowledge. According to the interviewee's findings, knowledge protection is not a common practice. The interviewees gave various reasons for this. For example, an interviewee from Italy stated: "*Not very important. We don't have patents or anything like that, so we have no particular needs. Another point is that evolution is very rapid and hardly there is knowledge that belongs to only one person*". The interviews also suggest that there is no need to protect knowledge since the knowledge the company possesses is viewed as not unique and everyone has access to it, so protecting it is not necessary. An

interviewee from Poland said on that matter, *“It seems to me that this knowledge on which we work is rather generally available”*.

Those few interviewees that claim to engage in knowledge protection do so through legal and technical means. Among the various legal mechanisms, non-compete clauses and confidentiality agreements are used. As stated by an interviewee from Romania, *“Knowledge protection in our company is mainly treated from the perspective of contract confidentiality”*. An interviewee from Poland stated, *“Only in the contract we have a clause on confidentiality, about not passing on the information that is in our database”*. From an Estonian interviewee it was learned *“Crucial, it is protected, first of all, with the contracts that we have; non-compete clause”*. Patents and intellectual property rights are recognized as forms of knowledge protection in some companies in the engineering field. For instance, an interviewee from Poland stated that *“we do everything, we legally protect ourselves so that these licences, copyrights remain with us and do not leak out of our school”*. Similarly, an Italian interviewee mentioned *“there is some caution in showing everything to the public. Patents are being considered in the electronic design part of the company”*.

From the IT perspective, the firms use standard security measures such as VPNs, encryption, and other cybersecurity practices. Also, the findings reveal a few situations where the KIBS SMEs used both legal and technical mechanisms to protect their intellectual property. An interviewee from Romania stated that knowledge protection is very important to their company and that they use *“VPN, digital protection, legal NDA clauses, and confidentiality. The company has intellectual property rights on all created outputs”*. Further, the use of shared drives and secure repositories, such as the cloud, are other tools used for knowledge protection.

The firms' owners, managers, and CEOs are primarily in charge of knowledge protection. There are instances in which the interviewees mentioned their administrative, IT department and legal teams as having a role to play in ensuring the security and protection of knowledge. Also, the marketing department can serve as an entity in charge of knowledge protection. The overall findings, however, indicate that all employees are responsible for protecting knowledge. On that an interviewee from Romania stated, *“everyone is responsible for knowledge protection, there is no particular person to do this job”*. Similarly, an interviewee from Poland said, *“in general, everyone is responsible for security”*. Therefore, knowledge protection seems to be a shared responsibility.

The interviewees confirmed that they face several challenges regarding this KM activity. One of them is the embedded knowledge, which is knowledge contained within processes, products, cultures, routines, or people. As an interviewee from Poland mentioned *“The knowledge is in our processes and the heads of our employees”*. An interviewee from Estonia reported *“I think here again, the biggest challenge is the technical knowledge of personnel... then for sure we are not able to detect them or protect them”*. Among the challenges companies face, as they work to protect their intellectual property, is the issue of hacking. In some cases, even with the best of security measures, an attack may breach a company's firewalls. As an interviewee from Poland stated, *“in the event of a hacking attack or in the event that an employee shares this knowledge with someone from the outside, the company will not have a way to deal with it”*. The same interviewee highlighted the issue of knowledge protection when employees indulge in unethical knowledge sharing or possibly intentionally knowledge leakage.

The situation that many of the studied companies employ freelancers to perform their business functions, the question is there of how to monitor the sharing of knowledge so that what requires protection does not fall into the wrong hands. As an interviewee from Poland mentioned *“the fact that freelancers who work for us and use our resources will use these resources in their work for other companies, which is inevitable - we, of course, prepare our contracts with relevant clauses, but this is essentially undetectable”*. To sum up, in Polish KIBS informants agree that knowledge protection is important, but they are not able to fully explain what types of tools/practices are used for this sake -

some were identified: e.g. legal clauses in the employee contracts, limited access to servers, technologically secured databases/repositories. Companies pointed out limited ability to protect knowledge (this is a very difficult area for companies). Some activities that may be undertaken are for example: allowing only a small group of employees to access sensitive data (different levels of access for different groups of employees or team members), legal statements for employees and cooperants, as well as copyright and property rights.

For Italian companies, the problem of knowledge protection is not perceived as particularly critical. In any case, the highest risk is related to business knowledge (e.g. market/customers specific characteristics); unfortunately, this is also the most difficult to protect due to its experiential nature. This content is largely resident in people's minds.

Overall, it appears that knowledge protection is underdeveloped among the four partner countries. Considering the responses as a whole from the interviewees, it is evident that the majority of companies do not engage in systematic knowledge protection.

4.2.5 Knowledge Application

In order to gain a more comprehensive understanding of the interview firms' knowledge application practices, we asked questions about tools, practices, and challenges encountered. By taking a broader view of the findings, it appears that a substantial number of the investigated companies engage in knowledge application to some extent, spanning all four partner countries.

The findings suggest that many companies apply knowledge by transforming it into products/services and processes in order to sell to their clients. A Polish interviewee stated, *"knowledge is transformed into a product that is created on demand from the customer. It is simply sold to the customer"*. Implementation of projects provides an opportunity to apply knowledge. As a Romanian interviewee indicated that *"bringing the new knowledge directly in the projects by infusing the new information in our activity"*. Another interviewee from Romania mentioned that *"We apply knowledge in line with project needs"*.

The companies involved seem to use two main channels for applying knowledge, i.e., people and technology. Not surprisingly in a small firm setting, people come before technology. There is an emphasis on people-driven activities, such as meetings and brainstorming sessions. For example, a Polish interviewee stated that *"...we systematize the knowledge gained, create processes, and translate it into further solutions"*. Similarly, an interviewee from Italy indicated that *"we make use of a detailed analysis of the problem, but we have not a predefined set of questions. After the analysis, we have internal meetings where the solution is found, and then it is shared with the customer, sometimes even with graphic mock-ups"*. Also, an interviewee from Estonia mentioned that *"we usually try new things and if we see that it works, we will implement it and start using it all the time. But if we see that someone is struggling with this method, we are going to discuss it and have like this brainstorming session"*.

Among the challenges identified in conjunction with the application of knowledge by interviewees from Poland and Romania in particular is the difficulty in assimilation, which can stem from employees' inability or lack of capability to analyze, interpret, and comprehend process knowledge collected from external sources. In one of the Polish KIBS, this challenge is viewed as a result of the speed with which knowledge can be translated into solutions for clients. A Polish interviewee stressed *"the challenge is how to quickly and effectively use the accumulated knowledge in the past"*. As well, it was found that many of the involved Polish companies struggle to recall practices learned in the past and apply them to subsequent projects due to the risk of forgetting. Some interviewees, primarily from Poland and Romania KIBS, also reported misunderstanding and frustration as common pressing issues they face prior to and during knowledge application. The integration of different knowledge is also seen as a

challenge among the studied Estonian and Italian companies. Moreover, budgetary issues on the part of clients are considered to be a unique knowledge application challenge among Romanian companies. It was also found that the skills and competences of the employees do not match the company tasks. This was viewed as a challenge of the Romanian and Italian companies. The misapplication of knowledge by clients was also mentioned as a challenge, mainly due to difficult communication with them.

Poland	Romania	Estonia	Italy
<ul style="list-style-type: none"> ● Mismatched training ● Difficulty in assimilation ● Forgetting ● Frustration ● Misunderstanding ● Knowledge misapplication 	<ul style="list-style-type: none"> ● Misunderstanding ● Client budget ● Frustration ● Difficulty in assimilating ● Knowledge gaps ● Employee turnover 	<ul style="list-style-type: none"> ● Lack of communication flow ● Integration of different knowledge ● Dynamism ● Keeping them updated 	<ul style="list-style-type: none"> ● Change-averse client ● Right understanding the client's problem ● Knowledge misapplication by the client ● Communication issues with clients ● Integration of different knowledge

Table 8. Challenges associated with knowledge application by country

For Polish KIBS the main problems with knowledge application are: insufficient acquisition of knowledge, making the application difficult, frustration caused by "trial and error" process while applying new knowledge, no time to transform this knowledge into action, products/projects created for a specific order (they are varied and must be tailored to the specifics of the client, so there is always an element of new knowledge that has not appeared before that must be applied). The possible solutions to these challenges are: reaching out to valuable data (e.g., statistics), good communication and cooperation with the recipient of processed knowledge (public institutions that commission projects, clients. etc.), openness to continuous learning, integrating knowledge application schemes and processes into organisational structure, as well as encouraging employees to do it by appropriate culture.

4.2.6 Knowledge Overview

Next, an overview of knowledge management is presented, which includes the biggest knowledge-related challenges, reported best practices, and how managing knowledge has evolved over time.

Biggest Knowledge-related Challenges

There is no doubt that the cascading effect of Covid-19 as well as the current Russian invasion of Ukraine have posed several additional challenges to companies, particularly among small companies. Against this backdrop, the interviewees were asked to name the driving knowledge-related challenges their company currently deals with or has dealt with in the past. The findings indicate that it has become increasingly difficult for KIBS SMEs to ensure the continuity of knowledge. As stated by an interviewee from Poland, *“we are a small company, and our software is quite large. And now, if any person leaves, suddenly there is a problem. Because everyone is responsible for some department and there are no people who can take it over right away”*. It is therefore possible to attribute the emergence of this challenge to poor succession planning.

The findings suggest that knowledge sharing has become more challenging compared to the past. As an interview from Romania mentioned *“knowledge sharing doesn't happen naturally anymore, as*

people are working mostly remote, and we needed to find other ways of promoting it". The interview findings indicate that this can also affect the onboarding process of new employees. The challenge of knowledge documentation also appeared again as several interviewees stressed that it has become difficult for the employees especially the younger ones to do proper documentation. Even if these documents are made, they are not done properly, making them difficult to use in the future. An Italian interviewee stated in this regard *"a main challenge is to convince employees to feed the documentary base on a daily basis"*. Another challenge indicated by Italian companies concerns the high turnover rate they are facing, which requires rapid knowledge transfer to new hires.

For Polish KIBS, the biggest challenges are: "transition from the old to the new", time (its lack and the pressure of time), leaving the company by the employee and loss of their knowledge, cooperation with external experts (their knowledge, skill level, commitment, etc.), managing current knowledge (continuity of knowledge, updating knowledge, etc.), technology development, cloud solutions,

Best Practices for KM

There are several points that emerged from the findings that can be considered best practices for managing knowledge. Regular meetings, both internal and external, are considered one of the most effective methods of managing knowledge, especially when it comes to the creation of new knowledge. During these regular meetings, the progress of the firms' KM activities can be evaluated. As stated by a Polish interviewee *"but so far it seems to me that regular team meetings, taking care to store and update the knowledge that everyone needs"*. Additionally, this regular meeting has the potential to enhance employee relations. As stated by another Polish interviewee *"these are good relationships with the team and try to maintain those good relationships, and a good balance between cordiality and formal dependence"*. Another best practice identified is to seek knowledge from external sources. A Polish interviewee mentioned that *"we have the opportunity to source the knowledge of specialists from academics, that is, from universities. And this is a very large resource for us to draw from, without, for example, increasing long-term employment"*.

Training and further education of employees regarding knowledge protection can be named as a further option to improve KM in firms. As stated by an interviewee from Poland, *"we have been thoroughly trained by specialists and experts in data protection. We have the right people and the right structures, with a staff of IT specialists who ensure that data are properly protected on an ongoing basis"*. The use of Wikipedia has also been recommended as an approach for internal knowledge documentation. According to an interviewee from Poland, *"we have a kind of Wikipedia in the company, where we save some of the technical documents. You can create some more subpages there and describe it. It is necessary to document it, because later there might be problems implementing a new employee or configuring something"*. The use of agile methodology and objectives and key results are also proposed as best practices for knowledge management by an interviewee from Romania. Adopting a methodology of that kind can help employees align themselves with the company's procedures, goals, and pace. Finally, the establishment of competence centres may also improve KM in KIBS SMEs, the larger ones in particular.

For Polish KIBS, the following best practices were identified: internal trainings (also for new-comers within the onboarding process), creating company own resources (that everyone can easily access), regular team meetings, lasting partnership with other companies, having a permanent pool of external experts, good project management methods (budget, deadlines, risks, etc.), "Wikipedia" in the company, where they save some of the technical documents, better and more detailed collection of requirements from customers (well-prepared surveys, requirements studies, etc.), as well as cooperation with universities.

For Italian companies, interesting best practices signalled by interviewees are: Dedicated team for analysing knowledge needs and acquiring new knowledge, training of new employees by means of sort

of «starting kit», standardizing documentation and introducing solutions of document management, organization of regular meetings to align teams. Also, the importance for top management to be exemplary and error tolerant was signalled.

KM Evolution

Regarding the evolution of KM over time, the views provided by the interviewees can be divided into four broad categories, namely, (1) Knowledge documentation has changed as a result of IT, (2) Knowledge sharing has taken on a new form as a result of company growth, (3) A pandemic has highlighted the importance of technical mechanisms for protecting knowledge and (4) Investments in knowledge assets.

To illustrate the categories, in the case of knowledge documentation, an interviewee from Italy reported: “... *increasing documentation activities through the adoption of IT-supported tools*”. Also, the way knowledge is acquired has changed; whereas in the past, it was an individual process, it is now a collective process. The expansion of companies has also influenced other KM approaches, such as knowledge sharing. This was easier before when small teams were involved, but now this is not the case with larger groups. A Polish interviewee stated: “*it has changed quite a bit as the company has grown. At the stage when the number of rooms in our company grew to several it was already difficult to ensure constant and ongoing knowledge sharing. Previously as we had one and then two rooms this flow was current, but with a larger team it no longer worked that way*”. Not only that, an interviewee from Poland also mentioned that “*It has changed, and this also required the accumulation of this knowledge and a different way of transmitting it. The process of sharing knowledge, these internal meetings, indicating people who talk about delegation, processes, and improvements - this is also a very big step forward. A lot has changed for the better - in the last 4 years*”. Also, the direction of knowledge sharing, and exchange has changed over time. “*Currently, the exchange of competencies and the exchange of knowledge between team members is no longer top-down, but bottom-up, or horizontally*” (Polish interviewee).

Not only the pandemic but also rapid technological advancements have led to a different KM approach regarding knowledge protection. As there is not only an increased need to protect knowledge but also the half-time of certain knowledge has further decreased. An interviewee from Italy, for example, stated that “*knowledge is becoming obsolete more rapidly than in the past, and we have to manage such rapid changes*”. Last, the companies have invested in the improvement of the firm’s KM. An interviewee from Poland mentioned on that matter “*well, more systemic investments in training, knowledge, conferences, sharing this knowledge began, so that it stays in some way*”. Similarly, an Italian interviewee stated, “*we have invested in training by institutionalizing training moments*”.

In Polish KIBS, it can be observed that over the years KM has become more systematic - incl. development of internal processes (e.g. onboarding), stronger specialization (concentration on selected areas of knowledge), relying on the principles of a virtual organization, etc.

5. Recommendations for KIBS companies

Based on the findings presented above, a number of recommendations are proposed so that KIBS SMEs will become better with their KM.

The overall findings show that KIBS SMEs do KM. Yet, as it has also been shown in previous research, it happens in a less systematic way and shows clear emphasis on certain KM aspects. This is good news as any further activities could be based on the activities already found in the companies. On the other hand, it is clear that there is still considerable room for manoeuvre in the companies not only to improve KM but also to benefit from it even more.

Overall, the findings underline that KM is time-consuming and requires a number of financial and non-financial resources and efforts from the companies, its organization members, to be improved. Given that and acknowledging that small companies work in a different environment and are exposed to certain restrictions not found in the large companies, they have to use the scarce resources with a much greater degree of care. Consequently, the first recommendation can only be that all KM activities must be considered strategically and be closely linked to the overall business objectives. This means clear accountability on the part of the management/leadership of the KIBS SMEs. KM is/must be a matter for the boss. In this regard, it should also be highlighted here that KM cannot be successfully implemented without appropriate organisational culture - if employees do not see the potential benefits for them related to following KM practices, they will not use them. Also, the culture that has tolerance for experimenting and making mistakes may help KIBS SMEs in integrating KM into all the activities and processes.

Unsurprisingly, the assumption of this responsibility is more likely to occur when the benefits of the activity, in this case KM, are clear. The results illustrate that there is still a great need for courses on KM to convince more KIBS SMES of the benefits of systematic KM. In view of the fact that in small companies there are often more tasks than heads, a KM that relies heavily on cooperation within the company and across company boundaries seems to make sense for these companies. A small KIBS cannot afford to have KM run by just a few people but should be the responsibility of all members. The results indicate that there are efforts in this direction.

The KM approach in KIBS should be a democratic one that recognizes that everyone has something to contribute and that ideas do not only come from top management. This reduces the risk of knowledge concentration, which can be particularly tricky for small companies and is exacerbated by the aforementioned skills shortage.

The findings suggest that KIBS SMEs should develop their understanding of possible consequences of not protecting their critical knowledge in particular. Considering that specialized knowledge forms the *raison d'être* of KIBS, they should identify and execute measures and actions so that they increase the chance of keeping their proprietary knowledge.

When comparing the individual countries, the results suggest that companies from Estonia have the greatest need for a better understanding of KM and its possibilities for the company. Thus, in this country there seems to be a particular need for offering more systematic training and courses dedicated to KM in general and KM in smaller firms.

The findings may be useful for other stakeholders such as policymakers and support organisations working with SMEs.

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