Preconditions for the Development of Organizational Knowledge Ecosystem Inside an Audit Firm

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Abstract: The paper aims to present key preconditions for the development of organizational knowledge ecosystem inside an audit firm. The audit activities represent a specific context for knowledge management, especially what concerns knowledge sharing and generation of new knowledge in organizational environment of formal rules and standards. We present the survey of audit firm employees (68) and their management by discussing the key challenges related to the dynamic knowledge sharing and new knowledge creation inside an audit firm. The paper investigates the nature of knowledge within an audit firm and analyses the cultural and structural aspects of KM practices that may lead to the emergence of ecosystem for sharing the existing and generating new knowledge. The paper adopts the intra-organizational perspective to knowledge ecosystem. The audit firm operates as knowledge organization that, despite its strong formal side, is a complex dynamic system of knowledge professionals, who form the different communities of practice inside the firm. Research presented in this paper helped identify the key challenges and opportunities for the emergent knowledge partnerships inside the professional audit firm. The key cultural preconditions behind the effective knowledge ecosystem - trust-based relations, organizational culture, positive horizontal and vertical relations, and strong intrinsic motivation to share knowledge - are in place. Research findings also reveal a good fit between the employee expectations and organizational practices. However, certain challenges need to be addressed, such as bringing out and embodying the tacit knowledge of employees, and the need for continuous upgrading of the processes of knowledge creation and integration. To establish an effective and sustainable knowledge ecosystem inside the professional services firm, the paper argues for striking a delicate balance between the formal and informal parts of organization, as well as its KM system.

Keywords: Knowledge ecosystem, Knowledge sharing, Organizational learning, Knowledge management in audit and accounting

1. Introduction

Extant knowledge management research is traditionally focused on the classical approach to KM as efforts designed to capture knowledge, convert personal knowledge to group-available knowledge, connect people to people, people to knowledge, knowledge to people, and knowledge to knowledge; and measure that knowledge to facilitate management of resources and help understand its evolution (O'Leary, 2001). However, we can see a gradual transition in the firm-level KM analysis away from the issues of improving the knowledge management processes towards building the dynamic organizational knowledge ecosystems (Järvi et al, 2018; Almanopoulu, 2019). Extant research increasingly treats the organizations as complex multi-level entities than discrete units (Boutros, 2014; Brychan, 2019). A significant part of ecosystem-related research stressed the inter-organizational dimension (Clarysse, et al., 2014; Valkokari, 2015). The intra-organizational dimension of ecosystem research is represented by the focus on the aspects, such as organizational diversity and integration of technical, organizational, and institutional subsystems (Parsons, 1960; Brychan, 2019), the complex interactions where changes in one part of organization affects other parts (Boutros, 2014), the balance of formal and informal relations in organizations (Brychan, 2019). Most of these aspects also affect the effectiveness of knowledge management processes inside organizations, yet still receive insufficient attention in the KM community. Moreover, these aspects did not receive sufficient attention in the KM research, especially in the context of audit and accounting firms that operate within the constraints of formal regulations, which represent a specific research problem.

The *aim* of our paper is to discuss the preconditions for the emergence of organizational knowledge ecosystem from the perspective of a firm specialising in audit and assurance services.

The paper presents conceptual analysis of knowledge management in the professional services firms (PSFs) and contextualises the findings of KM research in an international audit and assurance services firm (branch office in Lithuania). The empirical research covered 68 employees and management of the audit firm. The findings open the discussion regarding the potential improvement of KM system within the firm, as well as acquiring the traits of knowledge ecosystem.

First, we discuss the KM processes and systems commonly established by the professional services firms (PSFs) that includes consulting, accounting, audit, and other professional services (as often exemplified by the Big

Four). At the latter half of the paper, we present the findings of empirical research in the chosen audit firm and discuss the potential improvements of KM processes as preconditions for establishing an effective organizational knowledge ecosystem.

2. Knowledge Management in Professional Services Firms: Key Issues and Strategic Choices

Research on knowledge management in professional services firms (PSFs), especially the areas of audit and accounting services, covers various aspects of classical KM while considering the industry specifics, e.g., the different knowledge bases and diverse modes for capture, conversion of new knowledge, and its connection to the existing knowledge (O'Leary, 2001), linking the KM process and audit firm's performance (Salleh et al., 2011), the different combination of knowledge management strategies in audit and consulting firms (Janicot et al., 2021).

Research shows that despite their possible divergence in size and profile, the professional services firms all gain their competitive advantage thanks to individual and collective knowledge and reputation in the market (Reihlen, Werr, 2012). Such intangible assets are difficult to create and relatively easy to lose. Therefore, having effective systems that support and upgrade the intellectual and institutional capital is of a strategic importance to the long-term survival of PSFs.

Janicot et al (2021) explore the modes of knowledge codification and personalization strategies in audit and consultancy firms (ACFs) by the taking into consideration the different nature of knowledge and forms of knowledge sharing. As far as the first parameter is concerned, there are two major types of knowledge: *declarative knowledge* codified and stored in the internal and external databases, and *procedural knowledge* used when applying conceptual knowledge in specific situations and act as patterns for problem solving inside the organization. As far as the second parameter is concerned, Hansen et al. (1999) distinguishes between two major strategies that enable the knowledge sharing: *knowledge codification* and *knowledge personalization* strategies. The first one emphasises the setting up of networks of shareable databases, while the latter places great importance on inter-individual and collective communication as a source of value. The knowledge codification strategy relies a lot on the ICT tools used not only for capturing and storing valuable (codifiable) knowledge, but also for enabling easier sharing inside the organization. The ICT influenced perspective played a strong role in the earlier stages of KM development. However, the contemporary ACFs pay particular attention to *personalization strategies* with their focus on the creation of networks for effective knowledge sharing and innovative outputs. The success of such strategies relies less on technology and more on the intangible social aspects of organization, such as trust, that promote sharing behaviour.

In such context, the concept of *organizational knowledge ecosystem* has come to the forefront of academic discussions. The general ecosystem approach in business and management research takes its roots in the works of Moore (1993, 1996), while Adner (2006) is behind the concept of innovation ecosystem as the collaborative arrangements by which firms combine their offerings into a coherent, customer-facing solution. Traditionally, researchers treat such ecosystems as dynamically organized meta-networks and knowledge meta-clusters of different organizations (Carayannis, Campbell, 2009). More recently, the ecosystem concept increasingly permeates the intra-organizational contexts. The knowledge ecosystem approach is useful while operating in turbulent environments where the need for specific knowledge is difficult to predict. Bray (2007) stresses that ecosystem approach promotes dynamic knowledge exchange activities, and "frees organization from nearly impossible task of identifying what knowledge its employees have, need now, and will later find valuable". Ecosystem perspective considers not only the formal aspects of KM system but puts special emphasis on the quality of organizational relationships and organizational culture, trust, diversity of knowledge actors, their propensity to capture and share knowledge. Ideally, the knowledge ecosystem should possess the key characteristics of complex adaptive systems with their emphasis on (Anderson, 1999; Lichtenstein, 2016; Carapiet and Harris, 2007; Uhl-Bien, Marion and McKelvey, 2007). Jucevicius et al. (2021) discuss the knowledge ecosystem from CAS perspective although approaching the knowledge ecosystem from inter-organizational perspective. In research presented in this paper, we aim to assess the preconditions for the emergence of knowledge ecosystem in a selected audit firm. Focus is on getting a deeper understanding of cultures and structures that enable knowledge sharing and new knowledge generation inside the firm that must address the strategic contradictions of operating in heavily regulated environment, while at the same time having to ensure internal flexibility and learning.

3. Presentation and Discussion of KM Research Findings in Audit Firm

The empirical research covers the Lithuanian branch office of international firm with primary specialisation in audit and accounting services. It also offers other business services, such as tax advisory, compliance and reporting, risk management, and financial reporting. The authors of the paper have agreed to the firm's anonymity request; thus, the paper presents only the general profile of the company. The international firm is among global leaders in audit and assurance services. The branch office under study has been operational for 20 years (parent company – for more than 60 years), and employs ~100 professionals across the country. The study combines quantitative and qualitative research methods: survey of employees and semi-structured interviews with management. Both questionnaires and their categories draw upon the structure of Nonaka & Takeuchi's SECI model and McElroy's knowledge lifecycle model.

The survey covered 68 employees (or 68%), of which 2 (2.9%) represent the administration department, 25 (36.8%) - audit department, 41 (60.3%) - accounting department. The tax department did not participate in the survey, which is a limitation of the study. It is important to mention that study has reached around 80 percent of employees from two key departments – audit and accounting, thus one can make objective generalizations for these two fields. In terms of work experience, 14 (20.6%) employees have been working in the organization for less than 1 year, 35 respondents (51.5%) - for 1 to 3 years, 13 (19.1%) - for 3 to 5 years, and 6 (8.8%) - for more than 5 years. The age distribution of the respondents is as follows: 35 research participants (51.5%) are between 18 and 29 years old, 26 (38.2%) - between 30 and 39 years old, while only 7 (10.3%) were over 40 years old. The demographic data shows that young professionals with few long-established links dominate organization, which has its effects on the knowledge processes inside the firm. The questions in the survey adopt Likert's 5-point scale.

First, we sought to understand *what kinds of knowledge and information the employees consider valuable in their work environment*. Most employees completely agree with the statement that personal and professional knowledge is the most valuable in the work environment (4.53), closely followed by the information and assistance provided by colleagues (4.32) and work experience (4.25). The access to training materials (390), sharing personal life experiences (3.84) and internal company procedures and documents (3.79) are of somewhat lesser importance. Then we asked respondents how often they shared the above-mentioned types of knowledge and information with their colleagues. All answers were on a lower side of the scale compared to the previous block, which indicates that employees are generally less eager to share knowledge and information that they consider valuable (see Table 1). On the other hand, the employees were most active in sharing the same three aspects considered as most valuable: personal and professional knowledge (4.26), work experience (4.09), and information and help provided by other colleagues (3.93). Personal life experience (3.56), internal company procedures and documents (3.21) and training materials (3.09) were also shared, but less intensely. The greatest gap between "considered as valuable" and "shared with others" has been observed in the latter two – training materials, and company procedures and documents. Thus, the greater challenges arise when sharing the codified knowledge in the organization.

Table 1: Comparison of Valued vs. Shared Knowledge and Information

	Considered as valuable	Shared with others
Personal and professional knowledge	4.53	4.26
Information and assistance provided by colleagues	4.32	3.93
Work experience	4.25	4.09
Training materials	3.90	3.09
Personal life experience	3.84	3.56
Internal company procedures and documents	3.79	3.21

We then asked the respondents to tell us (using similar categories) what knowledge and information they are lacking and would be most eager their colleagues to share. The majority emphasised practical knowledge (4.29) and technical knowledge (4.07), and to a lesser extent theoretical knowledge (3.93). The sharing of individual work documents, such as personal notes (3.25) and customer information (2.88) were considerably less important. The respondents are moderately satisfied with the way the knowledge sharing processes take

place in their organization (3.28), knowledge and information they receive from their colleagues are clear and reliable (3.85), as well as valuable (3.99). Employees carefully analyse new work-related knowledge (3.54), they generally claim there is no ambiguity or uncertainty in the required knowledge (3.37). The most critical points concern the clarity and structure of received information (3.13), and the overall effectiveness of system of knowledge sharing (2.81). So again, most problems are associated with capturing and systemization of information and knowledge inside the firm.

The respondents also provided their opinions regarding the engagement of organization's management and employees in KM activities. The situation was moderately positive on the following fronts: employees often come up with ideas on how to improve work-related processes (3.57), management knows what competence and expert knowledge the employee has (3.16), management tends to consider employee suggestions related to process improvements (3.41) and tends to implement such suggestions (3.32). However, relatively few respondents agreed that company keeps record of and stores the suggestions and ideas of employees (2.63), while employees who leave the company rarely save and transfer their knowledge so that it remains in the company (2.78). Creativity methods are rarely used for generating new ideas, thoughts and solve problems (1.97). This represents a KM challenge to the company dominated by relatively young employees, who have (more than 70 percent work for less than 3 years). It means that firm is experiencing potential disruptions in knowledge transfer as employees leave the organization and new employees arrive. Although the KM processes are generally functioning on the operational level, ensuring the continuity of knowledge due to high-level workplace mobility remains an issue of strategic importance.

When asked about the key barriers to sharing knowledge and information, the employees stressed the fact that the necessary information is not systematized (3.37) as the key barrier. On the other hand, respondents tend to disagree that the knowledge received from colleagues is not clear, hard-to-understand and unreliable (2.40). Nor is intra-firm competition an important barrier to knowledge sharing (2.04). Respondents claim that management does not ignore the employees' personal suggestions for better performance (2.19). They remained relatively neutral in their assessment of the motivation system for sharing knowledge inside the organization (2.90) and accessibility of needed information (2.87). Therefore, the main issues to be addressed by the organization concern systematization and improved access of information and knowledge.

When asked about the knowledge dissemination and implementation problems within the company, they emphasised three major issues: a lack of documents describing what and how to do specifically during a certain process (3.59), high cost of work execution time (3.54), and many corrections of the work performed (3.24). The problematic areas mainly concern the daily operations of the firm and execution of various operational tasks. The aspects related to knowledge dissemination, its access and feedback were not of any major concern: lack of feedback (2.25), different interpretations of knowledge transferred (2.50), lack of sharing (1.97), miscommunication in knowledge transfer (2.66).

The main motivating factors to share knowledge and information inside the organization are related to the horizontal intrinsic aspects of organization, such as organizational culture (3.87), willingness to reach for the shared goals (3.82), willingness to create added value to the organization (3.71). However, trust and positive relations with colleagues and management were the greatest motivating factors. It is important to mention that positive relations with colleagues (4.10) and trust in colleagues (4.22) were identified as even more important than positive relations with superiors (3.85) and trust in management (4.07). The bonuses have by far the least effect on employee decision to share their knowledge and information (3.07), which shows the "soft" intrinsic nature of the organizational catalysts.

The analysis of organizational practices has shown that they to a large extent correspond to the identified motivating factors to share information and knowledge. The employees identify equally positive relations with colleagues (4.00) and management (4.00), as well as trust-based relations with both parties (4.15 and 3.99 accordingly). Other factors, such as organizational culture (3.91), willingness to reach the shared goals (3.76) and create added value (3.65) are also ensured by the organization. On the other hand, economic motivators, such as bonuses, play almost no role in the organizational practices of knowledge sharing (1.88). However, as already mentioned above, the study shows that their motivating impact is not at all significant. Table 2 presents the comparison of key motivators to share knowledge and actual organizational practices.

Table 2: Comparison of Motivators to Share Knowledge and Organizational Practices

	Motivating factor	Organizational practice
Trust in colleagues	4.22	4.15
Positive relations with colleagues	4.10	4.00
Trust in management	4.07	3.99
Positive relations with superiors	3.85	4.00
Organizational culture	3.87	3.91
Willingness to reach the shared goals	3.82	3.76
Willingness to create added value to the organization	3.71	3.65
Bonuses	3.07	1.88

Finally, the employees identified the most common forms of generating new knowledge inside the organization. The most common way to generate new knowledge was through informal face-to-face interactions (4.09). Some knowledge, although to a moderate extent, is generated through collective discussions (3.15) and systemization of different knowledge bases through responsible employees (3.17). However, the use of databases for integration of knowledge is regarded as virtually non-existent (2.47), which brings us back to the same key challenges faced by the audit firm.

The semi-structured interviews with management allowed us to complement and contextualize the findings of the employee survey. The management representatives stated that the key external forces determining the evolution of the firm's KM system are the new technological developments as well as the external requirements set for audit and accounting firms. Knowledge, experience, and skills sharing processes are constantly taking place in the company, since the organization under study is rather specific and has specific needs. In terms of procedures, the company must follow the industry requirements that are set and supervised by certain institutions. Colleagues constantly update and share knowledge among each other, as it is a key success factor of professional service firms. The organization is constantly thinking about improvements, but unfortunately, it does not happen very quickly. The current method of knowledge management in the organization is to a significant extent defined by the external actors and their descriptions where knowledge sharing with colleagues and mutual communication should take place.

There have been certain instances in the practice of audit firm where knowledge management methods did not work either because they were rejected by the employees, or were unused due to the employees' workload, or due to the lack of staff. As seen from the management perspective, employees have a lot of work during the season, so they tend to focus on their tasks rather than share knowledge with their peers. Due to their workload, they do not put their insights on paper. As a result, some valuable knowledge fades into oblivion before being shared.

Despite some problems, one can also observe success stories when it comes to KM practices in the audit firm, e.g., concerning the feedback loops behind the learning processes inside the organization. When sending notifications, messages and other important information, the company requests confirmation from the employee. There are responsible persons who supervise the feedback and if they do not receive it, they send a reminder. In this case, assimilation of information is monitored. As far as monitoring of knowledge acquisition is concerned, employees have to take tests at the end of the training. Tests show how much knowledge and information have been absorbed, which is an effective way to check the acquisition of new codified knowledge. Respondents confirmed that employees present their personal knowledge to colleagues by making presentations about what they know and train others. It usually happens during the quarterly management meetings. Colleagues share knowledge with their departments, or managers between managers, as well as with other departments.

Talking about what is considered as valuable knowledge, management particularly emphasised personal qualities (next to the professional competences) as they underlie the employees' learning ability to learn and collaborate. There are incentives to the employees to share their knowledge to improve processes and solve problems. Among such incentives are gifts and bonuses. However, not all employees are aware of this opportunity or have forgotten about it. The employee survey has also confirmed this observation.

Training remains the main channel of equipping employees with new knowledge. However, training is subject to specific company regulation. Employees must acquire the needed professional knowledge during set period (40 hours of training). Since there are specific periods in the year when the employees of audit firm are extremely busy, training takes place during the "off season". In case of the remote training sessions, the employees also receive the recorded training materials. Important knowledge is stored in the firm's internal system. Management meetings take place every month where managers share their department's observations, feedback and necessary changes. Every meeting is recorded, the minutes reveal the problems discussed and solutions proposed; this information is stored. However, the survey findings suggest that employees still face challenges due to insufficiently effective systemization of knowledge inside the company.

Management representatives also stressed the importance of cultivating the climate of organizational trust where employees feel like one big family. Company seeks to avoid the emergence of negative culture. The competition among employees is rare and happens only in isolated cases (this observation was also confirmed during the survey). Managers hold annual individual interviews with their employees to achieve their best fit in organization and its culture.

Management representatives were less convinced that knowledge of employees is used to the maximum for improving the processes of the firm. During the periods of intense workload, the specific knowledge and talents often remain unobserved. When the top season is over, employees usually fail to write down the key problems, solutions, and other valuable insights, so they often do not receive the needed dissemination inside the organization. The more introvert employees have access to a special anonymous knowledge platform where they can put their opinions, ideas, and suggestions, but such inputs are rarely received. Management recognizes the importance of having a formal KM system, and using the "soft" elements of organization, such as trust, culture, positive social relations inside the firm for gradually developing an effective organizational knowledge ecosystem (i.e., with strong formal and informal subsystems of diverse actors, also across the boundaries of domestic branch office).

4. Conclusions

Research has shown that the firm's knowledge management system can be improved by focusing on three courses of action: 1) capturing and codifying the employees' tacit knowledge, 2) systemizing the diverse knowledge already found inside the organization and making it accessible to users, 3) involving the knowledge workers to be more (pro)actively engaged in improving the company's processes.

To establish an effective and sustainable knowledge ecosystem inside the professional services firm, one has to strike a delicate balance between the formal and informal parts of organization, as well as its KM system. This is a challenging task given numerous formal requirements in the environment of audit and accounting firms. The research conducted in the chosen audit firm has shown that the firm has some of the prerequisites needed for developing such ecosystem: horizontal and vertical organizational trust, collaborative organizational culture, employees' willingness to learn and contribute to the shared goals of organization, general coherence of employees' motivational factors and organizational practices promoting the sharing of knowledge. On the other hand, to achieve knowledge ecosystem that has sustainable systemic impact and does not rely on the *ad hoc* KM initiatives, one must take into consideration further actions. First, to strengthen the formal aspects of capturing and systemizing valuable declarative and procedural knowledge in the field. Secondly, to connect the diverse knowledge actors into the network that spans the organizational boundaries. Research has shown that most of the knowledge sharing is still taking place within the branch office, but connecting the knowledge workers from different branches of international audit firm into one common knowledge platform could be a welcome initiative. Finally, the KM processes in audit and accounting firm remain largely focused on training activities and learning the industry-specific knowledge, and less so on generating the new knowledge (e.g., standards) in the field. As the *raison d'être* of knowledge ecosystems is the creation of new knowledge, the audit firm could use its international profile and leadership to engage new diverse actors into shaping new forms of collaborations. Such 'strategic communities' could span the organizational boundaries and lead to the creation of new *de facto* and *de jure* standards in the field.

Acknowledgements

The paper was prepared with the support of the Research Council of Lithuania under the research project SMARTORG, "Smart development of organizational knowledge ecosystem" (C. No. S-MIP-21-49)

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