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DOCTORAL THESIS

KNOWLEDGE VULNERABILITIES AND KNOWLEDGE RISKS IN KNOWLEDGE MANAGEMENT SYSTEMS

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ABSTRACT

In an environment characterized by uncertainty, rapid technological advancement, and continuous organizational transformation, effective knowledge risk management has become a strategic imperative. Organizations are increasingly required to adapt their strategies and processes to manage knowledge-related uncertainties while sustaining high-performance knowledge management systems. Although the academic literature on knowledge management and knowledge risk has expanded in recent years, significant gaps remain, particularly regarding the dynamic analysis of knowledge vulnerabilities and the systemic management of knowledge risks within organizations. Existing studies primarily focus on isolated aspects of knowledge risk, such as specific risk factors embedded in formal knowledge management systems or sector-specific challenges, particularly within public institutions. Other contributions emphasize organizational constraints, including culture, leadership, structure, strategy, and human capital, as well as the inherent complexity of sustaining effective knowledge processes in dynamic environments. However, a comprehensive, process-oriented, and dynamic perspective that integrates knowledge vulnerabilities, risk identification, and management mechanisms within organizational systems remains underdeveloped.

The lack of conceptual clarity surrounding the notions of knowledge vulnerabilities and knowledge risks further complicates research efforts, as these concepts are interpreted differently across disciplines. This conceptual ambiguity limits the development of coherent frameworks capable of systematically identifying and mitigating weaknesses within organizational knowledge systems. Addressing this research gap offers significant theoretical and practical benefits. A deeper understanding of knowledge vulnerabilities would enhance organizations' capacity to identify structural and process-related weaknesses, improve risk assessment mechanisms, and support informed decision-making. Moreover, strengthening the visibility and governance of organizational knowledge would contribute to enhanced performance, resilience, and long-term sustainability.

Building upon previous developments, the present doctoral thesis seeks to further investigate and refine the categorization of knowledge vulnerabilities, offering a more integrated and dynamic approach to knowledge risk management. By adopting a mixed research design, the study aims to clarify the interconnections between knowledge vulnerabilities, knowledge risks,

knowledge risk management and knowledge risk impact. Particular attention is given to the Romanian context, where the implementation of knowledge management systems remains limited and research on knowledge vulnerabilities is still in its infancy. This contextual focus enhances the originality and relevance of the study, contributing both to international scholarship and to the development of practical solutions tailored to emerging knowledge-based organizations. Through conceptual clarification, empirical investigation, and the development of a dynamic analytical framework, this doctoral research aims to advance understanding of knowledge vulnerabilities within knowledge management systems, ultimately supporting organizations in navigating complexity and sustaining competitive advantage in knowledge-driven environments.

Nowadays, knowledge has become an essential resource for every organization. Since 2020, when the global pandemic was declared, other major events have taken place around the world, including military tensions, insurgencies in Africa, an energy crisis, global food crisis, global warming crisis and cyber warfare. Thus, economic disruptions and shocks have become quite frequent, leaving organizations with less time to manage change (Ursache, 2022a). The accumulation of all these crises amplified uncertainty, especially by making the decision-making processes more difficult and by reducing the organizational capacity of systematic planning (Durst et al., 2023). Having this context, knowledge risk management became even more challenging than before the pandemic, forcing the organizations to become more agile and to acquire new skills that allow them to answer in due time to unpredictable situations (Ursache, 2022b).

In an era characterized by the day-by-day evolving technology and digitalization, which accelerated the transfer of information, it can be easily noticed that research in the field of knowledge management increased. In this context, knowledge is known as more important than before, becoming an essential variable of the development of the organization, that can determine its success at the end of the day. This idea was underlined by Bratianu (2023) as well, who considers that knowledge is dynamic and has the ability to continuously evolve, and organizations must learn how to properly manage it in order to adapt, innovate and have a competitive advantage.

Due to that, societies and organizations of all types and sizes need to be prepared at every moment to adapt to new changes. One consequence to this environment characterized by uncertainty is that knowledge risk management initiatives rarely begin from scratch (Henz & Oliveira, 2024). In reality, organizations might already manage knowledge internally, but in an informal way (Remenyi, 2025). Some organizations most probably conduct basic evaluations of possible risks, although these evaluations are most of the times constrained by the lack of specialized resources and knowledge (Demirdöğen, 2023). More than that, it is possible that prior efforts to put formal knowledge management initiatives into practice failed, this bringing negative effects of the employees' performance perception when it comes to implementation (Koivisto & Taipalus, 2025).

Since all organizations are under continuous pressure to manage uncertainty and to rapidly and often modify their strategies in order to maintain an effective knowledge risk management, it is important to take into consideration the main obstacles faced and how difficult it might be to maintain a high-performance knowledge risk management system (Njiru et al., 2025). Despite the fact that the literature has grown in the past years, there is still a lack of research that investigates the knowledge vulnerabilities and knowledge risk management systems from a dynamic organizational perspective, especially when it comes to the knowledge processes and the difficulties faced by the organizations. The already existing literature on knowledge risk and knowledge management mostly focuses on specific risks or situations, including the risk factors within the formal knowledge management systems (Dodla & Jones, 2023) or obstacles to efficient knowledge risk management in public sector organizations (Phaladi, 2024). Other scholars underlined the organizational challenges, including the contextual and structural constraints, such as organizational culture, leadership, strategy, structure, people (Onofre & Teixeira, 2022) and the intrinsic challenges of sustaining efficient knowledge processes in dynamic settings (Koivisto & Taipalus, 2025).

A comprehensive dynamic perspective on vulnerabilities within knowledge management systems is still lacking in the existing academic literature, especially when it comes to identification, understanding, and management of knowledge risks. Therefore, despite their increasing significance in a setting marked by uncertainty and rapid change, knowledge vulnerabilities especially continue to be under-theorized and methodologically difficult to analyze (Bratianu & Bejinaru, 2022). Researching this gap brings a great advantage, as it would facilitate the identification and mitigation of important weaknesses, will support informed decision-making within the organizations and also strengthen the performance, resilience and long-term sustainability of the organization by increasing especially the visibility of the organizational knowledge.

Although research on risks and vulnerabilities in knowledge management systems is still incipient, recent doctoral studies have advanced the field by identifying important knowledge vulnerability categories (Chakraborty et al., 2025). By investigating and researching this framework, it is expected to bring more conclusive insights, which might provide a solid base for the ability of an organization to better identify its vulnerabilities and for developing better solutions that address knowledge vulnerabilities and assess knowledge risks.

It is also important to underpin that the concepts of knowledge vulnerabilities and risks have multiple meanings, being used in different fields. Because of this, a common definition is difficult to choose, this being one of the reasons why it is difficult to work with these concepts. Subsequently, further research, particularly in the field of knowledge risks, should provide additional information on different categories of knowledge vulnerabilities, with ongoing analysis being mandatory. More than that, it is important to mention that in Romania, the knowledge management systems are being implemented slowly, this being the reason why the research of knowledge vulnerabilities and risks is almost inexistent.

In order to clarify the main concepts under consideration, namely knowledge vulnerabilities, knowledge risks, and knowledge management systems, the current doctoral thesis will adopt a process-based approach. In this way, a bibliometric analysis was first carried out, having the role of identifying the gap in this field. The bibliometric analysis will also reveal how different related constructs interact and create conceptual networks able to define the boundaries of the subject matter.

The second step was to analyze the already existing literature. The literature review will thoroughly approach each construct considered in the conceptual model and the underlying relationships among the independent and dependent variables. Knowledge vulnerabilities will be defined and operationalized according to the extant frameworks and new perspectives will be proposed.

Thirdly, the methodology used will be addressed in detail, with this doctoral thesis following a mixed approach. Both quantitative and qualitative designs will be depicted to clearly specify the scope and focus of the empirical research.

The next part will present, analyze and discuss the results of both qualitative and quantitative data gathered. An integrative outlook of the findings will be advanced so that compelling and new insights into knowledge vulnerabilities and knowledge risks will become steppingstones of further endeavors on the topic.

Finally, the conclusions, implications and limitations of the doctoral thesis will aim to identify the contributions of the doctoral thesis and at the same time to explore new research avenues availed by the unfolding of the doctoral thesis. Both theoretical and practical implications are outlined with a view to assist scholars and practitioners in their future investigations.

Currently, knowledge management systems are greatly impacted by unknown vulnerabilities and risks that have not yet been sufficiently taken into account by managers and experts around the world (e.g., military conflicts, energy and food crises, disruptive technologies, etc.). All of these affect the intellectual capital of organizations and the entropy of their knowledge, redefining them in unprecedented ways. In a digitalized era, characterized by the high-speed transfer of information through innovative technologies that are continuously evolving, the research in the field of knowledge is more and more diverse and because of those scholars are more challenged to investigate unfamiliar areas that could constitute critical weaknesses in terms of organizational success and even survival.

Advancing research in the field of knowledge vulnerabilities and knowledge risks was conceived as a way of enhancing organizational knowledge, covering potential threats and weaknesses within knowledge management systems, with a view to strengthening the organization as a whole. Furthermore, knowledge vulnerabilities and risks in the context of knowledge management systems have emerged as a challenging doctoral topic, but even so, current research has shown that they are of high importance to the fields of knowledge management and knowledge risk management. Research in this area has yielded convincing and conclusive results, which are intended to provide real support for the further identification of relevant vulnerabilities and for the timely assessment and mitigation of knowledge risks.

The choice to address Romanian knowledge management systems was based on their characteristics and expected processes, which are likely to highlight notable knowledge vulnerabilities and knowledge risks. By deepening the existing literature and expanding the theoretical bases with new proposals on knowledge vulnerabilities, the doctoral theses aimed to make notable contributions to the conceptual field of knowledge vulnerabilities, knowledge risks, knowledge risk management, and knowledge management systems. Several analyses were carried out – bibliometric analysis, qualitative and quantitative research – to deepen the relationships between knowledge vulnerabilities and knowledge risks, also taking into account knowledge risk management and the respective impact.

The present thesis presents for the first time in Romania the correlations between knowledge vulnerabilities and knowledge risks. Also, it is for the first time to introduce as qualitative research the tree diagrams connecting knowledge vulnerabilities, knowledge risks and knowledge risks consequences for a given organization.

It is well known that significant risks can have a negative impact on an organization's performance, leading to a variety of unwanted consequences. In this context, managers need to be able to identify the wide variety of knowledge-related vulnerabilities and risks and establish guidelines in place to either completely eliminate or significantly reduce their impact at the organizational level. Early action is necessary for successful knowledge risk management, emphasizing the behavioral and structural factors that contribute to risk rather than just its effects. In conclusion, this research was intended to focus on the systematic examination of knowledge vulnerabilities and their correlations with knowledge risk management practices and risk outcomes and tried to propose a promising direction for future research in the field of knowledge management systems.

This doctoral research also highlighted the importance of knowledge management in general, which has become essential in today's business environment as organizations face more challenges when it comes to innovation and improving their performance in order to keep pace with all the changes taking place in this continuously changing environment. Shortly, organizations that have the ability to manage their knowledge effectively also have the ability to gain a competitive advantage and to quickly adapt to the changing market conditions. Knowledge is power, thus mastering knowledge becomes the only way to achieving power.

Regarding the implications, they can be tackled from a theoretical, managerial and practical, and policy and organizational point of view. From a theoretical perspective, this thesis contributes to knowledge management literature by expanding the understanding of knowledge vulnerabilities and risks within organizational knowledge management systems. By integrating both qualitative and quantitative methods, the research points out how perception of knowledge risks are influenced by the culture of the organization, the sector of activity and experience. For practitioners, the thesis underlines the importance of proactively identifying and mitigating knowledge risks to safeguard critical organizational knowledge. Managers are advised to establish a culture that strikes a balance between knowledge-sharing and confidentiality, as well as to put in place formal risk assessment processes that are adapted to the organization's sector of activity and technological environment. In particular, information from the IT and energy sectors points to the need of employee training, ongoing monitoring and efficient knowledge governance in order to lower the risks. Moreover, the thesis points out to the importance of cross-border learning. Lastly, regarding the policy and organizational implications, the thesis supports the development of formal policies and frameworks that aim to manage knowledge risks, especially in multinational and knowledge-intensive organizations. Thus, this study reinforces the policy makers to support standards and guidelines for knowledge management and risk mitigations within the organizations, especially in the organizations where knowledge represents an important asset for innovation and market competitiveness.

Despite the contributions of this study to comprehend knowledge vulnerabilities and risks in the knowledge management systems, some limitations should be acknowledged. First of all, the qualitative part included two focus groups with a small number of participants (eight from Romania and thirteen outside Romania). Even though the participants were professionals with high expertise, the sample couldn't accurately reflect the variety of viewpoints from various industries and cultural environments, which limit how broadly the results can be applied. Secondly, there was an unequal distribution of participants across the industries, as the international group was highly biased towards IT (with only one person from the venture capital sector) and the majority of respondents from Romania were from energy and IT sectors. Due to this imbalance, some knowledge risks may have received more attention than others, which might have led to a lack of coverage or sector-specific vulnerabilities in the industries that were lower represented. Lastly, another limitation might be the size of the sample of the quantitative research, which included only 132 respondents, which might not be fully adequate for covering various sectors, organizational sized or geographic regions.

Regarding the future direction, future research could carry out a larger sample size, that could cover more industries and countries, as this would provide a richer understanding of context-specific knowledge vulnerabilities, from different perspectives. Moreover, by exploring sector-specific or cross-industry comparisons, future research could highlight best practices for knowledge risk management and could incorporate also organizational outcomes, including organizational performance and innovation, in order to better understand the impact of knowledge vulnerabilities and risks on strategic and operational effectiveness.