National University of Political Studies and Public Administration

Doctoral School in Management

# Transactive memory system as a strategical management resource

PhD Thesys Abstract

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**Introduction**

This doctoral thesis explores the Transactive Memory System (TMS) as a strategic management resource, using a mixed-methods approach that integrates both quantitative and qualitative research to examine the premises and impact of TMS development in companies operating in Romania within knowledge-intensive business services (KIBS).

The quantitative research examines the impact of Transactive Memory System (TMS) development on performance indicators such as intellectual capital, employee satisfaction, employee retention (the intention to remain with the company in the coming years), team performance, and the company's market position, as well as the influence that organizational culture values exert on the development of employees' meta-knowledge (ImetaK) and the Transactive Memory System (TMS).

The qualitative approach is used to explore the same aspects related to TMS, with a particular focus on the context of intensive telework in KIBS, a practice triggered by the need to adapt work formats during the Covid-19 pandemic. Within this context, the doctoral research regards remote work and the use of online channels as working tools that amplify the effect of

TMS on organizational values by fostering either alignment or divergence between organizational practice and cultural values and aspirations, with cascading consequences on organizational efficiency and development.

Considering TMS as a strategic resource, the thesis adopts an exploratory approach to investigate companies operating in Romania within knowledge-intensive business services (KIBS), assuming that these organizations are largely dependent on the performance level of TMS, since the work carried out in such companies is highly specialized, making the integration and team-level awareness of each member's expertise all the more important.

The theory of Transactive Memory Systems (TMS) has attracted the attention of researchers across numerous scientific fields and has been predominantly explored in areas such as cognitive psychology, organizational and social psychology, communication, information science, and management (Peltokorpi & Hood, 2019).

The concept of the Transactive Memory System (TMS) was introduced by Daniel Wegner, who described it as a combination of the individual knowledge of group members and the meta-knowledge of 'who knows what' within the group (Wegner, 1987). Since Wegner's initial conceptualization, definitions have evolved to encompass various nuances. While early definitions focused primarily on the cognitive division of labor and the awareness of expertise within a working group, more recent perspectives emphasize the dynamic and interactive nature of these systems, highlighting how communication, coordination, and trust among group members shape their effectiveness (Heavey & Şimşek, 2015). Contemporary definitions acknowledge that transactive memory systems are not static entities but adaptive systems that evolve over time as group members interact, exchange information, and update their knowledge of each other's expertise. The practical implications of understanding and applying transactive memory systems are considerable, particularly in organizational settings. Organizations can leverage this understanding to create teams and working groups that optimize the use of knowledge (Fisher et al., 2015; Lewis, 2018; Olabisi & Peltokorpi, 2014). By identifying individuals with complementary expertise and fostering a culture of open communication and knowledge sharing, organizations can cultivate effective transactive memory systems that enhance problem-solving, decision-making, and innovation. Furthermore, a well-developed transactive memory system can

facilitate the transfer of prior experience to new tasks and promote a deeper understanding of complex domains, leading to sustained performance improvements (Lewis et al., 2005).

Studies in the literature indicate a strong connection between the transactive memory system, knowledge management, and organizational performance across various dimensions such as innovation and creativity, team efficiency, and others (Cao & Ali, 2018; Levi & Askay, 2020; Lewis, 2003).

The theoretical importance of this thesis lies in three dimensions described below, dimensions in which a gap has been identified in the availability of specialized literature:

(1) Research on transactive memory systems has expanded and benefits from a multidisciplinary approach (cognitive psychology, social psychology, organizational management, software development project management, etc.), with a strong impact in the scientific literature and significant applied relevance. Although the most frequent approach is the link between TMS and team performance, we found no studies that explore the analysis of organizational culture and values through the lens of their correlation with organizational performance and the development of transactive memory systems;

(2) The exploration of transactive memory systems in Romanian literature is still at an early stage, with references to TMS found only in industry—specifically in the performance of software development teams—and in cognitive psychology (Curşeu & Rus, 2005);

(3) Since 2020, the increased use of telework in knowledge-intensive sectors has led to transformations in work organization and in the preferences of managers and/or employees, who have continued to use telework even after the lifting of restrictions imposed by the COVID-19 pandemic—either as the default option or in a hybrid format (working from home combined with working on-site). In many cases, employees in knowledge-intensive fields work in teams where members operate in different formats—some on-site, others hybrid, and others fully remote. This situation justifies the investigation of the support that TMS can provide to organizational and team performance under conditions of heightened flexibility in work arrangements. Moreover, the relationship between the development level of the transactive memory system (TMS) operating at the team level and team performance in the context of telework has been scarcely investigated,

despite the fact that, during 2020–2023, the literature placed considerable emphasis on telework under the restrictive measures designed to prevent the spread of SARS-COV-2.

**Research objectives, questions and hypotheses**

Starting from these aspects, the thesis sets out several main objectives, as follows:

O1. To explore the current state, constraints, and opportunities regarding the development of TMS in companies operating in Romania within knowledge-intensive business services (KIBS).

O2. To examine aspects related to remote work in KIBS firms operating in Romania.

O3. To investigate the influence of telework on TMS.

O4. To investigate the relationship between TMS development and aspects related to organizational culture, such as values promoted and manifested in daily practice.

O5. To design and test a research model describing the relationships between TMS and key performance indicators such as intellectual capital, the company's market position, team performance, employee satisfaction, and employee retention (the intention of employees to continue working for the company in the coming years).

O6. To extend the proposed research model and test it in a more complex framework that integrates the web of relationships involved in and generated by the development of the transactive memory system (TMS).

More specifically, objective O6 aims at testing a research model that, on the one hand, encompasses the relationships between TMS, employees' meta-knowledge (ImetaK), and cultivated organizational values (VAL), and on the other hand, the relationships between TMS and the five key performance indicators: intellectual capital, the company's market position, team performance, employee satisfaction, and retention.

In line with the stated objectives, the research addressed both the theoretical dimensions and the practical implications regarding how leaders and managers can support the strengthening of TMS and transform this resource into a strategic advantage.

The research was grounded in a generic research question (Q: What is the impact of developing employees' meta-knowledge (ImetaK) and the Transactive Memory System (TMS) on

the sustainable performance of the organization?), which was further broken down into three specific research questions (Q1, Q2, Q3):

Q1. What is the impact of TMS development on the organization's performance indicators, such as intellectual capital, team performance, employee satisfaction and retention, and the company's market position?

Q2. What is the relationship between employees' meta-knowledge (ImetaK) and TMS?

Q3. What is the relationship between organizational culture values, knowledge sharing, employees' meta-knowledge, and TMS?

Based on the specific research questions Q1, Q2, and Q3, a set of hypotheses was formulated in order to test, on the one hand, the relationships between the level of TMS development and performance indicators, and on the other hand, the enabling role of organizational culture by examining the influence of organizational values on the development of employees' meta-knowledge and on TMS itself.

H1. The development of Transactive Memory Systems (TMS) at the organizational level leads to sustainable performance as follows:

H1a. TMS positively influences the development of intellectual capital.

H1b. TMS positively influences employee satisfaction.

H1c. TMS positively influences team performance.

H1d. TMS positively influences employee retention.

H1e. TMS positively influences the company's market position.

H2. Employees' meta-knowledge (ImetaK) positively influences TMS. The development of employees' meta-knowledge about their work environment and colleagues positively impacts the level of TMS development within the organization.

H3a. Organizational culture values (VAL) influence TMS.

H3b. Organizational culture values (VAL) influence ImetaK.

**Thesis structure**

The thesis is structured into four chapters. The first chapter addresses the concept of the Transactive Memory System (TMS) and conducts a bibliometric analysis of the literature to clarify the direction of investigation. The bibliometric analysis relied on a statistical evaluation of documents on the topic of interest indexed in the Web of Science, containing in their abstract the expression 'transactive memory' along with the terms 'knowledge' and 'performance', for the period 1975–2023, in English, and classified as articles. A detailed analysis was carried out using the bibliometric software VOSviewer (van Eck & Waltman, 2023), which enabled the mapping and visualization of similarities, keyword co-occurrence, citations, and co-citations of sources, highlighting bibliographic coupling as well as prominent authors and their countries of origin. The results of the bibliometric analysis revealed a growing interest in the study of transactive memory systems (TMS), particularly since 2010. The analysis highlighted key concepts related to TMS, such as team performance, organizational performance, and knowledge management, emphasizing the increasing importance of managing intangible resources such as knowledge.

The second chapter reviews the literature with the purpose of presenting the dimensions under investigation (TMS, knowledge, meta-knowledge, intellectual capital, TMS, organizational culture) and of grounding the research hypotheses. The literature indicates that successful organizations rely on intellectual capital to achieve a sustainable competitive advantage (Brătianu et al., 2020), using as a primary resource the exploitation of knowledge assets generated by knowledge workers whose members employ their expertise and experience to solve problems and create added value through innovation and new products (Lewis, 2003). The Transactive Memory System (TMS) is particularly relevant for understanding the processes of knowledge capitalization within teams, as described in the literature (Wegner, 1987; Hollingshead, 2001). TMS enables organizations and their teams to achieve high levels of performance (Peltokorpi & Hood, 2019). The literature emphasizes that specialization, credibility, and coordination among team members are crucial aspects of TMS (Lewis, 2003; Schein, 2010; Levi & Askay, 2020), influencing task and project delivery, efficiency, creativity, innovation, and performance (Anderson, 2014; Cao & Ali, 2018; Lee et al., 2014; Levi & Askay, 2020; Lewis, 2004; Mell et al., 2014; Peltokorpi & Hood, 2019; Zhang et al., 2007; Zheng, 2012). Since we found no studies that explore the analysis of organizational culture and values through the lens of their correlations with organizational

performance via the development of transactive memory systems, we have considered this absence a potential gap to be addressed within the present research.

The third chapter presents the methodology employed, describing the research design, the instruments used, and all details concerning the qualitative and quantitative studies conducted. Methodologically, the study adopts a mixed-methods approach to achieve its objectives, combining exploratory qualitative research (based on in-depth semi-structured interviews collected from 18 participants in the target population) with quantitative research (based on the analysis of data gathered through a questionnaire administered to 103 KIBS representatives operating in Romania). The quantitative research examines the relationship between TMS development and organizational culture values, namely their alignment with operational practices, and further, the impact of TMS on the five performance indicators considered: the company's intellectual capital (IC), market position (Market_position), team performance (Performance), employee satisfaction (Satisfaction), and employee retention (E_Turnover). The qualitative component is used to explore the same aspects related to TMS, with an emphasis on the context of intensive telework in KIBS, a practice triggered by the need to adapt work formats during the Covid-19 pandemic. In the qualitative study, the data obtained from semi-structured interviews are analyzed in terms of content, enhancing the description and specification of the investigated phenomena. In the quantitative study, the data collected through the closed-ended questionnaire are statistically analyzed, thereby increasing the generalizability and validity of the research. The quantitative analysis employs primary data collected via questionnaire, processed with SPSS, and modeled using PLS-SEM to aggregate the research hypotheses into research models M1 and M2 and subsequently test these models.

The fourth chapter presents the results of the qualitative research and the results of the quantitative research, as well as the analysis conducted through structural equation modeling.

Finally, the conclusions are outlined, together with the theoretical and practical contributions, as well as the limitations of the research and the future directions of investigation.

**Findings, conclusions and contribution**

The results of the qualitative research indicated that the digital literacy and prior experience with telework acquired by KIBS employees before the pandemic substantially contributed to maintaining performance levels during the COVID-19 crisis. The transition from office work to

telework occurred without technical difficulties, and the perceived changes were mainly associated with the workspace and adjustments in work processes. However, the factor that differentiated the teams' ability to sustain performance in 12 out of the 18 cases investigated in this study (as compared with the decline in performance in the other 6 cases) was primarily linked to the functionality (versus dysfunctionality) of TMS, reflected in the degree of specialization, credibility, and coordination within the team. Experienced and well-established teams were those able to maintain performance levels, while participants who reported a decline in team performance (6 out of 18) pointed to TMS dysfunctionality at the team level, manifested in problems concerning specialization, credibility, and especially member coordination.

The results indicate that KIBS employees perceive various difficulties associated with telework when it is the only option available (as was the case during the COVID-19 pandemic), which makes them prefer a hybrid solution. The analysis of respondents' statements revealed that most issues revolved around the excessive use of technology-mediated communication, the lack of face-to-face interaction, and the absence of working together with colleagues at the company's premises, all of which negatively affected collaboration, team spirit, and organizational culture. Consequently, organizational culture emerged as a critical issue associated with remote work and the related deficiencies in collaboration and communication. Similarly, the study by Sull and Sull (2020) highlighted the importance of honesty and transparency on the part of leaders during the months of the pandemic. When employees think, speak, and act through screens, effective communication that integrates transparency becomes essential for maintaining trust, engagement, and collaboration (Nadkarni et al., 2021).

Since telework has remained a common practice in KIBS, becoming normalized (as shown in the follow-up stage conducted with respondents between May and June 2023), the continuation of the challenges highlighted in the interviews regarding intensive telework is expected to persist and affect organizational values and the level of TMS development. This occurs through disruptions in communication, collaboration, and coordination with colleagues, as well as in the integration of the expertise held by different team members, which in turn impacts team effectiveness in project delivery and overall performance.

Thus, we can conclude that the results of the qualitative research suggested the opportunity to further investigate, through quantitative analysis, the relationships between TMS and

performance indicators, as well as the connection between TMS and organizational values, particularly the value of collaboration.

The results of the quantitative research confirmed hypotheses H1a, H1b, H1c, H1d, H1e, H2, H3a, and H3b using PLS-SEM modeling.

The analysis of the relationship between TMS and organizational culture focused on the values manifested in the daily practice of KIBS organizations operating in Romania, with particular attention to the value of collaboration, since our qualitative findings indicated a clear link between fostering collaboration as an organizational value and the development of TMS.

The results showed that an organizational culture focused on collaboration positively influences communication and the sharing (both formal and informal) of knowledge within the organization, which in turn positively affects ImetaK (the level of employees' meta-knowledge about their work environment and colleagues), as well as the level of development of the transactive memory system (TMS) at both team and organizational levels. The findings indicate that a collaborative culture within the organization enhances the development of TMS both directly (the direct effect of VAL on TMS) and indirectly through the improvement of employees' meta-knowledge. The quantitative research results revealed statistically significant positive influences of TMS on all the dimensions analyzed. Moreover, the results highlight a multitude of beneficial indirect effects that the organizational value of collaboration (VAL) exerts on all variables in the model, with particular emphasis on the size of its indirect effect on intellectual capital and team performance.

For data analysis, the statistical software SmartPLS was employed, applying structural equation modeling (SEM) using the partial least squares method (PLS-SEM) in accordance with methodological standards (Hair et al., 2019) to test the adequacy of the measurement model and subsequently evaluate the relationships among the constructs considered. In the first stage, the measurement model was assessed, followed by the evaluation of the structural model in the second stage. The quality of the measurement model was tested according to the PLS-SEM approach (Chin, 1998; 2010; Hait et al., 2019; Henseler & Sarstedt, 2013; Hu & Bentler, 1998) by examining convergent validity, discriminant validity, and internal consistency.

The analysis of the structural model indicated that TMS has a significant positive effect on each of the five performance indicators considered, through the constructs included in the model. The results show that TMS development has a significant impact on organizational performance, positively influencing the growth of intellectual capital (H1a), the improvement of employee satisfaction (H1b), team performance (H1c), employee retention (H1d), and the company's market position (H1e). Thus, the outcome of the structural model analysis provides an integrated perspective on how TMS contributes to the sustainable performance of the organization, highlighting the importance of effectively managing collective memory within the organizational environment.

In conclusion, the quantitative research revealed the positive impact of the organizational value of collaboration, with its cultivation facilitating the development of employees' meta-knowledge and TMS, as well as the impact of TMS development on organizational performance across all dimensions.

The statistical analysis supports hypotheses H2, H3a, and H3b, providing results consistent with the indications in the literature (Abdulabaass & Jasim, 2017), which show that the development of meta-knowledge entails a better awareness and understanding of one's own cognitive skills and capacities as well as those of teammates, being crucial for effective learning, problem-solving, and decision-making in complex organizational environments (Avedisian & Bennet, 2010). When organizational values promote collaboration, employees are more likely to engage in knowledge-sharing activities, learning together with colleagues, and collective problem-solving, thereby fostering a deeper understanding of the expertise and capabilities available within their teams (Brauner & Becker, 2006). Such a collaborative environment facilitates the development of meta-knowledge, as individuals gain insights into their strengths and weaknesses in relation to others, enabling them to better leverage their knowledge and seek assistance when necessary (Wang & Noe, 2009). Transactive memory systems, understood as the collective cognitive system formed by individuals' knowledge and their awareness of 'who knows what' within the group, are essential for the effective use of knowledge and coordination in organizations. Organizational values oriented toward collaboration encourage the development of strong interpersonal relationships, trust, and communication channels, which are crucial for forming and maintaining transactive memory systems. Employees are more inclined to openly

share their knowledge, expertise, and experiences when they feel valued, respected, and supported by their colleagues and the organization as a whole. This collaborative sharing of knowledge leads to a more evenly distributed and interconnected understanding of the organization's knowledge base, allowing individuals to quickly access the information and expertise they need to perform their tasks efficiently. Moreover, collaborative values promote a culture of continuous learning and improvement, in which employees are encouraged to seek feedback, experiment with new ideas, and learn from both successful and failed situations (Syifa & Ahman, 2022). Therefore, the indications of the literature support our research findings, which suggest that a culture of collaboration, characterized by open communication and respect, facilitates the development of TMS.

With regard to the impact of the Transactive Memory System (TMS) on organizational performance, the hypotheses (H1a, H1b, H1c, H1d, H1e) are confirmed by the results of the PLS-SEM analysis. The findings of the quantitative research show that TMS development has positive effects on key organizational performance indicators, such as the growth of intellectual capital (H1a), improvement of employee satisfaction (H1b), team performance (H1c), employee retention (H1d), and the company's market position (H1e). The results provide an integrated perspective on how TMS contributes to the sustainable performance of the organization, aligning with previous studies that have highlighted the improvement of intellectual capital (Heavey & Şimşek, 2015). It should also be noted that the knowledge management literature posits that performance differences among firms are mainly due to their unique assets and mechanisms for managing knowledge (Kianto et al., 2014), with transactive memory systems forming part of these mechanisms. TMS represents a sophisticated, distributed cognitive system that facilitates the encoding, storage, retrieval, and communication of knowledge within a group (Ardichvili et al., 2003), thereby surpassing individually held knowledge and creating a shared understanding of 'who knows what' within the group (Brauner & Becker, 2006). As highlighted in the literature (Ishak et al., 2010; Mohammed et al., 2019), this shared awareness enables members to access and utilize expertise efficiently, with a well-developed TMS leading to improved coordination, reduced redundancy, and more effective problem-solving.

Consistent with the results of the quantitative research, the literature shows that TMS development facilitates strategic management by providing a structured approach to setting

objectives, allocating resources, and monitoring performance. Enhanced communication channels ensure that all stakeholders are aligned with organizational goals, which leads to improved decision-making and problem-solving, and consequently drives improvements in organizational performance (Chuang & Lin, 2010).

In conclusion, this doctoral thesis provides a theoretical perspective corroborated with an empirical investigation of the premises and impact of developing transactive memory systems (TMS) in companies operating within knowledge-intensive business services (KIBS) in Romania.

The thesis contributes to the understanding of how the development of the Transactive Memory System (TMS) influences organizational performance, as well as the complex relationships among organizational culture, employees' meta-knowledge, and TMS. In doing so, the work addresses a gap in the literature by offering an integrated research model that, on the one hand, examines the relationships between TMS, employees' meta-knowledge, and the cultivation of certain organizational values such as collaboration, and, on the other hand, measures the relationships between TMS, intellectual capital, the company's market position, team performance, employee satisfaction, and retention. In this regard, the research questions and hypotheses were designed precisely to shape such an integrated model through a two-step design approach, gradually guiding the process of identifying and testing the relationships among these concepts.

The main aspects that highlight the theoretical contributions of this doctoral thesis are closely tied to the hypotheses tested and confirmed through the quantitative research.

A first aspect concerns clarifying the impact of the Transactive Memory System (TMS) on organizational performance. The research demonstrates that TMS development is not merely a theoretical concept but has concrete and positive effects on key organizational performance indicators, such as the growth of intellectual capital (H1a), the improvement of employee satisfaction (H1b), team performance (H1c), employee retention (H1d), and the company's market position (H1e). Thus, the study provides an integrated perspective on how TMS contributes to the sustainable performance of the organization, underlining the importance of effectively managing collective memory in organizational contexts.

A second aspect concerns highlighting the role of employees' meta-knowledge in the development of TMS. Through hypothesis H2, the research brings to the forefront the importance of meta-knowledge (ImetaK) as a predictor of the level of TMS development, emphasizing that employees who have a deep and reflective understanding of their work environment and their colleagues can foster the development of the transactive memory system, thereby enhancing the organization's capacity to manage and use knowledge effectively.

The third aspect refers to the integration of organizational culture, illustrating the interconnections among a culture of collaboration, meta-knowledge, transactive memory systems, and performance, which provide a holistic perspective on how organizations can foster innovation and adaptability by leveraging human capital. Thus, the testing of hypotheses H3a and H3b makes an important contribution by highlighting how organizational culture values (particularly collaboration) influence both TMS and employees' meta-knowledge. The study shows that organizational values such as collaboration create a climate of trust and open communication, facilitating both formal and informal knowledge sharing and, implicitly, the development of meta-knowledge and TMS.

The fourth aspect concerns the methodological contribution, by proposing a set of instruments attached to an integrated model that links organizational culture values to performance indicators through the mediators ImetaK (employees' meta-knowledge) and TMS (transactive memory system), thereby offering an empirical model for future studies.

The practical implications of understanding and applying transactive memory systems are considerable in organizational settings. As the literature indicates (Fisher et al., 2015; Lewis, 2018; Olabisi & Peltokorpi, 2014), organizations can use this understanding to create teams and working groups that optimize knowledge utilization.

By offering valuable insights into knowledge management and collaborative problem-solving within teams, TMS emphasizes the exchange of information and resources among team members, improving team performance by optimizing the mechanisms through which members access, modify, and 'validate' shared knowledge (Day et al., 2004; Heavey & Şimşek, 2015; Layek & Koodamara, 2024). Communication serves as the mechanism through which team members share their individual knowledge, build a shared understanding of the problem, and coordinate their actions (Perry et al., 2021).

Teams that develop TMS are more likely to establish clear goals and expectations, monitor individual progress, and provide timely feedback, thereby promoting adherence to standards and potentially enhancing overall efficiency (Aarons, 2006; Dong, 2023).

Limitations and Future Directions — The limitations of the research go hand in hand with its main contribution, namely the advancement of an integrated model that links organizational culture values to performance indicators through the mediators ImetaK (employees' meta-knowledge) and TMS (transactive memory system). Thus, our study conducted an in-depth analysis only of the organizational value of collaboration, highlighting the future direction of carrying out similar analyses for other values.

Additional limitations may be associated with the chosen conceptual and methodological approach, particularly the cross-sectional research design. Therefore, future studies could test the relationships analyzed in this study by investigating other sectors or geographical regions, as well as by employing longitudinal research to capture their evolution over time.