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Metacognitive Regularities and Their Future Implications for Knowledge Management Theory: A Systematic Review

Khadija Muhammad Hussain Marvi
kmarvi85@gmail.com , fa25p1-edu-002@fjwu.edu.pk
Ph.D. Scholar, Department of Education, Fatima Jinnah Women University, Rawalpindi

Dr. Malik Ghulam Behlol
ghulambehlol@fjwu.edu.pk
Dean/Professor, Department of Education, Fatima Jinnah Women University, Rawalpindi

Qanita Ahmed
qanitaahmed123@gmail.com , fa25p1-edu-001@fjwu.edu.pk
Ph.D. Scholar, Department of Education, Fatima Jinnah Women University, Rawalpindi

Sonia Rani
soniarani1113@gmail.com
MPhil Scholar, National University of Modern Languages Islamabad
Corresponding Author: * Khadija Muhammad Hussain Marvi kmarvi85@gmail.com , fa25p1-edu-002@fjwu.edu.pk

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ABSTRACT

This literature review studies the developing landscape of metacognitive regularities and explores how do metacognitive regularities, such as planning, monitoring, and evaluation, hold implications for tomorrow within the framework of knowledge management theory? The review highlights a growing scholarly shift toward integrating cognitive and behavioural insights into Knowledge Management (KM) frameworks, emphasizing how metacognitive regularities shape knowledge flows. It argues that future Knowledge Management theory will increasingly incorporate metacognitive regularity pathways. It explores how these metacognitive regulation processes influence KM activities, including building, applying, and sharing, storing, and holding knowledge. The study synthesizes literature from 2000 to 2025, highlighting a growing integration of metacognitive insights into KM frameworks. Review reveal that metacognitive planning strategically guides knowledge creation, monitoring enhances the application and sharing of knowledge, and evaluation supports effective knowledge storage and retention. Article reviewed evidence indicates that metacognitive regulation improves organizational learning, adaptive decision-making, and collaborative knowledge practices, though monitoring predominates over planning and evaluation. The findings advocate for structured metacognitive training in educational and organizational settings to enhance knowledge sustainability and institutional readiness. It concludes that implanting metacognitive regularities into KM systems can foster more adaptive, reflective, and sustainable knowledge practices. Future research should focus on longitudinal, cross-cultural studies and the role of digital tools in supporting metacognitive regularity informed KM Practically.

Keywords: *Metacognitive Regularities, Planning, Monitoring, Evaluation, Knowledge Management, Building Knowledge, Apply Knowledge, Share Knowledge, Store Knowledge, Holding Knowledge*

INTRODUCTION

Global interest in realizing has increased due to the rise of knowledge-driven institutions. The present review critically creates literature on metacognitive regularities and Knowledge Management (KM)

theory to sightsee their future implications. The question of current study; how do metacognitive regularities, such as; planning, monitoring and evaluation, hold implications for tomorrow within the framework of knowledge management theory? addressing study aims to clarify how integrating metacognitive regularities into KM frameworks can enhance learning, organizational performance, and knowledge sustainability in tomorrow's complex KM landscape and achieved deep clarification through study's objective; Critical review of literature related to metacognitive regularities and knowledge management theory's {Building Knowledge, Apply Knowledge, Share Knowledge, Store Knowledge, and Holding Knowledge} and their implications.

Metacognitive regularities the capacity to planning is the managerial process of setting objectives, determining the steps to achieve them, and creating coordinated plans and schedules to guide resource allocation and decision-making (Robbins, & Coulter, 2021), monitoring is the act of observing something and sometimes keeping a record of it and the process of determining how effectively something functions by examining its outcomes, efficacy, and influence is called evaluation, monitoring and evaluation are critical elements of implementation of process management (Mutune & Gatobu, 2024), one's cognitive processes has therefore become a foundational concept across knowledge management. Metacognition, often described as "thinking about thinking," has become a central theme in educational philosophy of mind and metacognitive regularities have been demonstrated to promote greater understanding in educational settings. It help people make sense of their beliefs, incorporate new knowledge, and modify their approach in response to new difficulties. The broader goals of knowledge management (KM) have become firmly connected to the cognitive processes that support knowledge management. Knowledge management theory places more emphasis on, building knowledge; it is the creation or acquisition of new information (James, 2013), applying knowledge; it is in practical contexts to successfully solve issues and reach decisions (Rumesh, 2003), sharing knowledge; it is a transmission or exchange (Mohammed, Nour, Noufou, & Nabeel, 2021), storing knowledge; it is maintaining information in an organized, easily accessible format for future search and usage (Paivi & Kirsi, 2012), and holding knowledge; it is frameworks for managing knowledge that underlie these activities (Nando, Melvyn, & Mien, 2021).

The problem statement of this study was (KM) systems are essentially dependent on how people and groups think about their thinking, including how they determine what they know, evaluate what they need to know, and control the methods they employ to interact with knowledge. The KM frameworks run a chance of being incomplete and ignoring human cognitive mechanisms if metacognitive features are not incorporated. Heba and Anas (2025) stated that in today's world, where knowledge is a key asset for organizations, the success of knowledge management (KM) depends greatly on how individuals and groups think about, monitor, and control their own thinking processes. Although KM theory provides frameworks for building, applying, storing, sharing, and holding knowledge, it often overlooks the cognitive and metacognitive regularities that support these activities. There is still a major gap in understanding how metacognitive regularity interact with KM practices, and how combining the two can improve decision-making, innovation, and learning in organizations or educational settings (Mohsin & Allahbaksh, 2025). Designing knowledge systems that are forward-thinking, flexible, and able to enable sustainable performance in corporate and educational settings requires addressing this gap. Therefore, Heillyn, Mayela, and Sandra (2020) stated that it is important to explore how linking metacognitive regularities with KM theory can make knowledge-based practices more effective and sustainable.

The rationale of the study explains that, in the twenty-first century, the increasing complexity of knowledge processing, digital environments, and self-directed learning has intensified the need for individuals to develop awareness of their cognitive processes and regulate them effectively. Self-governing choice fosters personal responsibility, guiding one's actions according to individual moral sentiments and worldview (Valery, 2008). In this context, metacognitive regularities can support transformative sustainability knowledge. Integrating metacognition with academic content enables future

instructors to recognize the significance of their contributions to sustainability and to broader educational goals (Jesica, 2020). Exposure to different methods aims to promote individuals' knowledge analysis and clarification of their own conceptions of classroom instruction, particularly as these conceptions are reflected in their instructional practices (Alberta, Jeanett, & Veronica, 2005). The study signifies the relevance of knowledge management theory to modern metacognitive regularities. According to Mohsin and Allahbaksh (2025) stated that institutions are leveraging modern technologies along with innovative knowledge and skills to improve their productivity and sustainability performance. The conceptual overview is the metacognitive regularities are key individual factors in independent working, as they shape how knowledge is reorganized and reconstructed. Learners' ability to apply these strategies flexibly and effectively directly impacts their autonomy (Xiao-Fang, 2016). Finally, this discussion highlights the broader applicability of knowledge Management theory to modern educational, professional. By situating Socratic insights of knowledge within present-day metacognitive regularities, the study underscores the enduring relevance of ancient philosophy in utilize knowledge.

Additionally, the growing emphasis on knowledge-driven institutions and the evolving educational demands within national, the integration of metacognitive regularities into knowledge management theory offers a particularly valuable pathway for strengthening both academic and institutional performance. This systematic review not only addresses existing gaps in how knowledge is understood and utilized but also empowers educators, students, and institutions in the country to develop stronger, future-ready frameworks that raise learning, improve decision-making, and enhance long-term intellectual and institutional growth.

LITERATURE REVIEW

The systematic review process began with a novice conceptual framework, titled Metacognitive Regularities Implication for Knowledge Management. This framework guided the reviewer in identifying the main theories and constructs that underlie the phenomenon. As studies were analyzed, emerging patterns and theoretical relationships allowed for the refinement of the conceptual model. Interpretation of the synthesized results aims to inform and educate decision-makers about the feasible implications of different choices across diverse contexts. Following PRISMA ensured that the search, selection, and synthesis processes were transparent, replicable, and aligned with international standards for evidence-based reviews.

Overview of metacognitive regularities and knowledge management

The intersection of knowledge management (KM) theory and metacognitive regulation provides a rich ground for exploring how individual cognitive processes influence organizational knowledge practices. KM literature encompasses foundational theories, implementation frameworks, and performance measurement models, emphasizing cyclical processes of knowledge creation, storage, retrieval, transfer, and application (Maryam & Dorothy, 2001). Subsequent extensions have situated KM within broader disciplinary perspectives, including economics, strategic management, and organizational behavior (Richard & Alina, 2006), while implementation strategies and evaluation metrics have been further elaborated by Alton (2003), Jinette (2000), and Ranjit (2004). Empirical studies demonstrate KM applications across corporate and public-sector contexts (Jenny, 2003; Bhojaraju, 2005), highlighting the evolution from early technology-driven, codification-focused approaches toward socio-technical models that balance organizational, technological, and human dimensions (Alexia, & Athanassions, 2014; Karl, 1997). This literature also underscores persistent tensions between codification and personalization strategies (Christine, Timothy, David, & Anne, 2002; lee, kim, and kim, 2012) and challenges related to security, cross-cultural adaptability, and conceptual clarity (Ebrahim, 2006; Steven, 2005). Within this context, metacognitive processes specifically planning, monitoring, and evaluation emerge as critical mechanisms with implications for the future of KM practices. By shaping how knowledge is processed,

applied, and refined, these metacognitive regularities can enhance organizational learning, inform adaptive strategies, and support more effective KM implementations, bridging the gap between individual cognitive regulation and collective knowledge performance (Jennex and Olfman, 2005, 2006; Ranjit, 2004). Consequently, integrating metacognitive insights into KM frameworks offers a promising pathway for advancing both theoretical understanding and practical applications, ensuring that knowledge-driven organizations remain responsive and innovative in dynamic environments.

Within the framework of knowledge management (KM) theory, metacognitive regularities specifically planning, monitoring, and evaluation play a critical role in shaping individual and collective learning processes with implications for future knowledge practices. Developmental research indicates that metacognitive regulation emerges early in life, with infants and young children demonstrating foundational capacities that continue to develop through formal education (Michael, 2024). Empirical studies in higher education reveal that a substantial proportion of students, for example in introductory biology, exhibit only emerging metacognitive competencies, which vary across disciplines and are particularly distinct between domains such as biology and organic chemistry (Julie, Xyanthe, & Neider, 2015). Structured scaffolds, notably problematizing approaches, have been shown to enhance monitoring and promote autonomous regulation within peer-learning contexts, thereby facilitating the co-construction and management of knowledge (Liesje, Hilde, & Martin, 2016). Moreover, metacognitive accuracy has been linked to higher creative, analytical, and academic performance across multiple disciplines (Kamila, & Marek, 2024; Nanzhe and Nurbiha, 2023), with convergent evidence from mathematics, science, and language studies supporting the positive impact of metacognitive regulation across age groups, including populations with attention-related challenges (Haoyuan, Yang, Yuanke, Jie, Chongbo, JinDao, Weiyang, 2021). Measurement tools such as the Jr. MAI, verbal protocols, and judgments of knowing (JOKs) exhibit varying convergent validity, reflecting the complexity of capturing metacognitive processes (Cristina & Timothy, 2023). Neuroscientific findings implicate mid-frontal structures, including the anterior cingulate cortex, in the executive control of metacognitive processes (Fernandez-Duque, Baird, and Posner, 2000), while recent cross-disciplinary and cross-cultural studies demonstrate that metacognitive regulation operates not only at the individual level but also socially and collectively, influencing task execution, content monitoring, and shared knowledge construction in collaborative learning environments (Joachim, Xenia, Corinna, & Jens, 2025). Collectively, these findings suggest that integrating metacognitive regularities into KM frameworks can enhance the anticipation, organization, and utilization of knowledge, thereby supporting adaptive learning systems and informed decision-making for the future.

Metacognitive Regularities

Metacognitive regularities refer to consistent patterns in the way individuals think about and regulate their own cognitive processes (Hans & Franz, 2025). These patterns can manifest in habits, strategies, or routines that people consistently use when learning, problem-solving, or making decisions. Elif and Semiha (2024) Recognizing these regularities allows individuals to become more aware of how they approach tasks and identify both strengths and weaknesses in their thinking processes by understanding these patterns, learners can predict how they are likely to respond to new challenges and adjust their strategies accordingly, leading to more effective and efficient learning outcomes.

Planning

Planning is the first key component of metacognition and involves setting goals, selecting strategies, and organizing resources before engaging in a task. Effective planning requires individuals to anticipate the steps needed to achieve a goal and consider potential obstacles that may arise. Naga, Durga, Koteswararao, Himabindu, Sharadha, and Thinagaran (225) stated that carefully planning, learners can allocate time and effort more efficiently, prioritize tasks, and choose approaches that are most likely to

lead to success. Planning not only helps in managing tasks but also enhances self-awareness, as it requires reflecting on past experiences and knowledge to make informed decisions about future actions (Paul & Ian, 2021).

Monitoring

Monitoring is the ongoing process of observing and assessing one's cognitive performance while engaging in a task. Paolo, Marco, Jochen, Chiara, Fabrizio (2024) stated that effective monitoring helps learners detect errors, identify gaps in understanding, and make real-time adjustments to strategies or approaches. By actively tracking progress, individuals maintain control over their learning and avoid repeating ineffective methods. Seung, Duck, Seung (2017) stated that monitoring also reinforces self-awareness by providing immediate feedback on how well one's thinking aligns with the goals set during the planning phase.

Evaluation

Evaluation is the reflective process that occurs after completing a task or learning activity, where individuals assess the effectiveness of their strategies and outcomes (Bruno, Sara, Josefien, Tom, & Guy, 2012). During evaluation, learners consider what worked, what didn't, and why, allowing them to refine future approaches. Orion, Benjamin, Sean, Kyle, Arman, Benjamin, Dawn, and Luca (2025) stated that this stage is critical for developing long-term learning skills because it promotes insight into personal strengths, weaknesses, and preferred strategies. By systematically evaluating performance, individuals can create a feedback loop that informs future planning and monitoring, ultimately improving overall cognitive performance and fostering lifelong learning habits.

Knowledge Management

The Knowledge Management framework emphasizes the continuous cycle of creating, sharing, storing, and utilizing knowledge to improve decision-making, innovation, and overall organizational performance (Denise, 2007). By categorizing knowledge management into specific stages, the framework allows organizations to identify gaps in knowledge processes and implement strategies to enhance efficiency. David, Maksim, Rosa, and Erik (2020) highlights the importance of both knowledge management, which can be documented, and tacit knowledge, which resides in individuals' experiences and expertise.

Building Knowledge

Building knowledge is the foundational step in the KM framework, focusing on the generation of new insights, skills, and information within an organization (Cindy, Hmelo, & Howard, 2008). This can occur through research and development, employee innovation, observation of market trends, or collaboration with external partners. Building knowledge involves capturing tacit knowledge from experienced staff and converting it into categorical knowledge that can be shared and applied. It encourages a culture of continuous learning, experimentation, and curiosity, ensuring that the organization remains adaptive to changes in technology, customer needs, and industry trends (Seng, Carol, Katerine, Leanne, Marlene, & Carl, 2021).

Apply Knowledge

Applying knowledge refers to the process of utilizing the acquired information and expertise to solve problems, improve processes, or make informed decisions (Rosalind, 2000). Knowledge application ensures that the organization benefits from its intellectual assets rather than simply storing them. Effective application requires that knowledge be relevant, accessible, and aligned with organizational goals. Mostafa, Vitality, and Adzhar (2019) stated that this stage also emphasizes performance measurement and

feedback mechanisms to assess how knowledge contributes to outcomes and where adjustments may be necessary to maximize impact.

Sharing Knowledge

Sharing knowledge is the practice of disseminating information and insights across teams, departments, and even with external stakeholders (Paavo, Heidi, Snejina, & Kenneth, 2015). This step enhances collaboration, reduces redundancy, and promotes innovation by allowing individuals to build upon each other's expertise. Methods of sharing knowledge can include formal training sessions, workshops, mentoring programs, online knowledge repositories, and collaborative digital platforms (Mark, Juri, Volkmar, & Volker, 2013). A culture that encourages openness and communication is critical for effective knowledge sharing, as it ensures that valuable insights are not showed within specific groups or individuals.

Storing Knowledge

Storing knowledge focuses on capturing and maintaining both clear and understood knowledge in a accessible manner (Petra, Guadalupe, & Victoria, 2020). This can include databases, document management systems, digital libraries, or cloud-based platforms. George (2022) stated that proper storage ensures that knowledge remains available for future use, reduces the risk of loss due to employee turnover, and supports organizational continuity. Security, indexing, and regular updating are important aspects of this stage, as they guarantee that stored knowledge remains accurate, relevant, and protected against unauthorized access.

Holding Knowledge

Holding knowledge refers to the long-term retention and preservation of organizational knowledge, emphasizing the strategic management of intellectual assets. This involves creating mechanisms to ensure that critical knowledge is retained within the organization despite staff changes, technological evolution, or market shifts. Nando, Mien, Melvyn, and Barry (2025) stated that holding knowledge also includes maintaining institutional memory, protecting proprietary knowledge, and leveraging historical insights to inform future decision-making. Heather, Deborah, and Steven (2008) stated that teachers who successfully hold knowledge are better positioned to sustain competitive advantage and ensure continuity across generations of employees.

Planning Relates to Building Knowledge

Planning, as a metacognitive regularities, involves setting goals, anticipating challenges, and deciding on strategies before engaging in learning or problem-solving. Yvonne (2007) stated the context of knowledge management, building knowledge refers to the process of creating, acquiring, or capturing new information and insights within an organization. The interconnection between planning and knowledge building lies in how planning helps determine what knowledge needs to be developed, the methods for gathering it, and the tools required for effective creation. For instance, a team may plan a research project by identifying knowledge gaps, allocating resources, and designing experiments, thereby directly contributing to organizational knowledge (Gizem, 2022). In essence, planning ensures that knowledge-building efforts are strategic and purposeful, rather than random or inefficient.

Monitoring Aligns with Applying and Sharing Knowledge

Monitoring, as a metacognitive regularities, involves the ongoing assessment of one's understanding and performance, checking for errors, and adjusting strategies as needed. In knowledge management, applying knowledge refers to using insights in real-world contexts, while sharing knowledge involves disseminating information to others within or outside the organization (Joshua, Naomi, John, & Reuben,

2025). Limpho (2024) stated that the connection between monitoring and these activities lies in the ability to assess whether knowledge application is effective and to identify when adjustments are necessary. Monitoring also guides how knowledge should be communicated to ensure it is accurate, actionable, and impactful. For example, during a project, monitoring progress can reveal best practices worth documenting and sharing, as well as mistakes to avoid. Overall, monitoring ensures that the application and sharing of knowledge remain effective, relevant, and continually improved.

Evaluation Supports Storing and Holding Knowledge

Evaluation, as a metacognitive regularities, involves reflecting on outcomes, judging success, and understanding what worked or did not. Fernando (2002) stated that knowledge management, storing and holding knowledge refers to organizing, archiving, and preserving information for future retrieval. The interconnection between evaluation and knowledge storage lies in determining what knowledge is valuable and worth preserving, as well as how it should be organized for future use. Tabata, Jose, Fabiano, Rafael and Anna (2021) stated that after completing a project, teams can evaluate lessons learned, decide which insights to document, and store them in knowledge repositories for others to access. This process prevents knowledge loss and strengthens organizational memory. Inclusive, evaluation guides the selection and organization of knowledge for long-term retention and future applicability.

Implications of Metacognitive Regularities for Tomorrow's Knowledge Management Theory

Knowledge Management (KM) literature consistently portrays knowledge as a dynamic, socially embedded, and distributed phenomenon encompassing tacit, implicit, and explicit forms (Nonaka & Takeuchi, 1995; Maryam & Dorothy, 2001; Richard & Alina, 2006; Fei, Meng & Steve, 2008). Tacit knowledge, being experiential and context-bound, contrasts with explicit knowledge, which can be codified, stored, and disseminated through technological systems (Alton, 2003; Bhojaraju, 2005). Scholars highlight the inherently social and evolving nature of knowledge, emphasizing its continuous creation, integration, and application within organizational settings (Claire, 2002; Joseph & Mark, 2005). KM processes including creation, storage/retrieval, transfer, and application depend on organizational enablers such as culture, leadership, collaboration, and IT infrastructure (Maryam & Dorothy, 2001; Nonaka & Takeuchi; Ranjit, 2004; Jenny, 2003; Richard & Alina, 2006). Strategies for managing knowledge, as typified by Earl's (Kristen & Lisa, 2001) taxonomies, demonstrate differential alignment with tacit versus explicit knowledge forms (Alton, 2003). Measurement of KM effectiveness remains complex, with frameworks such as the Balanced Scorecard, Skandia Navigator, EVA, and behavioral models attempting to capture its intangible outcomes (Ranjit, 2004; Jenny, 2003; Jinette, 2000), while integrated infrastructure and strategic alignment emerge as critical success factors (Jennex & Olfman, 2005; 2006). Within this framework, metacognitive regularities encompassing planning, monitoring, and evaluation can be conceptualized as mechanisms that facilitate the effective management and utilization of knowledge, enabling organizations to anticipate future challenges and adapt dynamically. By structuring reflective practices around these metacognitive dimensions, KM theory suggests that knowledge-intensive processes can not only be optimized for current operations but also provide strategic foresight, enhancing organizational learning, innovation, and future readiness (Lee et al., 2012; Claire, 2002).

Metacognitive regularities (MR) comprising planning, monitoring, and evaluation exert robust and consistent effects on learning across multiple disciplines, offering significant implications for knowledge management theory. Problematizing scaffolds have been shown to enhance comprehension monitoring and increase tutee-initiated regulation, while metacognitive prompts facilitate strategy adoption, such as a 37% increase in organic chemistry (Liesje, Hilde, & Martin, 2012; Katherine, Julia, Nikita, Nelson, Max, & Anne, 2023). High levels of metacognitive regulation are strongly associated with critical thinking, creative idea selection in children, and academic achievement in mathematics and science (Mohamad &

Norulhuda, 2020; Georgia, & Maria 2017). Empirical evidence indicates discipline-specific patterns: biology students cluster across four MR levels (Julie et al., 2015), whereas chemistry students demonstrate higher monitoring awareness, suggesting differential integration of MR in learning contexts. MR manifests in multiple forms including VMSR, MOR, SSMR, and IMR with SSMR predominating in complex professional environments and higher-level content regulation appearing in 50–84% of cases (Tuike, Simone, Cheryl, & Milo, 2021; Erika, Tuike, Reetta, & Mari, 2025). Functional analysis shows monitoring overwhelmingly dominates MR processes (75-91%), while planning (3-8%) and evaluation (5-20%) are comparatively underrepresented (Erika et al., 2025; Joachim et al., 2025). Developmentally, metacognitive agency emerges as early as ages 3-4, following the maturation of executive functions (Michael, 2024; Rosa, Michela, & Alessandro, 2013). Measurement approaches remain varied: verbal protocols provide rich qualitative detail, whereas questionnaires risk conflating metacognitive skills, and judgments of knowledge (JOKs) primarily assess concurrent rather than retrospective monitoring (Nelson & Narens, 1990; Cristina & Timothy, 2023). Within the framework of knowledge management theory, these findings suggest that structured support for monitoring and evaluation can optimize the identification, organization, and application of knowledge, thereby enhancing both individual learning and collective knowledge processes in contemporary and future contexts.

Emerging Patterns in Cross-Study

Across both knowledge management (KM) and metacognitive regulation (MR) research, clear cross-study patterns show that planning, monitoring, and evaluation function as core regulatory processes that determine learning effectiveness at both the individual and organizational level. KM studies emphasize that successful initiatives require strategic alignment, cultural support, leadership commitment, and process-focused approaches rather than technology-driven solutions (Alton, 2003; Jinette, 2000; Bhojaraju, 2005; Maryam & Dorothy, 2001; Joseph & Mark, 2005). Similarly, MR findings show that planning and monitoring predict performance (Theerapong, Chin, & Hsin, 2021; Julie et al., 2015; Katherine et al., 2023), effective scaffolding enhances regulation (Liesje et al., 2016; Gaston, Alma, & Leonardo, 2022), and shared regulation strengthens collective outcomes (Liesje et al., 2016; Nanzhe & Nurbiha, 2023; Tuike, Simone, Erno, & Marja, 2015). Both literatures also converge on persistent measurement challenges (Ranjit, 2004; Jenny, 2003; Arisha & Ragab, 2012; Tuike et al., 2021; Erika et al., 2025) and the developmental nature of regulatory capabilities at individual and organizational scales. Together, these patterns suggest that metacognitive regularities provide a conceptual blueprint for the future of KM. Just as learners regulate their cognition through planning, monitoring, and evaluation, tomorrow's KM systems must support organizations in regulating their knowledge processes not just storing knowledge but continuously assessing alignment, detecting breakdowns, and refining strategies. Insights from MR on scaffolding, shared regulation, and self-efficacy indicate that effective KM will depend on reflective cultures, collaborative monitoring, and adaptive learning structures. In essence, advancing KM theory will require embracing metacognitive processes as the organizing logic for how knowledge is created, shared, evaluated, and improved across the organization.

Lack of Completion in the Literature

Both Knowledge Management (KM) and Metacognition Research (MR) face significant limitations that constrain their theoretical and practical development. Measurement remains fragmented in both fields, with KM lacking standardized metrics and often relying on anecdotal frameworks, and MR employing inconsistent tools with minimal cross-method alignment, while longitudinal evidence is scarce (Ranjit, 2004; Jenny, 2003; Alton, 2003; Richard & Alina, 2006; Veenman et al.; Cristina & Timothy, 2023; Joachim et al., 2025). Cultural and contextual biases further restrict both domains, as KM models are predominantly Western and corporate-centric, and MR lacks sufficient cross-cultural research (Jenny, 2003; Jinette, 2000; Alexia, & Athanassions, 2014; Tuike et al., 2021). Emotional and ethical dimensions

remain underexplored, with KM neglecting issues such as emotions, privacy, power, and ownership, and MR overlooking affective influences on monitoring and regulation (Claire, 2002; Ebrahim, 2006; Anastasia, 2014). Integration with emerging technologies is limited, with KM referencing AI and analytics but lacking empirical development, and MR underexamining digital scaffolding (Maryam & Dorothy, 2001; Richad & Alina, 2006; Nanzhe & Nurbiha, 2023). Both fields show weak attention to micro-level cognition: KM emphasizes organizational structures over individual cognition, while MR struggles with cross-domain transfer and diverse representation (Joseph & Mark, 2005; Katherine et al. 2023; Haoyuan, et al., 2021). Understanding of group-level regulation is also insufficient, as KM research rarely addresses team-level failures and power dynamics, and MR lacks clarity on transitions from individual to socially shared metacognition (John, 2002; Anand & Singh, 2011; Liesje, Hilde, & Martin, 2015; Tuike et al., 2021). Finally, both domains neglect failure and sustainability analyses, with KM rarely examining long-term impacts and MR overlooking regulatory breakdowns and developmental trajectories (Anand & Singh, 2011; Ranjit, 2004; Julie et al., 2015). These converging limitations underscore the need for more difficult, integrative, and contextually sensitive research approaches in both KM and MR.

The objective, Critical review of literature related to metacognitive regularities and knowledge management theory's {Building Knowledge, Apply Knowledge, Share Knowledge, Store Knowledge, and Holding Knowledge} and their implications, achieved, such as;

Interpretation of the review

This review highlights the integral role of metacognitive regularities (MR) planning, monitoring, and evaluation in shaping knowledge management (KM) processes. MR enhances organizational capabilities across the full knowledge lifecycle: building, applying, sharing, storing, and holding knowledge. Planning aligns knowledge initiatives with strategic objectives, monitoring ensures ongoing assessment and error detection, and evaluation supports reflection and refinement. Empirical studies demonstrate that structured scaffolds and metacognitive prompts improve comprehension, strategy adoption, and knowledge co-construction in educational and professional contexts, with discipline-specific variations in MR integration (Liesje et al., 2012; Julie et al., 2015). Monitoring dominates MR activity, suggesting that KM interventions could be strengthened by promoting balanced engagement across planning, monitoring, and evaluation (Erika et al., 2025; Joachim et al., 2025).

Integration with Knowledge Management Theory

Then, MR provides a regulatory framework that complements traditional KM theories, which emphasize knowledge creation, storage, retrieval, transfer, and application. By embedding planning, monitoring, and evaluation, organizations can move beyond static knowledge repositories toward adaptive, learning-oriented systems. MR enhances both tacit and explicit knowledge management, bridging codification and personalization strategies while promoting reflective, evidence-based decision-making (Lee et al., 2012; Claire, 2002). Socially shared regulation and collaborative scaffolding translate individual metacognitive processes into collective knowledge practices, strengthening team learning and knowledge transfer across hierarchical and disciplinary boundaries (Liesje et al., 2016; Nanzhe & Nurbiha, 2023).

Future Organizational Learning

Additionally, MR into KM frameworks positions organizations for enhanced adaptive learning and strategic foresight. MR-informed systems can anticipate challenges, monitor knowledge flows, and evaluate outcomes dynamically, fostering innovation, flexibility, and continuous improvement. Digital platforms and AI-driven analytics can embed metacognitive prompts to support self- and shared regulation, enabling real-time knowledge assessment and collaborative problem-solving. Embedding MR

in organizational knowledge practices thus supports sustainable learning cultures and strengthens competitive advantage in knowledge-intensive and rapidly evolving environments (Cristina & Timothy, 2023; Joachim et al., 2025).

Strengths and Limitations of the Review

Moreover, integrates MR and KM research across developmental, educational, and organizational domains, offering a multi-level perspective on knowledge regulation. It identifies clear cross-study patterns and illustrates how MR mechanisms can optimize knowledge processes. However, limitations include fragmented measurement approaches, cultural and contextual biases, and limited longitudinal or cross-cultural evidence. Additionally, affective, ethical, and sustainability dimensions of MR and KM remain underexplored, and the transition from individual to socially shared metacognition requires further empirical investigation. Addressing these gaps is critical for advancing theory and practice in knowledge-intensive organizations remains insufficiently theorized, highlighting gaps for future empirical investigation.

Future Research Agenda

Future research should focus on longitudinal and cross-cultural studies to examine the development of metacognitive regulation (MR) over time and its impact on knowledge management (KM) processes across diverse educational contexts. Standardizing measurement tools that integrate verbal protocols, self-reports, and digital analytics will enhance the reliability and comparability of MR assessments. Further investigation is needed into the integration of emerging technologies, including digital scaffolds and AI-driven platforms, to support real-time planning, monitoring, and evaluation in learning environments. Additionally, studies should explore how individual MR transitions to socially shared regulation in group settings, emphasizing collaborative knowledge construction and collective monitoring. Attention to affective, ethical, and sustainability dimensions will further deepen understanding of how MR shapes knowledge practices over time.

For practical applications, educational institutions are encouraged to embed structured metacognitive frameworks into curricula, providing students with opportunities to plan, monitor, and evaluate their learning. Reflective and collaborative learning strategies, such as peer-learning and group projects, can strengthen shared regulation and knowledge co-construction. Leveraging technology to provide real-time feedback and adaptive platform can enhance the effectiveness of MR across disciplines, while discipline-specific approaches should recognize differences in regulatory patterns, such as between biology, chemistry, and mathematics. Finally, professional development for educators is essential to equip instructors with the skills to model and scaffold MR strategies, fostering self-regulated, reflective, and knowledge-rich learning environments that prepare students for complex, knowledge-intensive challenges.

Summary of the Review

This review highlights the critical connection of metacognitive regularities (MR) and knowledge management (KM) theory, demonstrating that planning, monitoring, and evaluation play a central role in enhancing knowledge processes across individual and institutional levels. MR facilitates the effective building, application, sharing, storage, and retention of knowledge, supporting both reflective learning and collaborative knowledge construction. Empirical evidence shows that structured framework, discipline-specific approaches, and socially shared regulation improve cognitive and organizational outcomes, while monitoring consistently dominates regulatory activity, underscoring the need for balanced engagement across MR dimensions. Integrating MR into KM contexts strengthens adaptive knowledge systems, bridges tacit and clear knowledge, and fosters continuous institutional learning.

Looking forward, surrounding MR into educational and institutional knowledge practices promises to enhance strategic foresight, innovation, and flexibility. Future research should address measurement standardization, cross-cultural validation, and the integration of digital technologies to support real-time metacognitive and knowledge processes. Practically, educational institutions can leverage MR-informed platforms, collaborative learning designs, and professional development to cultivate self-regulated, reflective learners capable of co-constructing and managing knowledge effectively. Ultimately, acceptance metacognitive regulation as an educational institutions logic within KM systems offers a pathway for knowledge-intensive educational and learning environments to remain adaptive, innovative, and future-ready.

METHODOLOGY

The present study adopted a systematic review design to synthesize existing empirical and theoretical literature on metacognitive regularities planning, monitoring, and evaluation and their implications for knowledge management theory includes; building knowledge, applying knowledge, share knowledge, store knowledge and holding knowledge. A comprehensive and structured literature search was conducted across multiple academic databases widely used in, education and interdisciplinary research. The following databases and digital libraries were accessed: Google Scholar, Sage Journals, Sage global Publishers, Advance online Publication, Emerald groups, Emerald insights, Science Direct, Springer, Taylor & Francis, Research Gate, MDPI, Psychology, Frontiers, MIS Quarterly, Crossref, Atlantis Press, Dialnet, and MODESTUM drawing on qualitative and quantitative perspectives. Systematic reviews employ analyses procedures designed with clear guidelines for identifying high-quality and relevant research (Louis, Lawrence, & Keith, 2018). The review included studies published between 2000 and 2025 that focused on metacognitive regularities and knowledge management, using any research design and appearing in credible academic sources such as journals and conference papers. Studies were excluded if they were unrelated to metacognitive regularities and knowledge management, if the full text was unavailable, or if they were non-academic materials or informal publications. These criteria helped ensure that only relevant and reliable literature was included in the review. An interpretive synthesis strategy was used because the studies were varied in methods and disciplines. The findings were combined by linking individual metacognitive regularities to organizational knowledge management, drawing out key themes and connections, and organizing them into a clearer framework. This approach connected personal learning with organizational knowledge, which met the goal of the study. The flow chart shows the systematic review literature review process (Abhikeet, Samir, & Roy, 2012).

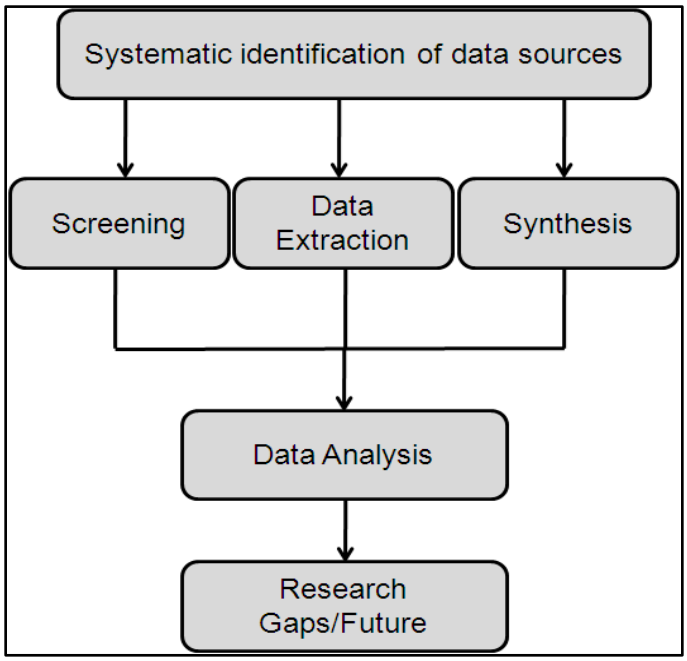

Figure 1. Systematic literature review process by (Abhikeet, Samir, & Roy, 2012; Tranfield, Denyer, & Smart, 2003)

Conceptual Model

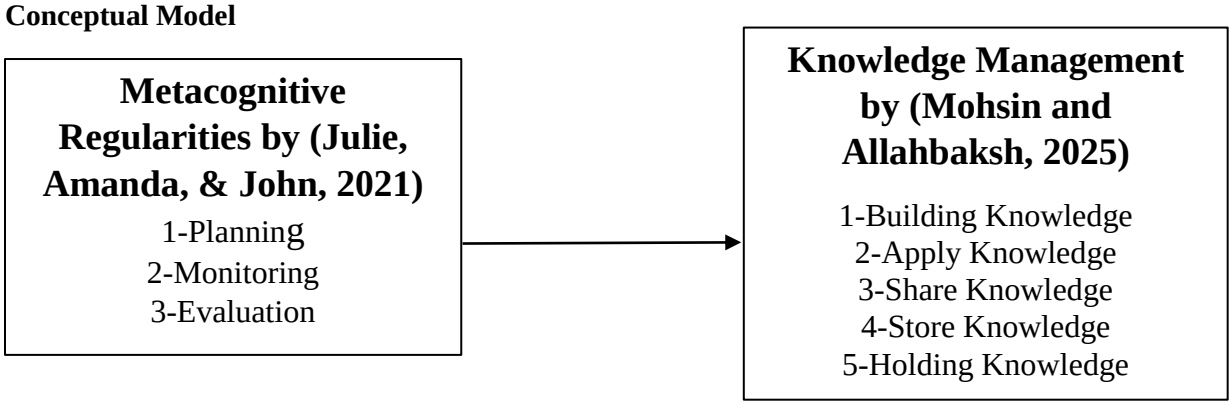

Figure 2. Conceptual Model for the Study

The conceptual framework for this systematic review integrates two complementary theoretical perspectives to explore the interplay between metacognitive regulation and knowledge management processes. It synthesizes the model of Metacognitive Regularities by Julie, Amanda, and John (2021) with the Knowledge Management theory proposed by Mohsin and Allahbaksh (2025).

The metacognitive dimension outlines the internal regulatory processes individuals employ during learning and task performance across three steps: 1. Planning: This involves setting goals, selecting appropriate strategies, and allocating resources before beginning a task. It is the preparatory phase of cognition. 2. Monitoring: This is the ongoing process of self-awareness during a task. It involves checking one's understanding, tracking progress towards a goal, and identifying potential problems or confusion as they arise. 3. Evaluation: This occurs after a task is completed. It involves assessing the outcome, reflecting on the effectiveness of the strategies used, and judging the overall success of the

process. Alongside, the knowledge management dimension describes the external, systematic handling of information across five key stages: 1- Building Knowledge; acquisition/creation, 2-Applying Knowledge; practical use, 3-Sharing Knowledge; distribution and exchange, 4-Storing Knowledge; preservation and organization, and 5-Holding Knowledge; long-term remembering.

The fundamental premise of this integrative framework is that metacognitive processes actively govern and enhance how individuals and institutions manage knowledge. The study aims to analyze the literature and identify how metacognitive regularities influence knowledge management. The key outcome of this framework is the derivation of practical recommendations, theoretical insights, and future research directions based on understanding this dynamic interaction. This conceptual framework illustrates a proposed relationship between two distinct but related fields: metacognitive regularities and knowledge management. The framework is divided into two main sections, each attributed to different researchers. The Theory of Knowledge (TOK) explores how knowledge is acquired, justified, and used. Drawing from philosophy and epistemology, TOK analyzes knowledge across different Areas of Knowledge, emphasizing that knowledge is not absolute but shaped by context, perspective, and interpretation. Metacognitive regularities refer to consistent patterns or principles in how individuals plan, monitor, and evaluate their own cognitive processes across tasks. Their theoretical basis lies in metacognition theory, which distinguishes between metacognitive knowledge (awareness of cognition) and metacognitive control (regulation of cognitive activity). Rooted in the work of Flavell (1979) and further developed in cognitive psychology and educational research, metacognitive regularities provide a framework for understanding individual effectiveness.

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