The mindful manager: exploring habits of mind during creative problem-solving in agricultural businesses

*Mpumelelo Longweni** ⓘD, *North-West University, South Africa*
Lerato E. Mdaka ⓘD, *North-West University, South Africa*
* Corresponding author: junior.longweni@nwu.ac.za

Operating in an increasingly changing business environment presents modern managers with complex problems that require creative solutions. This study delves into applying the 16 Habits of Mind (HoM) as a framework to enhance creative problem-solving competencies among managers. By conducting an exploratory qualitative research study through semi-structured interviews with 21 managers from different functional areas within the agricultural industry in South Africa, we examine the relevance of these habits when solving business problems. Our findings uncover a nuanced prioritization of these habits, with persisting, learning continuously, and listening with understanding and empathy emerging as top-ranked in management sciences. This research contributes to the theoretical discourse on managerial skills and effective problem-solving techniques. It provides practical implications for managers' training and development in this context and other emerging markets. These findings emphasize the necessity of nurturing a diverse range of thinking skills among managers to foster resilience, flexibility, and creativity by innovating in contemporary business.

Introduction

The landscape of business management is ever-evolving, shaped by constant challenges and opportunities. Managers in agricultural businesses play a crucial role in this dynamic setting, coordinating resources and strategies to navigate complexities and achieve organizational success (Lazarova et al. 2023). Central to this managerial role is the competency of problem-solving, a critical facet that determines the survival and the thriving of enterprises in the competitive agricultural industry (Yu et al. 2023). Scholars have focused on creative, critical, divergent, convergent, analytical and strategical thinking (among other thinking skills) concerning managers' effective problem-solving competencies (Kumar et al. 2021). Although these modes of thinking are valuable, the complex nature of business management,

particularly in emerging markets, calls for further exploration of skills that promote effective problem-solving (Sinkus 2020). To uncover the appropriateness of an unexplored thinking model for managers, we investigate the 16 Habits of Mind (HoM) during the problem-solving process in agricultural cooperatives.

The concept of HoM, introduced by Costa and Kallick (2000), has traditionally been associated with the education domain, helping to shape students' thinking patterns (Yustinah et al. 2023). However, these habits are potentially relevant to business settings, influencing their decision-making processes. This study has a contextual contribution, as it is situated in the context of South African agricultural businesses and seeks to bridge this conceptual gap. This study is important for advancing theoretical knowledge of managerial skills and offering practical insights that can enhance training programs and managerial techniques (Tița et al. 2023). Thus, this paper's impact is twofold, serving the interest of future researchers and practitioners. Therefore, this paper aims to expand the current understanding of managers' creative problem-solving competency by exploring how the 16 HoM are applied in businesses.

The following section is a literature review that delves into relevant concepts of this paper based on prior publications that lead to two research questions. The study was underpinned by systems theory and utility theory, in that it was grounded by satisfying the need for effective managerial task execution in businesses and considering tradeoffs present during the decision-making processes while operating in complex and interlinked environments (Farhan Fauzi & Marsasi 2023). The literature review is followed by a discussion of the methods used to conduct the study and a presentation of our findings. In the penultimate section of this paper, we present some managerial and scholarly implications, and our conclusion section ends the paper with closing remarks.

Literature Review and Research Questions

This literature review provides context and structure to the paper's development and findings. It commences with a discussion of managers' role in businesses, followed by how their level of managerial experience influences their task execution. Thereafter, we discuss managers' competencies, leading to an overview of the problem-solving competency and how it depends on thinking skills, which included the 16 HoM. This was done to elucidate the concept of HoM and orientate the reader to the discussion of our findings presented later in this article (Paul & Criado 2020). Managers: Management experience leads to better problem-solving. Experienced managers excel in communication, adaptability, and collaboration. These skills are crucial in dynamic emerging markets. Using new strategies, building team dynamics, and reflecting are important for navigating complex markets (Negrão 2020). Managerial Experience: More experienced individuals communicate honestly, are flexible, and work in collaborative spaces. Less experienced managers are open to new techniques and focus on team building and self-reflection (Kraus 2018). Highly experienced managers excel in problem-solving and emotional intelligence. Experienced individuals are less susceptible to personal stumbling blocks and tend to demonstrate enhanced managerial competence (Lockwood et al. 2021). Managerial Competencies: Managerial competence pertains to a wide range of abilities, expertise, mindsets, and conduct that managers employ to achieve efficacy in different business environments and positions of leadership (Bondarenko et al. 2021). Some of the most important managerial competencies are required for communication, awareness and self-management (Freitas & Odelius 2018), whereas effective problem-solving is probably one of the most crucial for business success and survival (Fischer & Funke 2014). Problem-solving: Problem-solving can be viewed as a process of cognitive actions aimed at achieving a preset objective, where managers assess alternatives and obtain answers to unanticipated questions. Managers with exceptional problem-solving skills can differentiate between algorithmic problems (problems with known answers or solutions) and heuristic problems (complex and complicated new problems) and recognize what mode of thinking skill is necessitated by the problem at hand (Heerkens & van Winden 2021). Thinking Skills: Thinking is contemplating a matter, while skill is task proficiency. Thinking skills involve cognitive processes resulting

in innovative concepts tied to intellectual capacity. Proficient managers use various modes of thinking in task execution. Researchers have studied managers' use of different types of thinking during problem-solving (Kumar et al. 2021). The current study explores 16 HoM for problem-solving, a novel concept in management sciences.

Habits of Mind

The 16 HoM find their roots in education. Gauging managers' thinking skills regarding these habits might enhance the translation of findings into training and learning directives. Using these HoM effectively necessitates various skills, predispositions, and previous encounters. This allows individuals to discern patterns, acknowledge alterations in their surroundings, and carry out suitable actions in response to the specific demands of each situation (Costa & Kallick 2000). The following section describes each habit of mind, states its relevance to the current study and alludes to relevant empirical studies.

(1) *Persisting*: Specific issues take time to solve, and sometimes all solutions fail. Many people lack the mental strength to persist in solving complex problems. Only effective individuals keep trying different solutions and strategies for uncertain problems. Negative stimuli like ambiguity and failure can improve cognitive persistence (Baas et al. 2013). (2) *Managing Impulsivity*: Individuals sometimes rush to judge without fully understanding the consequences of their actions. Some people quickly dismiss certain ideas while praising others excessively. Skilled problem solvers approach challenges intentionally by considering all options and consequences beforehand (Vazquez 2020). Managers should know the difference between impulsivity and spontaneity. Spontaneity can lead to creative thinking, triggering a creative state of mind (Kipper et al. 2010). (3) *Listening to Others – with Understanding and Empathy*: Some individuals focus too much on crafting their responses, neglecting genuine attentiveness. Commitment to others' thoughts decreases, leading to interjection, derision, and undermining. In contrast, active listeners are fully engaged, aiming for a positive outcome. They pay close attention to others' ideas and non-verbal cues (Costa & Kallick 2000). In addition, effective listening boosts creativity by shaping thought processes and aiding decision-making. Skilled listeners are open to learning by letting go of control and acknowledging they have more to learn (Castro et al. 2018). (4) *Thinking Flexibly*: People often struggle with considering different perspectives and handling unfamiliar situations. They find it hard to understand others' problem-solving methods and preferences. Influential thinkers learn from mistakes and are open to various approaches. They value both broad and narrow thinking and know when to use each. Flexible managers with diverse problem-solving methods can devise many solutions and anticipate different results (Costa & Kallick 2000). Baas et al. (2013) posit that personality traits such as receptiveness to experience, extraversion, constructive affectivity, and power motivation are innately linked to cognitive flexibility, which enhances creative thinking.

(5) *Metacognition*: Self-awareness and the ability to reflect are crucial for metacognition. Not everyone can effectively create and evaluate strategies when facing challenges. Intelligent individuals excel at planning and assessing their thinking and actions. Problem-solvers must intentionally plan, monitor, and reflect on their cognitive processes. (6) *Striving for Accuracy and Precision:* Many people rush to solve immediate issues instead of investigating the root cause. Effective managers aim for accuracy by analyzing past performances and making improvements for future success (Vazquez 2020). (7) *Questioning and Posing Problems:* Some individuals may lack inquisitiveness and the capacity to pose appropriate inquiries, which, once addressed, will serve as a bridge between the knowledge they possess and the knowledge necessary to solve the challenges they confront (Costa & Kallick 2000). Skilled problem-solvers naturally inquire and improve their approaches. They easily recognize gaps in their knowledge and work on filling them. This helps them form questions and strategies for desired outcomes. Regular questioning boosts creative and critical thinking in unique problem scenarios (Baas et al. 2013). (8) *Applying Past Knowledge to New Situations:* Incompetent people struggle to see similarities between new situations and past experiences, often due to anxiety from previous failures. Recognizing connections between current tasks

and past successes boosts cognitive effectiveness, leading to better problem-solving methods and solutions. Hagtvedt et al. (2019) coin the term, idea of linking, where past solutions are transformed into new ideas for effective problem-solving.

(9) *Thinking and Communicating with Clarity and Precision:* People sometimes use ambiguous language. This can lead to unproductive thinking. Effective managers use clear language to express precise thoughts (Vazquez 2020). Managers who excel in communication make informed decisions and spark creativity in subordinates (Kupritz & Cowell 2011). (10) *Gathering Data Through All Senses:* Some people struggle to engage with challenges fully. They may lack problem-solving skills and prefer listening over actively participating in team problem-solving. Savvy managers utilize all their senses to be aware of their environment and gather important information from it. (11) *Creating, Imagining, and Innovating:* Creativity is often considered innate, with some believing certain individuals are born creative while others see themselves as not creative. However, everyone can cultivate new and innovative ideas, solutions, and products (Proctor 2019). Studies have shown that people can be trained and encouraged to enhance their creativity. Creative managers envision different scenarios, starting from the end goal and working backwards to plan actions and achieve objectives (Costa & Kallick 2000). (12) *Responding with Wonderment and Awe:* Some people dislike using thinking skills in complex tasks. They avoid problems needing extra learning. Managers should embrace challenging situations for innovative ideas. Managers who react with child-like enthusiasm are more cable problem-solvers.

(13) *Taking Responsible Risks:* Outstanding managers trust their judgment and view risk-taking as an integral part of business. Despite unpredictable outcomes, they rely on experiences and intuition to manage risks. Research suggests that the ability to take informed risks is specific to certain fields, and creativity is associated with taking social risks (Tyagi et al. 2017). (14) *Finding Humor:* Managers with a creative mindset, they thrive by appreciating the absurd and the humorous, including irony and satire, and can laugh at situations and themselves (Vazquez 2020). Earlier research has shown a strong correlation between a person's sense of humor and creativity (Ziv 1976). (15) *Thinking Interdependently:* Effective managers are open to others' ideas and support practical solutions. They recognize their limitations and the importance of teamwork and can defend their ideas while considering others' viewpoints (Lowndes & Squires 2012). (16) *Learning Continuously:* Effective managers excel in considering others' ideas and advocating for their own practicality. They are aware of their limitations and recognize the necessity of collaboration. Additionally, they are skilled in defending their concepts and approaches while assessing others' ideas (Hagtvedt et al. 2019).

The 16 HoM is a viable thinking model for effective problem-solving in businesses. However, the 16 HoM were initially developed for the educational domain. The sources above demonstrate their usefulness in various settings. Some sources individually vindicate the use of certain HoM in business management. However, a research gap exists in the comprehensive assessment of Costa and Kallick's thinking model in management spheres. Bridging this gap requires an exploration of the HoM with managers who are likely to use it during the creative problem-solving (CPS) process. Thus, we formulate the following research questions to explore their relevance in management sciences empirically: (1) Are the 16 habits of mind relevant as thinking skills to managers? (2) Which habits of mind are the most important during problem-solving?

Methodology

We followed an exploratory, qualitative research design to conduct this study and collect data. The study followed a descriptive qualitative approach (Sandelowski 2000) with overtones of phenomenology (Merriam & Tisdell 2016) to collect data through semi-structured interviews. We believe that the managers who participated in this study are the eminent authority on the subject matter. We sought to amplify their voices in their lived experience of the Dunning-Kruger Effect (DKE) phenomenon (an illusory superiority cognitive bias) and utilization of the 16 HoM. Our study population is South African managers

in the agricultural industry. The sample frame consisted of selected middle managers in five major agricultural businesses. These businesses were selected based on the number of employees (ranging between 200 and 4 500) and revenue (ranging between R1.48b and R11.88b) during the empirical portion of this study. We used non-probability, convenience and judgement sampling to select middle managers as they are more likely to be in contact with colleagues (other middle managers), subordinates (lower-level managers), and superiors (top managers) (Engle et al. 2017).

We identified 21 interviewees and took notes during interviews for analysis. Reflective notes were made after each interview to compare responses. We realized saturation after 18 interviews and conducted two more for confirmation (Daniel & Harland 2018). The participants were thanked for their contribution. The 21st sent a written response. Generic qualitative analysis steps were used. Table 1 exhibits the sample characteristics.

Table 1. Sample Characteristics

Participant	Gender	Province	Mgmt. Exp. (Yr)	Functional area
1	Male	North-West	5	Financial department
2	Male	Gauteng	2	Operations department
3	Female	North-West	10	Financial department
4	Male	W. Cape	2	Financial department
5	Female	North-West	2	Human resources department
6	Male	North-West	18	Marketing department
7	Male	North-West	18	Executive – Managing director
8	Male	North-West	6	Operations department
9	Male	North-West	26	Operations department
10	Female	W. Cape	15	Human resources department
11	Male	W. Cape	16	Executive – Reginal manager
12	Male	Gauteng	25	Operations department
13	Male	Free State	25	Operations department
14	Male	North-West	18	Financial department
15	Female	Gauteng	18	Executive – General manager
16	Male	North-West	15	IT Dept. & Executive – MD
17	Male	Free State	18	Human resources department
18	Male	Free State	12	Operations department
19	Female	Free State	14	Marketing department
20	Female	Free State	8	Human resources department
21	Male	North-West	19	Executive - HOD - Finance

Source: the authors

The majority (71%) of our interviewees were males within the operations department (six managers), with mostly between 16 and 20 years of managerial experience (six participants) and residing in the North West Province (48%) of South Africa. The findings presented in this article gain additional credence by emphasizing the perceptions of highly experienced managers. Moreover, although not exhaustive, the participating managers cover a significant geographical representation of South Africa. Non-response bias was minimized by deliberately including a diverse range of demographic factors within the sample (Si et al. 2023), encompassing variables such as gender, age, location, and managerial experience.

Managers' perception of the phenomena was captured using nine open-ended questions. Before the interview, participants were given the questions, a concise explanation of the DKE, and abbreviated descriptions of the 16 HoM. The interview guide consisted of four sections, starting with an introduction section that expressed our gratitude for the participant's willingness to participate in our study and

reminded them of its objectives. The following section gathered managers' perceptions of the DKE, while the final section collected their views on thinking skills regarding the 16 HoM. The guide concluded by thanking the participants once again and providing them with an opportunity for closing remarks or questions.

Analysis

We used a reputable service provider that signed a non-disclosure agreement before transcribing interviews to increase the study's rigor. Transcripts were checked for accuracy; we then applied initial coding, peer-assessed by academics familiar with the topic. ATLAS.ti 23 was used for the final content analysis, which was also peer-assessed. We used it initially to quantify qualitative data (Nosenko 2022). The resulting Table 2 shows the most frequently mentioned habit of mind while accounting for specific indicators of the habits managers deem the most crucial for CPS in their businesses. This was done to mitigate potential shortcomings of interview-based research projects (Nunkoosing 2005). We elected to use ATLAS.ti instead of alternatives because it allows for streamlined coding, organizing, and analyzing complex qualitative data with its robust tools for identifying patterns and themes. Its user-friendly interface and flexible coding options enabled us to manage and analyze various data sources. Despite some drawbacks like a steep learning curve and potential over-coding risks, the benefits of ATLAS.ti in managing complex datasets and supporting rigorous analysis techniques outweighed these concerns (Paulus & Lester 2016). Interactions between categories were summarized in ATLAS.ti 23 for a conceptual framework, presented later. Table 2 reports the ranking of the items in Habits of Mind. This paper presents the top five HoMs by providing the six (nine due to deadlocks) highest-ranked HoMs. To determine the rankings presented in Table 2 below, we considered the frequency of the particular HoM being mentioned in managers' list of the top five HoM that lead to CPS (*F*). We also highlighted the specific HoM which the participating managers emphasized as the most important habit in relation to CPS, by multiplying each mention by 2.

Table 2.   Top Habits of Mind for Problem-solving

Habit of Mind	Description	*F*	Rating CPS[a]	Score[b]	Rank
Persisting (#1)	The ability to stick to a task until it is done	9	7*2=14	23	1st
Learning (#16)	New learning can improve the business	10	3*2=6	16	2nd
Listening (#3)	Ability to listen ideas and understand views	14	1*2=2	16	2nd
Knowledge (#8)	The ability to use past knowledge and apply	9	3*2=6	15	3rd
Thinking (#15)	Able to think interdependently	6	3*2=6	12	4th
Questioning (#7)	Asking relevant questions to bridge gaps	10	1*2=2	12	4th
Flexibility (#4)	Generating options and perspectives	12	0*2=0	12	4th
Impulsivity (#2)	Able to manage impulses to understand	9	1*2=2	11	5th
Accuracy (#6)	Striving for accuracy in actions and solutions	5	2*2=4	9	6th

F Frequency of mentions in rankings
[a] Rating of the HoM in relation to CPS
[b] *F* + Rating CPS = Score
Source: the authors

Measures were taken for credibility, reliability, and trustworthiness (Lincoln & Guba 1985). Interviews took place where the phenomenon was studied. Extensive field notes showed prolonged engagement. Member checking involved 21 managers reviewing study findings. The study's transferability was enhanced by reaching saturation and involving different demographic groups. Dependability was ensured through two stages of peer examination. Noteworthy documentation and correspondence were kept for confirmability (Daniel & Harland 2018).

Results and Discussion

Our findings suggest that the 16 HoM is crucial in facilitating effective problem-solving in agricultural industries, particularly in developing markets where managers encounter distinct challenges and opportunities. An in-depth analysis of the managers' rankings provides insights into which habits are essential for problem-solving and their implications for managerial success.

Figure 1 summarizes our study's findings. The CPS competency is depicted in the center of the conceptual framework. Outside of the center are the most influential HoM. The most important HoM are depicted nearest to CPS. As the most critical HoM, persistence is considered an anchoring HoM for the other four important HoM. The other HoM that have some impact on CPS are shown in the outer square of the figure.
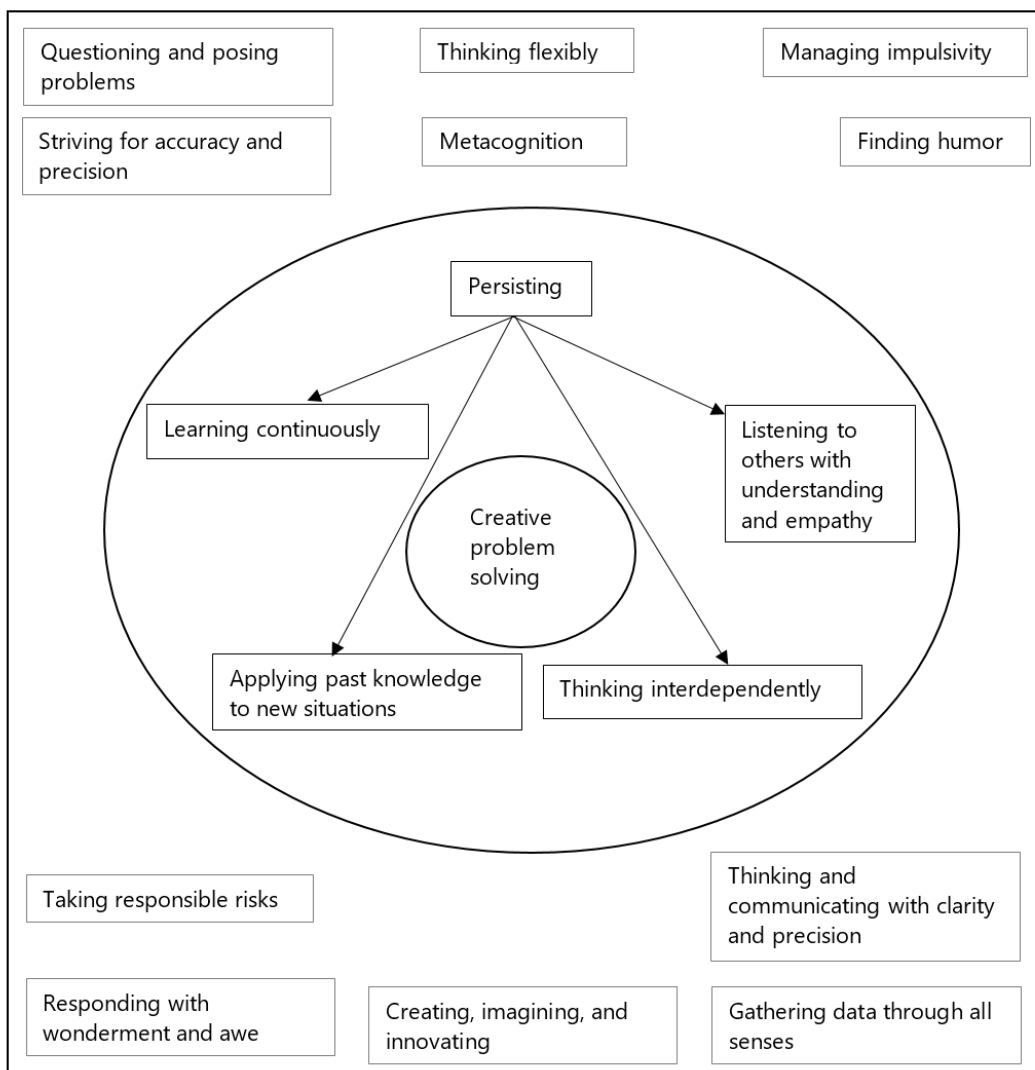

Figure 1. Summary of Crucial HoM During CPS
Source: the authors

Persistence, the Most Crucial HoM: We found that even though persevering through challenging tasks until their completion might not have made as many appearances on managers' ranking lists as learning

continuously did, it outranks #16 due to it being selected as the most critical habit of mind for problem-solving more frequently. Managers appreciate persistence as it embodies the grit and resilience required to tackle elaborate and uncertain business issues (Costa & Kallick 2000). This highlights the significance of determination and perseverance in a rapidly evolving business landscape where managers must navigate unpredictable circumstances. The capability to endure in the face of hardship assists in problem-solving and corresponds with the wider principle of resilience and dedication to personal and professional progress. Persistent managers focus on long-term objectives despite setbacks and challenges (Bass et al. 2013). The capability to endure in the face of hardship assists in problem-solving and corresponds with the wider principle of resilience and dedication to personal and professional progress. Managers who exhibit persistence typically focus on long-term objectives, even in the presence of setbacks or challenges.

Significance of Learning Continuously: Similar to the previous HoM, learning continuously had fewer mentions on overall ranking lists, yet it was more frequently considered crucial for problem-solvers than #3 (Listening to others with understanding and empathy). This habit is closely linked to personal growth and professional development, which are imperative for business success in emerging markets. This habit underscores the necessity of ongoing learning and adaptability in a dynamic business environment. Managers who accept continuous learning are more likely to stay informed of industry trends, technological advancements, and innovative practices (Hagtvedt et al. 2019). Continuous learning is also related to a growth mindset, empowering managers to address problem-solving openly and be willing to explore new concepts. It promotes adaptability, allowing managers to modify their strategies and approaches as circumstances evolve (Costa & Kallick 2000). This habit is desirable in agricultural enterprises, where external factors such as weather conditions, market fluctuations, and regulatory changes can significantly impact operations. The emphasis on habits such as persisting and learning continuously suggests an underlying recognition of challenges in emerging markets' long-term and evolving nature. This underscores the importance of resilience and a commitment to personal and professional growth as key drivers of business success in these contexts (Aithal & Pradhan 2022).

The Crucial Role of Emphatic Listening, Cooperation and Flexible Approaches to Thought: Listening to others with understanding and empathy is highly regarded since it is ubiquitous in managers' ranking lists. The role of listening in business can be perplexing. Although some studies continue to highlight the importance of managers' ability to listen with comprehension, in a quantitative assessment, it has also been found to be the skill managers struggle with the most (Longweni & Kroon 2018). The frequent appearance of this habit in ranking lists underscores the importance of empathy in business contexts. Managers who actively listen and empathize with their colleagues and subordinates are better positioned to cultivate collaborative relationships and inclusive decision-making processes.

Applying past knowledge to new situations and thinking interdependently are also highly regarded within the problem-solving process, as gaining diverse points of view is valuable when managers face heuristic problems (Stojanov 2022). Demonstrating and fostering interdependent thinking is essential to facilitate a collaborative resolution strategy. Managers who embrace this can harness their teams' strengths and stimulate innovative solutions by integrating diverse ideas and perspectives (Lowndes & Squires 2012). The significance of listening with empathy and thinking interdependently reflects a broader trend toward collaborative and inclusive management styles. This trend is particularly relevant in emerging markets, where diverse perspectives and collective efforts are crucial for overcoming unique challenges and leveraging these markets' opportunities (Longweni & Mdaka 2023).

Questioning and posing problems, thinking flexibly, and managing impulsivity are also notable HoM. These skills are essential for identifying, positioning and determining the cause of the most relevant issues (Mobbs et al. 2010). Managers who exhibit this habit can adjust to evolving circumstances, explore different approaches, and evaluate various solutions. By managing impulsivity, managers ensure a deliberate and thoughtful decision-making process, thus averting hasty judgments that may lead to unfavorable outcomes (Baas et al. 2013). Having a desire for correctness is in the sixth position of our

rankings based on managers' perceptions. Further, through content analysis, we found that all 16 HoM are relevant to problem-solving in a business context, with 14 HoM getting at least two mentions in managers' ranking of the most important HoM. Notably, gathering data through all senses and responding with wonderment and awe were the only HoMs to receive only one mention in each participant's rankings. The findings presented in this study gain additional credence by including the perceptions of highly experienced managers (an average of 13 years). Moreover, although not exhaustive, the participating managers cover a significant geographical portion of South Africa.

Regarding our first research question, are the 16 habits of mind relevant to managers' thinking skills? We find an affirmative answer. Among the 21 participating managers, all 16 HoM were mentioned at least once during our interviews. We considered this to mean that none of the 16 habits of mind can be viewed as irrelevant, which means that all 16 HoM contribute to CPS in business settings. The second research question is about which habits of mind are the most important during problem-solving. We find that the five most important HoMs for effective business problem-solving were persisting, learning continuously, listening to others with understanding and empathy, applying past knowledge to new situations, and thinking interdependently.

Implications of the Study

Our findings suggest managers should broaden their thinking skills, applying the 16 HoM to improve problem-solving and innovation. They must also constantly update their knowledge and skills to adapt to changing industry trends and technologies. Organizations that seek to aid this endeavor must invest in developing these habits among managers through targeted training. Businesses should also promote a persistent listening and empathy culture, which may lead to collaborative and inclusive problem-solving. Persistence in the research for knowledge is also likely to enhance managers' ability to apply their skills in various roles and circumstances. Because our findings are qualitative, future scholars are advised to conduct further research on the topic of the 16 HoM by following a quantitative design. A structural equation model may provide further insight into the HoM and other factors that enhance and hinder CPS in business. The current study explores 16 HoM for problem-solving, a novel concept in management sciences.

Conclusion

We found that persisting, learning continuously, listening to others with understanding and empathy, applying past knowledge to new situations, and thinking interdependently are the essential HoM for CPS in businesses. We conclude that the essence of persistence lies in its capacity to foster resilience, enabling managers to maintain their efforts and focus under challenging conditions, which in turn enhances the other most crucial HoM. Persistence enhances the habit of continuous learning by encouraging managers to remain committed to their developmental journeys, even when progress seems slow or learning becomes challenging. This commitment ensures that learning is not abandoned when immediate results are not evident, fostering a deeper, more comprehensive understanding over time. As managers persist in their tasks, they encounter diverse problems that necessitate new skills and knowledge, thus reinforcing the need for continuous learning. Similarly, the insights gained through ongoing learning can provide strategies and knowledge that managers can draw, enhancing their ability to persist through new and heuristic challenges. Further, persistence in listening, especially in complex and unfamiliar situations, can lead to greater understanding and more effective communications. It encourages managers to remain engaged in communication processes, even when disengaging might be easier, thereby deepening relationships and fostering a supportive team environment. Persistent efforts to understand others' viewpoints can break down barriers and lead to more empathetic interactions. This can be particularly important in high-stress environments where initial attempts at understanding may fail.

Persistence also encourages managers to continually apply their accumulated knowledge to new challenges, refining their ability to leverage past experiences effectively. This application often requires sustained effort, as the relevance of past experiences to new situations may not be immediately apparent. As managers persist in applying what they have learned, they also develop a sharper acumen for identifying which past lessons are most applicable to current problems, enhancing their problem-solving efficiency and effectiveness. Collaborative problem-solving requires persistence, particularly in maintaining open lines of communication and mutual respect among team members over time. Persistent efforts in fostering teamwork and collaboration can lead to more innovative and effective solutions. By continuously striving to engage and incorporate diverse perspectives, skilled managers can cultivate a more inclusive and dynamic approach to problem-solving. Persistence ensures these collaborative efforts are maintained, even when immediate consensus or solutions are elusive.

Our study's findings contribute to an understanding of managerial cognition and its impact on problem-solving within the agricultural industry of emerging markets. The prioritization of certain HoM over others points to a nuanced repertoire of thinking skills that successful managers draw upon to navigate the uncertainties and opportunities characteristic of these environments. This highlights the need for targeted development programs that enhance these cognitive strategies, thereby equipping managers with the tools necessary for innovation and adaptability. The most significant HoM formed a promising framework for improving decision-making and creativity in a complex environment. The 16 HoM are relatively comprehensive. However, a 17th skill, inspired by metacognition and intended to deal with stumbling blocks and cognitive bias, could be a desirable addition.

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Authors

Dr Mpumelelo Longweni (OrciD 0000-0001-9670-3648) is a Lecturer of Management Sciences in the Faculty of Management and Economic Sciences at the North-West University, Potchefstroom Campus, South Africa. Mpumelelo teaches operations management and strategic management courses and conducts research on managerial competencies and business management. He can be contacted at junior.longweni@nwu.ac.za

Dr Lerato E. Mdaka (OrciD 0000-0002-9761-1291) is a Lecturer of Management Sciences in the Faculty of Management and Economic Sciences at the North-West University, Potchefstroom Campus, South Africa. Lerato teaches strategic management and entrepreneurship courses at undergraduate and postgraduate levels and conducts research on innovation and entrepreneurship. She can be contacted at lerato.mdaka@nwu.ac.za