Metacognition In Entrepreneurship: Literature Review and Future Research Prospects

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Abstract

Metacognition is a diverse scope of research, and this study puts a spotlight on entrepreneurial metacognition. Three research questions guide the study. First, the study addresses the impacts of metacognitive awareness on entrepreneurial decision-making. Secondly, the study seeks to address any correlation between the various levels of metacognitive ability and entrepreneurial success. Thirdly, the study seeks to identify strategies that can be used to develop metacognitive skills in individuals with entrepreneurial mindsets. The study uses 74 scholarly articles indexed in Web of Science and Scopus databases on entrepreneurship metacognition and employs a thematic analysis methodological approach. The study is anchored on various theoretical foundations and pillars that anchor the theme of metacognition in entrepreneurship. The study reviews academic literature for future researchers to refer to and identifies other areas that may require further research.

Keywords: Metacognition, Entrepreneurship, Metacognitive Knowledge, Metacognitive Control, Metacognitive Ability

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Introduction

Metacognition is a key component of entrepreneurial success. Previous studies have shown that there has been remarkable success in areas where metacognition is employed (Jain et al., 2023). In this article, the concept of metacognition shall be explored in relation to entrepreneurship. Metacognition is a word used to refer to a sort of higher-level thinking which involves self-evaluation, monitoring, and deliberate control of one's cognitive processes (Schraw & Dennison, 1994). Flavell's (1979) study shows metacognition as the capacity to mindfully and deliberately consider how one should approach a problem, arrange the techniques one intends to apply, and reflect on the success or failure of their efforts. "metacognition" and "metacognitive regulation" collectively refer to two different cognitive processes. As per Flavell (1987), the two concepts of metacognition are metacognitive knowledge and metacognition experiences. Metacognition knowledge can be grouped into knowledge about a person, task, or strategy.

Schraw (1998) reveals that metacognition consists of knowledge and regulation. Metacognitive knowledge is that portion of your (a child's, an adult's) stored knowledge of the universe that relates to humans as cognitive beings and their various cognitive tasks, goals, behaviors, and experience (Flavell, 1979). Metacognitive knowledge is the understanding of one's cognitive architecture and functioning. Further, the term "metacognitive accuracy" is used to refer to the degree to which an individual's assessment of their belief system—which is a component of that evaluation—can be erroneous, leading to either an overestimation or an underestimation of their competencies (Veenman et al., 2006; Jain et al., 2023). With the right training and improvement methods, such capacity for metacognitively accurate judgment can be measured and improved. Kumar's (2022) review defines metacognition knowledge as consisting of expertise or convictions about how certain elements or variables affect the progress and results of cognitive endeavors. Conversely, metacognitive regulation can be brief or lengthy in duration, simple or complex in content (Flavell, 1987). Metacognitive regulation enables individuals to track and assess cognitive activity (Jain et al., 2023). Typically, metacognitive regulation aids in carefully preparing, assessing, and implementing the best action to accomplish a certain goal.

Metacognitive knowledge involves understanding the topic and being aware of one's experiences, beliefs, and attitudes. Metacognition is the control of one's thoughts for the sake of learning (Stanton et al., 2021). For instance, an entrepreneur or any other professional with metacognitive knowledge can accurately assess their understanding of a given topic and identify areas they need to focus on to gain deeper knowledge (Haynie et al., 2010). Such can take the form of being aware of one's strengths and weaknesses in a given area, examining one's assumptions, and effectively linking current knowledge with prior knowledge (Prather et al., 2020). In addition, metacognitive regulation involves utilizing strategies to manage and optimize cognitive functioning (Schraw, 1998). Baron & Ward (2004) defines the techniques key in cognition includes setting and monitoring goals, planning and monitoring work, and using self-instruction, timing, priming, pacing, and self-regulating emotions to remain focused. Metacognitive regulation is the ability to reflect on one's thinking and learning process, apply an effective approach to problem-solving, and adjust one's strategies to achieve desired outcomes.

Metacognition is a necessary part of learning and problem-solving in the modern world. Metacognition is a key element to success in the workplace and is related to a range of higher-order thinking skills (Dimov & Pistrui, 2023). Metacognitive skills can help individuals become effective planners, problem solvers, and confident learners (Sato, 2022). Research suggests developing metacognitive skills can improve workplace performance, motivation, and decision-making capabilities (Jain et al., 2023). Additionally, metacognitive skills have been suggested to increase satisfaction with one's work, better job performance, and increase independence. Schraw's (1998) research shows that metacognition is a crucial aspect of lifelong learning and promotes a culture of self-reflection and self-evaluation. Metacognitive abilities are becoming increasingly crucial for interpersonal and intrapersonal success as the world becomes more complicated (Flavell, 1987). People with metacognition are better able to recognize, express, and understand their ideas and feelings, which enables them to be more self-controlled and aware of their cognitive processes (Stanton et al., 2021). Metacognitive abilities can also assist people in comprehending their learning processes, which enables them to decide more wisely on their learning goals and objectives.

On the other extreme is the concept of entrepreneurship. Entrepreneurship is the practice of starting and growing a company or organization while taking on financial risks to get a profit. Risk-taking, self-assurance, creativity, goal, leadership, enthusiasm, and tenacity are just a few of the needed attributes (Dabić et al., 2021). Metacognition is an essential element of entrepreneurship. The integration of metacognition in entrepreneurship has had positive impacts on entrepreneurs. Haynie & Shepherd (2009) suggests that metacognition research can be used as a process perspective to reexamine an individual side of entrepreneurship by examining entrepreneurs' memory, learning, problem-solving, and decision-making skills. Entrepreneurs must be able to accurately assess their performance, skills, and gaps and make strategic decisions based on their evaluation. Metacognition involves reflecting on cognitive processes and decisions' potential results and outcomes (Jain et al., 2023). Metacognition is not about memorizing facts but rather an individual's ability to analyze and reflect on the self and the environment through critical thinking. By understanding the process of their own thinking and strategic decisions, entrepreneurs can better understand their performance and the decisions that lead to success.

Entrepreneurs must constantly assess how their choices affect their businesses. Klimas et al. (2021) established that most entrepreneurs fail out of the choices they make and must evaluate their company's goals, the risks they undertake when choosing a course of action, the actions they have already done, how they have gauged their progress, and the outcomes of their decisions to avoid failure (Haynie & Shepherd, 2009). Haynie et al. (2010) study argues that metacognition is the basic foundation of an entrepreneurial mindset, and entrepreneurs design and inform "higher-order" cognitive strategies to achieve their goals. The core of metacognition is the ability to accurately appraise one's progress and foresee prospective consequences, a skill that entrepreneurs require. Metacognition entails being aware of one's thought processes. Entrepreneurs that want to tackle challenges strategically need to understand how they think and how to analyze issues (Michaelis et al., 2021). Entrepreneurs who practice metacognition examine their choices and comprehend why they are being made. Entrepreneurs, for instance, need to assess whether their choices are driven by fear and whether they will provide the intended results (Haynie & Shepherd, 2009). Becoming conscious of one's prejudices is another aspect of metacognition, which can aid entrepreneurs in making more informed choices.

Additionally, entrepreneurial skill is made possible through metacognitive processes due to their automated characteristic. Entrepreneurs can therefore learn to plan, monitor, and reflect as part of the metacognition process, which is knowledge about cognitive and self-regulatory systems. Bastian & Zucchella (2022) reveal that entrepreneurs must know their goals and track and manage their cognition to self-regulate. Consequently, such processes encourage people to develop their entrepreneurial expertise more quickly (Haynie et al., 2010). For instance, as entrepreneurs gain knowledge, they can use metacognition to transform this into various opportunities. As a result, business owners can recognize and adjust to the cognitive character of opportunities.

In addition, metacognition assists people in identifying certain aspects of activities and circumstances that enable effective and flexible cognitive functioning when exposed to information from dynamic or complicated environments, behaviors typical of the entrepreneurial process. The ability to adapt to a changing environment is a key factor in entrepreneurial success (Bastian & Zucchella, 2022). To adapt to a changing environment, metacognition enables entrepreneurs to self-generate several frameworks and integrate them with goals (Flavell 1979, 1987; Schraw & Dennison, 1994). Similarly, higher levels of metacognition help people to be more responsive to uncertainty which clarifies why some entrepreneurs alter their cognitive response to act and mobilize in response to a changing environment while others do not.

One of the key qualities in an entrepreneurial mindset is self-confidence, which depends on an individual's perception of their capabilities. Too much confidence may yield harmful effects to an entrepreneur, whereas it can be beneficial to the person. Overconfidence is one of the errors that confront entrepreneurs (Baron & Ward, 2004; Haynie et al., 2010). Further, entrepreneurs are prone to the cognitive bias of illusion control, where they develop the increased belief that their actions will lead to their success even when there is no such chance (Baron & Ward, 2004). De Winnaar & Scholtz's (2020) study asserts that metacognition can help entrepreneurs to assess their self-beliefs by thinking through the kinds of challenges and ideas they come across daily. For example, they can identify how they can predict the success or failure of a business venture by considering which strategies or decisions will be best for the company and looking at possible risks and rewards associated with different courses of action. Entrepreneurs are, therefore, able to develop an accurate judging of their abilities to understand the viable options and make the best decision.

Additionally, metacognition aids entrepreneurs in determining which activities and procedures are crucial to a specific venture and which could benefit from delegation. Entrepreneurs may efficiently prioritize their time and resources through metacognition to maximize productivity (Dabi et al., 2021). Metacognitive abilities can also assist business owners in reviewing how far they have come toward achieving their objectives, seeing operational gaps, and making necessary adjustments to keep on course. Furthermore, metacognition aids businesspeople in learning from their errors and avoiding repeating them, including errors such as overconfidence and illusion of control (Baron & Ward, 2004; Dabi et al., 2021). Entrepreneurs can learn from their failures, pinpoint the root reasons, and look for solutions to the issue in the future. In this way, metacognition can aid business owners in overcoming challenges and creating a strong and resilient enterprise.

The main research questions that this paper intends to address include the following:

1. How does metacognitive awareness impact entrepreneurial decision-making?
2. How do various levels of metacognitive ability correlate with entrepreneurial success?
3. What strategies can be used to develop metacognitive skills in individuals with entrepreneurial minds?

Our research will focus on the influence of metacognition in entrepreneurship. The research will review intensively other literature to address the research questions. The three research questions consist of areas that, if addressed, shall help understand metacognition and its relation to entrepreneurship. The research will explore the theoretical frameworks, themes, and subthemes that underpin the topic through a thematic analysis methodological approach. The methodological approach will be useful in assessing various inferences regarding the research domain and help in proposing future research work that can be done. The following sections will constitute theoretical foundations embedded in the research, themes, and methodological approaches to metacognition in entrepreneurship.

Methodology

Typically, the methodology of this research encompasses an intensive literature review of previously published articles on the topic of metacognition and entrepreneurship. Literature reviews are crucial to theorizing because they provide a benchmark for describing a field of study and serve as the foundation for developing theoretical contributions (Post et al., 2020). Review articles are crucial for encouraging group and individual thoughts on the present state of the art within a certain issue domain and for igniting additional discussions. Review articles have gradually risen to prominence in the research landscape in recent years and developed the traits of a widely recognized genre with its standards.

Further, the importance of review articles is divergent, and a comprehensive search would aid in getting to the bottom of any matter and pointing out any gap that may exist and needs redressing. Review papers offer a variety of chances to advance theoretical understanding and scientific knowledge (Post et al., 2020). They aid in comprehending the study topic and identifying significant, under-researched regions, enabling the development of original and intriguing research questions and empirical studies in later research. Review papers can combine research data from multiple divergent sources in innovative or emerging research topics creatively, leading to a new

perspective or phenomenon (Post et al., 2020). As knowledge in management research frequently develops along disciplinary lines, creating distinct theoretical viewpoints not fully informing and drawing from one another, literature reviews in broader fields of study assist fragmented bridge areas of research.

A literature review refers to the pertinent synthesis and scientific reflection of a study domain (Patriotta, 2020) to foster an understanding of the topic and foster future research. Dabić et al. (2021) review described review papers as critical appraisals of content previously published since a literature review serves as a point of reference and embodies the fundamental essence of a research field. Any author should systematically do their research to write a thorough review paper. The literature review employed a systematic approach in this article by first establishing the search criteria and gathering the relevant articles. Secondly is an analysis of the discovered articles and the development of the content-driven codebook. Then, the thematic analysis focuses on the research domain, metacognition in entrepreneurship, by expanding on the theoretical foundations, key research themes, and subthemes.

Sampling of Articles and Collection of Data

To address the entrepreneurship metacognition domain, the search terms in the various journal articles referenced included "metacognition," "entrepreneurship," "metacognitive skills," and "entrepreneurship metacognition." In either case, the reviewed articles mention the search terms in the title, abstract, or the words put as keywords. Further, "metacognition" as a search term is a broad term, and various searches in support of the broad term included terms such as metacognitive knowledge, levels of metacognition, metacognition awareness, and metacognition ability (Flavelll 1979, 1987; Schraw, 1998; Dabić et al., 2021). A systematic review incorporating the search terms was beneficial because it tried several ways to answer the research questions. According to Hulland & Houston (2020), a systematic review is important in outlining the scope of the research domain and giving an overview of the present state of knowledge, providing resolutions to the existing inconsistencies that exists in different studies, synthesizing the literature in the article and integrate with the current work as well as point out gaps that exist in the body of the research.

The study relied on one of the most prominent scientific databases known as Scopus and the Social Science Citation Index (Web of Science – Clarivate Analytics), as it includes very useful and well-performing journals with current literature. Data on global research is available on the Web of Science (WoS) and Scopus platforms from Clarivate Analytics and Elsevier, respectively (Tennant, 2020; Dabić et al. (2021)). Both are largely regarded by the academic world as the two most reliable or authoritative data sources and serve as the foundation for almost all peer-reviewed knowledge about research throughout all fields (Tennant, 2020; Dabić et al., 2021). Further, some conditions formed the inclusion and exclusion criteria. First, for a research article to be included in the review, it should specifically state the scope in its title, abstract, and keywords boxes. Secondly, for an article to be included in the study, it should constitute a thorough investigation and mention entrepreneurship metacognition search terms.

Thirdly, the search criteria required the articles included in the study to be published between 1990 and 2023. Of the articles whose literature was reviewed and referenced in this study, most of them (17) involved published articles and reviews of 2021, 14 were published in 2020, and 10 were published in 2022. In contrast, other years, 1990 and 2023, had one, two, or three articles published. Figure 1.0, a bar graph, shows the number of review articles on which the study relied, which are given in terms of the year of publication and number used. A total number of 74 journal articles were included in the study.

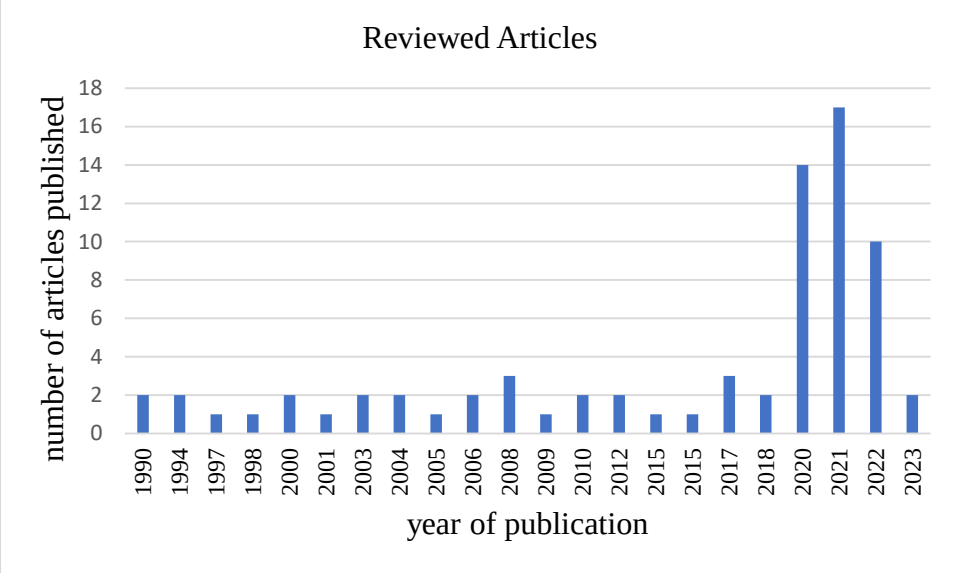

Figure 1.0: A bar graph showing the number of reviewed articles included in the study

Fourth, the research is also limited to comprehensive scholarly papers published in journals with a peer-review procedure to assure the review's validity further. Additionally, only English-language publications were included in the sample to strengthen the quality and coherence—the exclusion criteria required that book chapters, novels, and editorial notes be omitted. As per Kraus et al. (2020), systematic reviews should not include novels to avoid literature of poor quality. Kraus et al. (2020) review established that traditional literature searches were unstructured and not systematic, involving even the use of novels that would render literature reviews like in the entrepreneurship metacognition domain to be of low quality. Table 1.0 summarizes the most popular journal sources according to the number of articles used in the study.

Table 1.0. Overview of the most popular journal used by the number of articles.

No.	Publications	Frequency of articles
1	International Entrepreneurship and Management Journal	11
2	American Psychological Association	11
3	European Journal of Educational Research,	8
4	College & Research Libraries News	6
5	Behavioral Processes	5
6	International Journal of Environmental Research and Public Health	4
7	International Journal of Online & Biomedical Engineering	3
8	International Journal of Environmental Research and Public Health	3
9	Journal of Business Venturing Design	3
10	Small Business Economics	2
11	Journal of Small Business Management	2
12	Entrepreneurship Theory and Practice	1
13	Journal of the Academy of Marketing Science	1
14	International journal of recent contributions from engineering, science & IT	1
15	Journal of the Academy of Marketing Science	1

Building of the Code Book

The building of the codebook started following the literature search, whereby coding and screening of the literature commenced. Instead of examining the specifics of each study, the codebook creation focused on the overarching themes of the included publications in the systematic scoping review to spot a potential future research gap. The building of the codebook follows Wang & Harris's (2022) recommendations. The codebook specifically has five coding categories: the study methodology or the technique, the type of study design, the specific subject or

the research interest, and whether the study was a review study. Table 2.0 briefly describes the details of various coding categories and their subcodes.

Table 2.0: coding categories and Subcodes

Coding Categories	Description	Sub-Codes
1. Methodology	The research method that the study followed.	Quantitative OR Qualitative OR Mixed methods
2. Types of study design	The analytic approaches for the study.	Descriptive study, Correlational study or Experimental study
3. Specific subject	Which is the specific subject the study was focused on.	e.g., metacognition, entrepreneurship or both
4. Entrepreneurship metacognition	Whether the study had a focus on entrepreneurship metacognition	Yes or No
5. Review study	Whether the study was a review study.	Yes or No

Codes were used to show an overview of the key research studies that have been conducted on the topic of entrepreneurial metacognition. The codes included methodology and the study design types. Three subcodes—quantitative method, qualitative method, and mixed methods—were also included in the code methodology. Studies that used quantitative analytical techniques were classified as quantitative methods. Further, the search on the specific subject coding established whether the study had explicit empirical literature on metacognition or entrepreneurship. The study was interested in the specific themes and subthemes around entrepreneurship metacognition. In addition, a 'Yes' or 'No' code was used to define whether the study ad focuses on entrepreneurship metacognition. In line with Wang & Harris's (2022) recommendations, any other searched article that does not support the specific subject would be ruled out after thoroughly examining the available literature and theory.

Theoretical Foundations

Metacognition is a critical cognitive tool for predicting entrepreneurial objectives and improving performance when starting an enterprise. Metacognition is especially crucial for entrepreneurs to develop in the early phases of their decision-making process as it aids in managing ambiguity (Bastian & Zucchella, 2022). In relation to entrepreneurship, this article will explore theories of metacognition that anchor entrepreneurial concepts, including the theories of self-awareness, cognitive development, institutional theory, and discourse theories, among others. Self-awareness is among the most important aspects of metacognition and refers to recognizing and comprehending one's thoughts, feelings, and behavior (Lage et al., 2022). Self-awareness could either be procedural, declarative, or conditional. Schraw (1998) states that declarative knowledge is becoming aware of oneself, while procedural knowledge is awareness of doing things. Conditional applies to being aware of when to use another procedural or declarative knowledge. Metacognitively self-aware entrepreneurs can better monitor their thought processes and engage in strategic decision-making (Haynie & Shepherd, 2009). Additionally, self-awareness can assist business owners in recognizing their advantages and disadvantages, which is essential when coping with challenging and uncertain entrepreneurial situations.

Typically, the theory of self-awareness in metacognition refers to how people examine and assess their capabilities. Chapman et al. (2020) refer to self-awareness as a broad, multifaceted, and dynamic concept that affects a variety of cognitive, physical, sensory, and functional domains. According to Mitsea et al. (2021), metacognition is a higher-level "control" system that can become aware of its operations. The ability of humans to become aware of their cognitive processes and effectively monitor, control, and modify them to advance to greater degrees of self-development makes them unique among life forms (Schraw, 1998). Metacognition is the main capability that enables people to control their cognitive processes in ways that enable them to be creative, cooperative, critical, resilient, decisive, and adaptable (Haynie & Shepherd, 2009). Not particularly creative people can nonetheless be creative with metacognition (Mitsea et al., 2021). For example, people who want to become better communicators,

decision-makers, team players, and learners should use metacognition knowledge as a tool for self-evaluation to identify their strengths and limitations and then work to find the proper ways to make up for these weaknesses.

Secondly, the other theoretical foundation of metacognition is executive function. The execution function is another component of metacognition that is likely to yield a high quality of life (Diamond, 2013). Executive functions are monitoring, regulating, and guiding information and goals. The processes include planning, organization, problem-solving, and decision-making. The theory is anchored on the self-regulatory executive function (S-REF) model, which explains metacognition. S-REF model acknowledges that people's responses to unfavorable thoughts and emotions can lead to problematic metacognitive views (Han et al., 2021). The S-REF model claims that intrusive thoughts and worry-related dysfunctional metacognitive beliefs are linked to the emergence and maintenance of hallucinations and delusions (Sellers et al., 2017; Huntley et al., 2020). Above all, Salguero et al. (2020) reveal that dysfunctional metacognitive beliefs, which hold that own mental processes cannot be controlled, are strongly connected with rage. The model does not imply that persons with greater metacognitive ability have better self-reflection (Han et al., 2021). In entrepreneurship, executive functions allow entrepreneurs to identify and strategize to reach their goals effectively. Additionally, they enable entrepreneurs to focus on the most important task and delegate tasks to others.

Third is the cognitive theory of entrepreneurial metacognition, which infers that metacognitive ability affects how decisions are made and how problems are solved. Persons with metacognitive abilities can manage and monitor their thought processes by employing self-monitoring, self-evaluation, and self-correction techniques (Haynie et al., 2010). While metacognition monitors cognitive tasks, Han et al. (2021) describe cognition as an intelligent activity to handle a problem. Flavell (1979) and Han et al. (2021) refer to metacognition as the cognitive framework, information, activities, and procedures involved in regulating, modifying, and interpreting the thought process. Entrepreneurs can use their critical thinking and strategic planning skills to pinpoint and create workable solutions to any issues. Additionally, the cognitive theory asserts that metacognitive ability enables entrepreneurs to learn from their failures, apply their creativity to develop novel solutions and foresee potential roadblocks to their success.

The cognitive theory asserts that metacognition is divided into two main components: metacognition knowledge and metacognition control. Metacognitive knowledge, or meta-knowledge, is people's understanding of their mental processes and their capacity to observe and consider them (Fleur et al., 2021). On the other hand, Livingston (2003) defines metacognitive control, or meta-control, as the ability to self-regulate through behaviors like planning and changing behavior in response to results. Meta control is defined as the flow of information from the meta-level to the object level, and metaknowledge is the flow of information from the meta-level to the object level (Nelson, 1990; Shimamura, 2008). Cognitive processes, including decision-making, encoded semantics, object identification and discrimination, and spatial representation, all fall under the umbrella of the object level (Fleur et al., 2021). Information from the object level is analyzed, and top-down monitoring of object-level operations is placed on the meta-level.

Figure 2.0 shows the model of metacognitive processes. The upward movement of knowledge from the object to the meta-level is called meta-knowledge. In contrast, the downward flow from the meta-level to the object level defines meta-control (Nelson & Narens, 1994). Therefore, metacognition is defined as the top-down management and bottom-up observation of object-level processes (Fleur et al., 2021). For instance, procedures like error detection/monitoring, effort tracking, and correcting mistakes can be associated with meta-knowledge in executive functions. In contrast, inhibitory management, distribution of resources, and control of errors can be associated with meta-control (Fernandez-Duque et al., 2000). Metacognitive knowledge is the conscious understanding of people, tasks, and strategy-related cognitive issues ((Flavell, 1979; Haynie & Shepherd, 2009; Majeed, 2022). Analysis of the internal and external constraints to the growth of entrepreneurs adds to the knowledge of metacognition. The ability of the entrepreneur to link self-reflection and reason to clients, rivals, and networking with possible investors is therefore crucial.

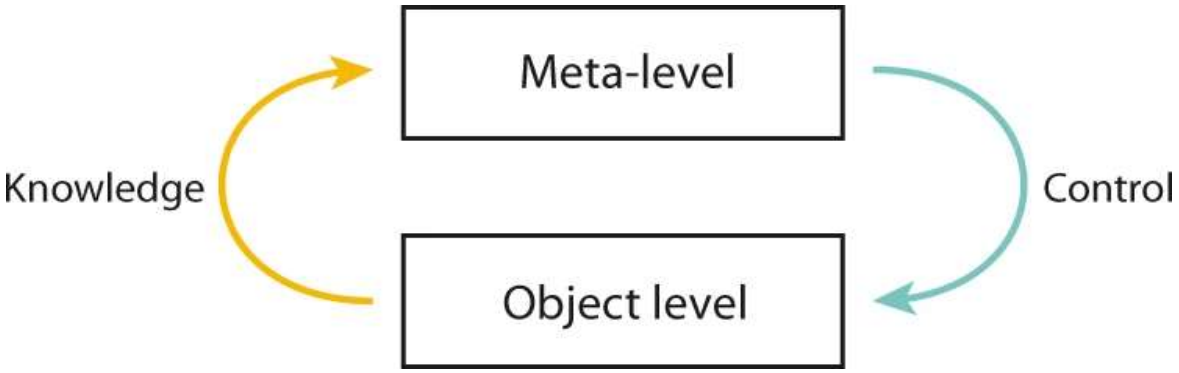

Figure 2.0: The model of metacognitive processes (Nelson & Narens, 1994)

Typically, cognitive development theory highlights the developmental changes in thinking as an individual matures. According to the theory of cognitive development, metacognitive processes become more complex as an individual grows and gains experience with tasks (Haynie & Shepherd, 2009). The theory has been used to explain how an individual develops the skills and strategies needed for successful metacognition (Jain et al., 2023). Cognitive development theory suggests that as individuals gain task experience, their metacognitive processes become more effective. Haynie & Shepherd (2009) reveals that as individuals become more aware of their cognitive strengths and weaknesses, they can use the knowledge to adjust their strategies according to the task demands, resulting in more effective problem-solving and decision-making.

The fourth theory is the psychological theory of entrepreneurial metacognition. The theory is anchored by the hierarchical metacognition processing model (Haynie & Shepherd, 2009). According to the theory, people use a hierarchy of thought processes to find issues and solutions (Drigas & Mitsea, 2020). The approach states that entrepreneurs start with a collection of concepts and ideas, which they then analyze and organize (Mitchell et al., 2005). Entrepreneurs are then given a set of methods to apply to their problem-solving abilities due to the analysis and structuring of the information (Haynie et al., 2010). An entrepreneur can, for instance, start with the objective of boosting firm profits before rigorously analyzing the numerous economic and marketing difficulties that must be resolved to realize the objective. The psychological approach asserts that metacognitive processes are continually updated, "employing observation of one's and other people's behavior/actions and their outcomes" and "through interpersonal relationships with others" (Bastian & Zucchella., 2022). The hierarchical information processing model contends that problem-solving and problem-identification depend heavily on a person's metacognitive abilities. Typically, an individual metacognitive ability allows the entrepreneur to thoroughly consider their problem-solving approaches before taking any action and to employ deliberate techniques to make sure that their problem-solving is successful.

The economic theory of entrepreneurship metacognition is another theory that anchors the notion that metacognitive skills enable individuals to use their resources more effectively. Metacognition theory uses a process-based approach to help nascent entrepreneurs in emerging economies build their sense-making structure and effectively handle the difficulties of an evolving context (Dabić et al., 2021; Majeed, 2022). A person who is metacognitively aware will better understand the complexity of the work environment and choose an appropriate alternative that will maximize the benefits of their final decision (Haynie & Shepherd, 2009). In an emerging economy, entrepreneurial work requires high-order sense-making to enable entrepreneurs to take a directional risk in response to feedback from a complex environment and to develop sustainably in their present endeavors (Majeed, 2022). If the enterprise fails, it could suffer unfavorable losses and set a bad precedent for future entrepreneurs.

Metacognitive skills also form the theoretical underpinnings that anchor the study. The term "metacognitive skills" refers to a group of cognitive processes that include self-monitoring, self-evaluation, and self-regulation (Schraw et al., 2006; Schuster et al., 2020). These abilities are necessary for entrepreneurs to make wise decisions and solve problems. Entrepreneurs with metacognitive abilities can better recognize their thought patterns and develop original, workable solutions to problems. They may also assist with self-criticism, which is necessary for absorbing feedback. Schraw (1998) reveals that metacognitive skills allow individuals to recognize their strengths and weaknesses and identify where their limited resources can best be applied. They also allow individuals to recognize and use their competitive advantage when strategizing. In addition, metacognitive skills enable entrepreneurs to assess their performance and adjust any mistakes they may have made. Güner & Erbay's (2021) study reveals that metacognitive skills enable individuals to develop strategies that aid in problem-solving by giving

logical reasons and answers to issues. As such, the economic theories of metacognition suggest that metacognitive skills are essential for any entrepreneur to succeed, as they give them an advantage in the competitive environment.

Although cognitivism seems more plausible than behaviorism, it lacks several crucial components pertinent to entrepreneurship. However, Bandura (2001) postulates that cognitivism relates to behaviorism in three components: self-reflection, regulation, and influence. As learners are required to understand and make sense of the outside world, cognitivism does welcome cognitions (Bandura, 2001). However, cognitivism treats reality as objective and merely projected onto the learner's mind. Thus, cognitivism disregards the particular circumstances and experiences that an individual is going through. Cognitivism differs from behaviorism by connecting a prospective reaction to the individual's mental processes rather than treating learning as a simple stimulus-response relationship. However, it still needs more opportunities for innovation (Tarasanski., 2020). From an entrepreneurial standpoint, entrepreneurs are only expected to find possibilities in the market and take advantage of them rather than create them.

The constructivist learning theory, for instance, is a well-liked learning theory that postulates that people build their understanding of the world and progress via experience with activities (Schunk, 2012). Constructivist theorists contend that metacognitive processes are more successful when people actively seek to understand a task and use their experience to develop methods for completion (Tarasanski., 2020). By arguing that metacognitive strategies work better when people are in an active learning state, constructivist learning theory has been utilized to explain metacognitive processes. Huq & Gilbert (2017) reveals that constructivism and metacognition complement each other. Individuals can better monitor and regulate their cognitive function when actively engaging with their surroundings, using their experience to set goals and prepare tactics.

The other theoretical foundations behind the review of the topic of interest are the discourse theories of entrepreneurial metacognition that focus on how entrepreneurs interact with and interpret their work to produce meaningful results. Discourse theories examine entrepreneurs' subjective, language-based interactions when forming a venture (Salih, 2022). The intricate dynamics provide an understanding of how entrepreneurs interact with and process information effectively to make decisions that can lead to success. However, Agili & Prabhashini's (2021) study establishes that there could be variations in the performances due to the influence of different factors in the interaction and learning process. The discourse theories of entrepreneurial metacognition view metacognitive skills as socially situated practices. According to the theory, entrepreneurs use metacognitive strategies to create a 'discourse' with other actors in their entrepreneurial environment, including individuals and the environment itself (Salih, 2022). For instance, entrepreneurs use metacognitive skills to interpret and construct the meanings of their interactions with others, the marketplace, and the wider world. Hence, entrepreneurs can better identify and understand the critical issues they must consider and address to succeed.

Concerning entrepreneurship, another theory that anchors the study is the institutional theory. Dabić et al. (2021) study on institutional theory defines institutions as groups of developed moral beliefs that control political, economic, and social interaction. Entrepreneurship is anchored on institutional theory (North, 1990; Scott, 2013; Veciana & Urbano, 2008). Every society has formal institutions comprising the framework of laws and regulations and informal institutions, which are the unspoken socially accepted guidelines for appropriate and inappropriate behavior. The new enterprises that form, in this case, organizations, will reflect the potential that the institutional framework offers. As per Dabić et al. (2021) review, the institutional theory is a social science approach that examines how social structures, values, and norms shape the behavior of individuals in organizations. The theory seeks to understand how institutions and their norms shape the behaviors and decisions of individuals, as well as how the decisions shape organizations and markets (Fu et al., 2018). The institutional theory aims to identify how a given social system influences the decisions and behavior of organizations and individuals in that environment.

Thirdly, institutional theory can aid entrepreneurs in comprehending the effects of their choices. Entrepreneurs can better grasp the effects of their choices and modify their tactics by knowing the institutions in which they are embedded (Dimov & Pistrui, 2023). The theory spells out that, for entrepreneurs operating in complicated and dynamic environments, it is essential to understand the consequences of any decision before making one and to foresee how the environment may alter due to the decision. Knowledge-based view (KBV) is another theoretical framework that anchors the study of metacognition in entrepreneurship. The KBV is a well-known theoretical paradigm for explaining the knowledge and learning-related influences on entrepreneurship. Most of the knowledge and abilities needed to run a business come from experience, and starting fresh enterprises helps people develop their entrepreneurship-specific expertise.

According to KBV, knowledge management involves sharing knowledge and human creativity. The theory postulates that the concept of KBV incorporates the gathering, revision, transformation, broadcast, use, and creation of knowledge (Cheng et al., 2022). The Knowledge-Based View (KBV) theory is an intellectual approach to

knowledge accumulation that claims an entrepreneur may successfully run a business when they have the cognitive abilities and knowledge to generate and build on ideas (Argote et al., 2000). KBV is founded on the notion that a person's knowledge accumulation considerably diverges from the conventional view of knowledge as a basic commodity in that it may be obtained via practice and experience and is transportable across numerous fields. According to the theory, knowledge can be acquired by significant effort or a latent ability that some people have.

Illustration of the Model of Metacognition

The model of metacognition has five theoretical dimensions. First is goal orientation, the degree to which a person perceives environmental variances in light of several individual, social, and organizational goals (Haynie & Shepherd, 2009). Secondly is metacognitive knowledge, the degree to which a human generates numerous decision frames to understand, plan, and carry out objectives to "manage" an ever-changing environment (Flavell, 1979). Metacognitive knowledge depends on how much the person relies on what is already understood regarding themselves, others, tasks, and strategies (Haynie et al., 2010). Thirdly is a metacognitive experience, which is the degree to which a person uses unique experiences, feelings, and intuitions when creating numerous choice frames aimed at interpreting, planning, and carrying out objectives to "manage" a changing environment. Fourth is a metacognitive choice, which refers to the degree to which a person actively chooses from a variety of decision frames the one that best interprets, develops, and executes a response for "managing" a changing environment (Flavell, 1979; Haynie & Shepherd, 2009). Fifth is monitoring, which involves getting feedback on the other four dimensions and evaluating it to manage the ever-changing environment. Figure 3.0 shows the conceptual metacognitive model.

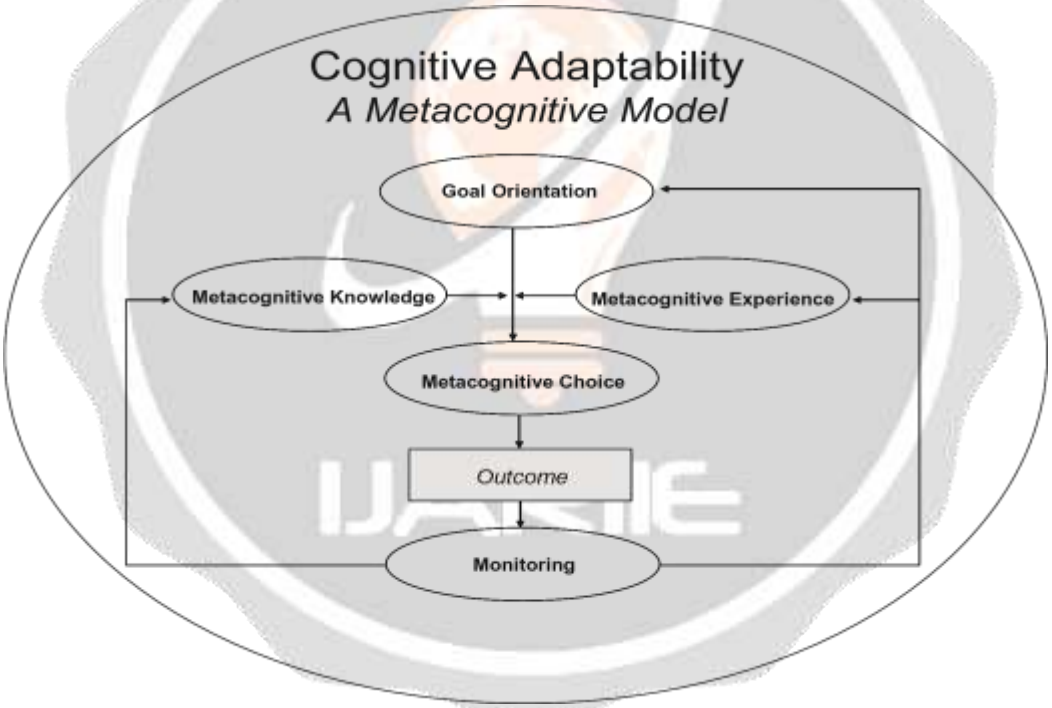

Figure 3.0 Conceptual metacognitive model.

Metacognition is built on eight separate but related pillars. Drigas & Mitsea (2020) illustrate the eight pillars of the model, with the first being metacognitive knowledge which refers to the learners' capacity to create knowledge, particularly in relation to their cognitive processes, and to create meta-representations of that knowledge (Flavell, 1979, 1987). The pillar of metacognitive knowledge necessitates a grasp of cognition, including how it works and is organized hierarchically. A profound grasp of the nature of developing meta-abilities and meta-skills that enable "learning to learn" processes is required (Flavell, 1979). The second pillar is the applied metaknowledge. Depending on the degrees of freedom specified by a task, challenge, or scenario, the person should strategically use their mental tools and apply metacognitive knowledge. Experience, reflection, and methodical application in real-world settings come before applied meta-knowledge (Drigas & Mitsea, 2020). The pillar of applied meta-knowledge also entails awareness of one's advantages and disadvantages. The pillar requires the capacity to apply previously acquired knowledge to fresh situations.

Further, the third pillar is self-observation which refers to the ongoing observation of one's internal and exterior throughout learning. A particular type of inward focus and control illuminates the sources of knowledge. Self-observation is a higher meta-ability that gradually grows with consistent practice. As per Drigas & Mitsea (2020), self-observation can be gradually attained through various meditation practices, including sitting in silence and lying or walking meditation. The fourth pillar is self-regulation which is the ability to control cognitive processes and correct any observable disturbances that prevent the cognitive and psychophysiological processes that underlie learning from operating normally (Drigas & Mitsea, 2020). Expertise in self-regulation enables humans to recognize any current thoughts, feelings, perceptions, and behaviors and attempt to control them in the present moment (Morrison & Jha, 2015). The fifth pillar is adaptability which refers to the capacity of people to change their mental and emotional states and learning behaviors to meet their objectives and expectations of learning (Drigas & Mitsea, 2020). The sixth pillar of the model is the recognition which is the capacity of learners to become conscious of their mental and emotional states and to comprehend how these affect learning. In order to learn from others, the pillar of recognition suggests the need to have the capacity to discern their mental states.

The seventh pillar of the model of metacognition is discrimination. The pillar of discrimination refers to the filtering and selectively choosing what is important or unnecessary in a learning environment regarding information and knowledge, differentiating between the known and unknown in each challenge, and helpful from harmful variables in learning (Drigas & Mitsea, 2020). According to Drigas & Mitsea (2020), discrimination carries out its filtering action without retaliatory rejection or suppression. Conversely, one can discriminate when attention is stabilized, calm, and steady. The eighth pillar is Mnemosyne. The awakened state connotes the voluntary sustaining of relaxed alertness and preparedness to reach optimal performance. Additionally, the pillar of Mnemosyne represents the internalized information that propels and inspires individuals to achieve success, independence, and mindfulness (Drigas & Mitsea, 2020). Figure 4.0 depicts the eight metacognition pillars and how they are connected.

In relation to entrepreneurship, the pillars of metacognition can be understood as mental frameworks for successful business decision-making. The pillars contain the key attributes of metacognition that drive rigorous thinking and intelligent decision-making. Each pillar includes a variety of approaches that aid in developing specific metacognitive skills and traits, progressively raising degrees of self-organization, cognitive ability, and mindfulness of an individual. Similarly, entrepreneurs with high metacognitive skills can record improved performance of their ventures owing to applying the various pillars of the metacognition model. For instance, entrepreneurs can use self-observation techniques to learn more about their advantages and disadvantages and prospective opportunities and problems.

Additionally, self-regulation is essential for entrepreneurs when it comes to making tough decisions, recognizing opportunities for improvement, and managing stress to ensure they remain efficient, productive, and focused. Nonetheless, the eight pillars of metacognition form the foundation of successful entrepreneurship. Reliance on the eight principles enables entrepreneurs to gain greater insight into themselves and their environment, further allowing them to develop effective strategies for business success. According to Dimov & Pistrui (2023), entrepreneurs' cognitive agility varies.

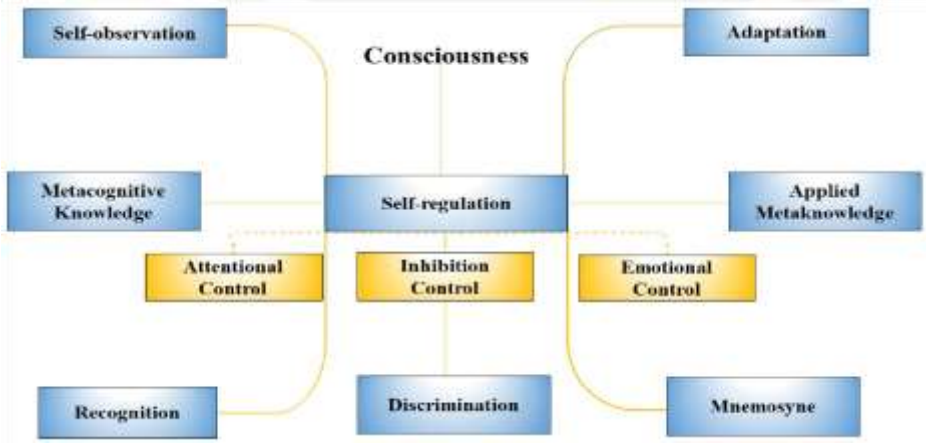

Figure 4.0: Pillars of metacognition model.

Research Themes and Subthemes

Following the codebook and the reviewed literature, different themes and subthemes were formed to provide answers to the research questions that this study sought to address. This section shall consist of the themes and the sub-themes that anchor the main research topic on entrepreneurship metacognition.

Research Question 1: How does metacognitive awareness impact entrepreneurial decision-making?

The first theme in addressing the question would be the "*Impacts of metacognitive awareness on individual entrepreneurial decision-making*." Different kinds of literature anchored the research theme, subdivided into subthemes depending on the theoretical underpinnings of the reviewed articles. One of the subthemes is the "*entrepreneur metacognition impact on nascent entrepreneurs*," which was in line with the study by Bastian & Zucchella (2022) article. The study by Bastian & Zucchella (2022) involved a qualitative study design. The study involved a longitudinal approach, and it was a descriptive study whose specific focus was on entrepreneurship metacognition. The study was not a review study but an actual research study since interviews and semi-structured questionnaires were given to 99 sampled respondents who were termed to be nascent entrepreneurs.

Typically, an entrepreneur is an individual that engages in decision-making to take risks in a certain venture. The second theme to address the research question would focus on the "*Role of metacognitive awareness in entrepreneurial risk-taking*." The theme would be supported by the quantitative study of Kemboi & Tarus (2021) in a descriptive research design whose focus was on metacognition in entrepreneurship. The study involved proving a hypothesis, and an actual study was done involving a sample of 466 small and medium entrepreneurs. In support of the theme, two sub-themes could be derived to further elaborate on the main theme. Kemboi & Tarus's (2021) study puts the spotlight on the role of metacognitive awareness and knowledge on entrepreneurial innovativeness. Thus, one of the subthemes would be the "*role of metacognitive awareness*" and the "*role of metacognitive knowledge*." Kemboi & Tarus (2021) findings established that metacognitive awareness had a positive and significant effect on entrepreneurs' innovativeness. The findings may imply that entrepreneurs who were metacognitively aware were more probable to engage in risk-taking than those who appeared not metacognitively aware.

On the other extreme is the "*role of metacognitive knowledge*." Although similar to the previously mentioned subtheme (metacognitive awareness), knowledge could either be natural or acquired. However, various literatures anchor the subtheme, including Clements et al. (2021) and Estrela et al. (2021) studies. Clements et al. (2021) was a qualitative study that employed mixed methods to study cognitive knowledge impact on entrepreneurship. The specific subject that the article focused on was entrepreneurship and how it is influenced by cognition. The study was a review study of previously published eight peer-reviewed articles. According to Clements et al. (2021), from an entrepreneurship research perspective, cognition primarily relates to the knowledge structures people use to make judgments and decisions about the development, appraisal, and expansion of opportunities. In order to identify or develop new items and acquire resources to launch and expand businesses, cognition knowledge aims to demonstrate how entrepreneurs integrate and piece altogether formerly connected knowledge.

Metacognition knowledge is the capacity to monitor and control one's conduct. The knowledge comprises knowledge about oneself, the surroundings, and the circumstance. In line with Clements et al. (2021) findings, an entrepreneur can be better prepared to make wise judgments if they have knowledge of their own attitudes toward a venture as well as those of other stakeholders. An entrepreneur can better focus on the risks and rewards of the enterprise by being aware of how his or her personal emotions and biases may affect decision-making. Entrepreneurs can be cognitively adaptive by engaging in meta-cognition, implying they get the capacity to be "dynamic, flexible, and self-regulating in their cognition given dynamic and uncertain task environments (Clements et al., 2021). Entrepreneurs who have a high level of metacognitive knowledge may concentrate on the key aspects of a business and change course as necessary. Additionally, the understanding helps identify important consequences of a venture that the entrepreneur might not be aware of right away.

The success of any decision made by an entrepreneur would depend on the level of metacognition knowledge possessed by the entrepreneur. Estrela et al. (2021) study that involved a quantitative study sought to prove the hypothesis that a significant relationship exists between entrepreneurial success in decision-making and metacognition knowledge. The study was not a review but an actual study where 169 respondents were involved. The study involved a correlational research design to investigate the relationship between metacognition knowledge and an entrepreneur's success in decision-making. As per Estrela et al. (2021) findings, metacognitive knowledge has significant and indirect effects on the success of entrepreneurial decision-making. The study by Estrela et al. (2021) reveals that self-realization and self-leadership are the key elements that form an entrepreneur's profile.

Research Question 2: How do various levels of metacognitive ability correlate with entrepreneurial success?

In order to address the research question, the first theme is the "*analysis of metacognition ability levels"* Understanding the different levels of metacognition ability would help further in understanding their correlation

with entrepreneurship success. The subthemes will be the individual metacognition ability levels. First and foremost is the understanding of metacognition ability so as to further elaborate on its levels and link it with entrepreneurship success. Different researchers have tried putting forth the meaning of "metacognition ability." Seow et al. (2021) review defined metacognition ability as the ability to analyze one's own thought processes and emotional states. Seow et al. (2021) involved a qualitative study whose specific subject was metacognition and referred to metacognition ability as an essential component of human experience that is subjective and spans several hierarchical levels of conceptualization, comprising both local self-belief in specific decisions and more general self-belief regarding our general competence.

There are different levels of metacognition ability that exist, and among the critical ones to put focus on include self-awareness, self-regulation, decision-making, problem-solving, and adaptability, as shown in Figure 3. To start with, the level of *self-awareness*, which, in line with Hägg (2021) study self-awareness, is the first level of metacognition ability towards gaining conditional knowledge about why and when one should take entrepreneurial decisions in order to balance the frequently action-oriented procedures prevalent in enterprise formation programs. Hägg (2021) study was a qualitative study that involved a review of the past articles published within the last seven years. The study focus was on metacognition and its relation to entrepreneurship decision-making, and the findings imply that self-awareness is highly collinear with entrepreneurship success. Self-awareness is the most basic level of metacognitive ability that involves awareness of oneself and one's environment. The level encompasses the ability of the entrepreneurs to recognize thoughts, feelings, behaviors, and environmental conditions and to be able to differentiate between them. Self-awareness level encompasses being able to differentiate between "right" and "wrong" or "good" and "bad."

The second level of metacognition ability is *self-regulation.* Dimov & Pistrui's (2023) study involved a review of published articles on entrepreneurship metacognition and put the spotlight on the self-regulation level of metacognition ability. Self-regulation is the ability to modify and control one's own thought processes and behavior. The level of self-regulation involves being able to modify, direct, and sustain one's cognitive processes to meet personal goals and objectives. In line with entrepreneurial metacognition, self-regulation requires the development of self-knowledge, self-efficacy, and self-control to achieve entrepreneurial success. The findings of Dimov & Pistrui's (2023) review established that self-regulation has three key elements, which include planning, monitoring, and evaluation. In line with Dimov & Pistrui's (2023) study findings, monitoring is being mindful and aware of and responding to how one is performing their activity; evaluation is assessing how effective regulation is working; and planning is identifying and selecting relevant tactics and allocating resources.

The third level of metacognitive ability is *decision-making*, or called *executive function.* Khawar et al. (2022) quantitative study puts the focus on getting the correlation between entrepreneurship success and the executive function, which is a key level of metacognition ability. The study by Khawar et al. (2022) involved a sample of 539 respondents that were interrogated on the impact of executive function on their entrepreneurial intent. Executive functioning is the ability to decide quickly and carefully. Executive function calls for having a thorough understanding of the circumstances and the capacity to consider all feasible outcomes and implications of a choice.

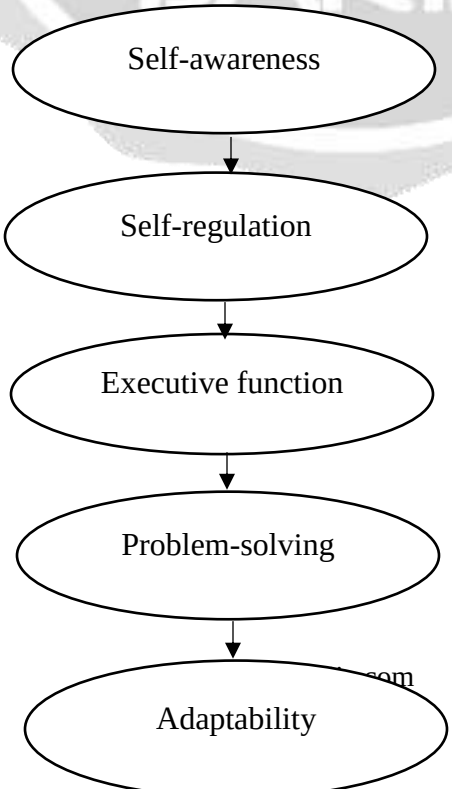

Figure 3: levels of metacognition ability

The fourth level of metacognition ability is *problem-solving*. Finding an issue, analyzing it, and then coming up with a creative solution are all aspects of problem-solving. The process encompasses the ability to engage in analytical thinking, problem-solving, knowledge integration, and critical thinking. Jain et al. (2023) integrative review puts focus on the relationship between metacognition and the workplace performance. The study is qualitative research that tries to link metacognition and the individual performances at the workplace. Jain et al. (2023) relied on empirical literature review from the Web of Science and Scopus database to establish the connections between metacognition, occupational cognitive abilities, and success at work.

The fifth level of metacognition ability is *adaptability.* Adaptive thinking entails the capacity to overcome difficulties in order to promote learning and development. Adaptability involves anticipatory preparation, self-control, interpersonal ability, and communication. Wang et al. (2020) quantitative study sought to establish any relationship between entrepreneurial cognitive adaptability and the entrepreneur efficacy and risk performance. The study was a correlational study involving actual research that used 432 respondents focusing on entrepreneurship cognition. Wang et al. (2020) defines cognitive adaptability as the capacity of an individual or group to provide feedback via the cognitive processes ingrained in the environment and to alter or modify the decision-making process in a suitable and efficient way. A team of entrepreneurs with a variety of cognitive differences is consequently more inclined to have flexibility in cognition.

Research Question 3: What strategies can be used to develop metacognitive skills in individuals with entrepreneurial minds?

The main theme that the answers to the question will be grounded in is "*strategies to develop metacognition skills among entrepreneurs*." The subthemes will comprise of the *strategies* themselves. Jain et al. (2023) reveal that metacognitive skills are crucial for entrepreneurship success in that they motivate one to improve performance and help ensure successful risk-taking of any decisions made by the entrepreneur. The first strategy that is effective in the development of metacognitive skills is *self-reflection*. Liu (2021) and Wang et al. (2022) are among two studies that frequently mention and shed light on the strategy of self-reflection. Liu's (2021) study is qualitative and tries to explain the need for self-reflection before climbing any ladder, be it in entrepreneurship. The study is a review of previously published articles whose specific subject is metacognition. Liu's (2021) study review refers to self-reflection as an essential phase in the process of evaluating information. Self-reflection in the information evaluation process prompts individuals to consider their observations, interpretations, presumptions, conclusions, views, and actions. Self-reflection stops us from making speedy progress up the inference ladder and entering a self-defeating reflection loop.

The other strategy to gain metacognitive skills for individuals with an entrepreneurship mindset is *goal setting*. Setting goals is a great way to cultivate metacognitive skills. Setting specific goals enables entrepreneurs to track their progress while staying motivated and focused. Setting goals also makes clear what must be accomplished to succeed. Kontostavlou & Drigas (2021) study involved qualitative research that reviewed various studies on metacognitive strategies and established that planning, execution, and monitoring are all tasks revolving around goal setting. The specific study focus was on metacognition. Kontostavlou & Drigas (2021) study review findings spelled out that there are three metacognitive strategies, including planning, which involves actions relating to what one must learn, what amount of time is needed, which method is best, and what the goal is. Secondly is execution which encompasses fulfilling the set goal. Third is monitoring, which is defined as actions taken either throughout the learning process or at its conclusion to determine whether the goal was attained through the exercise of self-control.

Future Research

The study intended to address the topic of metacognition in entrepreneurship by conducting an intensive literature search and uncovering any theoretical underpinnings to support the topic. However, the literature search has yet to be exhaustive on all dynamic's topics and themes of metacognition, such as team metacognition which is a broad topic that this study recommends for further research. Teams' metacognition implies the ability of teams to know when to get particular information and solve problems through teamwork (Hinsz, 2004; Hinsz et al., 1997; Thompson & Cohen, 2012). Hamilton et al. (2017) and Rhodes et al. (2018) are among the studies that inform that team metacognition is directly related to team performance. Rhodes et al. (2018) state that team metacognition improves proactiveness and innovativeness, lowering entrepreneurial risks. According to McCarthy & Garavan's (2008) study, metacognition is a key aspect vital in individual-level learning. However, little has been done

establishing the impact of metacognition under team-level or collective-level learning, which this study suggests for future research.

First, in discovering the impacts of metacognitive awareness on individual entrepreneurial decision-making, Bastian & Zucchella's (2022) study focused on nascent entrepreneurs, yet entrepreneurship metacognition is relevant to all types of entrepreneurs. Further studies should be done on the impact of metacognition on all entrepreneurs, including first-time entrepreneurs, habitual entrepreneurs, and portfolio entrepreneurs. In addition, Kemboi & Tarus's (2021) and (Clements et al., 2021) analysis reveals that a high level of metacognition leads to high performance among entrepreneurs. Further research needs to be done to understand the correlation between levels of metacognition and entrepreneurial risk-taking performance. For instance, does a low level of metacognition in entrepreneurship result in low-risk performance? What are the implications of having low levels of metacognition among entrepreneurs in decision-making?

Lastly, the literature search to determine any correlation between metacognitive levels and entrepreneurial success revealed that the five levels of metacognition ability include self-awareness, self-regulation, decision-making, problem-solving, and adaptability. However, the levels of metacognition are not limited to five; therefore, further studies are suggested to discover other levels of metacognition ability. The studies of Hägg (2021) and Khawar et al. (2022) found a high correlation between entrepreneurship success and the level of metacognition ability in question. Similarly, the same findings were also obtained by the studies of Jain et al. (2023) and Wang et al. (2020). However, there might be differences in the levels of entrepreneurial success, implying a variation in the levels of metacognition. A further search needs to be done to discover any differences between the levels and the success obtained in entrepreneurship and whether entrepreneurs operating under a certain level of metacognition ability would be more successful than others.

Implications For Practice

The literature findings of the study provide various meaningful contributions to practice. First, the findings spelled out that metacognitively aware entrepreneurs perform better in decision-making. Entrepreneurship decision-making is similar to risk-taking and requires metacognitive knowledge and awareness. In reference to the Knowledge-based view (KBV) theory, an entrepreneur will succeed in business when they have the cognitive abilities and knowledge to generate and build on ideas. Schraw (1998) depicts that an entrepreneur will succeed in a venture upon planning, monitoring, and evaluating the entrepreneurial decision taken. Entrepreneurs need to possess different levels of metacognition ability in that they must be self-aware, have self-regulation, engage in robust decision-making and problem-solving, and become adaptable to the prevailing environment. Further, the study recommends three practice strategies to gain metacognition skills among individuals with an entrepreneurship mindset. The strategies include self-reflection, goal setting, and engaging in critical thinking.

Conclusion

Metacognition is an essential element of entrepreneurship. Metacognition implies having knowledge and experience to pursue a certain task, goal, or strategy (Flavell 1979, 1987; Schraw, 1998). Entrepreneurs require metacognitive knowledge to be able to pursue their entrepreneurial efforts successfully. In line with this study's literature search and theoretical underpinnings, entrepreneurship metacognition is grounded on self-awareness, cognitive development theory, KBV, institutional learning, metacognitive skills, and psychological development theory. As per the research questions the study sought to address, first, robust decision-making in entrepreneurship requires metacognitively aware people. Secondly, success in any entrepreneurial initiative would require high metacognitive abilities or skills. Entrepreneurship success is associated with self-awareness, self-regulation, robust decision-making, problem-solving, and adaptability. Thirdly, metacognition strategies to help develop better entrepreneurial mindsets include self-reflection, goal setting, and critical thinking. However, more than individual metacognition is required to address entrepreneurship metacognition, and further studies on team metacognition are recommended to enrich the research theme and raise more literature on the subject.

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