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A Conceptual Model of Madrasah Leadership Based on Neuroleadership and Whole Brain Management

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ABSTRACT

The excellence of 21st-century madrasahs is no longer determined solely by capital, infrastructure, technology, or management, but by the ability to optimize human resources' cognitive abilities, creativity, knowledge, and collaboration through neuroleadership. This study aims to formulate a conceptual model of madrasah leadership based on neuroleadership to support the holistic management of brain potential. The study employs a qualitative approach using a descriptive-analytical literature review method. Data were sourced from reputable scientific articles, books on educational neuroscience, modern leadership theories, national education policies, and international research on neuroleadership. Data were analyzed using content analysis through concept identification, perspective synthesis, and conceptual model construction. The results indicate that madrasah excellence requires fifth-generation management that prioritizes knowledge-based activities, learning competencies, an understanding of how the brain works, and the optimization of cognitive potential as its primary foundations. The principle of whole-brain management helps leaders recognize diverse thinking patterns, integrate cognitive preferences, and align individual thinking tendencies with job requirements. The application of neuroleadership strengthens motivation, learning, social interaction, collaboration, innovation, and organizational performance. Thus, neuroleadership is a strategic competency for madrasah leaders to build governance that is adaptive, collaborative, innovative, people-oriented, and sustainable. This model underscores the importance of developing leaders who can effectively manage cognitive diversity as a collective strength of the madrasah in the face of complex and dynamic changes in education.

Keywords: Neuroleadership, madrasah leadership, learning competencies, whole-brain management.

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Introduction

Decision of the Minister of Religious Affairs of the Republic of Indonesia No. 184 of 2019 concerning Guidelines for Curriculum Implementation in Madrasahs and the Master Plan for Madrasah Education Development 2010–2030 directs the development of madrasahs to become excellent, high-quality, and competitive educational institutions. Madrasahs are expected to produce graduates who are religious, knowledgeable, skilled, and professional, and who can contribute to the life of the community and the nation (Minister of Religious Affairs, 2019). Achieving this vision requires leadership capable of responding to changes in the educational environment, which is becoming increasingly complex, fast-paced, and knowledge-based.

In this context, the challenges of madrasah leadership are not only related to the management of the curriculum, facilities, technology, and administration, but also to the ability to develop the potential of human resources. Madrasah leaders need to foster a culture of learning, encourage creativity, manage diverse ways of thinking, and strengthen collaboration among the madrasah community. Therefore, madrasahs need to adopt fifth-generation management, which places knowledge-based activities at the foundation of organizational development.

Savage (1996) explains that the competitive advantage of 21st-century organizations no longer relies solely on financial capital, physical assets, or technology, but rather on the ability to harness human intellectual capacity, creativity, knowledge, and collaborative capabilities. This paradigm shifts management practices from resource management toward the management of collective intelligence. In educational organizations, this shift requires leaders to develop learning competencies, build knowledge networks, and foster collaboration that supports innovation and organizational sustainability (Bahaudin, 2003).

One relevant approach to addressing these challenges is neuroleadership, an approach that integrates knowledge about how the brain works with leadership practices (Briceño et al., 2025). This approach is based on the understanding that thought processes, emotions, motivation, decision-making, social interactions, and leadership behavior are linked to the brain's mechanisms (Rock & Ringleb, 2013). Neuroleadership focuses on four key capabilities: decision-making and problem-solving, emotional regulation, social collaboration, and the ability to lead change (Rock & Ringleb, 2013).

These capabilities are relevant to madrasah leaders because educational leadership is fundamentally not only about strategy

formulation but also about the ability to build trust, foster motivation, and develop human potential.

The application of neuroleadership can be reinforced through the concept of whole-brain management developed by Ned Herrmann. This concept asserts that every individual has different thinking preferences. Using the Herrmann Brain Dominance Instrument (HBDI), these preferences are grouped into four quadrants: Analyzer, Organizer, Personalizer, and Visualizer (Herrmann, 1996; Herrmann & Herrmann-Nehdi, 2015). Understanding this diversity helps leaders integrate various ways of thinking into a collective strength. Alignment between an individual's thinking preferences and the cognitive demands of a job also has the potential to support learning, performance, and job satisfaction (Bahaudin, 2003).

Research on neuroleadership has expanded in the fields of management, human resource development, and organizational leadership. Similarly, the concept of whole-brain management has been used to explain the diversity of cognitive preferences in learning and work. However, research that integrates neuroleadership, fifth-generation management, and whole-brain management in the context of madrasah leadership remains limited.

The available literature also focuses more on neuroleadership in business organizations and general leadership, whereas the characteristics of madrasahs as educational organizations based on knowledge and religious values have not received adequate attention. This limitation highlights the need for a conceptual framework that explains the application of neuroleadership principles in developing human resources and improving madrasah performance.

This study aims to analyze the principles of neuroleadership and formulate a conceptual model for their application in 21st-century madrasah leadership. Specifically, this study addresses the following questions: How are the principles of neuroleadership relevant to the leadership challenges of 21st-century madrasahs? How can the concept of whole-brain management be applied to manage the diversity of mindsets among madrasah members? How can a neuroleadership-based madrasah leadership model support adaptive, collaborative, innovative, and sustainable governance?

Methods

This study employs a qualitative approach using a descriptive-analytical literature review method. This method was chosen because the study focuses on the examination, comparison, and synthesis of the concepts of neuroleadership, fifth-generation management, and whole-brain management in the context of madrasah leadership.

The research data consists of secondary data sourced from scientific journal articles, academic books, research findings, education policy documents, and other relevant literature. The literature was selected based on its relevance to the themes of madrasah leadership, educational neuroscience, neuroleadership, knowledge management, and diversity of thinking preferences. Primary sources include Savage's ideas on fifth-generation management, Rock's work on neuroleadership, Herrmann's work on whole-brain management, as well as various supporting studies in the fields of neuroscience, leadership, and Islamic education.

Data collection was conducted through the search, recording, categorization, and critical review of selected sources. The literature selection process considered the relevance of the content, the credibility of the publisher, the clarity of the theoretical framework, and the sources' contribution to the research objectives. The literature was then grouped into the following themes: challenges in madrasah leadership, principles of neuroleadership, diversity of thinking preferences, human potential management, and their implications for madrasah excellence.

The data were analyzed using content analysis through four stages: data reduction, concept categorization, cross-perspective synthesis, and contextual interpretation. The results of the synthesis were used to formulate a conceptual model of madrasah leadership based on neuroleadership. The validity of the study was ensured through source triangulation by comparing ideas from various sources of literature and examining the consistency of the relationships between theory, previous research findings, and the context of madrasah management.

Results and Discussion

Diversity Is God's Design

From the perspective of *whole brain management*, the diversity of individuals' ways of thinking, personalities, and potential constitutes intellectual capital that must be recognized, valued, and integrated into the organization's collective strength. No two individuals have exactly

the same thinking preferences, experiences, or perspectives on issues. Therefore, effective leadership is not about standardizing people, but rather about orchestrating that diversity into a synergy that fosters creativity, innovation, and organizational excellence. (Herrmann, 1996).

This principle is strongly aligned with Islamic teachings. The Qur'an views diversity as sunnatullah that is, a decree of Allah SWT that embodies wisdom and serves as a sign of His greatness. Allah says "*O mankind ! We created You from a single (pair) Of a male and a female, And made you into Nations and tribes, that Ye may know each other (Not that ye may despise Each other). Verily The most honoured of you In the sight of God Is (he who is) the most Righteous of you. And God has full knowledge And is well acquainted (With all things).* (QS. Al-Hujurat :13).

This verse emphasizes that differences are not a reason to belittle one another or engage in destructive competition, but rather an opportunity to get to know one another, learn from one another, and complement one another. In the context of madrasah leadership, the diversity of competencies, experiences, and mindsets among teachers and educational staff must be viewed as social and intellectual capital that enriches decision-making, learning, and organizational innovation.

Islam also teaches that interpersonal relationships are built on the principle of *ta'āwun* (mutual aid and collaboration). Allah SWT says: "... *Help ye one another in righteousness and piety but help ye not one another in sin and rancor: fear God: for God is strict in punishment.* (QS. Al-Mā'idah: 2)".

The concept of *ta'āwun* is very closely related to the idea of collaboration in *whole brain management*. Collaboration does not mean eliminating differences, but rather combining the various strengths of individuals to produce a result greater than the sum of their individual abilities. In organizational science, this phenomenon is known as synergy that is, when the results of collective work exceed the sum of individual contributions.

From a neuroscience perspective, this diversity is a natural consequence of the development of neural networks, shaped by a combination of genetic factors, life experiences, the environment, education, and the learning process (neuroplasticity). Every human being has a unique brain network organization, which gives rise to different thinking preferences, learning styles, creativity, analytical abilities, empathy, and problem-solving approaches.(Tokuhama and Espinosa, 2011). This difference is not a weakness, but rather a biological gift that

enriches an organization's collective capacity. Therefore, leaders who understand the principle of *whole brain management* will view diversity as a source of innovation, not as a source of conflict.

From an Islamic perspective, this uniqueness is part of the fitrah that Allah has instilled in every human being. Each individual is created with different potentials, inclinations, and strengths as part of Divine Design. In other words, Allah has instilled "*built-in potential*" in the form of diversity in character, talent, intelligence, and ways of thinking in every human being. These differences are not meant to be pitted against one another, but rather to complement one another in fulfilling our duty as stewards on Earth. Therefore, no human being is completely superior in every aspect, nor is there anyone who lacks any strengths at all. Every individual brings a unique contribution that becomes meaningful when placed in the right environment and role.

In the context of madrasah leadership, the madrasah principal is expected to be able to identify, develop, and optimize the unique potential of every teacher, educational staff member, and student. Leadership is no longer understood as an effort to standardize the abilities of the entire madrasah community, but rather as the art of discovering each individual's strengths and then integrating them into a collective intelligence (*collective intelligence*) that supports the achievement of a shared vision.

When everyone is given the space to develop their full potential, an organization will have a greater capacity to learn, adapt, innovate, and produce meaningful work. Ultimately, *whole brain management* teaches that great organizations are not built by uniform individuals, but rather by diversity that is wisely managed. Islam reinforces this principle by teaching that differences are a blessing, while collaboration is the path to the common good.

Thus, madrasah leadership grounded in *whole brain management* and Islamic values will foster an organizational culture that values uniqueness, strengthens collaboration (*ta'āwun*), and optimizes the full potential of every individual as a trust from Allah SWT. When every potential is given the opportunity to grow and complement one another, diversity is no longer a source of division but transforms into a powerful force that drives the advancement of knowledge, education, and civilization.

For, once again, diversity is part of Divine Design, which contains wisdom and serves as a source of civilizational progress. This is because within every human being there is an *"inherent"* plurality of attitudes and

traits that distinguish one individual from another. The strength of each individual is truly *"powerful"* when it is tapped into and nurtured as the foundation for achieving success and glory in all areas of life. (Bahaudin, 2003).

Through His various teachings, God has taught humanity that people are born into this world in different forms. This diversity is nothing other than a sign of His greatness and a means for us to get to know one another. People were created differently so that they may come to know and complement one another. "*Among His signs are the creation of the heavens and the earth, and the diversity of your languages and skin colors. Indeed, in that are signs for people of knowledge*(Ar-Rum: 22)."

In *Tafsir al-Munir*, it is explained that human diversity is a manifestation of the greatness of Allah SWT, reflected in differences in language, skin color, and physical characteristics. Every language has its own uniqueness; every race and ethnic group carries its own history and culture; and every individual is created with distinct physical traits. All of this diversity is part of the sunnatullah, which shows that differences are part of God's design and should be valued as the richness of humanity not as a reason to discriminate or feel superior to others. (Al-Zuhaili, 2016).

Neuroleadership

The accelerating pace of change in the 21st century has shifted the leadership paradigm from a control-oriented approach (*command and control*) toward leadership focused on developing human potential. In this context,*neuroleadership*emerges as a new paradigm that integrates findings from neuroscience with leadership theory and practice. This approach is based on the understanding that the entire leadership process from thinking, decision-making, managing emotions, motivating, communicating, to building collaboration is a manifestation of neural network activity within the brain(Rock and Ringleb, 2013).

The term "neuroleadership" was first introduced by David Rock in 2006 as an interdisciplinary field of study that bridges neuroscience, psychology, organizational behavior, and leadership studies. *Neuroleadership* explains that thinking processes, emotions, motivation, decision-making, social interactions, and leadership abilities are rooted in the brain's mechanisms (Gocen, 2021).

Neuroleadership holds that a leader's effectiveness is determined not only by intellectual intelligence (*intelligence quotient*) or managerial experience, but also by the ability to understand how the human brain

works in responding to challenges, managing stress, building social relationships, and making sound decisions (Rock, 2009).

Biologically speaking, every decision a leader makes is the result of the interaction of various brain systems. The prefrontal cortex (*prefrontal cortex*) plays a role in executive functions such as logical thinking, strategic planning, problem-solving, impulse control, and rational decision-making. On the other hand, the limbic system particularly the amygdala plays a role in processing emotions, perceiving threats, motivation, and the formation of emotional memories. Effective leadership emerges when a leader is able to maintain a balance between rational thinking and emotional regulation, so that the resulting decisions are not only intellectually sound but also emotionally wise.(Gazzaniga et al., 2009).

The neuroscience perspective shows that the human brain is plastic (*neuroplasticity*) that is, it has the ability to change, develop, and form new neural networks in response to experience, learning, and practice. This concept offers optimism that leadership ability is not a fixed, innate trait, but rather a competency that can be developed through learning experiences, reflection, feedback, and continuous practice.(Doidge, 2007). Thus, leadership is both a biological and a social learning process that continues to evolve throughout one's life.

David Rock and Jeffrey Schwartz explain that neuroleadership focuses on four key domains of leadership: decision-making and problem-solving (*decision-making and problem solving*), emotion regulation*(emotion regulation*), collaboration and social cognition (*collaboration and social cognition*), and leading change (*leading change*). These four domains are competencies that are highly sought after by modern organizations because they are directly related to a leader's ability to build an adaptive and innovative organization(Rock and Schwartz, 2006).

In the decision-making process, neuroleadership emphasizes the importance of utilizing the prefrontal cortex to think critically, evaluate various alternatives, and avoid cognitive biases that often arise due to the dominance of emotional responses. At the same time, leaders also need to develop self-awareness (*self-awareness*) so they can recognize their emotional state before making strategic decisions. Research shows that decisions made under high-stress conditions tend to be influenced by the activation of the "*reptilian brain*," making them more reactive than reflective.(Rock, 2009).

In terms of emotional management, neuroleadership teaches that emotions are not obstacles to leadership, but rather a source of psychological energy that must be managed constructively. Leaders who are able to regulate their emotions will find it easier to build trust, boost team members' motivation, and create a psychologically safe work environment (*psychological safety*). A safe environment reduces the brain's threat response and increases engagement, creativity, and the willingness to learn(Rock, 2008).

Neuroleadership also views collaboration as a biological necessity for humans. The brain is essentially a "social brain," which develops through social interaction, empathy, communication, and cooperation. Therefore, leaders are no longer viewed as individuals who unilaterally control an organization, but rather as facilitators capable of building relationships based on mutual trust, empowering members, and creating collective intelligence (*collective intelligence*) through knowledge-based collaboration.(Lieberman, 2013).

In the context of organizational change, neuroleadership explains that the brain naturally tends to cling to old habits because change is often perceived as a threat. Therefore, the success of organizational transformation depends not only on strategy formulation but also on a leader's ability to understand the biological mechanisms of resistance to change. Leaders who apply the principles of neuroleadership will prioritize clear communication, active participation, empowerment, and the creation of meaning so that change is perceived as an opportunity for growth, not as a threat. (Teboul and Damier, 2023).

For Islamic educational institutions, particularly madrasahs, neuroleadership is highly relevant. Madrasah principals are not only responsible for managing administration and resources, but also for fostering a culture of learning, developing teachers' potential, boosting students' motivation, and creating a work environment that is healthy both intellectually and emotionally. An understanding of how the brain works enables madrasah principals to make more objective decisions, manage conflicts constructively, establish empathetic communication, and develop learning approaches aligned with the principle of *how the brain learns best*.

Furthermore, neuroleadership serves as a crucial foundation for *brain-guide management*, a management approach that views people as strategic assets of an organization. While *brain-guide management* focuses on developing cognitive abilities, learning, creativity, and knowledge, neuroleadership provides the scientific basis for how all of

these potentials are developed through the brain's biological mechanisms. Thus, neuroleadership serves as a conceptual bridge connecting neuroscience, learning, knowledge management, and educational leadership.

Ultimately, neuroleadership teaches that the essence of leadership is not merely influencing the behavior of others, but helping people optimize their brain's potential. Excellent leadership is not leadership that produces compliance, but rather leadership that fosters awareness, creativity, learning, and collaboration. When leaders understand how the human brain works, they not only manage organizations more effectively but also build a learning culture that is more humane, innovative, and sustainable.

Whole Brain Management

Whole brain management is a management paradigm that views diversity in thinking styles (*thinking preferences*) as an organization's strategic asset. Based on the *Whole Brain*® model developed by Ned Herrmann. Through the *Herrmann Brain Dominance Instrument* (HBDI), Herrmann (1996) It categorizes human thinking preferences into four main quadrants that form the concept of *whole brain thinking*, namely *Analyzer* (A), *Organizer* (B), *Personalizer* (C), and *Visualizer* (D). These four quadrants do not indicate a person's level of intelligence, but rather their tendencies in using their brain's potential to respond to various life situations.

This approach is based on the theory of brain hemispheres developed by Roger Sperry, a neurosurgeon and 1981 Nobel Prize laureate. Whole-brain thinking explains how everyone can combine the "Eastern perspective" with the long-established "Western perspective." Whole-brain thinking is about optimizing the left side of the brain the seat of logic and efficiency and the right side of the brain the seat of intuition and inspiration. (Wonder and Donovan, 1984).

Whole Brain Thinking is a synthesis of Roger Sperry's theory of cerebral hemisphere specialization which emphasizes the rational functions of the cerebral cortex and Paul MacLean's Triune Brain Model, which positions the limbic system as the center of emotional processing. By integrating these two perspectives, Ned Herrmann developed the Whole Brain Model, which views human thinking abilities as a combination of cognitive and affective processes. In this model, the limbic system is an integral part of the four thinking quadrants, so that decision-making, creativity, learning, and leadership are determined not

only by rational intelligence but also by emotional intelligence and the ability to build interpersonal relationships. (Herrmann and Herrmann-Nehdi, 2015).

This approach emphasizes that every individual has a unique way of thinking that results from the integration of cognitive, analytical, procedural, interpersonal, and imaginative functions. These differences are not obstacles, but rather intellectual resources that need to be recognized, valued, and managed synergistically to produce superior organizational performance. (Herrmann, 1996).

From this perspective, madrasah leaders no longer simply manage people based on their positions or technical skills, but also understand how each individual (teachers and support staff) processes information, makes decisions, solves problems, communicates, and collaborates. An understanding of thinking preferences enables madrasah leaders to place the right person in the right role (*the right person in the right role*), build complementary teams, reduce cognitive conflict, and improve the effectiveness of communication. Thus, diversity in thinking styles is not viewed as a source of division, but rather as collective cognitive capital that strengthens creativity, innovation, and the quality of the organization's decision-making.

Herrmann explained that organizations capable of integrating all thinking styles will produce more comprehensive decisions because they take into account in a balanced way logic and analysis, planning and implementation, interpersonal relationships, and creativity and vision for the future. Such organizations are more adaptable to change because they are not trapped in a single, homogeneous mindset, but rather leverage the diversity of perspectives as a source of innovation. (Herrmann, 1996).

Furthermore, the effectiveness of *whole brain management* is largely determined by the degree of alignment (*fit*) between an individual's thinking tendencies (*whole brain thinking*) and the mental demands of a job (*mental requirements of the job*). When a person's mental characteristics align with the characteristics of the job they perform, they will find it easier to understand tasks, learn more quickly, work more effectively, and experience greater job satisfaction. Conversely, a mismatch between thinking preferences and job demands has the potential to cause stress, mental fatigue, low motivation, and even a decline in productivity. (Herrmann, 1996).

These findings are consistent with the *Person–Job Fit* theory, which states that the fit between individual characteristics and job characteristics contributes significantly to improved performance,

organizational commitment, job satisfaction, and psychological well-being (Kristof-Brown, et al., 2005). In the context of madrasahs, this alignment also has implications for learning success, as the learning process will be more effective when instructional strategies are aligned with the cognitive characteristics of both students and educators.

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process will be more effective when instructional strategies are aligned with the cognitive characteristics of both students and educators.

Conclusion

Leadership in 21st-century madrasahs cannot rely solely on administrative skills, organizational control, and technological proficiency; rather, it must transform into a form of leadership capable of developing human potential in its entirety. In a knowledge-based society, the fifth-generation management paradigm positions knowledge, learning, creativity, and human collaborative capacity as strategic assets. Therefore, a madrasah's excellence is determined by its leaders' ability to build a culture of learning, manage knowledge, and harness collective intelligence to produce meaningful learning and sustainable innovation.

Neuroleadership provides a foundation for madrasah principals to understand the connection between how the brain works and decision-making, emotional regulation, motivation, learning, social interaction, and change management. Its application is reinforced by whole-brain management, which helps leaders recognize the diversity of thinking preferences among teachers, educational staff, and students. This diversity can be integrated into a collective strength through the formation of complementary teams, effective communication, appropriate task assignments, and the creation of a learning environment that is safe, collaborative, and supportive of creativity.

In the context of madrasahs, neuroleadership is not only focused on organizational effectiveness but also on holistic human development toward becoming an "insan kāmil" a complete human being who integrates intellectual, emotional, social, and spiritual intelligence. The Islamic perspective views diversity as sunnatullah, which must be managed through ta'awun, mutual understanding, and a spirit of complementarity. Thus, madrasah leaders must serve as architects of learning and catalysts for change capable of orchestrating diversity into a source of strength, developing the potential of every member of the madrasah community, and channeling that potential toward the common good. This kind of leadership forms the foundation for creating madrasahs that are excellent, adaptive, innovative, sustainable, and firmly rooted in Islamic values.

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