

# The Inexorable Rise of Quantum Leadership amid Chaos

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## Abstract

Amid chaos, it is important to present an overview of quantum leadership as the new leadership paradigm that is essential to business organizations, governments, societies, and the environment. This narrative review describes quantum leadership through complexity science and considers good leadership in the change trajectory. Specifically, leaders emphasizing relevancy in developing interpersonal relationships and seeing change in others and willing to expedite cooperation among organizational members were characterized. The literature in major databases was assessed, where relevant quantum leadership and quantum leader articles were reviewed. Qualitative studies were synthesized to highlight the quantum leadership style and promote it in academia. There was an evident increase in quantum leadership studies in this Southeast Asia region, contributing to novel developments in management science in industry organizations and even in higher education. Organizational management identified opportunities in chaotic environments, paralleling science and systems where consciousness, relationships, genuineness, and uprightness might be considered. There is an evident need for studies on intentional lifelong learning via quantum leadership to encourage a knowledgeable society through this paradigm.

**Keywords:** Quantum leadership, quantum leader, organization, complexity

## Introduction

Frequently considered the primary issue of removing barriers to encourage and stimulate planning and decision-making actions, leadership is indispensable for accomplishing organizational goals, developing new workplace talents, and national contributions. The coronavirus disease 2019 (COVID-19) pandemic has disrupted many national systems, which have continued to be vulnerable to the volatility, uncertainty, complexity, and ambiguity of unpredictable global events. Thus, the need to future-proof management skills to address this complex world is more critical than ever.

The quantum era refers to the technical age pinnacle that has contributed to a strong and contented society despite the barriers in the development of society. The swiftly progressing digital age has led current leaders to espouse progressive innovative thinking. The Newtonian business approach that maintains markets and firms adheres to secure management, simple regulation-adherent certitudes, equilibrium assertion, control, and fixedness, which are all incompatible with the 21st century. As the established direct management system is incompatible in this era of uncertainty, digital upheaval, and threats, attention has focused on both quantum theory and quantum leaders (O'Grady, 2020). As the world experiences transcendent consciousness, major social transformation will lead to inevitable changes.

All aspects in the quantum era have begun shifting with apparently limitless possibilities. Modern nature and this shifting age strongly affect humans. Due to the substantial transformation in business thought and practices of this era, the influences on both leadership and management cannot be overlooked. Effective functioning in this new era requires shifting management roles and attributes.

Unrelated to organizational leadership, organizational leaders typically associate quantum physics with exotic science. The world is composed of matter where physical science and quantum physics have proven that even the minutest particles are composed of energy and vibrate at specific frequencies. Organizations are associated by leaders with machines requiring performance indicator-setting, lever-pulling, and rewarding. Realistically, organizations reflect the human living system affected by both employers' and employees' energy levels (Razavi et al., 2013), which are directly linked to consciousness levels.

Organizations are unstable, predictable, and controllable. Firms fail to retain the thinking tools, assumptions, and skills adopted at establishment. Therefore, it is vital to modernize corporate and individual thinking. Quantum thinking shifts requirements and forces people to the threshold of a specific model or perspective. Holistic thinking arrangements and experiences appear to disregard rationale and logic and appear wavelike (Laszlo, 2020).

Such thinking offers complete flexibility to the quantum system. Quantum organization employees are potential leaders, where those who can best manage it have the competitive advantage. In a chaotic physical system, creativity only emerges in a continuous discourse with wider social, political, economic, and ecological environments.

Physical systems feature chaos and intricacy daily. According to Watson, O'Grady, Deutsch and Malloch (2018), the Newtonian paradigm maintains control of boundaries and delimits roles, where behavior originates from internal dynamics, but not vice versa. Following the Classical or Newtonian paradigm, nature represents ordered simplicity, law observance, and finally control. Contrastingly, the quantum paradigm considers nature ambiguous, complicated, and chaotic; consequently, it encourages leaders to revolutionize and contemplate from a new perspective toward becoming quantum leaders (Curtin, 2011; Akmal, 2019). Holistically, organizations do not require human thinking machines. The quantum paradigm emphasizes uninterrupted connections through internal dynamics that affect conduct in relationships, interactions, and forces. Quantum organizations that feature dynamic energy systems include conscious observers who comprehend reality.

The quantum paradigm enables the interpretation of new events in complicated living systems within the present unsettled setting, specifically during strong pressure to transform, chaotic occurrences, ambiguous goals, and orders that appear of their own accord. The chaos theory aims to understand basic systems that could undergo unexpected change (Akpil & Gündüz, 2016). Complexity theory refers to the study of complex systems with numerous interactions, which frequently provide unexpected order. Despite these challenging times, leaders can provide high-value contributions to the organization with a shared vision and might identify the fundamental quantum leadership principles to develop quantum skills and reach their full potential (Shelton & Darling, 2008; Tasdelen & Polat, 2015).

Despite spending millions annually on leadership development programs, most countries continuously report

an acute scarcity of good leaders. The intersection of quantum physics, psychology, and spirituality is evident in great leadership. None of the numerous quantum leadership studies have empirically assessed the positive effect of quantum leadership professional practices and governance on organizational leaders' actions. The COVID-19 pandemic changes have demanded new continuous insights into leadership. This review presents information from previous studies on quantum leadership and development to provide an overview of this new leadership paradigm.

## Methodology

A narrative review may be non-linear but organized in chronological order, where clear trends are recognized and presented as a theoretical frame. Narrative reviews are presented dynamically using major databases, such as ScienceDirect, Web of Science, Scopus, ProQuest, EBSCO, Education Resources Information Centre (ERIC), Directory of Open Access Journals (DOAJ), Dimension.ai, and Google Scholar.

Keywords defining quantum leadership and quantum leaders were searched comprehensively to identify all related articles while eliminating irrelevant ones. Subsequently, the publications cited in the retrieved articles were manually selected. The literature selection criteria for inclusion and exclusion were defined with focus on the study applicability to the topic. The exclusion criteria were determined based on search objective pertinence while the fundamental review factors were defined by the inclusion criteria.

The abstracts and titles of the retrieved articles were screened, duplicates were removed, followed by the exclusion of non-English papers and keywords in the references. Studies were eligible for inclusion in the review following a full-article assessment of the contents that focused on quantum leadership or organizational quantum leaders. Figure 1 depicts the flow chart of the literature selection process.

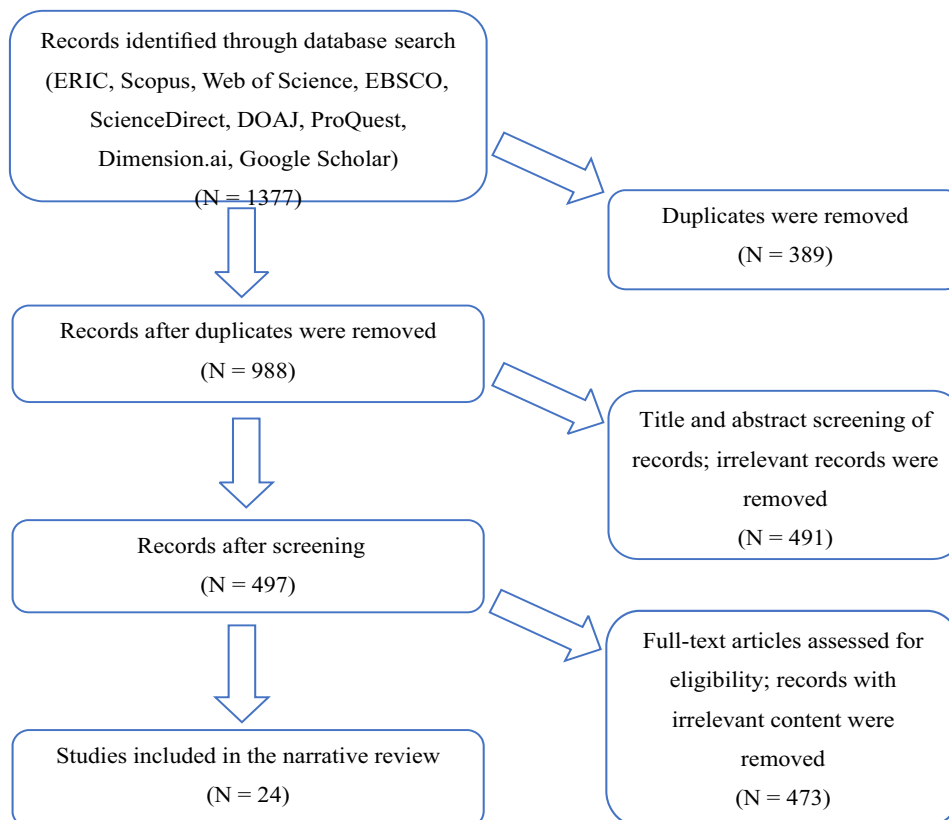


Figure 1: The literature selection process flow chart

## Literature Assessment

### The rise of quantum leadership

Leadership was depicted as a complicated process given leaders' self-analysis to enhance the present education system quality. Quantum leadership was conducive and effective in enhancing both learning and teaching (Nurrohim, 2010). Simbulan (2011) wrote that dominant logic and quantum leadership among business students enhanced their understanding to identify a successful business. In numerous studies, the concepts of quantum leadership, dominant logic, and entrepreneurial ability were examined considering the business curricula used in higher education institutions (Simbulan, 2011). The disciplinary paradigm of unitary nursing caring, which intersected caring science principles, also substantially investigated quantum leadership. Watson, O'Grady, Horton-Deutsch and Malloch (2018) demonstrated that quantum leadership and caring science are explicitly congruent from ontological, philosophical, and disciplinary perspectives. The introduction of the quantum paradigm in healthcare leadership prompted fresh, challenging ideas and criticisms of both discipline and awareness in that field.

In the past decade, quantum leadership studies focused on the education and clinical segments. Kayman and Ercetin (2011) reported that the quantum leadership behavior fulfilment level based on principals' or deputy principals' academic levels varied non-significantly. Leaders with postgraduate degrees demonstrated better ability to lead and manage schools, solve problems, acquire lifelong learning skills, and enhance creativity. Education institutions were affected by the perpetual change in comprehension, digestion, and interpretation, which signified the importance of training growth and constant education to embrace revolution (Kayman&Ercetin, 2011).

O'Grady (2018) stated that certain principles illuminate the conditions of change participation and aid the explanation of the leadership role in a chaotic and complex world. First, the universe is incomplete, advancing its contents in a network of energy and comprehension. Second, complexity and chaos are the vital features of the universe, which

cannot be understood independently of its own complex reality. Third, everything in the universe is self-organizing. The life patterns and intersections create an intense goodness-of-fit mosaic that reveals the ultimate connection among all universe elements. As humans are the co-creators of constantly unfolding and self-organizing activity, they are also part of the universal relationship network. Lastly, O'Grady (2018) posited that organizations are self-organizing, complex, and adaptive systems in which people express their creativity, energy, and meaning with purpose.

In contemporary management, expectations lose their validity and innovations become obsolete. Unfortunately, people frequently dismiss the need for a new leadership style to successfully achieve objectives. Due to volatility and uncertain phenomena that are deterministic, chaotic, and intricate, the leadership quantum leap must surpass leaders' outcomes and targets. Papatya and Dulupçu (2016) stated that leadership demands uncertainty, obscurity, and a flexible structure to discover quantum world dynamics. Moreover, rectifying indeterminacy or the uncertainty principle was unproductive as leadership is not controlled or deterministic. This highlighted the need for comprehension of the quantum leadership paradigm and its potential energy.

Quantum leadership theory focuses on interaction, integration, adaptation, and prediction and is not hierarchy-based. A quantum leader believes that the organization and organizational members are interconnected team members that can better serve each other via cooperation. Rather than merely focusing on individuals, the importance of individual relationships in an organization is emphasized. Leaders and their subordinates must be satisfied with the challenges of ambiguity and constant change. Moreover, quantum leaders must be sensitive and open to diverse realities but must also be conscious of their limits.

Deciphering quantum thinking and stances is crucial to embrace quantum leadership. Quantum leadership is described by four factors (reciprocal interactions, uncertainty phenomena, extensiveness, and environmental complexities) of an uninterrupted and rapidly changing quantum paradigm. Each management and quantum cannot individually dictate organizational success.

Quantum–management balance is required as quantum mechanics principles prioritize characteristics, behavioral, and contingency tactics (Bozorgi et al., 2020). Creativity and knowledge have equivalent importance for organizational achievement while active employee participation significantly affects overall organizational performance. New balance is also sought for quantum leadership insight–oversight and control–adaptability for leaders to initiate new optimism levels with a paradigm that improves potential, overcomes fear, builds interconnectedness, creates resilience, and develops maximum capacities (Barrash, 2012).

Rather than merely emphasizing results as most leadership styles do or the means of achieving results, quantum leadership emphasizes the process, which is considered indefinable and unlimited. Quantum leaders can discover potential (not always controllable or predictable), which is an advantage as leaders should be concerned once everything becomes predictable. Quantum leaders relinquish control to an extent and provide opportunities for the emergence of various leadership styles to align team members' motivations. Quantum leadership emphasizes organizational members' collaboration and continues to advance based on other advantages but is also aware of members' shortcomings and limitations. Moreover, quantum leadership instils importance into leadership but has its own organizational action plan to achieve goals appropriately and meaningfully (O'Grady & Malloch, 2013).

Zohar (2016) stated that quantum thinking principles consist of assumptions from quantum physics and the leadership viewpoint. The old Newtonian management paradigm involves atomism, determination, reduction, trueness or falseness, actuality, object split, control, and manipulation. The old paradigm emphasizes separate working parts, fragmentation, and predictability with control, typically dividing the world into subjects or objects detached from the environment. Contrastingly, the new quantum management paradigm is a holistic approach emphasizing relationships and self-organizing context integration that thrives on trust, uncertainty, and ambiguity. Once the new paradigm is more synchronistic, the

uncertainty principle applies and wave-particle duality can be observed in a pool of infinite potentiality.

O'Grady and Malloch (2013) mentioned that quantum leadership accepts chaos and is based on physics principles with constant change and transformation. As quantum leadership perpetually changes and evolves, the quantum leader should focus on understanding change intricacy or complexity and transforming it into an approach that can be understood by those affected. Quantum leaders can predict change direction by evaluating and predicting changes.

Quantum leadership also includes individual and group organizational values. Emotional investment is important as it presents an ownership and integrity perspective, which should be perceptible as values are attracted to a person's daily behavior. Similarly, the common basic suppositions in quantum leadership delineate intangible cultures and determine the factors that enable daily organizational function. Another supposition involves values and beliefs, such as established goals, and oral values, which groups or individuals with organizational influence can promote (Watson, Porter-O'Grady, Horton-Deutsch & Malloch, 2018).

Quantum leadership is a people-centric leadership that connects the organization or community, has collaborative intentions, and appreciates diversity, empathy, and differing dialog viewpoints. Simultaneously, quantum leadership is evolutionary and future-driven. Tsao and Laszlo (2019) demonstrated that a quantum leader is a learning leader who is aware of the bigger picture, transforms crises and limitations into opportunities, and is creative and adaptive. Laszlo, Sroufe and Waddock (2017) reported that organizational sustainability requires environmental, societal, and government integration into profit strategies. A leader fundamentally determines actions through mindfulness, pursuing a greater purpose, consciousness based on both beliefs and science, and daily-practice shaping.

Much quantum leadership literature in the past decade was published to create awareness of a novel leadership style paradigm in the quantum era and strive to construct the paradigm. Companies have begun recognizing primary

corporate intellectuals as teachers who alter the future of business with science and generate workplace collaboration to prosper in leadership. Quantum leadership mainly relates to empirical investigations of how the novel leadership paradigm results in a practical conceptual framework for organizational management. Given their substantial transformation of business thoughts and practices, the influences on both management and leadership must be considered in the quantum era (Kilmann, 2019; Senses & Temoçin, 2018). Management role and attribute shift are integral to effectively function in this new era. Thus, organizational leaders, specifically managers, must embrace the revolutionary mindset.

Quantum leaders should be flexible, adaptable, and cognizant of the organizational structure as advancing technology not only changes the functional landscape but also determines goal attainment. Quantum leaders who feel the excitement of change catalyze others to cooperate in advancement and discovery by gaining new talents and perceptions (O'Grady & Malloch, 2018). The prospects for quantum and conscious leaders are vast and limitless. Such leaders meet their objectives non-linearly via customized individual models to evaluate organizational intricacies and weigh factors that aid or hinder progress.

Leadership is prominent in comprehending the occasionally vague contextual innovation framework. Essentially, current quantum leaders should recognize organizational arrangements and tactics, expectancies, and justifications to incorporate cost-effective innovation (Otten & Chen, 2011; Sazesh & Siadat, 2018). Internet-derived information leads to immeasurable innovation. Thus, quantum leaders consider the influence of energy on the quantum business and should be continually appreciative by aiding others to amass positive energy in the field (Paz et al., 2018). In achieving superior functioning, leaders should generate inspiring visions equivalent to the organizational level to pursue purpose and meaning other than sole profit. To raise their energy levels, quantum leaders foster their inner work and embrace their transformation.

Enthusiasm, energy, and being adept at accommodating differing viewpoints are key to becoming a successful

quantum leader. A person who is an integral and close part of the natural world becomes more attuned to the influence of their actions on others and other living things. Many researchers in the past decade assessed quantum leadership to create awareness and unravel the novel leadership paradigm in the quantum age. The generalizability of those papers regarding quantum leadership reflects quantum leaders' capabilities to progress beyond conventional obstacles and create multi-level quantum leaps across cultures. Barrash (2012) stated that the new paradigm is possible due to interior and exterior, self and other, rational and emotional, and physical matter and consciousness complementarity. Accordingly, the novel operating assumption set in a consciousness-infused archetype of interconnectedness focuses on the new link between logic and intuition, parts and aggregates, and matter and mind.

Quantum leadership empirical studies mainly adopted this leadership style as a conceptual or practical framework to operate organizations. Hanine (2019) stated that quantum leadership is a multifaceted idea that includes relational, cognitive, emotional, ethical, and spiritual dimensions. Quantum leadership is described in quantum theory, which also provides management methodologies and procedures for ensuring effective service delivery, where quantum leadership enables such multi-tasking competencies. In this dynamic world, organizations seek creative, fully focused, competent, and energetic leaders to effectively lead via diverse plans and methods to enhance the quality of the organizational environment (Haris et al., 2016).

Quantum leadership has been identified as the new paradigm for advanced organizations as it is well suited to non-linear, unpredictable, and extremely complicated organizational contexts. Quantum leadership is considered a unique business leadership approach to resolve digital age difficulties. In addition to technical proficiency, intellectual analytic prowess, and appropriate competency, quantum leaders should possess interpersonal and relationship management skills, suggesting a new standard for the new workplace era that focuses on quantity and basic conflict resolution capabilities. Accountability is an integral approach to a successful quantum organization. Kocak (2020) stated that quantum leadership represents the

organizational capability to construct an atmosphere of confidence, trust, and a sense of belonging between employees to meet the stipulated goals.

Dargahi, Mehrani and Shayan (2017) stated that quantum leadership generated well-organized and effectual procedures within the healthcare segment, including clinical laboratories, wherein this paradigm was projected to change future management to the appeal of the dimensions of quantum leadership. The immeasurable potential of the quantum field attained organizational excellence, with quantum leaders displaying an exceedingly advanced sense of self to increase organizational results (Dargahi, 2013).

Quantum leadership is essential to improving education quality based on the qualities of visualizing and seeing, cultivation with respect, care, and love, executing far-sighted management, creating societal points, displaying empathy, highlighting empowerment, facilitating student development and success, prioritizing students, acting ethically, and engaging in persuasive communication (Mundiri & Ningtias, 2019). The aforementioned characteristics are a fraction of the capabilities that afford quantum leaders with new skills and competences to decipher and solve business management issues (Kocak, 2020).

The advent of new business segments was precipitated by emerging worldwide patterns, such as budgetary emergencies and new social and natural barriers. The benefit-driven incomparability model caused material abundance, was detrimental to regular asset consumption, and featured contamination and unbalanced characteristics, which denoted a substantial change to enable new jobs and change specialists and create esteem-makers across financial, social, and ecological domains (Nigri&Agulini, 2019). The authors highlighted a significant move within the business domain that transformed organizations into moral firms with practices that created connectedness and consolidated higher-level scientific intellectual aptitude. Changing people on a deeply natural level is more profitable and has noteworthy viability, which facilitates the coordination of ecological, social, and administrative

factors into a larger business outline. Nigri and Agulini (2019) stated that upon arriving at a more meaningful cognizance level, this approach introduced the optimal method to the quantum initiative and cohered with its structure and learning culture.

Businesses can operate remarkably well if there is trust and familiarity among organizational members. Long-term organizational success is strongly related to its consideration of quality, which includes team member participation, empowerment, and collaboration (Nurrohim, 2010). Similarly, Paz et al. (2018) asserted that leadership is an effective management instrument that can be applied to address changes stemming from fluctuations due to crisis effects, which is a common scenario in social organizational development and durability in human history. Much evidence supports quantum leadership as the art of changing an individual to spur others' evolution and transformation. The authors added that quantum leadership is a vital managerial skill to make work effective and enable organizational objective achievement.

The significance of emergence in comprehending and facilitating differences in complicated situations was highlighted in several seminal studies that reported on emerging quantum leaders. These studies described a practice rooted in complexity science (Root et al., 2020). The authors outlined the integral correlations and interconnection for deriving new processes and structures, which included integrating change and innovation in a conventionally structured system. The literature depicts the formation of a vibrant and distinct team ready to react and adjust to changes, thereby promoting innovative, measurable, and positive outcomes. Many researchers have demonstrated that the rigid order command system and notion that leaders must develop successful strategies resulted in mechanical organizational leaders being burdened with classical management abilities. Nonetheless, business leaders should acquire quantum abilities that fit the quantum era, which is a completely different discipline from social studies. Quantum leaders seek teamwork as the focus is interaction and sharing (Senses & Temoçin, 2018).

Some researchers assessed how internal estimations of substantial progression were combined into a quantum leadership possibility theory. Newtonian leaders inspire workers to cultivate distinct work qualities, which are desired for employees to effectively meet organizational goals. Quantum leaders support employees' professional and private development by integrating intellectual, technical, cognitive, affective, and well-being dimensions holistically and not purely as an instrument to attain organizational goals (Dargahi, 2013; Kayman & Ercetin, 2011).

Quantum leaders mainly provide insight and inspiration cultivated from their potential inner light that posits basic leadership requisites in multifaceted organizations (Sazesh & Siadat, 2018). These requisites include functioning with moral purpose, constructing positive differences in stakeholders' lives, constructing relationships, and transforming data into knowledge via sharing meetings. Quantum leaders strive to enhance human relationships, which are absent from Newtonian leadership styles. The sense of community, inclusivity, and holistic approach influence the emotional component and work-relevant technical traits (Barrash, 2012). The quantum approach fulfilment of the common good encourages involvement and spirituality by recognizing the manifestation and growth of both private and professional identities in contrast to incentives that discourage workers from pursuing bigger objectives (Paz et al., 2018).

According to the quantum paradigm, organizations and quantum mechanics have a symbiotic relationship in which organizational issues and organizational leaders' difficulties are connected to the chaos theory, quantum mechanics, and complexity theory. The fundamental system component defines meaning by reformulating organizational thinking about sagacity and benevolence while upholding unspoken cognizance and exterior stability utilizing new scientific knowledge. Worldwide trends, such as recessions, high market unpredictability, and environmental and social challenges have led to the necessity for new-market development. The profit-centric hegemony model that generated material wealth has also depleted natural resources, caused pollution and income

distribution imbalances, and predicted significant organizational revolution. In this manner, organizations have been required to assume new roles, become mediators of change, and generate economic, social, and environmental value. Intuitive in-depth transformations for increased well-being and work effectiveness have facilitated the incorporation of society, the environment, and governance into a holistic and viable business performance management structure.

Long-term organizational success has been strongly linked to thought quality, which includes empowerment, participation, and teamwork. Leadership has been used as a management instrument to address the variations created by disasters and an essential occurrence in human societal history concerning social organizational durability and development. A consideration that directed quantum leadership concerned how the internal approximations of extensive development may be constructively combined with theoretical possibility. The quantum leadership theory distinguishes the parallels between quantum leadership models and suggests a consolidative model of hierarchical quantum leadership reliant on vision, leader self-esteem, internal significance, and good representations at several degrees of being (Laszlo, 2019; Watson et al., 2018).

Quantum leadership essentially assesses how people behave and make life and work decisions, where achievement-oriented conditions (supportive, directive, and participative) involve various quantum leadership styles. Quantum leaders consistently guide and coach inexperienced subordinates in handling complicated and unstructured tasks. Changes in time require new approaches and models to resolve the increasing environmental ambiguities. Despite the lack of true information integration, obtaining the innovation trend is necessary. Specifically for conglomerates, organizational theory adheres more closely to quantum logic rather than to classical logic. People who work specifically with systems and management systems perceive various similarities between such systems and physicists' theoretical systems, which is important for organizations to understand those systems. With the lack of such frameworks, most business managements could experience the opposite effect.



The active combined engagement of all organizational members yields leadership. Quantum management involves holistic rather than fragmented organizations with interconnected work processes and individuals. Quantum management involves a dynamic, complex, and dissipative environment. Quantum leaders care that individuals possess perceptual filters and unique patterns that influence interactions (the presence of connectedness and participation). Furthermore, quantum leaders accept the existence of manifold realities, use spiritual and emotional intelligence to reframe situations and direct meaning between organizational individuals and groups, and possess a profound sense of vocation and altruism.

In the current complicated, ambiguous, and dynamic world, a leader should take chances in unfamiliar and volatile environments but with intellectual organizations. The quantum leadership paradigm presents a new leadership insight that is deemed an ambiguous and variable reality due to the uncertainty principle of quantum physics (Márquez-Ramos & Mourelle, 2016; Sarfraz et al., 2022). Organizational leaders must be more intelligent and well-equipped with knowledge. A quantum leader can cope and adapt to rapid changes in conditions, the environment, and data, information, and knowledge speed uncertainties to fulfil organizational objectives or goals. Considering a quantum leader's qualities based on their skills and characteristics, the organization should act and react rapidly, adapt to a continuously changing environment, demonstrate process flexibility, be visionary and intuitive, open to innovation, and have self-renewal and self-sustaining abilities (Kilmann, 2019; Senses & Temoçin, 2018).

### **Discerning quantum leadership skills**

In this study, quantum theory was used as an allegory for management conduct to enable the view of the development of a new organizational leadership paradigm: quantum leadership. In the physical realm, “subatomic” refers to anything littler than an atom. In most social science literature, “quantum” and “mechanics” refer to a quantity of physical matter and the study of motion, respectively. Thus, “quantum mechanics” refers to studying subatomic

particles in motion, where there is a tendency for energy and potentiality. The term “mechanics” suggests that energy is in constant motion, shifting from particle to wave and vice versa to form the material world (Turner & Baker, 2019). Similarly, the conventional management abilities of organizing, directing, planning, and controlling are no longer adequate in rapid-paced, dynamic, and highly complicated 21st-century organizations.

Quantum physics reveals entanglement and non-locality properties at the finest reality scale, which demonstrates that interconnection encompasses the scale of life. A growing research corpus has suggested that consciousness is a brain activity field property. Laszlo (2020) suggested that assisting leaders and organizations in shifting their consciousness from separateness and selfishness to connectedness and caring should be a daily practice, where a leader's cultivation of broader perceptions and higher awareness influences others and future generations. Connectedness and consciousness and change how a leader thinks and acts and are integral rather than separate parts of the natural world. Thus, the leader becomes attuned to how their actions affect their surroundings and organization (Laszlo, 2020; O'Grady, 2020; Mohsin et al. 2019).

A change of consciousness from separateness to connectedness will aid leaders in becoming more empathetic and compassionate. Such leaders would be able to consider most things as integral parts of the world and become more attuned to decision-making actions. The high need for the connectedness consciousness scale occurs through relational awareness, which is attuned to a universal intra- and interorganizational energy field and yields a totality of relationships by nature and self (Tsao & Laszlo, 2019). The drive from a leader's sense of greater purpose is connected to values and a sense of responsibility to others to transform not only the business, but also the environment, people, and economic growth.

Many things have changed overnight and new realities affect all aspects of human life, which indicate the beginning of the quantum age. Quantum management and leadership style have been defined and are thriving in the [new era, where organizational leaders must develop](#)

entirely new mindsets and skill sets. The most effective tool a leader can use for global change is consciousness transformation. Laszlo (2019) defined consciousness as the awareness of the mind of itself and its surrounding environment. Earlier social and natural sciences separated people and used individuals as mechanical matter subject to gravitational forces in meaningless directions. Thus, everything can be viewed as profoundly linked not only figuratively but also generally in the scientific terms of “energy” and “information” instead of discerning and maximizing self-gain (Laszlo, 2020).

Most people in the current organizational and business sustainability world prefer to be led rather than managed. Management and leadership have a profound theoretical and practical connection. Managing and leading are distinct actions, which are crucial as communication and coordination activities facilitate a leader's resource control, effectiveness, and procedural and work routine mastery to facilitate efficiency and improve performance (Shelton, Darling & Walker, 2002). Both are undoubtedly important within the organization system and should be dynamic. Therefore, leadership skills correspond with the organizational perspective as an interactive, unpredictable, and human-based system rather than merely being mechanistic and stable.

Considering that the directing, organizing, planning, and controlling management tools are derived from classical Newtonian physics, adopting quantum physics principles with a skill set that emphasizes the leadership qualities necessary for current organizations is timely. The basic quantum mechanics principles deliver significant perceptions into organizational subjective, objective, logical, non-linear, linear, and even chaotic aspects (Shelton, 1999). Simplistically, quantum science principles view reality differently and acknowledge that effectual leadership has higher requirements compared to the past.

Shelton et al. (2002) stated that seven quantum skills form a model that equalize sold management skills with novel counterparts that use both brain hemispheres more fully through futuristic and ancient, spiritual and scientific, complex and simple, and uncommon and common approaches. Figure 2 depicts the seven quantum skills in

Shelton's (1999) model: quantum acting (acting responsibly), quantum knowing (knowing intuitively), quantum trusting (trusting life), quantum thinking (thinking paradoxically), quantum feeling (feeling vitally alive), quantum seeing (seeing intentionally), and quantum being (being in relationships).

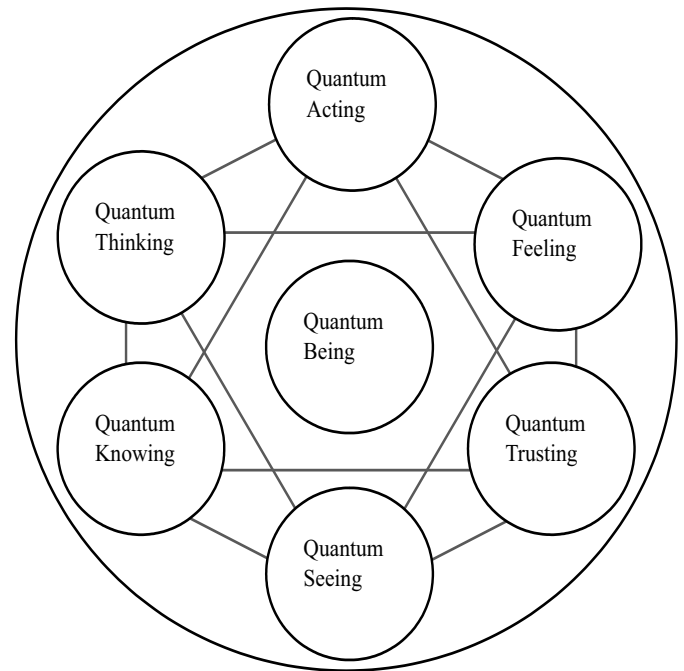


Figure 2: The quantum skill model (Shelton, 1999)

The quantum energy realm is assumed to be of chief significance and thus pivotal to everything else in the universe while the material facets are consequently of secondary importance. The quantum skills model mirrors the interrelations among the seven quantum skills. The inverted triangle is primarily psychological and is premised on human perception, which is highly individual (quantum seeing), creative thinking that requires right brain hemisphere development (quantum thinking), and human feelings that originate from internal self-talk (quantum feeling). A leader who understands these elementary psychological concepts can invent more purposefully and imaginatively.

Organizational leaders with these quantum skills surpass

deterministic, mechanistic, and reductionistic thinking limits and therefore deeply alter themselves and the organization. In this phenomenon, the quantum concept can be applied to human behavior and perspectives have shifted. Quantum skills are more suitable for meeting the intricacies of the current business environment and enable leaders to function more effectively and sustainably.

The aforementioned psychological quantum skills alone do not aid leaders in gaining a profound sense of importance and fulfilment. Therefore, to introduce more soul into the leadership role, the leader requires additional skills that change the emphasis from limited self-interest to betterment and the greater good. The spiritual quantum skills are based on three principles where people live in the same universe (quantum knowing), the contents of the universe are interconnected (quantum acting), and the universe creates order with chaos (quantum trusting). These skills are presented in the upright triangle in the model. As quantum being is complexly interconnected to the other quantum skills, it is placed in the center of the model and quantum being is a focal quantum skill.

Organizational decision-making forms the basis of quantum seeing. Notably, most quantum theory and current human perception research is considered a function of internal belief. Reality originates from what is true and belief stems from that perceived due to thought. Quantum leaders believe in reality and assume that it is true based on their perceptions; therefore, their views are strengthened by their belief. Organizational operation relies on experience and full awareness of the role of intent in wide consideration (Shelton et al., 2002). Typically, organizational leaders function in a repetitive cycle-based paradigm considering the observed world as the perspective and making decisions within a relatively narrow possibility range (Hanine, 2019). Leaders change their intentions and perceptions, learn about their intentions, and eventually strengthen their leadership style through learning. Such approaches are learned and mainly unconsciously controlled.

Quantum thinking originates from quantum physics, which indicates that the universe acts illogically and paradoxically (Shelton et al., 2002). The most easily perceived quantum

paradox is that the observable three-dimensional world consists entirely of unseen energy. This energy frequently leads to unexpected and volatile quantum transitions, where obstacles are crossed illogically and in a manner that is impossible to achieve at the macroscopic reality level. Thus, illogical developments can lead to highly useful applications. Nevertheless, many leaders continue to rely on linear, logical, black-and-white thinking skills, yet logical thinking has made modest progress in resolving the current substantial organizational challenges. Many organizational questions are self-contradictory and cannot be answered with rational dualistic thinking. Contrastingly, quantum thinking presents a steady stream of exceedingly inventive and frequently unreasoned ideas that can aid management leaders in transcending dualistic thinking (Ghaffari et al., 2019; Sardashti & Pordanjani, 2019; Salamat et al., 2021; Mohsin et al., 2022b; Mohsin et al., 2021a). The organizational ability to survive and even thrive requires the recognition and development of quantum thinking.

Quantum feeling is premised on the idea that human beings have the equivalent energy to the rest of the universe and are thus subject to the universal law of energy. As leaders cultivate and improve paradigms of high energy, organizational change plans will yield vaster differences in output and eventually better performance (Shelton et al., 2002; Naseem et al., 2019; Naiwen et al., 2021). Without an internal consciousness shift and a new emotional skill set, leaders will mainly follow the old organizational paradigm regardless of the number of new opportunities. Business organizational life undergoes major changes when leaders relinquish their shared reliance on external rewards and are fully accountable for bringing enthusiasm, purpose, and vitality to their organizations (Marzoughi et al., 2018).

Quantum knowing originates from quantum field theory where the universe is not full of energy fields. On the contrary, the universe emerged from an apparently infinite, omnipresent, and omnipotent potential quantum field that is both indescribable and immeasurable. Management leaders who incorporate mindfulness space into their daily work will cultivate whole-brain organization, fully utilize both brain hemispheres, and value intuitive knowledge and

rational analysis. As more leaders learn quantum knowing skills, they will aid the creation of a true learning organization in which all stakeholders profoundly value knowledge, thereby recognizing the importance of intuitive ideas (Shelton et al., 2002; Mohsin et al., 2022a; Li et al., 2021).

Quantum acting is designed based on the quantum mechanical concept of interconnectivity and its by-product non-local causation. Entanglement is widely studied in physical science as everything in the universe is part of a complex interconnected whole, which each affects every other part. Macroscopically, the unique quantum principle of inseparability clarifies complex interfaces, which defies the basic principle of relativity (nothing can travel faster than the speed of light) (Shelton et al., 2002). The quantum mechanical idea of interconnectivity and non-local causation forms the basis of quantum acting design, which is its by-product. The conscious choices of a leader will not only affect future choice possibilities but also interpersonal connections (Paz et al., 2018), presenting a new viewpoint of social accountability in decision-making. Therefore, a leader aiming to prosper their organization and life must begin with giving and serving. Common sense involves socially responsible behavior in respecting all stakeholders or maintaining environmental resources appropriately. Thus, leaders who use quantum behavioral skills will flourish, as would their organizations.

Quantum trusting originates from chaos theory, which presents a new means of observing changes. Structural chaos is paradoxical. In fact, the world structure is irregular and unpredictable (Shelton et al., 2002). All progress stems from chaos, whose absence commensurately conflicts with change, where life will stagnate and entropy will follow. A leader aids free and spontaneous organizational development without unnecessary intervention. Quantum trust enables leaders' adaptability to rapid environmental changes without having to control the direction, where a lower intention to manipulate existence yields greater appreciation thereof. The use of quantum trust skills is specifically challenging compared to traditional organizations that greatly value quantum prediction and control, where more exemplary self-organizing practices

will emerge as cooperating leaders use the aforementioned skills (Ghaffari et al., 2019).

Sub-atomically, relationships produce matter and subatomic particles are abstract, with properties that can be determined and perceived only through interacting with other particles. Subatomic particles are associated with relationship probability, which is considered relational science in physics (Shelton et al., 2002; Muhammad et al., 2019). The relational organizational nature and its environmental context are acknowledged by quantum being. The Newtonian object external conduct can be affected by other Newtonian objects but internal characteristics cannot be altered. Nevertheless, two quantum relationship particles can combine and share boundaries and identities, thus forming a quantum system surpassing the sum of the two individual parts. Quantum relations are the figurative requirement for human alteration where relationships can unleash individual potential (Dargahi et al., 2017; Mohsin et al., 2021b). In doing so, leaders will determine that progress is a derivative of the relationship. Outdated paradigms will be abandoned and leaders will become masters of change, thereby transforming and advancing their organizations from the inside out.

The aforementioned quantum concepts can be explained as an extremely useful new skill set for 21st-century managerial leaders and are based on the supposition that the quantum energy realm is of chief importance and fundamental to everything in the environment or universe. As leaders in this organizational dynamic era attempt to effectually fulfil their leadership and management roles, they must transcend reductionistic, mechanistic, and deterministic practices and principles. This is more congruent with quantum age complexities and thus identifies the quantum skill dimensions. The quantum paradigm is a management behavior metaphor and presents a novel skill set that affects leadership style effectiveness.

### **Complexity science**

Complexity science added to conceptual structure and social application mainly as globalization, digitalization, and the emergence of the internet created complexities and

uncertainties for 21st-century organizational structures. Organizations with Newtonian leadership styles are certain to fail when faced with new business management and new obstacles; therefore, quantum leadership is vital for organizational survivability (Kocak, 2020). Accordingly, new leadership styles are essential to traverse quantum physics rules.

The law of unlimited possibilities states that everything is full of potential and that any situation contains unlimited latent possibilities. Thus, old business thinking is stable, controllable, and supposes that markets and corporation function like mechanisms only capable simple predictability and certainty, which eliminates risk and assures equilibrium. Therefore, such thinking is no longer suitable for purpose. The quantum physics of complexity science and chaos should be allowed to create the potential for uncertainty. Leaders are encouraged to reinvent themselves and rewire their brains to think and act as quantum leaders.

Business organizations and people mutually define each other and the world. In the quantum worldview, quantum physical systems and processes share wave (network) and particle (individual) qualities to generate more enduring values and energy. The uncertainty principle, which reveals merely an item of two variables at one time but never both momentum and position, significantly influences business and physical science. As action is dictated by a person's paradigm, variations are inevitable. Rather than a challenging science of visible phenomena, quantum physics is developed from logic and relationships (Curtin, 2011). The quantum leadership journey is specifically heuristic and cannot be accomplished through conceptual learning only. To awaken the experience of wholeness, quantum leadership combines mindfulness, which involves the body, heart, and spirituality. Leaders who effectively chase such experiences find greater purposefulness and importance through positive social influence and consciousness (Laszlo, 2019).

Becoming a quantum leader involves learning to work with uncertainty and instability and thriving on it and knowing that innovation and creativity are best cultivated at the edge of chaos (Turner & Baker, 2019). Quantum leaders

envisage numerous conceivable outcomes for a problem or situation and investigate the possible inputs and means of addressing issues. Such leaders use interconnected networks, dialogue groups, and teamwork and accommodate initiative and self-organizing work structures and practices (Laszlo, 2020; Root et al., 2020). Quantum leadership requires a different perspective on reality that more subtly and intuitively controls the situation and creative potential of its indeterminacy. A quantum worldview restores importance and purposefulness to leadership (Hanine, 2019). Thus, quantum leadership marks the ascent of philanthropic capitalism where organizations aim to profit for a higher purpose and achieve a wider perspective.

Quantum science states that humans exist in a participative universe where cognizant people comprehend reality and are accountable not only for their actions but also the external context. Quantum science presents the concept of an intertwined universe where everything is imperceptibly linked (Erçetin, 2018). Events and matter do not occur separately from their context or environment and the wholes surpass the sum of their parts. Quantum physics states that the universe comprises dynamic energy patterns or self-organizing wave patterns, such as whirlpools, for which the borders are intertwined. Business organizations are essentially dynamic energy systems. Organizational practice, mental, emotional and spiritual aspects are also interlinked in real life (Stavriniades, 2013) and the same is true for separate organizational divisions.

Referring to experience as a whole, associative thinking is wavelike whereas quantum thinking is holistic (simultaneously particle-like in the left brain and wave-like in the right brain). Events occur chaotically, which renders any event prediction impossible. As they are unknown, no fully set identity exists until they are related. Similarly, the quantum system provides the flexibility to define itself as it progresses and emerges (Stavriniades, 2013; Turner & Baker, 2019).

The corporate world does not need more humans who act as thinking machines. Newtonian organizations have no prevailing assemblies to nurture emotional intelligence, much less systemic structures to raise the creative abilities

of spiritual intelligence (Zohar, 2016). The self is a dynamic system and there is a need to support others dynamically, which should be applied in organizations. The vision of a company is frequently unconscious of the organizational sense of identity, aspiration, motivating core values, sense of itself in the larger world, and strategies long-term. An organization that accesses its spiritual core can change its leadership patterns, assumptions, and corporate structure and surpass the old paradigm (Dargahi et al., 2017; Root et al., 2020).

From a quantum organizational perspective, everyone is a potential leader and those who can handle and use the ambiguity typically have a competitive advantage. As in chaotic and quantum physical systems, the future of imaginative human organizations can emerge only in a continuous and lightly ordered dialogue with the wider social, political, economic, and ecological environments (Senses & Temoçin, 2018). To reiterate, this needs a new type of trust in the developing properties of complicated circumstances.

Chaos and complexity are real-world concepts that apply to physical systems, which include human and environmental systems (McGregor, 2020). Akpil and Gündüz (2016) stated that chaos theory aims to understand simple systems that may change unexpectedly, abruptly, or irregularly. Complex systems with many interconnected pieces are the subject of complexity theory as they frequently yield unexpected order (Hossain et al., 2020). According to the quantum paradigm, contemporary science is considered chaotic, complicated, and uncertain whereas old science is described as structured simplicity. The most essential new science principle emphasizes the importance of not knowing everything clearly about a condition. The uncertainty principle states that only one complementary variable at a time can be known (Erçetin, 2018). This has important ramifications for both science and commercial management as one can never know both position and momentum. Humans act on a quantum system on any occasion and change it, where questions, assumptions, beliefs, and paradigms control how humans will act and consequently what changes will result.

Leaders should control the influence of business

complexity theory to construct a winning approach. The discovery of a hidden order of complex systems resulted from maximizing most of those systems in complexity theory. One complexity theory object is to sustain the fine equilibrium between chaos and law and between chance and planning with an incessantly changing organizational strategy that anticipates both changing conditions and new input (McGregor, 2020; Olsson et al., 2020). In management, the dominant component of the complexity and chaos theories is recognizing unpredictable, erratic, non-linear, and unstable systemic change based on the changing connections and complicated interactions between the system components (Jacobs, 2019). Equally, these factors render result prediction virtually impossible, which enables a novel flexible method that can confer organizational freedom to innovate.

In chaos and complexity theory science, they are collectively known as non-linear dynamics or dynamic systems theory, which provides a mathematical thought framework on change over time. All organizations function at the edge of chaos, which can be observed in the order and disorder transition space as an area of bounded instability where both conservative and progressive forces compete for control. In chaos theory, even an insignificant event or circumstance can exert a disproportionate influence on the way a large, complex system is shaped and evolves (Kowch, 2021; Wang, 2019). Thus, it is implied even a slight alteration can affect and produce different outcomes within the system. Complexity theory is based on efforts to explain the behavior of enormous complicated systems that operate in the quantum era, where studying complex chaotic systems reveals the order pattern and structure within (Olsson et al., 2020). Many disparate systemic elements cooperate to form the whole and its results and how each element changes.

Ng (2020) reported that it was substantially more important for management to acknowledge developing business trends and organizational patterns while adjusting the company approach appropriately than being directly involved in addressing organizational system groundwork details. Leaders should develop the experience and wisdom to know when and how the limits of order can be challenged

without exceeding the boundary of chaos or meeting accidents. Given the organizational management complexities in the modern business environment, leadership, vision, and corporate values with open communication are key to attaining company goals (Almanei et al., 2018; Poutanen et al., 2016).

Current rapid technological advancements are driving the world to increasingly higher magnitudes of interconnectivity. Therefore, organizations are facing more complex systems with greater change frequency and consequences. Almanei et al. (2018) noted that enterprises are challenged by unintended system-level consequences arising from well-intentioned individual actions. Employees are heterogeneous agents with different and evolving decision rules that both reflect the environment and attempt to anticipate change therein. Therefore, employees interact with one another and the interaction structures create an emergence. The resultant structure influences how the higher-level system will behave, where its properties and characteristics are based on its underlying agents (Kowch, 2021; Stavrinides, 2013), illustrating how the whole is greater than the sum of its parts. Thus, it is more important than before for organizations to consider how complexity science can assist.

In having the wish to control, complexity is an inconvenient reality. Rather than facing the harsh systemic reality people strive to sustain, mechanisms and models that enact a façade of certainty are frequently created. Doing so results in fewer variables but is a simplistic success that may not benefit the system overall. In most studies, placing a rigid priority on maximizing shareholders' returns clearly illustrates to employees that profitability is the preferable option. The common practice of reducing investments and expenses to enhance short-term margins can be disadvantageous to long-term organizational health. Competing values and priorities can be effectively balanced with decision effects only by embracing complexity (Almanei et al., 2018; Poutanen et al., 2016). Unsurprisingly, complexity theory is complicated, but there are some rules to leverage an idea to understand the best way to approach complex adaptive systems.

A common thought error is to infer individual behavior to a

system, which is a rational misjudgment. Rather, extrapolation should be avoided and the system should be considered at the correct level to understand how it operates (whether the department or team enables success) (Thietart & Forgues, 2002). Leaders or professionals should strive to relax tightly controlled coupled systems by repositioning components that have little influence on overall performance (Gharajedaghi, 2011). Recognizing complexity refers not only to facing reality but also that it is acceptable to understand actions and interventions more humbly and openly although the desired effect is not always achieved. Techt (2015) mentioned that embracing complexity does not simplify work but is recognition of reality, which will foster new ideas.

All living system members mutually define and influence each other. Human beings create the world, which is a vital perception into the new quantum worldview (Curtin, 2011). There is no radical split between body and mind; therefore, there is no foundation to distinguish between the private and the public, as it is an illusion generated by mechanistic attitudes and structures that will disperse. The business management style in value-driven leadership draws from a more profound pool of vision and more enduring values (Watson et al., 2018). Quantum leadership presents a better organizational model than the Newtonian system and a better thought model rather than goal-oriented and rule-bound thinking in seclusion.

## Recommendations And Conclusion

The industrial revolution for radical transformation has disrupted corporate leadership. External forces challenge organizational leaders to develop a radically new leadership culture, where the new leadership paradigm creatively addresses the rapid change in business environments, complexity, uncertainties, risk, global interconnectivity, decentralization, and stakeholders' demands for ethical practices. The current dynamic and disruptive environment requires stakeholders to have the expertise, knowledge, and skills to address complex issues and resolve intense situations. In the broader context of leadership actions and a shared understanding of the ideal underpinning and directing actions, quantum theory

emphasizes the importance of nuanced problem-solving that addresses the necessities. Thus, quantum leadership was developed by exploring the confluence of management and science and has been used to lead organizations with not only new thinking but also new metaphors, assumptions, and values.

This literature review revealed the absence of quantum leadership studies in the Southeast Asian region, specifically Malaysia. Moreover, important results from the multidisciplinary quantum leadership approach from local market organizations were outlined. Most respondents in the Geok and Shaari (2020) qualitative study believed that someone meant to be a quantum leader must possess the following four qualities: a strong sense of connection to their business and life, a sense of involvement, accountability, and continual learning. The most crucial aspect is that leaders must understand that their ultimate purpose is to serve. Based on the responses, it can be inferred that organizational leaders envisioned arguing about the presumed qualities in quantum leaders and quantum organizations within a complicated setting. These qualities included adaptivity to continuously varying conditions, flexibility, being visionary, intuitiveness, open-mindedness, imaginativeness, and the ability to restart and maintain performance. The findings suggested that human cognition is at least partly characterized, which acts as an integral component of context and attraction effects.

In quantum leadership, learning is supported and encouraged to augment organizational profitability with the appropriate learning setting, guaranteeing the stability of production methods and framework design practices, organizational assets, and motivation for growth (Geok & Ali, 2021a). The quantum leadership foundations in using the main principles of assembling and assessing manifold factors within an organization must be comprehended. The concept of an organic construction is to generate the passion of working towards the requirements of the entire organization rather than for self-interest (Geok & Ali, 2021c). Therefore, quantum leadership is a constantly changing management science surpassing artistic merits. Organizational theories, specifically in large organizations, could follow quantum logic more closely than classical

logic. Management system workers have observed numerous similarities between the material theoretical systems of organizational management. In the absence of such a framework, most business management directives may yield contradictory outcomes.

Quantum leadership research is still proceeding and presents insights into the significance of leadership type to management selections and utilizing manifold work dimensions rationally, emotionally, individually, and collectively. Quantum leadership supports both organized and informal learning that maximizes user-oriented education and knowledge transfer. Over the last decade, there has been more emphasis on learning through diverse approaches to construct a knowledge-based organization for constant enhancement through partnerships or collaborations, strategic alliances, and intra- and inter-organizational knowledge creation and transfer (Geok & Ali, 2021b). Thus, learning takes place in a swift and non-reflective setting as individuals and teams stop considering and evaluating actions. Participation in decision-making and strategy growth to fortify organizational leaders' intellectual frameworks is encouraged. Additionally, there is a need for studies on purposeful learning via quantum leadership that generates and implements an inclusive approach amid continuous alterations and shifts while remaining flexible and open-minded. Therefore, the resurgent interest in this area has led to new advances in higher education and the industrial and management sciences.

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