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Designing an Organizational Agility Model Using the Quantum Management Paradigm in Quasi-Governmental Companies

ABSTRACT

In today's turbulent, complex, and unpredictable environment, quasi-governmental organizations, particularly the Civil Servants Pension Fund, need organizational agility capabilities to respond effectively to stakeholders' needs, enhance productivity, and maintain organizational sustainability. Furthermore, the quantum management paradigm, through its emphasis on systems thinking, complexity management, flexibility, intuition, learning, and innovation, can provide an appropriate foundation for developing organizational agility. Accordingly, the present study aimed to design and explain a model of organizational agility based on the quantum management paradigm in the Civil Servants Pension Fund. In terms of purpose, this study was applied, and in terms of approach, it was qualitative and conducted using thematic analysis. The participants comprised academic experts and senior and middle managers familiar with management, organizational agility, and quantum management, who were selected through purposive sampling. Data were collected through semi-structured interviews and analyzed using coding and thematic analysis procedures. The findings resulted in the identification of eight organizing themes and 16 basic themes. The organizing themes included quantum skills, quantum leadership, quantum-agile structure, quantum-agile culture, quantum-agile human resources, quantum-agile capabilities, quantum intelligent technology, and strategic agility. The basic themes consisted of quantum thinking and cognition; quantum feeling, trust, and action; interactive and participative leadership; quantum decision-making; agile and fluid structures; quantum communication; a culture of innovation and risk-taking; learning and knowledge management; human resource competency development; human empowerment and flexibility; agile processes; continuous improvement and dynamic quality; agile technological infrastructure; data-driven technologies; organizational innovation and transformation; and environmental interactions. Ultimately, 115 initial codes were classified under these themes, and the final research model was developed. The findings demonstrated that organizational agility in the Civil Servants Pension Fund is a multidimensional concept whose realization requires the simultaneous development of human, managerial, structural, cultural, technological, and strategic capabilities within the quantum management paradigm. Accordingly, quantum skills and quantum leadership, as the principal drivers of the model, provide the foundation for developing flexible structures, a learning-oriented culture, empowered human resources, intelligent technologies, and strategic capabilities. Implementing this model can enhance flexibility, responsiveness, innovation, service quality, and the sustainability of the Civil Servants Pension Fund in addressing environmental challenges.

Keywords: organizational agility, quantum management, quasi-governmental organizations, Civil Servants Pension Fund

Introduction

Contemporary organizations operate in an environment characterized by turbulence, technological discontinuity, institutional complexity, shifting stakeholder expectations, and growing uncertainty. Under such conditions, traditional

bureaucratic models—built on hierarchy, stability, predictability, functional specialization, and linear planning—are increasingly inadequate for ensuring timely and effective organizational responses. Organizations must now detect environmental changes rapidly, interpret emerging signals, reconfigure resources, revise priorities, and deliver appropriate services without sacrificing quality, accountability, or long-term sustainability. Organizational agility has therefore become a central capability for organizations seeking to maintain effectiveness under volatile and ambiguous conditions. Rather than referring merely to speed, agility encompasses a multidimensional capacity involving responsiveness, flexibility, adaptability, innovation, resource reconfiguration, learning, and strategic renewal [1, 2].

Organizational agility can be understood as an organization's capacity to sense environmental developments, respond promptly to emerging threats and opportunities, and adjust structures, processes, technologies, and human resources in alignment with changing conditions. This capability requires more than occasional adaptation; it entails the institutionalization of responsiveness across different organizational levels. Agile organizations reduce unnecessary layers of hierarchy, facilitate cross-functional collaboration, decentralize selected decisions, and create mechanisms for the rapid circulation of information. They also establish flexible systems through which organizational units can be reconfigured according to new priorities. From this perspective, agility is simultaneously structural, behavioral, technological, strategic, and cultural. The creation of an agile organization therefore requires coordinated interventions across leadership, governance, workforce competencies, organizational design, and information systems [3, 4].

The significance of agility is particularly pronounced in public and quasi-governmental organizations. Such organizations are expected to respond to citizens and stakeholders, comply with regulatory requirements, maintain transparency, and ensure the continuity of essential services. At the same time, they often operate within rigid administrative frameworks, centralized decision-making systems, formalized procedures, and limited managerial discretion. These characteristics may reduce responsiveness and slow institutional adaptation. Research on organizational agility in the public sector indicates that public organizations must develop context-specific agility models that acknowledge both the need for flexibility and the continuing importance of legality, accountability, equity, and public value [4, 5]. Therefore, the adoption of agility in public-sector settings cannot simply replicate private-sector models; it must be adapted to the structural, institutional, and political characteristics of governmental and quasi-governmental organizations.

In Iran, the need to strengthen agility in public organizations has attracted increasing scholarly attention. Studies have emphasized that public organizations require agile human resource systems, decentralized capabilities, improved knowledge circulation, and employees who can perform effectively under changing conditions. Human resource agilization is especially important because organizational responsiveness ultimately depends on employees' ability to learn, collaborate, solve problems, and assume flexible roles [6]. Similarly, research on Iranian public universities has shown that organizational agility is shaped by interacting structural, managerial, cultural, and technological factors rather than by a single isolated capability [7]. These findings reinforce the view that agility in public and quasi-governmental organizations should be approached through a comprehensive model that simultaneously addresses organizational architecture, leadership behavior, employee capabilities, communication patterns, learning mechanisms, and technological infrastructure.

Pension funds represent a particularly important category of quasi-governmental organizations because of their economic, social, and intergenerational responsibilities. These institutions must manage long-term financial obligations, maintain service continuity, respond to demographic shifts, interact with multiple governmental and social stakeholders, and preserve

public trust. The Civil Servants Pension Fund, as one of the most important pension institutions in Iran, faces complex challenges associated with financial sustainability, governance arrangements, demographic pressures, changing employment patterns, administrative inefficiencies, and dependence on government support. Official assessments have highlighted the need for structural reform, improved governance, enhanced managerial efficiency, and more effective policy responses to ensure the sustainability of the Fund [8]. Structural analyses of Iranian pension funds have likewise identified imbalances between revenues and obligations, institutional fragmentation, insufficient autonomy, and weaknesses in long-term policy design as major challenges to their effectiveness [9].

The complex conditions facing pension funds cannot be addressed solely through procedural reform or incremental administrative improvement. These organizations require the ability to anticipate environmental changes, evaluate multiple scenarios, coordinate with diverse stakeholders, and rapidly redesign services and internal processes. Previous research in Iranian public-sector pension funds has identified organizational agility and leadership as important determinants of institutional adaptability and performance [10]. Nevertheless, pension funds remain constrained by bureaucratic routines, formalized hierarchies, fragmented information systems, and delayed decision-making. These conditions demonstrate the need for a conceptual framework capable of integrating agility with a management paradigm suited to complexity, uncertainty, interconnectedness, and nonlinear change.

The quantum management paradigm offers such a framework. Quantum management emerged from the application of concepts associated with quantum thought to organizational and managerial analysis. It challenges the deterministic, mechanistic, and linear assumptions of classical management and proposes that organizations should be understood as dynamic, interconnected, and continuously evolving systems. From this standpoint, organizational events cannot always be explained through simple cause-and-effect relationships. Instead, multiple possibilities may coexist, organizational actors influence one another through complex interactions, and small changes may generate disproportionate outcomes. Quantum management therefore emphasizes systemic awareness, interconnectedness, contextual interpretation, uncertainty management, intuition, creativity, and holistic decision-making [11, 12].

Quantum thinking encourages managers to move beyond binary judgments and fixed assumptions. It promotes the simultaneous consideration of alternative possibilities and recognizes that organizational realities may be ambiguous, fluid, and dependent on observation and interaction. In the contemporary digital environment, such thinking can support more flexible approaches to innovation, technology adoption, and organizational transformation [13]. Quantum management does not imply the literal transfer of physical laws into management practice; rather, it uses quantum concepts as a conceptual lens for understanding complexity, emergence, relationality, and uncertainty. This perspective is particularly relevant to organizations operating in unstable environments where managers cannot rely exclusively on historical data or predefined procedures.

Within this paradigm, quantum skills represent a set of managerial capabilities that enable leaders and employees to understand interconnected systems, tolerate ambiguity, use intuition, build trust, and act effectively under uncertain conditions. These skills typically include quantum seeing, quantum thinking, quantum feeling, quantum knowing, quantum acting, quantum trusting, and quantum being. Together, they enable managers to perceive organizational patterns, understand paradoxes, encourage collective meaning-making, and remain open to multiple courses of action. Research in Iranian public universities has demonstrated a significant relationship between quantum management skills and

organizational agility capabilities, with organizational intelligence functioning as a mediating mechanism [14]. More recent evidence has similarly shown that managers' quantum skills may enhance organizational agility through employees' readiness for organizational change [15].

Readiness for change is crucial because the implementation of agility often requires employees to abandon established routines, accept new responsibilities, and work through flexible or cross-functional arrangements. Quantum management can facilitate this process by emphasizing trust, participation, dialogue, and shared interpretation. Research has found that quantum management skills positively affect employees' readiness for change and that organizational agility mediates or interacts with this relationship [16]. In educational organizations, efforts to develop quantum management models have also emphasized the importance of nonlinear thinking, flexible leadership, collaborative relationships, continuous learning, and adaptive structures [17]. These findings suggest that quantum management may serve as a meaningful theoretical foundation for constructing organizational agility models in complex institutions.

Quantum leadership constitutes another central dimension of this paradigm. Quantum leaders view organizations as networks of relationships rather than rigid chains of command. They seek to facilitate interaction, empower employees, distribute selected forms of authority, and create conditions in which new ideas can emerge. This leadership orientation is compatible with servant, participative, adaptive, and distributed approaches, but it places particular emphasis on interconnectedness and the management of potentiality. An indigenous model of quantum leadership developed for Iranian knowledge-based companies identified competencies related to holistic thinking, uncertainty management, trust building, creativity, and collaborative influence [18]. Similarly, a competency model for leaders of quantum organizations highlighted the importance of cognitive, relational, behavioral, and strategic capabilities required to lead complex organizational systems [19].

Empirical evidence also indicates that quantum leadership can stimulate innovative behavior and employee innovation performance. Quantum leadership may enhance organizational intelligence, enabling organizations to interpret information more effectively, coordinate collective action, and support innovative behavior [20]. From the perspective of organizational sustainability, quantum leadership has also been linked to higher levels of employee innovation performance, suggesting that relational, participative, and complexity-sensitive leadership practices can contribute to both adaptability and long-term organizational viability [21]. Studies of emergent leadership in complex adaptive systems further demonstrate that leadership may arise through interactions among organizational actors rather than exclusively through formal authority, reinforcing the relevance of quantum perspectives to flexible and self-organizing organizational arrangements [22].

Decision-making under the quantum paradigm differs from conventional sequential decision models. Managers must often act before complete information becomes available, consider several alternatives simultaneously, and revise decisions as conditions evolve. Quantum decision-making therefore requires tolerance of uncertainty, strategic intuition, scenario thinking, and the ability to combine analytical evidence with experiential judgment. Quantum planning similarly emphasizes flexibility, self-direction, and the ongoing revision of goals and pathways. Research on quantum planning has shown that such an approach can strengthen self-directed learning by encouraging participation, autonomy, reflective thinking, and adaptive action [23]. These capabilities are highly relevant to quasi-governmental organizations whose managers must respond to policy changes, financial constraints, stakeholder demands, and operational disruptions.

The relationship between leadership networks and organizational agility is also important. Managerial and social ties can provide access to information, resources, legitimacy, and collaborative opportunities. However, their effects depend on the institutional context and the manner in which they are used. Research has shown that managerial ties may improve organizational agility by facilitating information exchange and resource mobilization, although excessive dependence on such ties may also introduce constraints [24]. Studies in emerging markets have likewise found that entrepreneurs' social ties influence organizational innovation through institutional conditions and survival pressures [25]. Furthermore, the effects of managerial ties on product innovation vary according to macro- and micro-institutional environments [26]. These findings indicate that relational capabilities should be incorporated into agility models, particularly in organizations that depend on coordination with governmental bodies, regulators, universities, service providers, and other stakeholders.

Political and business ties may also influence planning flexibility in complex institutional environments. Evidence from Turkey has shown that such ties can produce mixed effects: they may improve access to resources and information but can also create dependency and rigidity [27]. For quasi-governmental organizations, this duality is especially relevant. Effective external interaction must enhance environmental alignment without undermining institutional autonomy or accountability. Accordingly, strategic agility requires not only networking but also the capacity to evaluate external relationships, manage stakeholder expectations, and maintain flexibility in the allocation of organizational resources.

Digital transformation has further intensified the need for organizational agility. Digital technologies enable real-time communication, integrated information systems, intelligent dashboards, data analytics, automation, and personalized service delivery. However, technology alone does not produce transformation. Organizations must possess the structural flexibility, cultural readiness, and managerial capabilities required to integrate digital tools into decision-making and service processes. Empirical evidence indicates that organizational agility promotes digital transformation by enabling organizations to respond rapidly to technological change, redesign processes, and coordinate resources more effectively [28]. In the context of pension funds, digital transformation may improve data integration, stakeholder communication, service accessibility, monitoring, and managerial transparency.

Emerging technologies, including artificial intelligence and quantum computing, also raise new opportunities and governance challenges. Strategic approaches to integrating quantum artificial intelligence emphasize the need for technological preparedness, ethical governance, workforce development, cybersecurity, and alignment between technological capabilities and organizational objectives [29]. At the governance level, quantum information technologies require new institutional arrangements related to accountability, standards, risk management, and public oversight [30]. Although these technologies remain at different stages of development, their increasing relevance demonstrates the need for organizations to establish adaptive technological infrastructures and data-driven decision systems capable of evolving alongside technological change.

An agile technological infrastructure should be integrated with organizational learning and knowledge management. Agile organizations continuously acquire, interpret, share, and apply knowledge. They encourage experimentation, treat errors as sources of learning, and use feedback to improve services and processes. Knowledge sharing supports coordination across organizational boundaries and reduces the delays associated with fragmented decision-making. Thematic analysis is particularly useful for identifying such interconnected organizational capabilities because it allows researchers to extract basic, organizing, and overarching themes from expert narratives and to represent the relationships among them

systematically [31]. In the present context, this method can reveal how human, structural, cultural, technological, and strategic factors interact within a quantum-based agility model.

The existing literature therefore provides substantial evidence concerning the individual relationships among quantum management skills, quantum leadership, organizational intelligence, innovation, readiness for change, and organizational agility. For example, quantum management skills have been associated with the agility of employees in the Ministry of Sport and Youth, with organizational intelligence acting as a mediating variable [32]. However, much of the available research examines specific causal relationships rather than developing an integrated framework. Existing studies frequently focus on universities, educational organizations, knowledge-based companies, or selected government departments. As a result, limited attention has been given to the design of a comprehensive organizational agility model based on the quantum management paradigm for quasi-governmental pension institutions.

This gap is theoretically and practically significant. Theoretically, organizational agility is increasingly recognized as a multidimensional construct, yet the mechanisms through which quantum management dimensions collectively shape agility remain insufficiently integrated. Recent systematic reviews have called for models that combine agility enablers and resilience capabilities across organizational systems [2]. Similarly, multidimensional reviews of organizational agility emphasize the need to connect strategic, operational, technological, cultural, and human dimensions rather than treating agility as a narrow operational capability [1]. A quantum-based model can contribute to this need by explaining how cognitive, relational, structural, technological, and strategic components interact under conditions of uncertainty.

Practically, the Civil Servants Pension Fund requires a model that corresponds to its specific institutional responsibilities and environmental pressures. Generic agility frameworks may not adequately address the Fund's combination of public accountability, financial obligations, demographic challenges, regulatory constraints, and stakeholder complexity. A context-sensitive model should therefore identify the quantum skills, leadership practices, structural arrangements, cultural characteristics, human resource capabilities, technological systems, and strategic mechanisms necessary for strengthening organizational agility. Such a model may assist policymakers and managers in prioritizing interventions, redesigning processes, strengthening employee capabilities, improving service responsiveness, and enhancing organizational sustainability.

Accordingly, the aim of the present study was to design and explain an organizational agility model based on the quantum management paradigm in the Civil Servants Pension Fund.

Methodology

This developmental study was conducted using a qualitative approach and thematic analysis. Thematic analysis, also referred to as theme analysis or thematic content analysis, is a widely used method of content analysis and an approach to analyzing qualitative data obtained from interviews. It also provides many of the fundamental skills required for other forms of qualitative analysis. Common approaches to thematic analysis include template analysis, thematic matrices, thematic networks, and comparative analysis. In the present study, the thematic network analysis method was employed. In thematic network analysis, developed by Attride-Stirling (2001), themes are systematically organized according to a specified process into basic, organizing, and global themes (Aqeli et al., 2023). The stages of thematic analysis based on Braun and Clarke's (2006) framework are as follows: this stage includes selecting the research topic, formulating the research problem, specifying

the research objectives and questions, selecting the research design, and determining the scope, population, and sample. As previously stated, the present study aimed to identify the relevant components and indicators and to develop a comprehensive model of these components based on the identified factors.

The participants included nine faculty members in public administration and six senior organizational managers, who were recruited through snowball sampling. The principal inclusion criteria were holding a doctoral degree, possessing specialized knowledge in public administration, and having professional and research experience in the relevant field. Participants were selected based on information obtained from previously identified cases. The experts' demographic characteristics are presented in Table 1.

Table 1

Interview Participants in the Qualitative Phase

Interviewee Code	Gender	Educational Qualification	Organizational Position	Interview Duration (Minutes)	Work Experience
I1	Female	PhD	Faculty member	43	More than 10 years
I2	Female	PhD	Faculty member	30	More than 10 years
I3	Female	PhD	Faculty member	40	5–10 years
I4	Female	PhD	Faculty member	54	More than 10 years
I5	Male	PhD	Faculty member	35	5–10 years
I6	Male	PhD	Faculty member	43	More than 10 years
I7	Male	PhD	Faculty member	46	More than 10 years
I8	Male	PhD	Faculty member	35	More than 10 years
I9	Male	PhD	Faculty member	41	5–10 years
I10	Male	Master's degree	Manager	33	More than 10 years
I11	Male	PhD	Manager	47	5–10 years
I12	Male	PhD	Manager	41	More than 10 years
I13	Male	Master's degree	Manager	34	More than 10 years
I14	Male	Master's degree	Manager	36	More than 10 years
I15	Male	Master's degree	Manager	46	More than 10 years

The interviewees comprised nine public administration faculty members—four women and five men, all holding doctoral degrees—and six senior organizational managers—two men holding doctoral degrees and four men holding master's degrees.

Findings and Results

In this study, data were collected through semi-structured interviews with 15 experts. The interviews continued until theoretical saturation was reached. Theoretical saturation refers to the point at which sampling is continued until the similarity of the responses results in repetition and no new data emerge.

At this stage, after transcribing the interviews and supplementing the transcripts with notes taken during the interview sessions, the researcher repeatedly and carefully reviewed the interview texts. Independent ideas were identified as basic themes, and each was assigned a specific code. Subsequently, the basic, organizing, and global themes were identified and abstracted, and the thematic network was constructed. A thematic network represents relationships among themes in a nonlinear manner. No hierarchical relationship exists among the themes in this network; instead, emphasis is placed on the interdependence and interconnectedness of the network components. After the thematic network was constructed, it was reviewed and analyzed. However, the researcher must recognize that a thematic network is an analytical tool rather than the analysis itself. Once the thematic network has been developed satisfactorily, the researcher returns to the original text and interprets it with the assistance of the network (Aqeli et al., 2023). The themes, thematic network, and interpretation of the

network are discussed in detail in the research findings section. Inter-coder agreement was used to establish the reliability of the study. In addition to the researcher who performed the initial coding, another researcher independently coded the findings. Similarity between the two sets of coding indicated agreement and, consequently, reliability. Cohen's kappa coefficient was calculated to determine the degree of agreement and was found to be .75, indicating acceptable reliability. To establish the validity of the research, in addition to applying the strategy of researcher sensitivity throughout the research process, the findings were submitted to three academic experts and subsequently confirmed by them. In the thematic analysis process, the interviews were first transcribed and then supplemented with notes taken during the interview sessions.

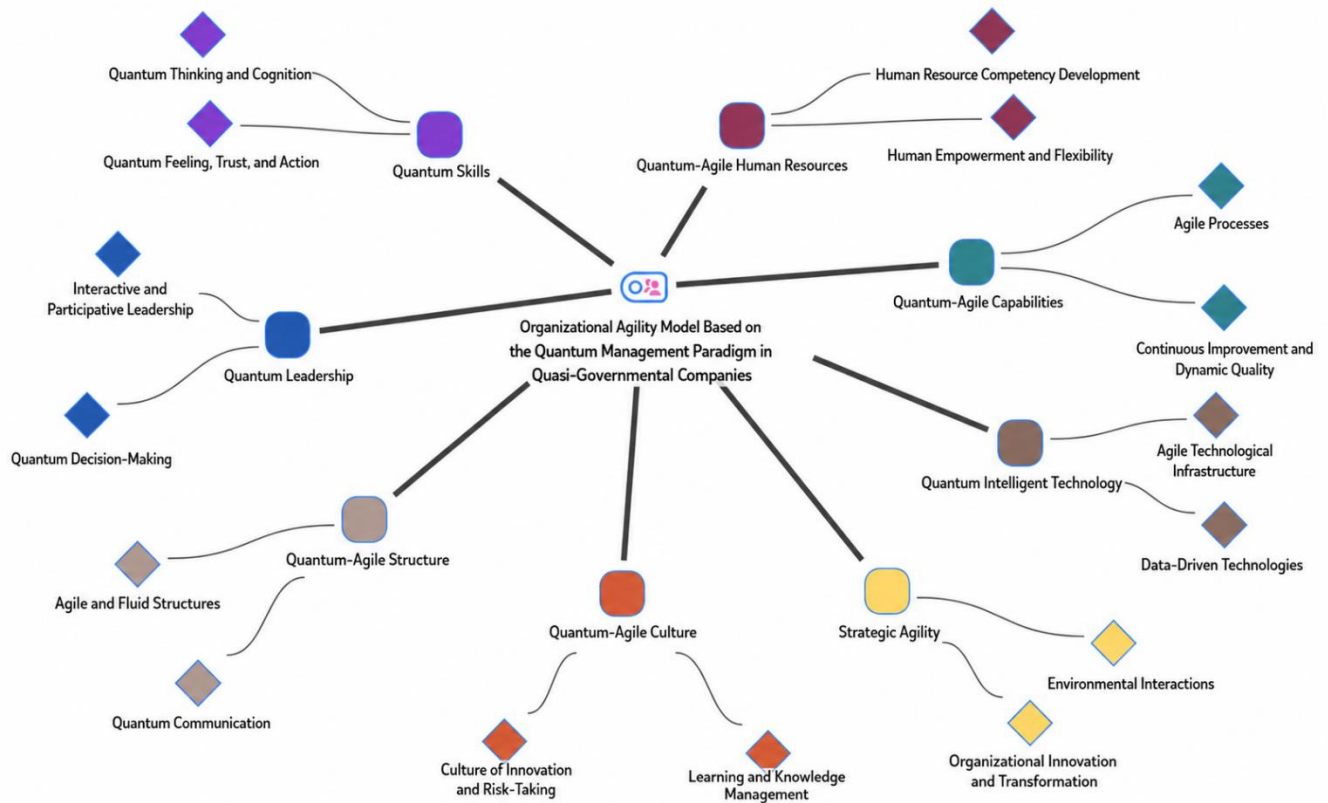
The texts were then reviewed carefully and repeatedly. Independent ideas were initially identified for each interview as basic themes, and each theme was assigned a code. Where sections of the interview text contained themes similar to those identified in previous interviews, the same previously assigned codes were used to denote them. Ultimately, the initial codes were extracted. After identifying the basic themes, the organizing and global themes were abstracted based on the basic themes. At this stage, an attempt was made to reorganize the initial themes, or basic themes, into more abstract themes, thereby guiding the researchers toward broader and more central themes. The results are presented in Table 2.

Table 2

Results of the Thematic Analysis

Open Codes	Basic Theme	Organizing Theme
Quantum thinking; systems thinking; understanding order and chaos; foresight; intuitive thinking; understanding environmental complexity	Quantum thinking and cognition	Quantum skills
Quantum feeling; quantum trust; quantum action; quantum being; emotional intelligence; managerial intuition; intelligent decision-making; psychological resilience; rapid response to change	Quantum feeling, trust, and action	Quantum skills
Power sharing; trust building; quantum communication management; team guidance; leader–employee interaction; support for team autonomy; servant leadership; managerial synergy	Interactive and participative leadership	Quantum leadership
Uncertainty management; crisis management; risk analysis; dynamic decision formulation; continuous reassessment; decisional courage; simultaneous consideration of multiple alternatives	Quantum decision-making	Quantum leadership
Decentralization; elimination of hierarchical layers; self-managing teams; project-based structure; flexible organizational boundaries; network organization; dynamic organizational chart; reconfiguration of organizational units	Agile and fluid structures	Quantum-agile structure
Organizational entanglement; real-time communication; knowledge sharing; free flow of information; cross-functional collaboration; internal networking; information transparency	Quantum communication	Quantum-agile structure
Agile culture; creativity; innovation; acceptance of failure; trial-and-error culture; corporate entrepreneurship; support for high-risk projects; freedom of ideation; continuous improvement; cultural flexibility	Culture of innovation and risk-taking	Quantum-agile culture
Quantum learning; knowledge management; knowledge sharing; continuous learning; team learning; continuous training; constructive conflict resolution; adaptive learning	Learning and knowledge management	Quantum-agile culture
Agile workforce; development of soft skills; problem-solving capability; individual creativity; self-directed learning; talent development; intrinsic motivation; work autonomy; interdisciplinary skills	Human resource competency development	Quantum-agile human resources
Self-management; team performance; continuous feedback; dynamic accountability; job autonomy; rapid substitutability	Human empowerment and flexibility	Quantum-agile human resources
Speed; responsiveness; parallel processes; rapid decision-making; real-time feedback; elimination of unnecessary activities; simultaneous project implementation; adaptability	Agile processes	Quantum-agile capabilities
Organizational competence; continuous improvement; error correction; quality management; productivity enhancement; continuous evaluation; implementation flexibility	Continuous improvement and dynamic quality	Quantum-agile capabilities
Flexible information systems; cybersecurity; integrated systems; management platforms; digital communication	Agile technological infrastructure	Quantum intelligent technology
Artificial intelligence; intelligent dashboards; business intelligence; parallel processing	Data-driven technologies	Quantum intelligent technology
Service development; digital transformation; value creation; product development; flexible growth; open innovation	Organizational innovation and transformation	Strategic agility
Responsiveness; analysis of complex environments; collaboration with stakeholders and universities; interorganizational networking; interaction with start-ups; service personalization; environmental alignment	Environmental interactions	Strategic agility

To provide a clearer explanation of the study's contribution, the resulting categories are organized into the following six groups. Finally, in the sixth stage, the concluding analysis and report are presented. The qualitative research model is presented below.

Figure 1*Initial conceptual model derived from the qualitative phase*

Discussion and Conclusion

The present study aimed to design and explain an organizational agility model based on the quantum management paradigm in the Civil Servants Pension Fund. The thematic analysis of expert interviews resulted in the extraction of 115 initial codes, 16 basic themes, and eight organizing themes: quantum skills, quantum leadership, quantum-agile structure, quantum-agile culture, quantum-agile human resources, quantum-agile capabilities, quantum intelligent technology, and strategic agility. Overall, the findings indicate that organizational agility in a quasi-governmental pension institution is not a single operational attribute but a multidimensional organizational capability formed through the simultaneous interaction of cognitive, leadership, structural, cultural, human resource, technological, process-related, and strategic dimensions. This interpretation is consistent with recent conceptualizations that regard organizational agility as a multidimensional construct encompassing sensing, responding, learning, adaptation, resource reconfiguration, innovation, and strategic renewal [1, 2]. The findings therefore extend prior literature by demonstrating how these dimensions can be integrated within a quantum management framework appropriate to the institutional conditions of the Civil Servants Pension Fund.

The first organizing theme, quantum skills, consisted of quantum thinking and cognition and quantum feeling, trust, and action. The associated codes included systems thinking, understanding order and chaos, foresight, intuitive thinking, recognition of environmental complexity, emotional intelligence, managerial intuition, psychological resilience, and rapid response to change. These findings suggest that organizational agility begins with the way managers and employees perceive and interpret organizational reality. In turbulent environments, linear and deterministic thinking is insufficient because problems are interconnected, causal relationships are often ambiguous, and several possible courses of action may coexist.

Quantum thinking enables managers to recognize interdependence, tolerate uncertainty, and combine analytical reasoning with intuition and foresight. This finding aligns with the principles proposed for quantum leaders, according to which effective management in complex environments requires holistic thinking, awareness of multiple possibilities, and the capacity to operate without relying on rigid assumptions [12]. It is also consistent with the broader quantum-level management perspective, which emphasizes complexity, relationality, emergence, and nonlinear organizational change [11].

The identification of trust, feeling, action, and resilience as components of quantum skills further indicates that agility is not purely cognitive. Managers may recognize change but still fail to respond if they lack decisional courage, emotional stability, or trust in employees and organizational systems. Quantum management skills help translate environmental perception into adaptive action by strengthening confidence, intuition, and readiness to operate under uncertain conditions. Previous Iranian studies support this interpretation. Quantum management skills have been shown to affect organizational agility through organizational intelligence and employees' readiness for change [14, 15]. Similarly, organizational agility has been identified as an important mechanism linking quantum management skills with employees' readiness to accept and implement organizational change [16]. Thus, the present findings confirm that developing quantum skills can enhance both the sensing and response dimensions of agility.

The second organizing theme, quantum leadership, included interactive and participative leadership and quantum decision-making. The extracted codes emphasized power sharing, trust building, team guidance, leader–employee interaction, support for team autonomy, servant leadership, managerial synergy, uncertainty management, crisis management, risk analysis, dynamic decision formulation, and continuous reassessment. These findings show that leadership in an agile quasi-governmental organization should move away from command-and-control practices toward facilitation, participation, distributed authority, and relational coordination. Quantum leaders do not merely issue instructions; they create the conditions in which employees can exchange knowledge, assume responsibility, and contribute to adaptive decisions. This result is compatible with indigenous models of quantum leadership that emphasize holistic cognition, trust, creativity, flexibility, and shared influence [18]. It also accords with competency models for quantum organization leaders that highlight cognitive, relational, behavioral, and strategic competencies as essential for managing complex organizational systems [19].

The role of quantum leadership in supporting innovation also reinforces the present results. Studies have demonstrated that quantum leadership enhances innovative behavior through organizational intelligence and contributes to employees' innovation performance within the broader framework of organizational sustainability [20, 21]. This relationship is understandable because participative and trust-based leadership reduces fear, enables idea sharing, and increases employees' willingness to experiment. The present findings also support the view that leadership may emerge through interactions among organizational members rather than being confined to formal authority positions [22]. In the Civil Servants Pension Fund, this means that agility can be strengthened when leadership responsibilities are distributed across teams and when expertise, rather than hierarchical rank alone, influences decision processes.

Quantum decision-making emerged as a distinct basic theme within quantum leadership. This finding reflects the institutional reality that managers in pension funds must often make decisions under demographic, financial, regulatory, and technological uncertainty. The identified emphasis on scenario evaluation, risk analysis, decisional courage, and simultaneous consideration of alternatives corresponds to quantum planning approaches that encourage autonomy, reflective judgment,

and continuous adjustment [23]. In practice, this means that decisions should not be treated as final responses to stable problems but as revisable choices within a changing system. Such a decision model is particularly important for quasi-governmental organizations, where delayed decisions can increase financial and administrative pressures.

The third organizing theme, quantum-agile structure, comprised agile and fluid structures and quantum communication. The findings emphasized decentralization, reduction of hierarchical layers, self-managing teams, project-based structures, flexible organizational boundaries, network organization, dynamic organizational charts, and reconfiguration of units. These results are consistent with the established characteristics of agile organizations, including fewer hierarchical levels, empowered teams, flexible role boundaries, and rapid resource reallocation [3]. They also correspond with research on public organizations showing that agility requires institutional arrangements that increase responsiveness while preserving accountability and public value [4, 5]. For the Civil Servants Pension Fund, structural agility does not necessarily imply the elimination of formal controls; rather, it requires the removal of unnecessary administrative layers and the creation of flexible mechanisms for cross-functional action.

Quantum communication, reflected in organizational entanglement, real-time communication, knowledge sharing, transparency, and interdepartmental collaboration, complements structural flexibility. An organization cannot become agile merely by changing its organizational chart. Information must circulate quickly, accurately, and horizontally across units. The concept of organizational entanglement is especially relevant because decisions made in one department can influence several other units and stakeholder groups. Therefore, communication should be viewed as an interconnected organizational system rather than a sequence of isolated transmissions. This finding is compatible with studies showing that managerial and social ties facilitate access to information, resources, and collaborative opportunities, thereby strengthening agility and innovation [24, 25]. However, the usefulness of these ties depends on institutional conditions, and poorly managed relationships can generate dependency or rigidity [26, 27]. Consequently, communication networks in quasi-governmental organizations should be transparent, purposeful, and aligned with organizational priorities.

The fourth organizing theme, quantum-agile culture, included a culture of innovation and risk-taking and learning and knowledge management. The related codes included creativity, acceptance of failure, trial and error, corporate entrepreneurship, support for risky projects, freedom of ideation, continuous learning, team learning, adaptive learning, knowledge sharing, and constructive conflict resolution. These findings demonstrate that agility requires a cultural environment in which employees can question routines, test new ideas, and learn from unsuccessful initiatives. Bureaucratic organizations often punish errors and reward procedural conformity, but such conditions discourage experimentation. The present findings suggest that the Civil Servants Pension Fund must develop a culture in which carefully managed experimentation is regarded as a source of institutional learning rather than as a violation of administrative order.

This result is consistent with studies showing that quantum leadership and quantum management foster innovation by supporting trust, organizational intelligence, and employee creativity [20, 21]. It also aligns with models of quantum management in educational organizations that emphasize continuous learning, flexible interpretation, participation, and openness to change [17]. The relevance of learning and knowledge management is particularly strong in the pension context because the Fund's decisions depend on legal, financial, demographic, actuarial, and technological knowledge distributed across different units. If this knowledge remains fragmented, organizational response will be slow and inconsistent. A learning-oriented culture can therefore improve both the quality and speed of decision-making.

The fifth organizing theme, quantum-agile human resources, consisted of human resource competency development and human empowerment and flexibility. The findings included soft-skill development, problem-solving ability, individual creativity, self-directed learning, talent development, intrinsic motivation, interdisciplinary skills, self-management, continuous feedback, dynamic accountability, job autonomy, and rapid substitutability. These findings emphasize that organizational agility ultimately depends on employees who can perform beyond narrowly defined job descriptions. Agile employees must be able to learn quickly, collaborate across professional boundaries, and assume new roles when organizational needs change. This result is consistent with research on human resource agilization in Iranian public organizations, which has highlighted the importance of employee capabilities, flexible roles, learning, empowerment, and adaptive human resource practices [6]. It also aligns with models of organizational agility in public universities that identify human resources as a core component of broader structural and managerial agility [7].

Employee empowerment is especially important because decentralized structures will not improve agility unless staff possess sufficient competence and authority to act. Continuous feedback and dynamic accountability can help balance autonomy with responsibility. The results also suggest the need for workforce substitutability, meaning that critical organizational tasks should not depend exclusively on a single individual. This is particularly important for the continuity of public services. The relationship identified in previous research among managers' quantum skills, organizational intelligence, and the agility of public-sector employees further supports this conclusion [32].

The sixth organizing theme, quantum-agile capabilities, included agile processes and continuous improvement and dynamic quality. The identified codes emphasized speed, responsiveness, parallel processes, rapid decisions, real-time feedback, elimination of unnecessary activities, simultaneous project implementation, adaptability, quality management, productivity improvement, and continuous evaluation. These findings indicate that agility must be manifested in actual workflows rather than remaining a leadership aspiration. Processes should be redesigned to reduce administrative delays, eliminate redundant steps, and enable parallel rather than exclusively sequential implementation. At the same time, speed should not be achieved at the expense of service quality. Dynamic quality therefore refers to the continuous monitoring and improvement of services in accordance with changing stakeholder needs.

These findings are consistent with multidimensional definitions of agility that incorporate operational responsiveness, process flexibility, and ongoing reconfiguration [1, 2]. They also correspond with the development of organizational agility assessments for governmental and nonprofit organizations, in which rapid response, adaptation, collaboration, and continuous learning are treated as interdependent capabilities [4]. For the Civil Servants Pension Fund, agile processes can improve the timely delivery of pension services, accelerate responses to regulatory change, and reduce the administrative burden experienced by beneficiaries.

The seventh organizing theme, quantum intelligent technology, consisted of agile technological infrastructure and data-driven technologies. Flexible information systems, integrated platforms, digital communication, cybersecurity, artificial intelligence, business intelligence, intelligent dashboards, and parallel processing were identified as key components. These findings reflect the growing dependence of organizational agility on real-time data and integrated information. Digital technologies can facilitate rapid sensing, coordination, monitoring, and decision-making, but their effectiveness depends on organizational readiness and process redesign. This conclusion aligns with evidence that organizational agility promotes digital transformation by enabling organizations to reconfigure processes and resources around new technologies [28]. It also

corresponds with strategic approaches to quantum artificial intelligence integration, which emphasize technological preparedness, governance, workforce competencies, and security [29].

The inclusion of cybersecurity is especially important because pension institutions manage extensive personal, financial, and employment data. Therefore, technological agility must be accompanied by robust data governance and risk controls. Emerging quantum information technologies also raise new governance issues related to accountability, standards, and institutional oversight [30]. Although the immediate implementation of quantum computing may not be feasible, the strategic implication is that the Fund should develop a flexible technological architecture capable of accommodating future innovations.

The final organizing theme, strategic agility, included organizational innovation and transformation and environmental interactions. The findings highlighted service development, digital transformation, value creation, flexible growth, open innovation, environmental analysis, collaboration with stakeholders and universities, interorganizational networking, interaction with start-ups, service personalization, and environmental alignment. These findings indicate that internal agility must ultimately support the organization's ability to renew its strategy and adapt its services. Strategic agility requires the Fund to move beyond reactive administration and continuously evaluate how demographic, economic, regulatory, and technological developments affect its mission.

The emphasis on environmental interaction is compatible with previous findings concerning managerial ties, innovation, and planning flexibility [24, 25, 27]. It is also particularly relevant in view of the structural and financial challenges facing Iranian pension funds. Official and scholarly assessments have identified sustainability, governance, financial imbalance, and institutional fragmentation as serious concerns requiring coordinated reform [8, 9]. The present model suggests that these challenges should be addressed not only through financial or legal reform but also through the development of internal agility, intelligent technology, stakeholder collaboration, and strategic innovation. This conclusion is consistent with previous research conducted in Iranian public-sector pension funds, which identified organizational agility and leadership as important dimensions of institutional effectiveness [10].

Taken together, the eight organizing themes form an interdependent system. Quantum skills and quantum leadership operate as foundational drivers because they shape how complexity is understood and how authority and decisions are exercised. These drivers influence the development of agile structures, learning-oriented culture, empowered human resources, agile processes, intelligent technologies, and strategic responsiveness. The model therefore supports a systemic rather than fragmented approach to organizational agility. Its principal contribution lies in integrating quantum management and organizational agility within the specific context of a quasi-governmental pension organization.

This study was subject to several limitations. The qualitative design and purposive selection of 15 academic and managerial experts provided rich and specialized data but limited the statistical generalizability of the findings. The study was conducted within the context of the Civil Servants Pension Fund, and its structural, regulatory, and organizational characteristics may differ from those of other pension funds or quasi-governmental organizations. In addition, the findings were based on participants' perceptions and professional experiences and may have been affected by subjective interpretations, organizational position, and social desirability. Although inter-coder agreement and expert review were used to strengthen reliability and validity, the extracted model was not quantitatively tested in this phase of the research.

Future studies should develop and validate a quantitative measurement instrument based on the eight organizing themes and 16 basic themes identified in this research. The proposed model can be tested using confirmatory factor analysis and structural equation modeling with a larger sample of managers and employees. Comparative studies across different pension funds, public agencies, quasi-governmental corporations, and private organizations could clarify which dimensions are context-specific and which are broadly applicable. Longitudinal research could also examine whether the implementation of quantum management practices leads to measurable improvements in responsiveness, service quality, innovation, employee readiness for change, and organizational sustainability over time. Further studies should investigate possible mediating and moderating variables, including organizational intelligence, psychological safety, digital maturity, environmental turbulence, and leadership readiness.

Managers of the Civil Servants Pension Fund should implement the proposed model through a phased organizational transformation program rather than isolated initiatives. Leadership development programs should strengthen systems thinking, uncertainty management, participative decision-making, trust building, and strategic intuition. Organizational structures should be reviewed to reduce unnecessary hierarchical layers, establish cross-functional teams, and delegate appropriate authority. Human resource systems should emphasize interdisciplinary competencies, continuous learning, self-management, and flexible career roles. The Fund should also integrate its information systems, develop real-time managerial dashboards, strengthen cybersecurity, and use data analytics to support decisions. Finally, formal mechanisms should be established for collaboration with universities, technology firms, start-ups, beneficiaries, and other stakeholders to support service innovation, environmental sensing, and continuous organizational renewal.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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