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Explaining the quantum leadership model in order to establish organizational civilization in the country's higher education system

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Abstract

This research aims to explain the quantum leadership model to establish organizational civilization in the country's higher education system. The research is methodologically a combination, Inductive in the qualitative section, deductive in the quantitative section, and fundamentally oriented in its objectives. The research population in the qualitative phase consists of experts from the Islamic Azad University and members of the university faculty, totalling 12 individuals selected through purposive sampling and the snowball method to achieve theoretical saturation. In the quantitative phase, for the Delphi stage, 12 experienced professors with over 20 years of experience in the management department of Islamic Azad University were selected using purposive sampling for examination. In the third phase, the modelled data derived from the combination of the grounded theory phase and the Delphi method were examined among the population of employees with over 20 years of experience in the Islamic Azad University. A total of 238 individuals (according to the formula of the unlimited population Cochran) were studied using non-probability convenience sampling. The data collection tool in the qualitative part was a semi-structured interview based on the grounded theory approach, and in the quantitative part, a researcher-made questionnaire. MAXQDA2020 software was utilized in the qualitative section and for data analysis. The research findings in the qualitative part created 6 categories based on the grounded theory in terms of causal factors, axial categories lay the foundation factors, and intervention depending on the consequences of implementing quantum leadership, which is presented in the form of a quantum leadership model. The results of this study showed that by implementing the model obtained in this research, we can witness positive consequences in implementing quantum leadership to establish organizational civilization in the country's higher education.

Keywords: quantum leadership, organizational civilization, higher education of the country
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1 Introduction

Generating new knowledge has been a fundamental function of universities since ancient times, and the greatest effort of the academic community lies in advancing knowledge and enhancing intellectual capital by utilizing available informational, intellectual, and human resources. Therefore, universities should identify, extract, and effectively utilize these resources through innovative and appropriate leadership and management methods. One of the new concepts of the third millennium is quantum leadership. The goal of quantum leadership is to increase the power and effectiveness of managers and employees by using the concepts and principles of quantum theory as a guide to describe and explain organizational phenomena and solve management problems. On the other hand, the effective management and organizational excellence of universities and the existence of precise management and leadership systems are the inevitable necessities and needs in an efficient and effective system. These necessities, including a commitment to ethics, require managers to be equipped with quantum leadership skills so that universities, relying on these skills, can increase their commitment to change. This leads universities to have greater productivity [18]. Therefore, managers are aware that the only constant element in the equations of the present era is change. Many leaders know that stability in organizations is an old and outdated idea, and traditional management skills are not the solution to new organizational problems [5].

Leadership is considered the most important pillar of an organization, as it can act as an incentive for high performance among employees or reduce it, ultimately leading to the success or failure of the organization. There is no consensus on the definition of the term "leadership". Some consider it as "ability", some as "art", and others as a "process". Additionally, some researchers have emphasized the role of followers in the emergence of leadership, while others have focused on the roles of leaders. According to R. Stogdill [19], there are as many definitions of leadership as the number of individuals attempting to define it. Based on this, it is said that leadership is like beauty and cannot be defined, but when you see it, you realize that you are aware of its existence and recognize it [2].

The 21st century is witnessing an era that can be called the quantum era in terms of technology. Traditional beliefs about management and leadership and the nature of the organizational environment have been limited by the worldview of mechanistic, algebraic and reductionist thinking. The current thinking about leadership necessitates resorting to new models, dimensions, and skills. The dimensions and skills that are more suitable to respond to the complexities of the quantum era and empower the leaders of the organization to perform their duties more effectively [11]. With a focus on ethics and organizational excellence in today's organizations and considering the necessity of employing quantum leadership tailored to contemporary changing organizations, this study aims to elucidate the quantum leadership model for the establishment of organizational civilization in the national higher education system. In this section, after stating the problem and presenting the research questions, the significance and necessity of it are examined. Following this, the objectives, theoretical and operational definitions, the scope of the research variables, the research domain, innovation aspects, and the organization of the study are addressed, ultimately outlining the stages of research execution.

2 Theoretical foundations and research framework

The importance and effectiveness of the quantum approach in examining and solving many complex problems have been the reason for the attractiveness of the research topic. Presenting a quantum leadership model helps tackle potential issues and problems that cannot be solved by conventional methods. It addresses them in innovative, dynamic, and creative ways rooted in quantum thinking, making them tangible and solvable. Quantum concepts have not yet been applied to the study of human behaviour [7], but many studies show humans as quantum beings [6]. Human, like everything else in the world, is composed of core elements derived from a common source. Although considered a material being subject to Newtonian classical laws, it also possesses a non-material and invisible dimension, with its functioning influenced by quantum principles.

The existing gap between the worldviews established through quantum physics and Newtonian physics as a basis implies that if the worldview of quantum physics is used as a metaphor for organizational issues, we should see the effect of this paradigm shift in organizations. This shift in the pattern should influence the organizational model (both mentally and physically), the underlying values of this model, and leadership behaviours as a reaction to these values in a way that yields observable results in physical instances. Consequently, deducing and explicating a behavioural leadership model based on the quantum paradigm and measuring this model enhances the unique value of science. Newtonian organizations, characterized by reductionism, verticality, mechanistic approaches, hierarchy, and compartmentalization, are no longer responsive to today's complex and turbulent environments. Therefore, the necessity to move toward creative and learning organizations with characteristics such as multidimensionality, continual change, adaptability, agility, borderless, networking, high levels of trust, and so forth, becomes inevitable [11].

The extension of principles and foundations from quantum physics to management knowledge and leveraging this fundamental paradigm in employing a novel approach to individual and organizational life, especially in the realm of leadership and human capital in organizations, deserves profound attention. This is because the essence of modern physics knowledge lies in seeing things differently, thinking differently, and acting differently, which in turn will lead to receiving different feedback. In the second half of the 20th century, the quantum paradigm, by invalidating the principle of causality and stating the principle of uncertainty, opened a new and amazing horizon for the truth-seeking human nature. The mysterious, complex, and astonishing quantum world, despite its unpredictability, has its own order and specific purpose. Based on this new paradigm, most disciplines such as pure sciences, technical and engineering fields, humanities and social sciences, as well as religious studies and theology, have undergone significant transformation and extensive evolution [11].

Quantum leaders pay attention to spiritual leadership techniques and use spirituality in guiding and motivating employees. They focus on both the professional and personal aspects of employees, working on enhancing self-awareness, self-leadership, and continuous growth by paying attention to the emotional, ethical, mental, and technical aspects, striving to build and maintain trust within the organization. In this way, they become the architects of organizations that can achieve maximum progress and success by using the huge source of quantum vacuum energy, in very complex and chaotic conditions [11].

In relation to organizational civilization, the category of leadership and change management has a special place. Implementing such a civilization within organizations requires fundamental and cultural changes, not merely structural ones. The mental substructures of colleagues within the organization need to undergo transformation and change. In this context, structural changes and tools can aid in this transformation. In a brief comment, it can be claimed that moving towards creating a civilized organization requires changes in the form and shape of the organization as well as changes in content. For this reason, an organization achieves such comprehensive change not only by being placed in the categories of first and second-order learning but also by entering the realm of third-order learning, which pursues changing the mindsets of the organization's employees [13].

On one hand, organizational civilization aims to establish respect for individual and collective rights in society before constructing a civilization. It encourages individuals within smaller environments to respect the reasonable rights and desires of others, fostering the achievement of the organization's ultimate goals through social behaviours accompanied by goodwill [15]. On the other hand, the concept of any organization, even if it has undesirable performance, has an organizational culture. In fact, the organizational culture supports the prevailing atmosphere within the organization [14]. In the present context, organizational civilization encompasses cultures that provide the necessary groundwork for the organized and purposeful training of human resources to enhance service delivery and create a win-win situation. Undoubtedly, this issue supports the civility in today's organizations; a dilemma that many human resources and workgroups in organizations, especially hierarchical governmental entities, suffer from due to its absence. The breadth of organizational civilization means the dynamism and organizational effort for continuous improvement in the path of prosperity that knows no end. Organizational civilization is one of humanity's longstanding aspirations to reach the true nature of human creation [12]. Compliance with civil (organizational) rights is a general behaviour. The strong presence of social justice is evident in the observance of delicacy and utmost integrity. Complete organizational communication is established comprehensively. Preservation of organizational civility by managers and the existence of large organizational social capital are evidently among the criteria of organizational civility.

According to the views of Fris and Lazaridou [8], the quantum perspective supports spirituality in organizations for the following reasons: the Newtonian view sees individuals as replaceable objects and components, contradicting people's sense of belonging. The quantum model emphasizes relationships and efforts to improve individuals' relationships with each other, aiding in fostering a sense of belonging to the community. Secondly, when managers adopt a Newtonian orientation, they strive to expand individuals' work-related qualities. However, a manager within a quantum perspective seeks to create conditions for both personal and professional aspects of individuals, encompassing technical, intellectual, effectiveness, emotional, spiritual, political, and religious dimensions to develop and flourish [18]. Ultimately, considering the discussions presented, this research seeks to answer the question: how the quantum leadership model will be to establish an organizational culture in the Iranian higher education system?

3 Research methodology

The current research aims to present a quantum leadership model to establish organizational culture in the Iranian higher education system, focusing on the Islamic Azad University in Iran. Therefore, this research is considered in terms of its research method as both inductive and comparative, foundational in terms of its goal, descriptive in terms

of data collection method (quantitative-qualitative), and correlational in terms of data processing. In general, the current research was based on the following steps:

In the first stage, the researcher made efforts to conduct an initial literature review by reviewing theoretical foundations published in reputable domestic and international indices. This involved primary library studies to gain further insight into the field of quantum leadership and organizational culture, alongside drafting the second section of the paper.

In parallel with this work, while carrying out the necessary processes to obtain permission to conduct research among the members of the statistical community, the process of conducting research interviews was carried out. In the following, the conducted interviews were converted into text and analyzed by the researcher and another person based on the foundation's data theory approach to obtain the necessary confirmation in terms of validity. After presenting the qualitative model and obtaining approval from the supervisors and advisors, the researcher constructed a questionnaire adapted from the relevant model. To further contextualize the model, it was presented to 12 professors from the management department of Islamic Azad Universities in a Delphi process. This process concluded in a two-way iterative manner. In the end, the qualitative model, whose components were also confirmed through the Delphi method, was distributed for confirmatory factor analysis among the population of employees with experience in Islamic Azad University.

The population in the grounded theory stage of this study consisted of managers and faculty members from higher education institutions in the country, with a focus on Islamic Azad University, who were knowledgeable in the field under investigation. The sampling method was purposeful and tried to select managers and academic staff members who had management experience and sufficient experience in the subject and were willing to cooperate. In this stage, sampling continued until theoretical saturation (interview 9) was achieved. To ensure the proper attainment of theoretical saturation, two additional interviews were conducted. However, as no new information related to the research model emerged from these interviews, sampling concluded after interview 11. In the second stage (Delphi study), 12 professors with more than 20 years of experience in the management group of Islamic Azad Universities were selected by purposive sampling method and examined based on the Delphi method.

The Delphi method primarily revolves around collecting and refining expert opinions iteratively to achieve consensus or convergence on a particular topic. While it's not solely based on mathematical formulas, various statistical techniques can be employed in this process. Here are several mathematical formulas and concepts often associated with the Delphi method.

Mean (Average): The sum of all values divided by the number of values.

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} \tag{3.1}$$

Variance (σ^2): Measures the average of squared differences from the mean.

$$\sigma^2 = \frac{\sum_{i=1}^{n} (x_i - \mu)^2}{n} \tag{3.2}$$

Standard Deviation (σ): Square root of the variance.

$$\sigma = \sqrt{\sigma^2} \tag{3.3}$$

Weighted Averages: Assigning weights to experts' opinions based on their expertise or reliability. The weighted average formula is:

$$\text{Weighted Averages} = \frac{\sum_{i=1}^{n} (x_i \times w_i)}{\sum_{i=1}^{n} w_i} \tag{3.4}$$

where, x_i is the individual data points or opinions, w_i is the weights assigned to each expert's opinion, and n is the number of experts. Consensus Measurement: There's no specific formula for consensus measurement in the Delphi method, but indices like the coefficient of variation (CV) or the coefficient of quartile variation (CQV) can be used to assess the dispersion of opinions relative to the mean.

- Coefficient of Variation (CV): It's the ratio of the standard deviation to the mean.

$$CV = \frac{\sigma}{\mu} \times 100\% \tag{3.5}$$

- Coefficient of Quartile Variation (CQV): It's the ratio of the interquartile range to the median.

$$CQV = \frac{Q_3 - Q_1}{Q_2} \times 100 \tag{3.6}$$

where, Q_1 is the first quartile, Q_2 is the median (Second quartile), and Q_3 is the third quartile.

Exponential Smoothing:

$$S_t = \alpha \times Y_t + (1 - \alpha) \times S_{t-1} \tag{3.7}$$

where, S_t is the smoothed value at time t, Y_t is the actual value at time t, and α is the smoothing factor.

Correlation Coefficients: Used to measure the strength and direction of relationships between different variables or responses from experts. The Pearson correlation coefficient formula is a common method:

$$\rho = \frac{\sum(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{X})^2 \sum(Y_i - \bar{Y})^2}} \tag{3.8}$$

where, X_i, Y_i are individual data points, and $\bar{X}, \bar{Y}$ are means of X and Y respectively. In the third stage, the derived model resulting from the intersection of the grounded theory and Delphi method was applied to the statistical population of employees with more than 20 years of experience in the Islamic Azad University, totaling 238 individuals (according to the Cochran's unlimited population formula (eq. (3.9))). These individuals were selected through non-probability convenient sampling method for the study.

$$n = \frac{Z^2 \times p \times (1 - p)}{E^2} \tag{3.9}$$

where,

n = required sample size

Z = Z-score corresponding to the desired confidence level (e.g., for a 95% confidence level, Z might be 1.96)

p = estimated proportion or probability of success (or the proportion being studied)

E = desired margin of error

The data collection tool used in the phase related to the grounded theory was a semi-structured interview method conducted either face-to-face or through social messaging and media platforms. The interviews were conducted individually. Before commencing the interviews, brief information about the research objectives was provided, consent was obtained for recording and publishing the interview information without mentioning the interviewees' names, and assurance was given regarding the confidentiality of the interviewees' names and content. In the end, the recorded materials were analyzed meticulously by the researcher and another independent analyst. After analyzing to ensure the accuracy of the researcher's interpretation and understanding of the interviewees' statements, four individuals among the interviewees were randomly selected. Quotations from their interviews as well as the final findings of this stage were presented to them for their feedback. The focal point of the questions was the professors' opinions regarding the components of quantum leadership for universities. Initially, a general question was asked: "In your opinion, who is a quantum leader in a university? What characteristics does such a leader possess?"

Based on the responses, direct and indirect follow-up questions were used, such as: "From a rational, emotional, and spiritual perspective, what characteristics does a university leader possess?"

In this study, questioning colleagues and examining the members were employed to validate the research. The results of the analysis and classifications were confirmed by colleagues. Additionally, input was sought from an experienced qualitative researcher in the field, which was also validated.

Furthermore, the results of the analysis and coding from the interviews were provided to four of the interviewees, who confirmed them based on their interviews and experiences. In this investigation, an attempt was made to comprehensively describe all the details of the research process, from sampling to data collection and analysis, to ensure there were no ambiguities left regarding the transferability of the points. Efforts were made to select a sample that could enhance the generalizability of the findings obtained from the interviews. The aim was to have a sample that could provide an examination of the subject from various perspectives, and the expansion of the sample continued until no new perspectives emerged. An experienced external qualitative research supervisor was involved, having access to various elements such as interview audio files, implemented texts, notes, analyzed data, study findings, extracted

meanings, codes, themes, study process details, initial study objectives and proposal, interview questions, and all study specifics. This not only ensured reliability but also validated the study's credibility.

The Delphi section was conducted using a semi-structured questionnaire. In this questionnaire, identified components were presented to the relevant sample members using a 9-point Likert scale spectrum. At the end of each variable's components, a defined space was allocated for participants to add their desired components to the model.

In the confirmatory factor analysis stage, a structured questionnaire with a 5-point Likert scale was used to collect research data.

In the grounded theory method, data analysis means continuous comparison of data with the purpose of conceptualization and includes all steps from coding to classification. In fact, this method enables theory creation through direct systematic coding and analytical methods. This process involves three types of comparisons. Initially, phenomena are compared with each other to discover similarities and how they change under different conditions. During this process, based on the identified similarities, general concepts and their characteristics are recognized, forming the basis for future concepts and propositions. In the next step, the categories made to saturate the theoretical characteristics are compared with the concepts. This process aims to increase the details of concepts, enriching them while exploring the potential emergence of new concepts during the expansion of extracted propositions' characteristics. The final stage involves comparing concepts with each other. The purpose of this is to understand the relationships between concepts, aiming to unify them in hypotheses and ultimately in theory. It's through these continual comparisons in the research process that this method is also called the method of continuous comparison [3].

In the first stage of coding, which is called open coding, the researcher tries to identify hidden concepts by reviewing the collected data. This stage is called open coding because the researcher names the concepts with an open mind and does not set any limits for determining the codes. The purpose of open coding is to break down the collected dataset into the smallest possible conceptual elements. The next task for the researcher is to compare and categorize the concepts extracted from the data, which will be done in the next two stages, namely axial and selective coding. The researcher, while collecting data, simultaneously records their thoughts and interpretations of interacting with the data, which is also an ongoing and continuous process. In other words, it is necessary to develop continuous interaction with data systematically. This is possible with the help of a method called note-taking or recording. Taking notes means writing necessary descriptive points during coding for the next process, which is axial and selective coding. In this phase, points that serve as reminders of code meanings, the relationship between codes, etc., are written down. Strauss and Corbin [20] express in this regard: Writing theoretical notes is an essential part of the formation of grounded theory because the analyst cannot retain in mind all aspects, specific features (components), hypotheses, and questions emerging from the analysis process; there needs to be a system to accomplish this. The use of notes constitutes such a system. In axial coding, the process of assigning codes to the concepts in the data is left completely open and takes an excerpted form. Actually, after performing open coding, the researcher can identify the main themes in the dataset and then proceed with coding around these themes in the next stage. In the final stage of coding, known as selective coding, the researcher, considering the identified codes and concepts in the two previous stages, strengthens the coding process further. Emphasizing the sections that could play a more significant role in formulating the theory assists in facilitating the subsequent stages [4]. It should be noted that these tests were done using MaxQDA2020 software.

4 Research findings

In this study, the researcher adheres to the principles of the open coding approach, as referenced in the previous section. After conducting the interviews, the initial step in the coding process involves open coding using a line-by-line method.

The process of open coding ends with the emergence of the axial category. As mentioned, the axial category is the category that shows the main concern of the participants about the research problem. In this research, analytical judgments were made about the identification of the axial (central) category, based on the following criteria that are stated in the emergent approach [9]:

- The axial category must be central. This criterion shows that the axial category explains a significant share of behavioural pattern fluctuations.
- The axial category must occur frequently and intermittently in the data.
- The axial (central) category should be easily and meaningfully related to other categories; therefore, there's no need for these linkages to be created forcefully.

- An axial category should have explicit and intriguing implications for formal theory.
- An axial category must have a significant culmination; meaning it not only avoids leading to a deadlock and leaving the researcher stranded but, with its explanatory power, brings the researcher to conclude the analysis of the processes they are working on.
- An axial category must be entirely variable and easily changeable in relation to other variables.
- While an axial category explains an issue, it itself is also a dimension of that issue, hence explaining itself and other variables to some extent.

Finally, taking into account the above criteria and based on the procedures of the emerging approach, in this research, the effects of the emergence of the axial category were graphed after the coding of the 12th interview. At this stage, the researcher called the axial (central) category "customer citizenship behaviour". Glaser [9] emphasizes that the naming or title attributed to the axial category at this stage may change during subsequent coding stages. This is because the researcher might perceive what the axial category is but might not be able to formulate an appropriate conceptualization. In this stage, the researcher should not worry but rather choose a label or conceptual title, even if it seems weak, until reaching a more suitable label for the concept through subsequent stages and further coding.

The axial category that explains the most significant changes around the primary concern of the participants will be the focus of the study and the selective data collection in subsequent stages. The axial category explains how participants resolve their primary concern [10].

It should be noted that during the open and axial coding phase, the data were carefully examined, and their main and sub-themes were identified. Dimensions and characteristics were determined, and the pattern was investigated. For these analyses, the analytical techniques suggested by Strauss and Corbin [20] were used. The main unit of analysis for open and axial coding was concepts. During the detailed analysis of the data, concepts were developed through headings by the researcher, either directly from the participants' interview transcripts or according to their common usage. The implemented version of the interviews was regularly reviewed to find the main category, categories, characteristics (features) and dimensions of these categories. Strauss and Corbin [20] defined the above terms as follows:

- Concepts: Constituent units of theory or separate mental labels for phenomena.
- Categories: Classification of concepts that make up the phenomenon at a higher level
- Feature: Features that are related to each category and provide more definition and description about the dimensions
- Dimension: shows the location of features along a continuous spectrum.

Based on this, initially, by parsing the interview text into elements containing messages within lines or paragraphs, efforts were made to extract open codes. In the next stage, these concepts were placed within larger categories as main themes. Then attempts were made to classify these themes into broader conceptual categories. In the second stage, which is axial coding, first, the main theme was determined, and then other themes were categorized into six major clusters: causal conditions, strategies, contextual factors, intervening conditions, phenomena, and outcomes. Finally, in the selective coding phase, the relationships between them were formulated into a theoretical paradigm model. Regarding the explanation of what each of the above factors is, it should be said that according to Strauss and Corbin [20], they are as follows:

- Phenomenon: It means a mental form of a phenomenon that is the basis of the process.
- Causal conditions: It consists of things that affect the axial category.
- Strategies: Actions or specific interactions that arise from the central (axial) phenomenon.
- Context: Specific conditions that influence the strategies.
- Intervening Conditions: General contextual conditions that influence the strategies.
- Outcomes: They encompass the outputs resulting from the implementation of strategies.

Table 1: Demographic characteristics of interviewees

Sex	Male	8
	Female	3
Work experience	10 to 20 years of experience	2
	20 to 30 years of experience	9
Education	PhD	11

The results of the descriptive statistics of the demographic characteristics of the interviewees of this research are as follows:

According to the above table, it can be seen that among the 11 people who participated in the interviews, 8 of them were male and 3 were female. In addition, 2 of these people had a work experience between 10 and 20 years, and 9 people had more than 20 years of work experience, and all 11 people had a doctorate education.

Coding

In this part of the research, the researcher is trying to provide open to selective coding related to the grounded theory that was conducted on the interviews.

Table 2: Coding based on the grounded theory

Concept	**Dimension**	**Component**
Effective factors in quantum leadership (causal factors)	Structural factors	Communication development
		Flexibility
		Learn-based organization
		Agility and changeability of the organization
		Borderless
		Organization development
		Process management
	Behavioral factors	Ethicality in leaders
		Employee innovation
		Internal commitment
		Participability
		Quantum psychological skills (quantum vision, quantum thinking, quantum feeling)
		Quantum immaterial skills (quantum cognition, quantum action, quantum trust)
		Quantum focal skill (quantum existence)
	Contextual factors	Actions compatible with community sensitivities
Quantum leadership strategies	Structural strategies	Creating change from within people, not from the organization
		Using modern behavior and skills
	Behavioral strategies	Creating the value of increasing personal discipline
	Contextual strategies	Support consultation and ideas
		Support creativity
Challenges and obstacles of quantum leadership	Structural barriers	Failure to design synergy opportunities
		Inability to change control
		Inconclusiveness
		Non-hierarchical networks
	Behavioral barriers	Wrong selection or appointment
		Wrong selection or appointment
		Culture defect
	Contextual obstacles	Movement on the edge of chaos
		Unpredictability of results

The governing platform required for quantum leadership	Structural capabilities	Clarification of intentions
		Organizational openness
		Development and improvement of human resources
		The intelligence of quantum organization
	Behavioral capabilities	Multi-skilled staff
		Team work
	Contextual capabilities	Growth space
		Security space
		The atmosphere of transformational leadership
		Creating a shared vision
		Identification
		Enrichment of culture
		Promotion and development of awareness
Consequences of organizational civilization	The outcomes for the higher education system	Innovation in science production
		Structural and organizational optimization of education and research system
		Promotion of productivity and scientific prosperity
		Development and promotion of organizational identity
		Improving the scientific, practical and ideological quality of professors and staff
	Consequences for society and country	Evolution and promotion of human sciences and social behavior
		Reliance on ethical, Islamic, and professional values of human resources
		Justice-centeredness and promoting administrative health
		Evolution and promotion of human sciences and social behaviors
Characteristics of quantum leadership	Intrapersonal	dynamism
		Holistic
		Positive thinking
		Decentralization
		Researcher
		Full of passion and excitement
		Financial acumen
		High level of trust
		Attention to spirituality and value and emotional dimensions
		Creative adaptation (anticipating the change)
		Self-organization
	Extrapersonal	In the role of a coach
		Cultivating leadership talent among followers
		Responsiveness
		Avoiding the spirit of control and power-seeking,
		Intuitive decision-making in ambiguous situations,
		Leadership at all levels of the organization,
		Ambiguity and complexity
Features of organizational civilization	Behavioral	Preservation of physical appearances and orderliness and cleanliness
		Performing activities automatically
		Achieving win-win benefits
		Empowerment of the organization
	Structural	Moralocracy or ethics: Observance of upbringing and etiquette in social and organizational relationships, human-centric, transcendental values, spirituality
		Sociocratic: Decision-making based on collective satisfaction, circular organization, enhanced communication, selection based on satisfaction, excessive emphasis on enthusiastic and joyful participation
		Meritocracy: Power through meritocracy
		Adhocracy: Dynamic structure, informal behavior, matrix structure, strong organizational communications, reduced standards, lack of concentration
		Technocracy: Experts governing, scientific capabilities

Characteristics of organizational civilization

5 Conclusion

The current research was designed and implemented to present a quantum leadership model to establish organizational civilization in Iran's higher education system with an emphasis on Islamic Azad University in Iran. The statistical population in the stage related to the grounded theory in this study included managers and faculty members

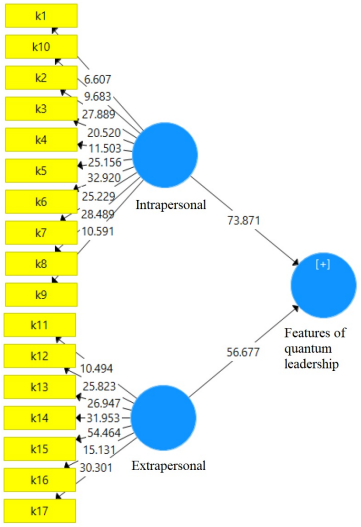

Figure 1: Characteristics of quantum leadership

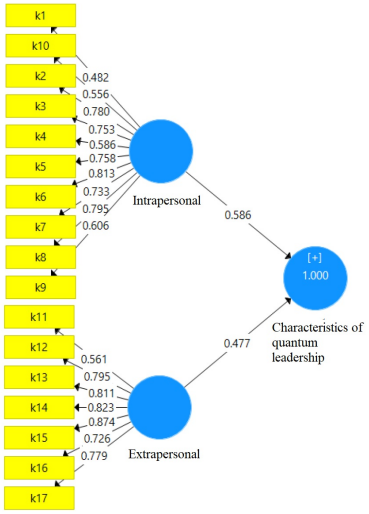

Figure 2: Model in standard mode

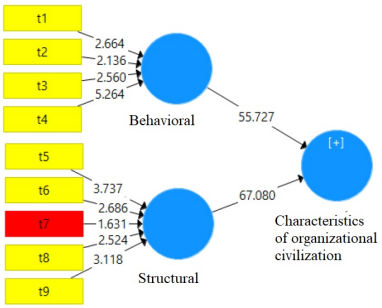

Figure 3: Model in a meaningful state

of higher education institutions in the country, with an emphasis on the Islamic Azad University, who had awareness of the field under study. The sampling method was purposeful and tried to select managers and academic staff members who had management experience and sufficient experience in the subject and were willing to cooperate. In this stage, sampling continued until theoretical saturation was reached (interview 9), and to ensure that theoretical saturation was properly achieved, two additional interviews continued. However, as no new information relevant to the research

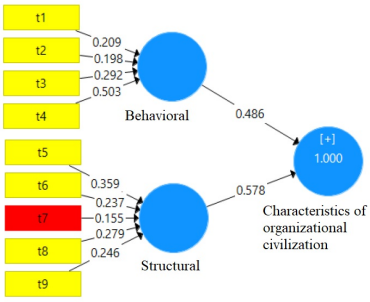

Figure 4: Model in standard mode

model emerged from the interviews, the sampling ended with the 11th interview.

Regarding these people, it can be said that among the 11 people who participated in the interviews, 8 of them were men and 3 were women. Moreover, two of these individuals had a tenure of service between 10 to 20 years, and nine individuals had over 20 years of service tenure. Additionally, all eleven individuals held a doctoral degree. Coding based on the grounded theory approach led to the identification of 6 concepts which are: effective factors in quantum leadership, quantum leadership strategies, challenges and obstacles of quantum leadership, the governing platform required for quantum leadership, features of quantum leadership and consequences of organizational civilization.

Effective factors in quantum leadership include three dimensions structural, behavioural and contextual factors. Structural factors include the components of communication development, flexibility, learning-based organization, organization agility and changeability, Borderless, organization development, and process management. This finding is consistent with the results of the research by Salimi et al. [16], which pointed to the role of organizational agility.

The behavioural factors also include components such as ethicality in leaders, employee innovation, internal commitment, participability, quantum psychological skills (quantum perspective, quantum thinking, quantum feeling), non-material quantum skills (quantum cognition, quantum action, quantum trust), and quantum focal skills (quantum existence). Contextual factors also include the component of actions compatible with the sensitivities of society. This finding is in line with the findings of Dargahi [5] and Azimi Sanavi and Razavi [1], who emphasized the effect of education leading to an increase in quantum management skills.

In the end, the concept of quantum leadership characteristics has two dimensions intrapersonal and extrapersonal. The intrapersonal dimension has components of dynamism, holistic, positive thinking, decentralization, research, full of excitement, financial acumen, high-level trust, attention to spirituality and value and emotional dimensions, creative adaptation (anticipation of change), and self-organization. The extrapersonal dimension has components in the role of a coach, developing leadership talent among followers, responsiveness, avoiding the spirit of control and power-seeking, intuitive decision-making in conditions of ambiguity, leadership at all levels of the organization, ambiguity and complexity. Considering that Shelton [17] also mentioned the field of spirituality, it is in line with this finding.

In the second stage (Delphi study), 12 professors with more than 20 years of experience in the management department of Islamic Azad Universities were selected by purposive sampling and examined based on the Delphi method. Regarding the demographic characteristics of these people, it should be added that among the 12 participants in the Delphi stage, there were 8 men and 4 women. Additionally, all 12 individuals had over 20 years of service tenure and held doctoral degrees.

Based on the findings of the first Delphi stage, the borderless components, internal commitment, lack of result-orientedness, inefficiency in policy bias, organizational openness, financial acumen, enhancement of productivity and scientific flourishing, the elevation of scientific, practical, and ideological quality of professors and employees, elimination, and supportive components for employees' innovative behaviours (the behavioural strategies dimension from the concept of strategies), increasing the level of practical knowledge and competence of managers and employees (the contextual factors dimension from the concept of factors influencing leadership) were added to the model, and no changes were made in the second Delphi stage, concluding the Delphi process.

In the third stage, the modelled result obtained from the integration of the grounded theory and Delphi phase was applied to a statistical population of employees with over 20 years of experience at the Islamic Azad University, comprising 238 individuals (based on the Cochran unlimited population formula) using a non-probability convenience sampling method. Among the 238 participants who took part in the confirmatory factor analysis stage, 53 were male and 126 were female, while 59 did not respond to this option. Their service tenure was also all over 20 years. In terms

of education, 123 individuals had a bachelor's degree or less, 49 held a master's degree, 6 had a doctoral degree, and 60 individuals did not respond to this option.

Based on these findings, the third components of the structural dimension of the characteristics of organizational civilizations, the second component of the organizational challenge dimension, the concept of quantum leadership challenges and obstacles, and the second components of the structural and behavioural dimensions of factors affecting quantum leadership were removed from the model.

According to the findings of this research, it is suggested:

1. Considering the positive consequences of the quantum leadership method, it is suggested that the structural factors in the Islamic Azad University, which are visible to some extent, should be emphasized more. In this regard, it is suggested that organizational agility should be considered more in Azad University. Certainly, it must be acknowledged that some branches within the Islamic Azad University, such as Isfahan or Qazvin, have been able to compete with top universities in the country like Sharif University by timely entry and investment in cutting-edge sciences such as robotics, aerospace, and others. In addition to university benefits, they have also contributed to national interests.
2. It is suggested to pay attention to the targeted study opportunities with the dual focus of students and professors in Islamic Azad University. Certainly, to experience the crystallization of a learn-based organization, attention should be paid to organizational learning processes, knowledge management, the conversion of implicit knowledge into explicit, and so forth, from a structural perspective. Additionally, the practicality and realization of learning in these courses must be thoroughly evaluated. In reality, it must be acknowledged that some of the study opportunities were being utilized as a form of privilege (rent) or leisure, and the university wasn't benefiting as it should from the advantages resulting from these expenses. Therefore, it's essential for this matter to increase within the university, and new knowledge and sciences should be introduced to the university. Of course, reviewing the performance evaluation system, compensating services, and also promoting academic ranks can be very helpful.
3. It is suggested that the Ethics Committee be added to or replace the Disciplinary Committee and in this direction, instead of negative interactions, more emphasis should be placed on encouraging and guiding interactions for the internalization of ethics among academics.

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