

Modeling the Agility of Education Departments with a Digital Transformation Approach

Mohammadreza Gharbi Jahromi 

Ph.D. candidate of Educational Administration, Marvdasht branch, Islamic Azad University, Marvdasht, Iran.

Moslem Salehi *

Department of Educational Administration, Marvdasht branch, Islamic Azad University, Marvdasht, Iran.

Mozhgan Amirianzadeh 

Department of Educational Administration, Marvdasht branch, Islamic Azad University, Marvdasht, Iran.

Ebad Allah Ahmadi 

Department of Educational Administration, Marvdasht branch, Islamic Azad University, Marvdasht, Iran.

Abstract

The purpose of this study is to provide a model of organizational agility in education departments with a digital transformation approach. This study is an applied research from the perspective of agile modeling of education departments' digital transformation strategy. Based on the data collection method, it is a mixed research done by qualitative-quantitative methods. The participants include experts familiar with the structure and organizational relationships in education. Using the purposive sampling method, 15 people participated in this study. The main tools for collecting data are interviews and questionnaires. The interview consisted of 6 initial questions in a semi-structured manner. Content analysis has been used to identify the underlying categories of the research. The structural-

* Corresponding Author: msalehi@yahoo.com

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interpretive modeling method has been used to design the initial model. Data was processed in the qualitative phase with ATLAS TI software and the quantitative phase with MicMac software. Using qualitative analysis, the views of experts were identified through content analysis, and 5 categories and 19 components were identified. Then, based on the interpretive structural model, a model was designed for organizational agility of the Department of Education. There are 5 main themes of maturity, visionary leadership, structural flexibility, knowledge-based organization and socialism and 19 organizing themes in this model. Managers think about the interests of society and stakeholders such as students, their parents, and respond to the needs of society, and prioritize group interests over individual interests. In this study, socialism refers to digital strategies and employees and digital governance. An organization that considers itself committed to meeting the needs of stakeholders; Due to the participation of stakeholders in all matters, they become aware of environmental changes faster, and as a result, they feel obliged to respond and become more agile day by day. To develop a country, its education structure must first be optimal; Therefore, the condition for Iran's complete success in using smart services is to have an educational system equipped with the latest technologies. They are responsive to the needs of society and consider group interests of more importance than individual ones.

Keywords: Organizational Agility, Education Organization, Visionary Leadership, Content Analysis, Interpretive Structural Model.

1. Introduction

In today's world, all organizations and their environments are experiencing ever-increasing instability, turmoil, and constant change (Mangalaraja et al., 2022). One of the ways to respond to the factors of organizational change and improve competitive activity is organizational agility. On the other hand, agility means the ability to feel and respond quickly to environmental opportunities to innovate and improve competitiveness, which is a vital and essential element for the survival and success of the organization (Ghelichkhani et al., 2021). Digital transformation is one of the most important topics in organizational agility. Achieving organizational mobility in the digital age, in addition to technological superiority, has leadership and competitive advantage (Savić, 2021).

To reduce the effects of these changes and take advantage of existing opportunities and reduce response time and improve flexibility, a whole new form of organization must emerge (Rafi et al., 2021). In all these organizations, competition is in different dimensions. These dimensions include: speed of customer service, increasing the quality of service, providing service with products at the best possible time (Thomas, 2021). Therefore, to achieve these goals, organizations and their employees must move towards increasing flexibility, readiness for change and welcoming it, gaining more competence, increasing production and exchange of information, readiness to face unforeseen events, and so on. The word must become more agile (Franco and Landini, 2021).

Successful implementation of agility requires change in a variety of areas (Knauss et al., 2017). One of the most important areas is to pay attention to digital content in the organization, which is essential in facilitating organizational agility (Andriyani et al., 2017). Studies show that organizations start digital transformation activities with different goals and perceptions such as changing customers' attitudes, forcing government governance, responding appropriately to the emergence of new technologies, and environmental pressures (Xing et al., 2020).

Education is the goal of the political system of the Islamic Republic of Iran. Formal and public education is one of the key components for the survival and strengthening of the Islamic Republic of Iran and an opportunity to practice the republic including the Ministry of Education and other relevant institutions ,and stakeholders

together achieve this national and social goal. However, after the Islamic Revolution, the Iranian educational system, although in the quantitative expansion of educational services and turning to the concerns of Islamic education in the record, its current situation is not commensurate with the second step of the Islamic Revolution and as expected. Despite the efforts of officials and honorable ministers of education in recent decades, the speed and direction of implementing the fundamental change have not been able to properly meet the expectations of the Supreme Leader and the people. The lack of noticeable change in the outputs and even the decline of some of them are evident in this claim. Coronary conditions have also set the stage for some of these challenges to become more prominent and even new challenges to arise (Nowruz Ali, 2021).

Centralized, bureaucratic, and low-productivity structure of the Ministry of Education, unbalanced distribution of education manpower in terms of quantity, quality, and gender, a significant shortage of manpower in the coming years, shortcomings of the evaluation system, and quality assurance of education services and lack of formal education system At the national level and in many other cases, have caused organizational agility to be felt in education more than ever (Heidari & Zanganeh, 1400). Unfortunately, today, the country's education for various reasons, is not able to meet the needs of society based on its lofty goals and has faced many problems in rendering services and training of efficient manpower (Chan & Muthuveloo, 2020). Also, this organization does not have the ability to move at the right speed towards digital transformation. Getting rid of existing shortcomings and inefficiencies and achieving dynamic and successful education requires a profound transformation in this institution to stop all the factors affecting the success of this system, to facilitate the achievement of goals by making optimal use of resources and opportunities ahead (Kikha et al., 2021).

The situation of the education system in our country is such that many countries in the world have now crossed the borders of traditional education and gone on the digital circuit and beyond. Nowadays, some countries in the world not only use information technology to provide educational materials, but even smart schools have marked the happiest time for students to learn so that the need for the child's physical presence in the educational space has gradually disappeared and While learning educational content, the student

pursues other interests at the same time. But education in our country not only does not benefit from the digital transformation but also has not been very successful in joining e-government; According to the Secretary of the e-Government Commission of the Information Technology Organization of Iran, e-government is at the lowest level.

Education as a scientific and cultural institution is the bedrock of conditions that put children and adolescents on the path of development of educational missions of society. Today, as schools expand and take on new responsibilities, their management becomes more complex. Henson (2002) considers schools to be one of the most complex social organizations in the present age, for whose guidance several factors must be aligned. Because the organizational structure of the Department of Education is one of the dimensions that plays a very important role in the adaptation of the school to the external environment. Educational management theories and researches have challenged the idea of educational organization as a bureaucratic structure (SenLiu et al., 2018).

Education departments are considered as the highest command centers of thought and knowledge production in society and with the presence and activity of students in the direction of scientific advancement and to give direction to intellectual, religious, cultural and political movements of society (Khaki Vatan & et al., 2021). Every education department needs to be agile in responding to a set of internal and external forces (Aldakeel et al., 2015).

Organizational agility is one of the organizational categories that has far-reaching consequences in organizations and is one of the most influential categories on organizational productivity. And organizations that have employees, workflows, timely decision management, and fast and agile operations can move toward increasing success. Organizational agility is the result of several factors, including the resources and human capital of the organization (Nasiri Valik Nabi & Navidi, 2016). Considering that the capability of human resources in organizations causes organizations to be successful in achieving their goals and employee agility is one of the important concerns of organizations, identifying the factors affecting organizational agility seems necessary (Haji Kamangarkolai, 2015). The general attention of researchers has been focused on examining the relationship between component and technical components with

agility, including the human aspect of agility, and it has been stated that human capital affects organizational agility (Najrani, 2016).

Due to the problem of globalization, organizations face many challenges in their work environment, and to face these challenges face many problems (Kharazmi et al., 2021). In this area, agility aims to help organizations advance their goals and reach maturity. Organizational agility is, in fact, a response to environmental needs. Today's organizations are looking to improve the ability to provide services in the shortest time with the lowest cost, improve quality and innovate in their services, in general, today's environment requires more flexibility from organizations and this is solved by organizational agility (Storde et al., 2019). Agility to the performance of employees and the organization requires constant preparation to face fundamental and superficial changes, and in a word, the agile organization is always ready to learn anything new that increases the profitability of taking advantage of new opportunities. Therefore, one of the most important pillars of organizations in moving towards organizational agility is human resources and capital (Mulhern, 2009). Educational thinkers and researchers believe that the traditional structures of the organization are incapable of managing the complexities of the school and its relationship to the external environment and cannot be coordinated with traditional structures, processes, and systems of education in the 21st century (Gabriel, 2016). To improve decision-making systems and mechanisms and coordination with the external environment, all emphasize the need to change the structure of the organization and the flexibility of the structure as much as possible (Sherehiy, 2018).

In school, the most important and main factor of inclusive growth, development, and progress is manpower. Among them, principals, school executives, and educational experts have a special place as the most prominent and effective human resources in schools and offices. The school has a key role in both realizing a change and in responding to the needs arising from the various changes in society, so it can be said that one of the most important resources of organizations is human resources, whose capabilities enable organizations to achieve their goals; Therefore, employee agility is one of the important concerns of organizations and it is necessary to identify the factors affecting employee agility. In general, there is a relationship between organizational agility of the Department of Education and

organizational agility of schools, and also the dimensions of organizational agility of education can predict the agility of the school organization. So this is an answer to the question of what is the agile modeling of education departments' digital transformation strategy?

2. The literature review

2.1. Organizational Agility

Agility and the ability to respond quickly to the external environment has become a necessity that agility is no longer a matter of choice for business organizations in the 21st century (Tseng et al., 2011). It distinguishes successful organizations from unsuccessful ones. It combines with the forces of market pressure in which successful business practices are imitated globally. These constant changes require rapid response and adaptation (Ananthram et al., 2019). However, the inherent need to grow and become a competitor in the relevant industries impairs the ability of organizations to be flexible and react quickly to market changes (Conboy et al., 2019). Net size and market power often blind and impede the ability to detect and respond quickly to changes that could otherwise improve competition. There is no basic formula for developing an agile company. A company can become increasingly agile, but it is never explicitly agile (Alzoubi et al., 2015).

Agility is an ongoing process, much like continuous improvement. Organizational agility is more of a core competency, a competitive advantage, and a differentiation than it becomes a topic (Alzoubi et al., 2015; Doz & Kosonen, 2018; Holsapple & Li, 2018; Williams et al., 2014). It requires strategic thinking, innovative thinking, exploiting change, and the constant need to adapt and be active (Arteta & Giachetti, 2008). So agility becomes a necessity for survival instead of choice. At the grassroots level, agility can be divided into two distinct parts: flexibility and adaptability (Falance, 2016; Holsapple & Li, 2018).

Agility is a criterion of accountability (Zhang et al., 2001). Predicted responses to an external stimulus indicate the overall resilience of the organization (Olson, 2021). The responses and decisions that an organization makes about environmental stimuli are a criterion of an organization's adaptability (Harraf et al., 2017). These two responses (effectively planned or unplanned) are basic agility attributes that must be consistently applied by an organization.

Decomposition of agility into more defining characteristics includes sense, foresight, entrepreneurial awareness, and organizational activism (Dyer, 2018). These elements of agility can be defined as general goals that each pillar of agility is trying to achieve (Abbaspour et al., 2014). Conceptualizing the dimensions of agility as a pillar helps to strengthen the basic and wide range of agile measures that are designed to address specific situations (Zanjeichi et al., 2014). Agility columns are presented as multiple dimensions of agility that together form the core. For example, a column that emphasizes leadership presents leadership in a way that allows for a prior definition of agility. To maintain organizational communication, agility is a priority because it is the basic empowerment of organizational effectiveness and excellence. It is a tool to achieve and maintain high performance. Agility must go beyond the business process and be a hallmark of individuals, teams, and the overall organizational culture (Mische, 2017).

2.2. The agility of the country's education departments

With these descriptions, education must be agile so that it is sensitive to environmental changes and has the necessary speed to adapt to them. One of the new ways to respond to the factors of educational change is agility (Veisi, 2021). Agility is in fact a new paradigm for engineering organizations and educational departments, and the educational organization, like other organizations, must be able to design itself in order to respond to a set of internal and external forces (Ravichandran, 2018). In this case, with the occurrence of sudden events and changes, it does not easily get tired and becomes more adaptable and powerful, and responds quickly to sudden changes and the needs of applicants. To create such an organization, various strategies are proposed to implement an agility model in education (Ghiasi Nadosh, 2020).

The results of the research of Abolghasemi et al. (2015) in presenting a model for educational agility showed that the model presented in the field of organizational agility is very comprehensive. Accordingly, the dimensions of organizational agility of educational departments include speed, responsiveness, competence, and flexibility, which are the main dimensions examined in this model and, in fact, include the dimensions that constitute organizational agility. There are also several factors affecting the process of

organizational agility that are known as these factors act as input to the process of organizational agility and affect it. But the output of the model, which is influential factors, is introduced in the form of job satisfaction, competitive advantage, and productivity and is included in the model. These factors are the ones that affect the agility process and are, in fact, its consequences. The following is internal and external research related to organizational agility:

Menon & Suresh (2020) in their research entitled "Factors affecting organizational agility in higher education" state that the purpose of this article is to first discover the factors that can facilitate agility in higher education and then analyze the interrelationships between these factors. According to the literature review and the use of expert opinions, eight factors that can improve agility in higher education were identified, which are the ability to understand the environment, organizational structure, information technology, organizational learning, human resource strategies, leadership, and readiness. And to change and collaborate. Based on the proposed model, leadership was shown as the most important factor and then human resource strategies and organizational structure. This model identifies and prioritizes all the important drivers of agility that can help universities and colleges design, adopt, and implement policies and methods that facilitate agility. In their study entitled "Increasing Agility to Strengthen Organizational Performance: Considering Critical Factors", Busse & Weidner (2020) state that this article aims to examine the latest managerial developments around the world and to understand the practical implications of advanced research and case studies. The case of organizational agility has been done. By developing and strengthening a set of dynamic core capabilities, organizations are likely to survive and thrive in today's unpredictable business environment. Special emphasis on organizational agility in the business process and balanced project management Agile can create a better position to meet customer needs as it evolves.

Chan & Muthuveloo (2020) in their study entitled "Organizational Critical Capabilities for Organizational Agility: An Experimental Study" state that this study aimed to examine the organizational competencies required for agility among private higher education institutions in Malaysia in a turbulent environment. They operate commercially. This study found that all three organizational structures enable organizational agility to significantly affect the

organizational performance of private higher education institutions. The results also showed that higher private centers to strengthen their organizational agility need organizational learning to be able to optimize organizational performance.

3. Methodology

This study is from the perspective of applied research that has been conducted with the aim of agile modeling of education departments using the digital transformation strategy. Based on the data collection method, it is a combined research done by qualitative-quantitative methods

Participants in this study in the qualitative and model presentation, including experts familiar with the structure and organizational relationships in education (in this study, the criterion of expertise, having at least a master's degree in related fields of organization and educational management, and at least 10 years of experience) Activity in managerial positions in the education organization). The sample size in qualitative studies and interviews is usually between 5 and 25 people is recommended. In general, the interview process in qualitative analysis continues until theoretical saturation is reached. Using the purposive sampling method, 15 people participated in this study.

The main tools for collecting research data are interviews and questionnaires. The interview consisted of 6 initial questions and was conducted in a semi-structured manner. The research questionnaire consists of 6 main structures and is designed based on the structure of an interpretive structural model. To calculate the validity of the qualitative part, the calculation of the Holstie coefficient has been used. The amount of two-coder agreement in this method is 0.715, which is more than 0.6, so the qualitative analysis has sufficient validity. Content validity (expert opinion polls) was used to assess the validity of the questionnaire and its validity was confirmed. Content analysis has been used to identify the underlying categories of the research. The structural-interpretive modeling method has been used to design the initial model. Data were performed in the qualitative phase with ATLAS TI software and the quantitative phase with MicMac software.

4. Data analysis

The qualitative part of this study is based on the views of 15 experts familiar with the structure and organizational relationships in education. In terms of gender, 10 people are men and 5 people are women. Finally, 4 people have 10 to 15 years of work experience and 11 people have more than 15 years of work experience, which is shown in Table 1 by their frequency.

| Demographic characteristics | | Frequency | Percentage |
|-----------------------------|----------------|-----------|------------|
| Gender | Man | 10 | 69% |
| | Female | 5 | 31% |
| Work Experience | 10 to 15 years | 4 | 25% |
| | Over 15 years | 11 | 75% |
| | Total | 15 | 100 |

To provide a model for organizational agility of the Department of Education, semi-structured specialized interviews have been conducted with teachers. At this stage, 6 open-ended questions are considered before the interview begins, and during the interview process, it is anticipated that new questions will be asked. For the researchers to get acquainted with the depth and scope of the content of the data, they have repeatedly read the data and actively read the data (searching for meanings and patterns).

The results of the interviews were analyzed by the content analysis method. Theme analysis was performed based on the method proposed by Brown and Clark (2006) including basic, organizing, and comprehensive themes. The text of the interviews, which was previously entered into the software as a text file, was read many times, and their key points were entered into the ATLASTI software as code. For this purpose, the text of the interviews was read and reviewed several times. The data were then broken down into semantic units in the form of sentences and paragraphs related to the main meaning.

The semantic units were reviewed several times and then the appropriate codes of each semantic unit were written and the codes were classified based on semantic similarity. The analysis process was repeated in the same way with the addition of each interview. The interviews continued until the theoretical saturation was reached. The criterion for achieving theoretical saturation was to achieve repetition

in the extracted codes. In the open coding stage, 111 codes were identified.

Finally, 5 axes (main category) and 19 indicators (subcategory) were achieved through axial coding. The indicators of the organizational agility model of the Department of Education extracted from the interviews are presented through the content analysis method.

Table 2: Themes categorized by theme analysis

| | Basic themes | Organizing themes | Comprehensive themes | The main theme |
|---|--|-------------------|----------------------|--|
| 1 | Awareness-Awareness-Inner Sensitivity-Eagerness to Learn-Creating the Need for Agility-Responsibility in Awareness-Rejection of Traditional Beliefs-Recognizing Resistance | informing | Maturity | Agile modeling of education department's Digital transformation strategy |
| 2 | Internal transformation for change-Strong determination-Readiness for agility-Strong will of managers-Moderation and stability | Ask | | |
| 3 | Creating rules for attracting internal and external credits in the organization - Formulation of lofty and flexible goals - Formulation of rules for outsourcing - Amendment of rules and employment agreements with executive guarantees - Formulation of rules for the production of the organization - Policy of optimal use of costs - Elimination of rules Handcuffed | policy | | |
| 4 | Avoiding moment-making decisions-Purposefulness-Providing a clear picture of the organization-Long-term horizon-Moderation-Developing vision and information-Recognizing threats and opportunities | Futurism | visionary leadership | |
| 5 | Prompt response - Increased accountability - Systematic approach and public participation - Accountability of managers - | responsiveness | | |

| | Basic themes | Organizing themes | Comprehensive themes | The main theme |
|----|--|----------------------------|------------------------|----------------|
| | Systematization of complaint follow-up - Development of appropriate monitoring system and monitoring | | | |
| 6 | Proper and optimal use of human resources-Existence of specialized trained human resources-Delegation of authority and empowerment of employees-Increasing staff competencies-Appropriate and scientific organization-Elimination of lifelong employment program | human resource development | | |
| 7 | Creating a culture of attaching importance to employees, motivating employees, rewarding and encouraging systems, prioritizing group interests over individual and factional ones, encouraging people committed to agility, financial rewards and career advancement, using teachers 'opinions of school principals, teachers' satisfaction and Managers of agility programs | Motivational culture | | |
| 8 | Knowing the role of technology - Introducing employees to new technologies - Using the latest technologies - Existence of various hardware and software - Equipping with modern hardware and software - Easy access to hardware and software | Technology driven | | |
| 9 | Decentralization, school-centered, outsourcing, downsizing, providing quick feedback, coordinating, reducing the number of organizational posts, eliminating cumbersome rules, and using technology | Decomposition | Structural flexibility | |
| 10 | Capacity coordination-Availability of consultants-Existence of communication consultants and online-Facilitation of | Proper communication | | |

| | Basic themes | Organizing themes | Comprehensive themes | The main theme |
|----|---|--------------------|------------------------------|----------------|
| | communication-In-house and out-of-organization communication | | | |
| 11 | Technological innovation-Using creative techniques-Permission and freedom of action-Promoting creativity and innovation-Using creative and innovative managers in all areas-Central group to increase ideas | Central creativity | | |
| 12 | Existence of coordinators - Integrity in response to change - Inter-organizational balance - Coordination between capacities - Leadership | Synchronization | | |
| 13 | Existence of sufficient knowledge in the field of agility-Diversity in educational products-Use of internal capacities for software production-Strong interview teams to extract tacit knowledge-Existence of accurate reporting system | Knowledge based | | |
| 14 | Creating a friendly and cordial atmosphere for knowledge sharing-Recounting mixed or experienced content-Appreciating knowledge-sharing-Trusting in knowledge-sharing-Career rotation | Sharing knowledge | Knowledge-based organization | |
| 15 | Knowledge Writing-Unsuccessful Knowledge Writing-Knowledge Story-Accurate Reporting System-Knowledge Base Design | Documentation | | |
| 16 | Educational needs assessment-Providing continual training-Promoting the culture of acquiring knowledge-Team building training | Training-driven | | |
| 17 | Using the capacity of team or team work - Encouraging team problem solving - Identifying skilled creative people and interested in the organization to form teams - Self-governing teams - Enlightening teams - Creating team work needs - Indirect | Team oriented | Socialism | |

| | Basic themes | Organizing themes | Comprehensive themes | The main theme |
|----|---|--------------------------|----------------------|----------------|
| | supervision of teams | | | |
| 18 | Meeting people's needs - Customer satisfaction (teacher, student, parents, staff and community) - Appropriate grievance redressal system | Responsive culture | | |
| 19 | Decentralization of decisions- Exercising the authority of organizations- Probing non-governmental organizations with supervision- Making decisions with prudence- Paying attention to the needs of students- Central process- Coherence in using the capacity of human resources | Participatory Management | | |

According to the table above, the research model consists of one macro theme and 5 comprehensive themes and 19 basic themes. Themes network is also a good way to analyze themes. What the network of themes offers is a role similar to that of the organizing principle and the method of presentation. The theme network systematizes organized themes and pervasive themes based on the basic theme process. These themes are then plotted as web maps and the inverted themes of each of these three levels are shown along with the relationships between them.

After reviewing and eliminating the repetitive basic themes, it was divided into 19 organizing themes and then into 5 themes: maturity, visionary leadership, structural flexibility, knowledge-based organization, and socialism. In the next step, the network of themes of the exploratory model was drawn. One of these methods is to assess the validity of references to participants to validate research data and findings. In the present study, this issue has been used in two ways. In the first method, after conducting the interview and conducting it, the transcript of the interview is returned to the interviewees to confirm the veracity of their statements. In addition, points of ambiguity were discussed with participants, and these ambiguities were resolved. There were only some ambiguities about the categories that were corrected in the final categorization.

The second method is related to checking the accuracy of the results and the model that has emerged. After the final coding and the emergence of the model, this model was presented to some employees to confirm the reliability of the final findings of the research. The process of model emergence was explained to them and the model itself was explained. Finally, the subjects approved the whole model and coding. Also, in order to verify the findings, the network of themes and the extracted model was sent in the form of a questionnaire to the experts who were university professors, and most of them approved the components and the model.

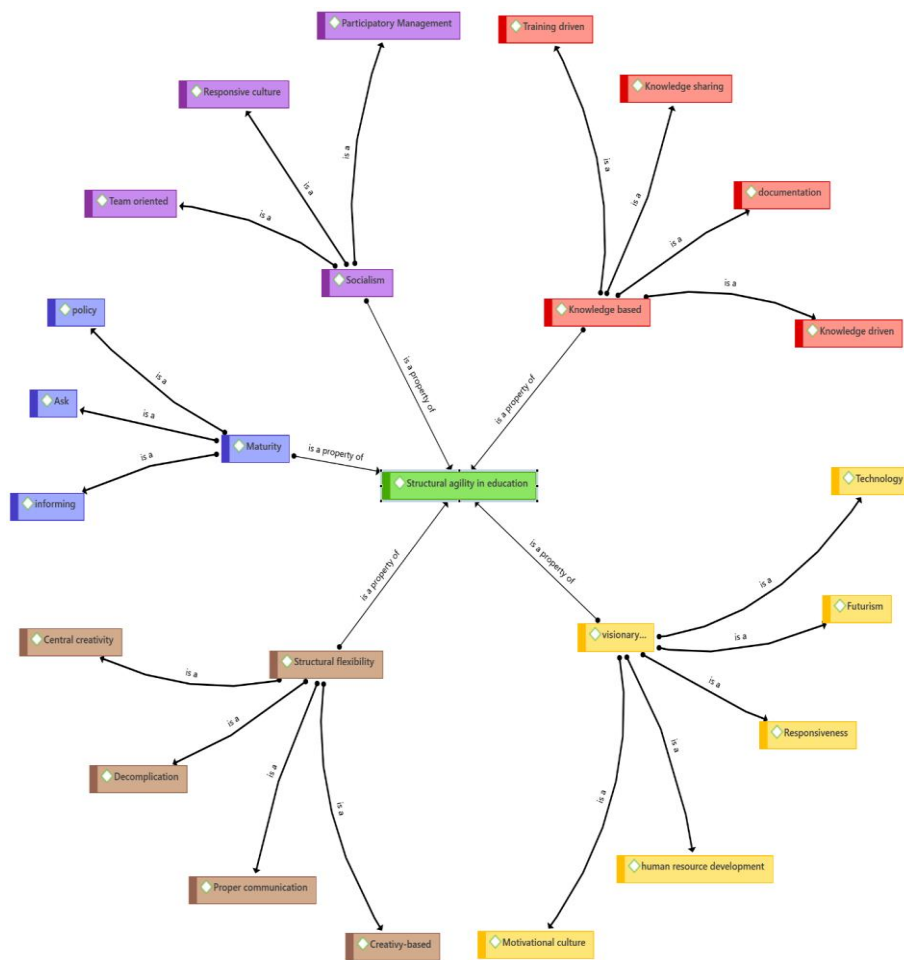


Figure 3: The network of themes of structural agility in education in the digital transformation approach

According to the network of designed themes, it can be said that agility is divided into 5 main themes: maturity, visionary leadership, structural flexibility, knowledge-based organization and socialism, and 19 organizing themes of awareness-raising, policy-making, foresight, accountability, human resource development, motivational culture. Decomposition, good communication, creativity, coordination, knowledge based organization, knowledge sharing, documentation, training orientation, team orientation, responsive culture, and participatory management are included.

Interpretive structural model

The second step, based on the research model, is to identify internal relationships and provide a model of organizational agility of the Department of Education. The structural-interpretive modeling method has been used to design the final model. The structural-interpretive modeling method (ISM approach) enables experts to delineate complex relationships between a large number of elements in a complex decision-making situation. This method works to regulate and direct the complexity of relationships between structures (Azar et al., 2010). In this method, by analyzing the effect of a structure on other structures, the order and direction of complex relationships between structures of a system are examined and thus the complexity of relationships between structures is overcome (Azar & Bayat, 2008). The pattern of relationships between factors is determined using the pattern in Table 3.

Table 3: Signs used in structural-interpretive pattern design

| Symbol | V | A | X | O |
|----------|--------------------------|--------------------------|----------------------|----------------------|
| Relation | The variable i affects j | The variable j affects i | Two-way relationship | Lack of relationship |

By identifying the relationships of the indicators, a Structural Self-Interaction Matrix (SSIM) is formed.

Table 4: SSIM structural self-interaction matrix

| C6 | C5 | C4 | C3 | C2 | C1 | Symbol | Variable |
|----|----|----|----|----|----|--------|-----------------|
| V | O | O | A | X | | C1 | flexibility |
| V | A | A | V | | | C2 | Knowledge-based |
| V | A | A | | | | C3 | Socialism |

| C6 | C5 | C4 | C3 | C2 | C1 | Symbol | Variable |
|----|----|----|----|----|----|--------|----------------------|
| V | X | | | | | C4 | Visionary leadership |
| V | | | | | | C5 | Maturity |
| | | | | | | C6 | Structural agility |

The received matrix (RM) is obtained by converting the structural interaction matrix itself into a double value matrix of zero and one. In the received matrix, the elements of the original diameter are equal to one. Secondary relationships must also be controlled to ensure. That is, if A leads to B and B leads to C, then A must lead to C. That is if direct effects should be considered based on the secondary relationship, but this has not happened in practice, the table should be corrected and the secondary relationship should also be shown. The following formula shows how to determine access using the proximity matrix:

Equation 1: Determine the final access matrix

$$M = (A + I)^n$$

Matrix A is the initial access matrix of the identity matrix and the final access matrix. The matrix empowerment operation is performed according to Boolean rules (Equation 2).

Relation 2: Boolean laws

$$1 \times 1 = 1; 1 + 1 = 1$$

The final access matrix is presented in Table 5.

Table 5: Achievement matrix after compatibility

| C6 | C5 | C4 | C3 | C2 | C1 | Variable |
|----|----|----|----|----|----|----------|
| 1 | 1* | 0 | 1 | 1 | | C1 |
| 1 | 1* | 0 | 1 | | 1 | C2 |
| 1 | 0 | 0 | | 0 | 1 | C3 |
| 1 | 1 | | 1 | 1 | 1* | C4 |
| 1 | | 1 | 1 | 1 | 1 | C5 |
| | 0 | 0 | 0 | 0 | 0 | C6 |

After forming the achievement matrix to determine the relationships and level of the factors of organizational agility, "achievement set" and "prerequisite set" should be identified. For variable C_i , the set of

access (output or effects) includes variables that can be accessed through variable C_i . The set of prerequisites (inputs or effects) includes the variables through which the variable C_i can be reached.

Table 6: Set of impact and effectiveness and subscription

| Level | Common | Input: Impact | Output: Impact | Variables |
|-------|----------|-----------------|-------------------|------------|
| | C1,C2,C3 | C4,C5, C1,C2,C3 | C1,C2,C3,C6 | C01 |
| | C1,C2,C3 | C4,C5, C1,C2,C3 | C1,C2,C3,C6 | C02 |
| | C1,C2,C3 | C4,C5, C1,C2,C3 | C1,C2,C3,C6 | C03 |
| 1 | C4 | C4 | C1,C2,C3,C4,C5,C6 | C04 |
| | C5 | C4,C5 | C1,C2,C3,C5,C6 | C05 |
| | C6 | C6 | C1,C2,C3,C4,C5,C6 | C06 |

The set of outputs includes the criterion itself and the criteria that affect it. The set of inputs includes the criteria themselves and the criteria that affect them. Then the set of bilateral relations of criteria is determined.

The first level elements will have the most impact on the model. After determining the level, the criterion whose level is determined is removed from the whole set and again forms the set of inputs and outputs and the next variable level is obtained. After identifying the first level variable(s), these variables(s) are deleted and the set of inputs and outputs is calculated without considering the first level variables. The common set of identifiers and variables whose share is equal to the set of inputs are selected as second-level variables.

Table 7: Set of inputs and outputs for level determination (level two)

| Level | Common | Input: Impact | Output: Impact | Variables |
|-------|----------|---------------|-----------------|------------|
| | C1,C2,C3 | ,C5, C1,C2,C3 | C1,C2,C3,C6 | C01 |
| | C1,C2,C3 | ,C5, C1,C2,C3 | C1,C2,C3,C6 | C02 |
| | C1,C2,C3 | ,C5, C1,C2,C3 | C1,C2,C3,C6 | C03 |
| 2 | C5 | ,C5 | C1,C2,C3,C5,C6 | C05 |
| | C6 | C6 | C1,C2,C3,,C5,C6 | C06 |

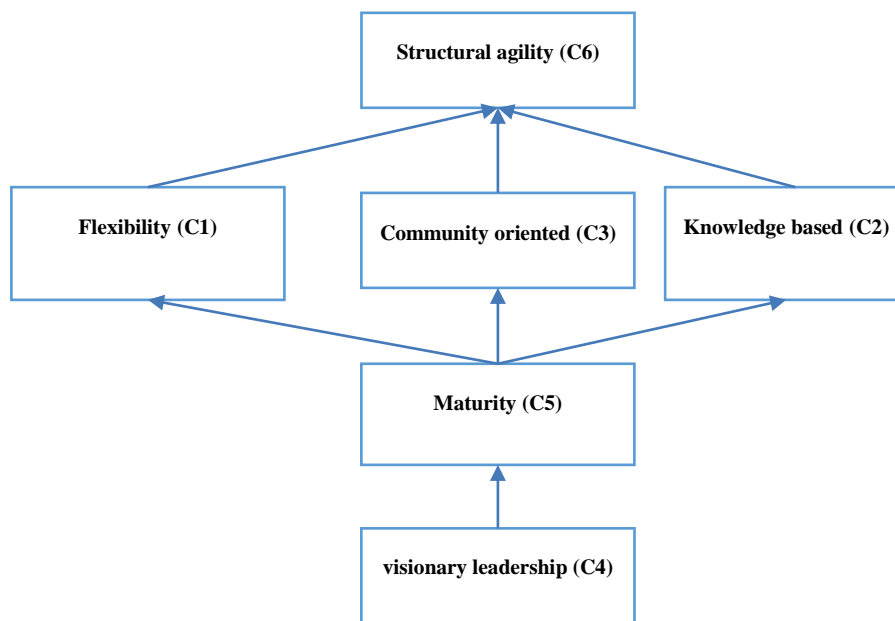
Table 8: Set of inputs and outputs for level determination (level three)

| Level | Common | Input: Impact | Output: Impact | Variables |
|-------|----------|---------------|----------------|------------|
| 3 | C1,C2,C3 | C1,C2,C3 | C1,C2,C3,C6 | C01 |
| 3 | C1,C2,C3 | C1,C2,C3 | C1,C2,C3,C6 | C02 |
| 3 | C1,C2,C3 | C1,C2,C3 | C1,C2,C3,C6 | C03 |
| | C6 | C6 | C1,C2,C3,C6 | C06 |

Table 9: Set of inputs and outputs for level determination (level four)

| Level | Common | Input: Impact | Output: Impact | Variables |
|-------|--------|---------------|----------------|-----------|
| 4 | C6 | C6 | C6 | C06 |

According to the output of ISM calculations, the variables of visionary leadership factors (C4) are the first level and maturity (C5) is the second level. To determine the third level elements, the first and second level variables are removed, and once again the set of inputs and outputs is calculated without considering the first level variables. Based on the common set of identification and variables whose state of being common is equal to the set of inputs are selected as second-level variables. According to the output of ISM calculations, the variables of flexibility (C1) and knowledge-based (C2), and community-oriented (C3) are the third level. The structural agility variable (C6) is at the fourth level. The final pattern of the levels of the identified variables is shown in the figure below. In this figure, only the meaningful relations of the elements of each level on the elements of the lower level and also the meaningful internal relations of the elements of each line are considered.

**Figure 4: Modeling the agility of education departments with digital transformation strategy**

As It can be seen, visionary leadership is the cornerstone of agility. Unless the leadership is visionary, there will be no maturity in the organization. visionary leaders can play a key role in the maturity of an organization by drawing the horizon ahead of the organization, creating a sense of accountability, developing human resources, creating a motivational culture and technology. When an organization matures, it demands change, raises its awareness, and sets the stage for managers to move toward agility. Decomposition, community-oriented, and knowledge-based organization are other pillars of agility.

Conclusion

The present study was conducted to develop an agile model of the education department using the digital transformation strategy. In the first part, using qualitative analysis, the views of experts were identified through content analysis, and 5 categories and 19 components were identified. Then, based on the interpretive structural model, a model was designed for organizational agility of the Department of Education. Agility in 5 main themes of maturity, visionary leadership, structural flexibility, knowledge-based organization and socialism and 19 organizing themes of awareness-raising, policy-making, foresight, accountability, human resource development, motivational culture, technology-centric, complexity, appropriate communication, creativity centrality, coordination, knowledge based organization, knowledge sharing, documentation, training orientation, team orientation, accountability culture, and participatory management. In justifying the network of organizational agility themes, it can be said that one of the main steps for any change in the maturity of the organization is that organizations that are not in the field of maturity change do not know what is going on around them and are unaware of their future work. Even they do not know how ignorant they are.

The resistance of managers at this stage of work is high. The value of work is small, but on the other hand, the potential is very high. But they are not yet ready to make the change. Deir (2018) believes that readiness for change is defined by employees' positive views and opinions about the need for change and the positive consequences of change-related efforts for employees and the organization. Also, readiness for beliefs and attitudes. Which is

required and organizational capacity for the successful implementation of these changes (Turkzadeh and Abd Sharifi, 2016). Furthermore, Abolghasemi et al. (2015) showed that different dimensions of flexibility, culture, speed, responsibility, competence, accountability, and integration are effective on the agility of the organization of education departments under study.

Visionary leaders in the digital age are people who primarily have the power of visualization, foresight, and imagery of the future, and with their high intelligence, formulate a correct, realistic, and inspiring vision for their environment. Conboy et al. (2019) stated that the characteristics of visionary leadership are foresight, accountability, human resource development, motivational culture, and technology-orientation. In fact, preventing decisions to create the hour, purposefulness, presenting a clear picture of the organization, long-term vision, moderation, developing a vision and information, recognizing threats and opportunities (foresight); Rapid accountability, increased accountability, systematic approach and public participation, accountability of managers, systematization of complaint follow-up, development of appropriate monitoring system (monitoring); Proper and optimal use of human resources, the existence of specialized trained human resources, delegation of authority and empowerment of employees, increase of staff competencies, proper and scientific organization, elimination of lifelong employment program (human resource development); Creating a culture of attaching importance to employees, motivating employees, reward and encouragement system, prioritizing group interests over individual and factional, encouraging people committed to agility, financial rewards and career advancement, using the opinion of school principals, teacher satisfaction and managers of agility programs (motivational culture) and knowing the importance of the role of technology, familiarizing employees with new technologies, use of modern technologies, the existence of various hardware and software, being equipped with modern hardware and software, facilitating access to hardware and software (technology-driven) .. Visionary leadership plays a very important role in coordination and agility.

Every organization strives to have an appropriate organizational structure to increase productivity, such efforts alone can lead to increased customer satisfaction, more services, and profits of the

organization and lead to the success of the organization. In a flexible organizational structure, employees can perform their tasks efficiently by being aware of customer needs and making timely decisions. In this way, higher efficiency and intelligent operation capability are possible as a prerequisite for moving in the path of digital transformation (Xiang et al., 2020).

Kikha et al. (2016) showed that flexibility plays a key role in organizations to maintain their survival in a turbulent and unpredictable environment. Flexibility in the organization is one of the basic concepts in organizational agility according to which the organization can adapt to environmental changes. The more flexible the structure of an organization, the more agile that organization will be and can change with innovative technologies and speed and beat competitors. In this regard, we can refer to mechanical and organic structures. Mechanical structures are the result of a closed environment and the control and control of most things is done centrally and in a standardized way. In such structures, intra-organizational communication is defined based on the hierarchy and positions of an organization. It is mechanically managed but unlike organic structures, the structure is not absolute, the hierarchy is less, and the complexity and variety of positions is less, so most employees and stakeholders are involved in decision-making (Gameda. & Lee, 2020).

Managers think about the interests of society and stakeholders such as students, and their parents, and they respond to the needs of society, and prioritize group interests over individual interests. In this study, socialism refers to digital strategies and employees and digital governance. An organization that considers itself committed to meeting the needs of stakeholders; Due to the participation of stakeholders in all matters, they become aware of environmental changes faster, and as a result, they feel obliged to respond and become more agile day by day. To develop a country, its education structure must first be optimal; Therefore, the condition for Iran's complete success in using smart services is to have an educational system equipped with the latest technologies. How can we expect digital transformation to bring about a fundamental change in the country until our country's education system understands digital transformation?

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