Designing an Interpretive Structural Model (ISM) for Digital Transformation Culture Drivers with a Contextual Approach in Tehran Province Water and Wastewater Company

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Abstract

Today, organizations are compelled to implement digital transformation within their operations to remain competitive in the market. To achieve this transformation, organizational culture must adapt to the new requirements of a digital environment, which is attainable through transforming traditional processes and routines. The aim of this study is to design an interpretive structural model (ISM) for the drivers of digital transformation culture with a contextual approach in the Tehran Province Water and Wastewater Company. This research is applied in purpose and employs an exploratory mixed-methods approach. In the qualitative phase, thematic analysis was utilized, while the quantitative phase employed interpretive structural modeling (ISM). The qualitative sample consisted of 14 experts selected purposefully until data saturation was reached. In the quantitative phase, a simple random sample of 234 managers was selected. Data collection methods included semi-structured in-depth interviews for the qualitative phase and a researcher-designed questionnaire for the quantitative phase. For data analysis in the quantitative phase, descriptive statistics, confirmatory factor analysis, and ISM based on the opinions of 12 experts were applied. After identifying the themes, a model for the drivers of digital transformation culture was developed. Using interpretive structural modeling, the relationships between factors were determined and analyzed through a power-dependence diagram. The findings reveal that leadership, employees, and managers are the main drivers with the highest influence power for shaping a digital transformation culture. Linking factors include the digital transformation program and digital technology, while organizational structure is influenced by other factors. By ranking the effective drivers, this study provides significant guidance for establishing a digital transformation culture in the company.

Keywords: *Digital transformation culture, Drivers, Interpretive structural modeling (ISM), Tehran Province Water and Wastewater Company.*

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1. Introduction

The world is undergoing a transformation, shifting from the industrial era to the age of intelligence [1-3]. In today's business environment, where changes occur at an unprecedented pace, the rapid development of digital technology has significantly altered strategies, objectives, and various operations. Organizations must prioritize digital transformation to remain competitive and relevant in the business landscape [4-7]. Digital transformation is no longer merely a buzzword; it has become a vital strategy for maintaining competitiveness in the business arena. To achieve progress, organizations must adopt innovative approaches. Businesses not only need to embrace digital transformation for survival but also grow across all dimensions with this transformative vision, fostering a culture of adaptability, resilience, and continuous improvement [8].

Successful digital transformation requires a comprehensive approach that incorporates elements such as organizational culture, change management practices, continuous assessment and learning, cross-departmental collaboration, and adaptability [9, 10]. Digital transformation can be viewed as a process in which organizations evolve by leveraging new technologies and revising their current approaches to solve problems and alter work routines. This includes providing enhanced training for users, migrating data to cloud services, and employing artificial intelligence (AI) technologies. Organizations continuously assess and realign their trajectory and goals using AI in analytics and decision-making to achieve a desirable future state [11]. The role of digital transformation leadership is intricately linked to changes in organizational culture, defined here as the "shared values" of employees [12]. For the first time, digital culture connects humans with machines capable of artificial reasoning and learning [13]. Investment in digital transformation ensures the future of organizations. A fundamental cultural prerequisite for transitioning to the digital world is the dissemination of experiences from various organizational sectors throughout the organization. Such entities, agile and powerful, can tackle even the most significant challenges [14]. Digital transformation fosters a new organizational culture in which individuals can freely take innovative and creative steps toward their team's and organization's goals. The culture of digital transformation should be viewed both from a collective meaning perspective and a tool-based viewpoint [15].

Research on digital transformation culture spans multiple perspectives, highlighting diverse drivers and impacts. Trushkina et al. (2020) identified drivers such as digital skills and competencies, organizational environment, leadership, performance management, and professional knowledge resources, emphasizing informal interaction and organizational design under information economy conditions [16]. Stoyanov (2019) highlighted the importance of leadership competencies and innovative approaches in transforming organizational culture from traditional to digital, emphasizing that digital culture facilitates change and innovation [17]. Ahmed et al. (2019) linked digital organizational culture, business model innovation, and senior management awareness, asserting that digitization supports value creation and enhances business performance [18]. Zhang et al. (2021) revealed significant connections between digital organizational culture, digital capabilities, and innovation, suggesting that readiness and culture predict digital innovation [19]. Robertson (2018) emphasized initiatives like structured training and the integration of ICT, AI, and big data in fostering digital transformation [20]. Borcan (2021) linked dynamic capabilities, business models, and organizational culture, demonstrating their roles in digital transformation and market adaptation [21]. Leso (2022) emphasized leadership's role and IT contexts in supporting digital transformation [22]. Martínez-Caro et al. (2020) pointed out drivers like open organizational culture, investment in eco-friendly innovation, and customer risk perception [23]. Rachinger (2018) explored how digitization impacts business model innovation, highlighting organizational capacities and employee competencies as vital factors [23]. Muller et al. (2019) identified flexibility, knowledge diversity, and digital literacy as drivers of cultural change and innovation [24]. Asad Amraji et al. (2019) proposed a maturity model for digital transformation, emphasizing elements like digital culture, open innovation, and personalized digital services [25]. Together, these studies underscore the multifaceted nature of digital transformation culture and its critical role in organizational success.

Tehran Province Water and Wastewater Company is a critical organization responsible for supplying and distributing water and managing wastewater for the metropolis of Tehran. Given technological advancements and high stakeholder expectations, including citizens (customers), diverse suppliers and contractors (external stakeholders), and employees and workers (internal stakeholders), this company faces heightened demands.

Leading organizations have successfully implemented digital transformation by leveraging AI, eliminating manual processes, adopting flat structures, facilitating participatory decision-making, and automating operations across all sectors. Consequently, expectations from this company span agility, efficiency, and precision in production, distribution, operations, revenue management, customer services, and administrative and welfare functions. Although several digital platforms, automation systems, diverse applications, and electronic sales offices have been established, embedding a culture of digital transformation within all layers of the Tehran Province Water and Wastewater Company requires identifying enabling factors and drivers. By recognizing these factors and fostering organizational synergy, the ideal goal of establishing a digital transformation culture can be achieved.

2. Methodology

This study is applied in purpose and employs an exploratory mixed-methods approach. Mixed-methods research allows for the simultaneous advantages and strengths of qualitative and quantitative methods to be utilized (Johnson et al., 2004). In the qualitative phase, thematic analysis was employed, while the quantitative phase utilized interpretive structural modeling (ISM).

The qualitative research population consisted of experts with a minimum of 25 years of work experience in Tehran Province Water and Wastewater companies, at least 15 years of managerial experience, and a minimum of a master's degree. A total of 14 participants were purposefully selected until data saturation was reached. In the quantitative phase, the statistical population included 600 employees of the Tehran Province Water and Wastewater Company. A simple random sampling method was used to determine the sample size, and the Morgan formula was applied, resulting in a sample size of 234 participants.

For data collection, semi-structured in-depth interviews were conducted in the qualitative phase, while a researcher-designed questionnaire (based on the qualitative model) was used in the quantitative phase. Qualitative data analysis was conducted using the six-step coding process proposed by Braun and Clarke (2006), which includes familiarization with the text, generating initial codes, searching and identifying themes, mapping thematic networks, and producing a final report.

In the quantitative phase, data analysis employed descriptive statistics, confirmatory factor analysis (using SmartPLS software), and interpretive structural modeling based on the input of 12 experts.

3. Findings and Results

The findings of this study correspond to the steps of the interpretive structural modeling (ISM) process. The steps and their results are presented below in sequence:

Step 1: Identifying the Drivers of Digital Transformation Culture

To identify these drivers, thematic analysis was used. Semi-structured interviews were conducted with 12 experts purposefully selected. The interviews were coded, resulting in 21 basic themes extracted and categorized into six main themes. Data analysis was conducted iteratively and meticulously to achieve theoretical saturation for the primary and secondary themes. During the analysis, categories were continuously reviewed and revised. The qualitative phase of the study consisted of two parts:

1. Text Analysis of Interviews: The interview texts were thoroughly examined and coded.
2. Extraction and Categorization of Themes: The basic themes extracted from the interviews were grouped into six main themes and analyzed.

Table 1. Comprehensive, Organizing, and Basic Themes

Organizing Themes	Basic Themes
Leadership	Creating a clear vision, nurturing digital talents, taking a comprehensive view of technology opportunities and risks.
Digital Transformation Program	Organization-wide strategy, forward-looking and comprehensive planning, coordinated actions, value creation from technologies.
Employees	Awareness of the need for transformation, flexibility, high learning capacity, digital opportunism.
Digital Technology	Appropriate hardware infrastructure, suitable software infrastructure, strong digital security.
Structure	Low centralization, extensive communication, appropriate regulations.
Managers	Digital mindset, openness to change, ability to manage changes, learning capacity.

As shown, the indicators identified from the qualitative phase include:

- **Leadership** (creating a clear vision, nurturing digital talents, taking a comprehensive view of technology opportunities and risks),
- **Digital Transformation Program** (organization-wide strategy, forward-looking and comprehensive planning, coordinated actions, value creation from technologies),
- **Employees** (awareness of the need for transformation, flexibility, high learning capacity, digital opportunism),
- **Digital Technology** (appropriate hardware infrastructure, suitable software infrastructure, strong digital security),
- **Structure** (low centralization, extensive communication, appropriate regulations),
- **Managers** (digital mindset, openness to change, ability to manage changes, learning capacity).

Step 2: Constructing the Structural Self-Interaction Matrix

After identifying the components of the model for drivers of digital transformation culture, a 6x6 square matrix was designed. This matrix serves as the questionnaire for the interpretive structural model (ISM). The questionnaire was used to collect expert opinions, examining the pairwise relationships between components. In the matrix, components may have bidirectional, unidirectional, or no relationships. The types of relationships are defined as follows:

- **V**: Component i influences component j.
- **A**: Component j influences component i.
- **X**: Components i and j mutually influence each other.
- **O**: Components i and j have no relationship.

In this study, 12 academic experts completed the questionnaire, providing their assessments of the relationships between components using the defined symbols. Since reciprocal relationships between components can be derived from the upper triangle of the matrix, completing only the upper triangle is sufficient, leaving the main diagonal blank.

For aggregating expert opinions, averages could not be used, as the final matrix must consist of binary values (0 and 1). Therefore, the most appropriate approach was to use frequency and mode. To better identify the components, each was labeled C1 through C6 in the rows and columns of the table. Based on the mode derived from the frequency distribution, the experts' opinions on the influence of each component on another were reviewed, and the resulting data formed the final structural self-interaction matrix.

Table 2. Structural Self-Interaction Matrix of Components

Component	Variable Name	C1	C2	C3	C4	C5	C6
C1	Leadership	X	V	X	V	X	V
C2	Digital Transformation Program		X	A	V	V	
C3	Employees			X	V	V	
C4	Digital Technology				X	A	
C5	Structure					O	

Step 3: Formation of Initial Reachability Matrix

In the next step of the study, the structural self-interaction matrix was converted into a binary matrix of 0s and 1s, resulting in the initial reachability matrix. To construct this matrix, symbols X and V in each row of the structural self-interaction matrix were replaced with 1, and symbols A and O were replaced with 0. The resulting matrix, shown in Table 3, is referred to as the initial reachability matrix. The diagonal elements were set to 1.

The initial reachability matrix indicates whether a row variable can "reach" a column variable along a continuous and directed path. It describes accessibility for all paths of length 0 and 1.

Table 3. Formation of the Initial Reachability Matrix

Component	Variable Name	C1	C2	C3	C4	C5	C6
C1	Leadership	1	1	1	1	1	1
C2	Digital Transformation Program	1	1	1	0	1	1
C3	Employees	1	1	1	1	1	1
C4	Digital Technology	0	1	1	1	1	1
C5	Structure	0	0	0	0	1	0

C6	Managers	1	1	1	1	1	1

Step 4: Formation of Final Reachability Matrix

After constructing the initial reachability matrix, its internal consistency needed to be established. For instance, if component i influences component j, and component j influences component k, then component i should also influence component k. If this condition was not satisfied in the initial reachability matrix, it was corrected by adding the omitted secondary relationships. These corrections in the final reachability matrix are marked with the symbol 1*.

In this study, two secondary relationships were observed and incorporated into the initial reachability matrix. As shown in Table 4, the consistency of the initial reachability matrix was ensured, and the influence power and dependence degree of each component were identified.

Influence Power: The influence of a component on other components is calculated as the sum of the numbers in each row for that component in the final reachability matrix. **Dependence Degree:** The extent to which a component is influenced by other components is calculated as the sum of the numbers in each column for that component in the final reachability matrix.

Table 4. Formation of Final Reachability Matrix

Component	Variable Name	C1	C2	C3	C4	C5	C6	Influence Power
C1	Leadership	1	1	1	1	1	1	6
C2	Digital Transformation Program	1	1	1	0	1	1	5
C3	Employees	0	1	1	1*	1	1	5
C4	Digital Technology	0	1*	1	1	1	1	5
C5	Structure	0	0	1	0	1	0	2
C6	Managers	1	1	1	1	1	1	6
Dependence Degree		3	5	5	4	6	5	

Step 5: Formation of Reachability, Antecedent, and Intersection Sets

To determine the levels of components in the final model, reachability, antecedent, and intersection sets were identified for each component:

- **Reachability Set (Outputs):** Components accessible from a specific component, including the component itself and those it influences.
- **Antecedent Set (Inputs):** Components that influence a specific component, including the component itself.
- **Intersection Set:** The overlap between the reachability and antecedent sets.

After determining the reachability and antecedent sets for each component, the intersection elements were identified.

Step 6: Determining Relationships and Hierarchies Among Components

In this step, the levels of each component were determined. Components whose intersection sets matched their reachability sets were identified as the top-level (least influential) components in the ISM hierarchy. These components exert minimal influence on other components.

After identifying the highest-level components, they were removed from the reachability, antecedent, and intersection sets of other components. This process was repeated until all components were assigned a level.

As shown in Table 5, in the first iteration, the organizational structure was identified as a first-level component and removed. The model proceeded to the second iteration.

Table 5. First-Level Iteration

Component	Variable Name	Reachability Set	Antecedent Set	Intersection Set	Level
C1	Leadership	1-2-3-4-5-6	1-2	1-2	
C2	Digital Transformation Program	1-2-3-5-6	1-2-3-4-6	1-2-3-6	
C3	Employees	1-2-3-4-5-6	3-4-6	3-4-6	
C4	Digital Technology	1-2-3-5-6	1-2-3-4-6	1-2-3-6	
C5	Structure	5-6	1-2-3-4-5-6	5-6	1
C6	Managers	1-2-3-4-5-6	2-4	2-4	

As shown in Table 6, in the second iteration, Digital Transformation Program and Digital Technology were identified as second-level components and removed.

Table 6. Second-Level Iteration

Component	Variable Name	Reachability Set	Antecedent Set	Intersection Set	Level
C1	Leadership	1-2-3-4-6	1-2	1-2	
C2	Digital Transformation Program	1-2-3-6	1-2-3-4-6	1-2-3-6	2
C3	Employees	1-2-3-4-6	1-3-4-6	1-3-4-6	
C4	Digital Technology	1-2-3-6	1-2-3-4-6	1-2-3-6	2
C6	Managers	1-2-3-4-6	2-4	2-4	

Finally, as shown in Table 7, the remaining components—Leadership, Employees, and Managers—were identified as the most influential components at the third level of the model.

Table 7. Third-Level Iteration

Component	Variable Name	Reachability Set	Antecedent Set	Intersection Set	Level
C1	Leadership	1	1	1	3
C3	Employees	1	1	1	3
C6	Managers	1	1	1	3

Step 7: Drawing the Interpretive Structural Model and Interaction Network

The final model of the components influencing the interpretive structural model of the drivers of digital transformation culture in the Tehran Province Water and Wastewater Company includes the hierarchical positioning of components relative to one another and their relationships across three defined levels, as shown in Figure 1.

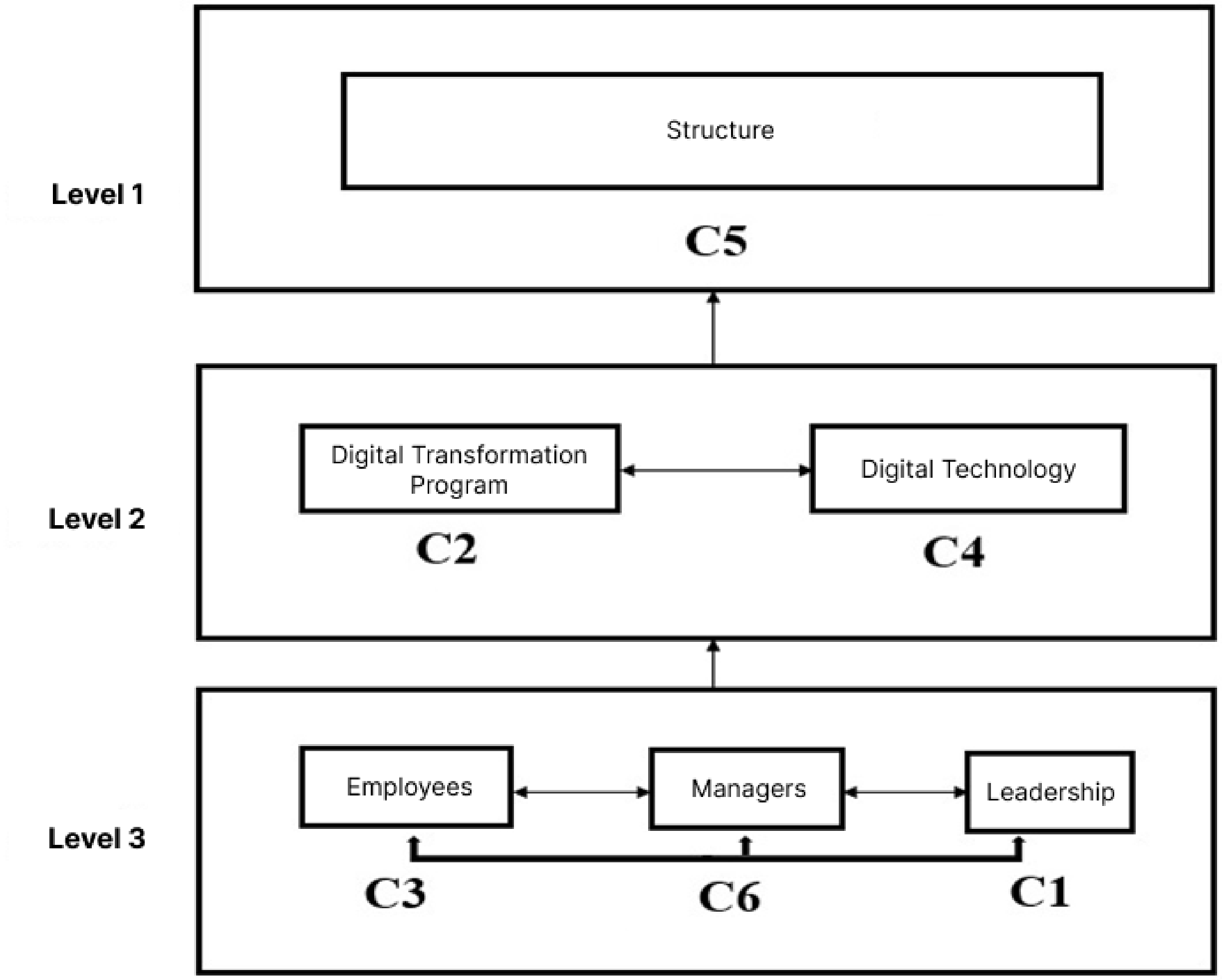

Figure 1. Interpretive Structural Model of Drivers of Digital Transformation Culture in the Tehran Province Water and Wastewater Company

Step 8: Analysis of the MICMAC Power-Dependence Diagram

In the interpretive structural model, the mutual relationships and influences between components, as well as their interactions across different levels, are clearly depicted, facilitating a better understanding of the decision-making framework for the Tehran Province Water and Wastewater Company officials.

The power-dependence diagram is formed to determine the key criteria for influence power and dependence of the components in the final reachability matrix. Both the "interpretive structural model" and the "power-dependence diagram" involve similar computational processes. However, while the interpretive structural model only helps to understand the direct relationships between components by showing the hierarchical structure, the power-dependence diagram serves as an analytical tool to classify components based on their hidden and indirect relationships.

Based on the influence power and dependence of the components, a coordinate plane can be defined, dividing components into four categories: autonomous, dependent, linkage, and foundational.

- **Autonomous Area:** Components have low dependence and low influence power.
- **Dependent Area:** Components have strong dependence but weak influence power.
- **Foundational Area (Key):** Components have low dependence but high influence power.
- **Linkage Area:** Components have both high dependence and high influence power.

As shown in Figure 2, the organizational structure component (C5) is in the dependent area, the digital transformation program and digital technology components (C2, C4) are in the linkage area, and the leadership, employees, and managers components (C1, C3, C6) are in the foundational (key) area.

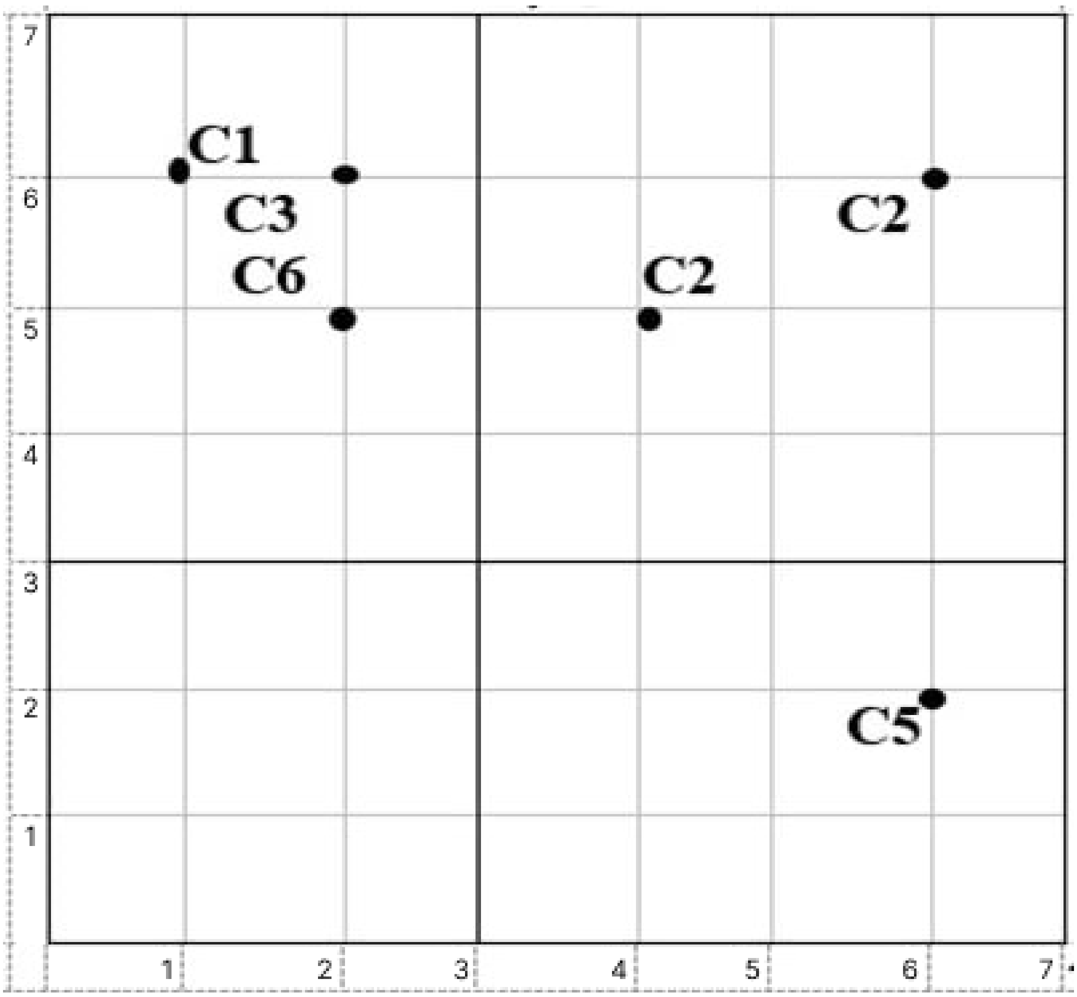

Figure 2. Power-Dependence Diagram of Components

Reliability is equivalent to dependability in quantitative research. It refers to the degree to which data can be reproduced and replicated by other researchers. This means that the findings and results presented by the researcher should accurately reflect the perceptions and thoughts of the respondents.

Various methods exist for assessing reliability in qualitative research, typically divided into the following four categories. In this study, the last two methods were used:

1. Utilizing structured processes from convergent interviews.
2. Organizing structured processes for recording, documenting, and interpreting data.
3. Having at least two individuals conduct interviews separately but in parallel.
4. Comparing the findings of two or more researchers.

4. Discussion and Conclusion

As businesses face a Darwinian era of digital transformation, digital transformation has become a key term for entering modern domains. Its effectiveness across all areas is undeniable, and organizations that successfully weather this disruptive storm will be those with cultural readiness, strong leadership, structural reinvention, and the ability to adapt to technological demands.

Since the ultimate goal of this research is to establish a culture of digital transformation in the organization responsible for water supply and wastewater management in Tehran, identifying the drivers and enablers of digital transformation and innovation is a critical step. It is essential to determine which drivers and stimulators play a fundamental, key, and influential role so they can be leveraged as tools for transformation. Therefore, the results of the interpretive structural model (ISM) for the drivers of digital transformation culture in the vast water and electricity industry are worth discussing.

The findings are consistent with Stoyanov's results regarding the role of employees and managers in digital transformation [17]. Both studies emphasize that creating a digital culture is impossible without a mission and objectives that employees pursue. In both studies, it was confirmed that leaders are responsible for providing experiences and inspiration to drive change, while reducing resistance and stress and activating their creative potential.

The findings of another study [16], including drivers such as digital competence, employee IT skills, commitment to organizational goals, organizational environment, organizational design, performance management, employee development, resources, vision, values, informal interaction, behavioral stimulation, and fostering innovation, align with the findings of this study. There is agreement in the areas of work structure, asset management, and customer relationships.

The findings of Muhammad Jasrif Teguh (2022), in the study titled *"Examining the Characteristics of Digital Organizational Culture,"* align with this research. Teguh identified drivers such as mutual collaboration, digital leadership, digital innovation culture, employee digital skills, digital technology change orientation, digital data management, risk-taking, customer experience focus, agility, and digital mindset. These align with this research, emphasizing interfunctional collaboration, digital leadership, digital innovation culture, digital literacy, and adaptability.

This research is consistent prior studies [18, 19]. Both studies revealed the relationship between digital organizational culture and digital capabilities with digital innovation. They highlighted drivers such as organizational readiness, digital capabilities, innovation, focus on digital capabilities, digital organizational culture, management, values, shared beliefs, transformation, and the integration of technological resources.

The findings regarding digital technology components (suitable hardware and software infrastructure, strong digital security) align with the prior studies [20, 21]. Both emphasized drivers like applying digital technologies, ICT, AI, big data, and social media, and highlighted structured training, dynamic capabilities, and adaptability to environmental changes.

Studies [22, 23, 26] align with this research, emphasizing the role of IT contexts, fostering innovative culture, and leadership support in digital transformation. They underscore the importance of understanding customers, product innovation, and cultural adaptation to organizational performance improvements.

In contrast, this research diverges from some studies [19] [24] regarding control-based leadership approaches, control-driven cultures, and the limited diversity in digital innovation networks. However, it aligns with prior studies [27, 28] which consider digital organizational culture as a process shaped by uncertainty in technology-driven environments, emphasizing flexible organizational designs and holistic evolutionary perspectives.

Findings [7, 29, 30] support the significance of organizational strategy, culture, digital technologies, and cross-functional organizational changes, highlighting the importance of redefining organizational strategies in digital domains.

The power-dependence diagram divided components into four areas:

1. **Autonomous Components**: Low influence and dependence; none identified in this study, indicating strong interconnectedness.
2. **Dependent Components**: High dependence and low influence; the organizational structure falls here, indicating its susceptibility to changes in other components.
3. **Linkage Components**: High influence and dependence; digital transformation programs and technologies are here, showing their dynamic impact on the system.
4. **Independent Components**: High influence and low dependence; leadership, employees, and managers are foundational and significantly influence other components.

The power-dependence analysis reveals the importance of both direct (linear) and indirect (nonlinear) relationships between components. Among the six elements (organizational structure, digital transformation program, digital technology, leadership, employees, and managers), leadership, managers, and employees are the most critical drivers of digital transformation culture. In subsequent levels, attention to digital transformation programs, digital technologies, and organizational structure is vital for establishing a digital transformation culture.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

References

[1] M. A. Sánchez and J. I. Zuntini, "Organizational readiness for the digital transformation: A case study research," 2018, doi: 10.20397/2177-6652/2018.v18i2.1316.

[2] R. Zimmermann, A. Soares, and J. B. Roca, "The moderator effect of balance of power on the relationships between the adoption of digital technologies in supply chain management proces ses and innovation performance in SMEs," *Industrial Marketing Management*, vol. 118, pp. 44-55, 2024/4/1/ 2024, doi: 10.1016/J.INDMARMAN.2024.02.004.

[3] W. Zhou, "Mechanisms Influencing the Digital Transformation Performance of Local Governments: Evidence From China," *Systems*, vol. 12, no. 1, p. 30, 2024, doi: 10.3390/systems12010030.

[4] H. N. H. Phuong, H. T. Tin, P. T. T. Huynh, and N. L. N. Quynh, "The customers' perception of privacy in the retail industry when adopting digital transformation," *HO CHI MINH CITY OPEN UNIVERSITY JOURNAL OF SCIENCE-ECONOMICS AND BUSINESS ADMINISTRATION*, vol. 14, no. 2, pp. 140-153, 2024, doi: 10.46223/HCMCOUJS.econ.en.14.2.2609.2024.

[5] O. Onesi-Ozigagun, "Leading Digital Transformation in Non-Digital Sectors: A Strategic Review," *International Journal of Management & Entrepreneurship Research*, vol. 6, no. 4, pp. 1157-1175, 2024, doi: 10.51594/ijmer.v6i4.1005.

[6] M. Oliinyk, "Digital Transformation of Management Processes in State and Public Organizations: Features, Directions, and Recommendations for Development," *Management and Entrepreneurship Trends of Development*, vol. 1, no. 27, pp. 53-63, 2024, doi: 10.26661/2522-1566/2024-1/27-05.

[7] G. Deep, "Digital transformation's impact on organizational culture," *International Journal of Science and Research Archive*, vol. 10, no. 2, pp. 396-401, 2023, doi: 10.30574/ijsra.2023.10.2.0977.

[8] M. Cantemir, A. Pitic, and D. Bayraktar, "Drivers of Digital Transformation and their Impact on Organizational Management," 2024, doi: 10.2478/sbe-2023-0009.

[9] W. Delone, D. Migliorati, and G. Vaia, "Digital IT governance," in *CIOs and the Digital Transformation*: Springer, Cham, 2018, pp. 205-230.

[10] H. Lee and S. Lee, "Creative industry digital transformation case study, market reorganization strategy and platform," 2020, doi: 10.14400/JDC.2020.18.7.177.

[11] S. Lee and D. Lee, "Opportunities and challenges for contactless healthcare services in the postCOVID-19 Era," 2021, doi: 10.1016/j.techfore.2021.120712.

[12] K. S. Cameron and R. E. Quinn, *The Competing Values Culture Assessment: A Tool from the Competing Values Product Line*. 1999.

[13] M. Vexler, "Driving Digital Transformation with Cultural Change," 2019, doi: 10.13140/RG.2.2.18499.55843.

[14] J. Bughin, M. Chui, and J. Manyika, "An executive's guide to the Internet of Things: The rate of adoption is accelerating," *McKinsey Quarterly*, vol. 4, pp. 92-101, 2015. [Online]. Available: https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/an-executives-guide-to-the-internet-of-things.

[15] V. Grover, S.-L. Tseng, and W. Pu, "A theoretical perspective on organizational culture and digitalization," 2018, doi: 10.1016/j.im.2022.103639.

[16] N. Trushkina, R. Abazov, and N. Rynkevych, "Digital Transformation of Organizational Culture under Conditions of the Information Economy," 2020, doi: 10.34021/ve.2020.03.01(1).

[17] I. Stoyanov, "Opportunities and challenges for digital organization culture construction," *International Journal*, 2019, doi: http://www.foibg.com/ijitk/ijitk-vol13/ijitk13-02-p02.pdf.

[18] A. Ahmed, M. Kashif Khurshid, Z. Riaz, and N. Nasir, "Business model innovation, digital organizational culture, and bank performance: The role of digital technologies and top management mindfulness," 2022, doi: 10.31580/jmi.v9i2.2667.

[19] Z. Zhang, Z. Yousaf, M. Radulescu, and M. Yasir, "Nexus of Digital Organizational Culture, Capabilities, Organizational Readiness, and Innovation: Investigation of SMEs Operating in the Digital Economy," 2021, doi: 10.3390/su13020720.

[20] J. Robertson, "Organizational culture and public diplomacy in the digital sphere: The case of South Korea," 2021, doi: 10.1002/app5.256.

[21] I. Borcan, "The Role Of Dynamic Capabilities, Business Model And Organizational Culture In The Digital Transformation Of A Traditional Organization," *Management and Marketing Journal*, 2021. [Online]. Available: https://ideas.repec.org/a/aio/manmar/vxixy2021i1p108-124.html.

[22] B. H. Leso, M. N. Cortimiglia, and A. Ghezzi, "The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: A mixed-methods approach," 2023, doi: 10.1007/s10111-022-00714-2.

[23] E. Martínez-Caro, J. G. Cegarra-Navarro, and F. J. Alfonso-Ruiz, "Digital technologies and firm performance: The role of digital organisational culture," *Technological Forecasting & Social Change*, 2020, doi: 10.1016/j.techfore.2020.119962.

[24] S. D. Müller, N. Obwegeser, J. V. Glud, and G. Johildarson, "Digital Innovation and Organizational Culture: The Case of a Danish Media Company," *Scandinavian Journal of Information Systems*, 2019. [Online]. Available: https://aisel.aisnet.org/sjis/vol31/iss2/1.

[25] E. Asad Amraji, A. Mohammadian, A. Rajabzadeh Ghateri, and M. Shaar, "Proposing a Maturity Model for Digital Transformation Capabilities Using the Meta-Synthesis Method: Case Study of Pharmaceutical Companies," *Quarterly Journal of Information Management*, 2019. [Online]. Available: https://www.aimj.ir/&url=http://www.aimj.ir/article_108244.html?lang=en.

[26] M. Rachinger, R. Rauter, C. Müller, W. Vorraber, and E. Schirgi, "Digitalization and its influence on business model innovation," 2018, doi: 10.1108/JMTM-01-2018-0020.
[27] A. Hanelta, R. Bohnsackb, D. Marzc, and C. A. Marante, "A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change," 2021, doi: 10.1111/joms.12639.
[28] S. Serpa, M. J. Sá, and C. M. Ferreira, "Digital Organizational Culture: Contributions to a Definition and Future Challenges," *Academic Journal of Interdisciplinary Studies*, 2022, doi: 10.36941/ajis-2022-0095.
[29] T. Hess, C. Matt, A. Benlian, and F. Wiesböck, "Options for Formulating a Digital Transformation Strategy," *MIS Quarterly Executive*, vol. 15, no. 2, pp. 123-139, 2016. [Online]. Available: https://www.researchgate.net/publication/291349362_Options_for_Formulating_a_Digital_Transformation_Strategy.
[30] J. Van der Zande, "Banks and digitalization," in *The Rise and Development of FinTech: Accounts of Disruption*, R. Teigland, S. Siri, A. Larsson, A. M. Puertas, and C. I. Bogusz Eds., 2018.