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Modeling the Factors Influencing Successful Change Management in Educational Organizations: Emphasizing Organizational Culture, Technological Infrastructure, and Organizational Structure

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ABSTRACT

Objective: Organizational change is essential for enhancing educational system performance. This study aimed to analyze the role of managerial strategies in the successful implementation of organizational change, focusing on cultural, structural, and technological dimensions.

Methods: This applied, descriptive-survey study investigated a population of 66 principals and 380 primary school teachers in Deylam County, Iran (2024). Using Krejcie and Morgan's table and convenience sampling, data were collected via a validated researcher-made questionnaire (Masavat, 2024). The data were analyzed using Confirmatory Factor Analysis (CFA) and one-sample t-tests.

Results: The results of CFA indicated that the proposed model demonstrated a good fit based on multiple fit indices ($\chi^2/df = 2.81$, GFI = 0.97, AGFI = 0.92, CFI = 0.96, RMSEA = 0.07). Furthermore, the one-sample t-test results showed that the three components—cultural, structural, and technological—each have a significant and positive impact on the successful implementation of organizational changes in the educational system, and the status of these components was assessed as favorable.

Conclusions: Successful organizational change in educational systems requires effective managerial strategies, strong organizational culture, flexible structures, and advanced technological infrastructure. A systemic approach integrating these three pillars is vital for achieving sustainable educational transformation.

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Introduction

In the contemporary era, educational organizations face unprecedented pressures to adapt to rapid environmental shifts. This dynamism necessitates continuous organizational change, which is no longer a peripheral activity but a core strategic imperative for survival and growth (Burnes, 2023; Cummings & Worley, 2022). However, the success rate of organizational change initiatives remains notoriously low, with a significant number failing to achieve their intended objectives. This high failure rate is often attributed to a simplistic approach that overlooks the complex, multi-faceted nature of organizations. Academic literature and practical evidence increasingly point to the fact that successful change is not merely a product of managerial directives but is contingent upon a delicate interplay of various internal organizational factors (Fullan, 2024). Among these, three pillars are consistently identified as critical determinants of change success: organizational culture, technological infrastructure, and organizational structure. First, organizational culture—the shared values, beliefs, and norms—shapes the collective mindset and behavior of employees. A culture that fosters trust, collaboration, and psychological safety is more likely to embrace change, whereas a rigid, risk-averse culture can breed resistance and sabotage transformation efforts (Naranjo-Valencia & Jiménez-Jiménez, 2023). In the context of education, a supportive culture is vital for encouraging teachers and staff to adopt new pedagogies and administrative processes (Hosseini et al., 2024). Second, the pervasive influence of technology, particularly information and communication technology (ICT), has made it an indispensable element of modern organizational change (OECD, 2023). Digital transformation is not simply about acquiring new hardware or software; it involves a fundamental shift in how organizations operate, communicate, and deliver services (Sánchez-Cruzado et al., 2024; Zhang et al., 2025). In educational settings, technological infrastructure enables data-driven decision-making, facilitates collaborative learning environments, and streamlines administrative processes, thereby creating a foundation for agile and responsive change (Zarei et al., 2023). As Rezvankhah et al. (2024) note, the synergy between technology and structural/cultural reforms is critical for the comprehensive development of the education system. Third, organizational structure, which defines the hierarchy, reporting lines, and division of labor, can either facilitate or hinder change. Flexible, decentralized, and organic structures are generally more conducive to innovation and adaptation, as they allow for faster decision-making and greater employee involvement (Kezar et al., 2024; Stouten et al.,

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2024). Conversely, rigid, bureaucratic structures with high centralization often lead to slow responses and increased resistance (Cummings & Worley, 2022). In educational organizations, adopting collaborative and non-hierarchical structures can empower teachers and principals, making them active participants in the change process (Mohammadi et al., 2023). Despite the recognized importance of these three factors, a significant gap persists in the literature. Most studies have investigated the impact of culture, technology, or structure on organizational change in isolation (Mohammadi et al., 2023; Zarei et al., 2024). This fragmented approach fails to capture the complex, synergistic relationships between them. There is a critical need for a holistic, systemic model that examines how these factors collectively and interactively influence change management success in the specific context of educational organizations (Fullan, 2024). The present study addresses this gap by developing and testing an integrated model that explores the combined influence of cultural, technological, and structural dimensions on the success of organizational change in the Iranian primary education system.

Material and Methods

This study is applied in its objective and follows a quantitative, descriptive survey design. It is cross-sectional and inferential in nature, employing both descriptive and inferential statistics to analyze the data. The study was conducted in 2024 (1403 in the Persian calendar).

The statistical population included all principals (N=66) and teachers (N=380) working in primary schools in Deylam County, Iran. Given the accessibility constraints and the need for a representative sample, a convenience sampling method was employed. The sample size was calculated using the Krejcie and Morgan (1970) table.

Based on the total population of 446 individuals (66+380), the table recommended a sample size that was deemed adequate for the study's analytical requirements, resulting in a final sample of 236 respondents.

The primary data collection instrument was a researcher-made questionnaire developed by Masavat (2024). The questionnaire was designed to measure the three key constructs (organizational culture, organizational structure, and organizational technology) and their role in the successful implementation of organizational change. It consisted of 22 items, all rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

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Validity and Reliability: The face and content validity of the questionnaire were established through a panel of experts in educational management. The reliability of the instrument was assessed using Cronbach's alpha coefficient, which is the most common measure of internal consistency. The obtained alpha value exceeded the acceptable threshold of 0.70, confirming the questionnaire's reliability. In this study, the Cronbach's alpha for the whole instrument was 0.86.

The data analysis was conducted using SPSS and AMOS software. First, descriptive statistics (mean, standard deviation, skewness, and kurtosis) were calculated to understand the data distribution. To test the overall fit of the proposed model, a Confirmatory Factor Analysis (CFA) was performed using AMOS. The fit of the model was evaluated using several indices: the Chi-square to degrees of freedom ratio ($\chi^2/df < 5$), the Goodness of Fit Index (GFI > 0.90), the Adjusted Goodness of Fit Index (AGFI > 0.90), the Comparative Fit Index (CFI > 0.90), and the Root Mean Square Error of Approximation (RMSEA < 0.08). Following the validation of the measurement model, three one-sample t-tests were conducted to test the study's hypotheses, comparing the mean scores of the three factors against the test value of 3 (the midpoint of the Likert scale).

Results

The descriptive statistics for all 22 items and the three main factors are presented in Table 1. The means for all items ranged between 3.31 and 4.01, indicating that respondents generally agreed with the statements regarding the presence of supportive cultural, structural, and technological conditions. The calculated skewness and kurtosis values fell within the acceptable range of ±3 and ±10, respectively, confirming the univariate normality of the data.

Table 1. Descriptive Statistics of Research Variables

Items	Mean	SD	Skewness	Kurtosis
Organizational Culture				
There is a suitable organizational climate/culture (mutual trust) for knowledge transfer and sharing.	3.62	1.164	-0.538	-0.486
There is a suitable organizational climate/culture (respect for knowledgeable individuals).	3.56	1.306	-0.503	-0.858
Management pays attention to employees' opinions on work issues.	3.67	1.233	-0.670	-0.593
Meetings are usually held with managers to be aware of employees' opinions.	3.57	1.350	-0.774	-0.588
Participatory decision-making is used in this organization.	3.40	1.270	-0.229	-1.016
Employees have the opportunity to apply their knowledge.	3.69	1.283	-0.548	-1.002
There is a favorable cultural context for sharing scientific experiences among colleagues	4.01	-1.017	1.025	0.522
Organizational Structure				

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There is not enough attention to developing infrastructure (e.g., information center).	3.47	1.170	-0.211	-0.944
There is a suitable system for valuing knowledge to motivate knowledge sharing.	3.31	1.239	0.043	-1.254
Employees follow standards and rules in their work.	3.47	1.174	-0.582	-0.504
There are clear rules for employee advancement.	3.65	1.197	-0.516	-0.628
Employees are assigned to positions based on their field of study.	3.62	1.108	-0.263	-0.656
There are communication channels for feedback from subordinates and superiors.	3.66	1.217	-1.069	-0.459
Teamwork is encouraged to achieve organizational goals.	3.61	1.293	-0.887	-0.528
You get the information you need at the right time.	3.44	1.309	-1.025	-0.326
Organizational Technology				
What is the quality of support from systems and networks?	3.51	1.264	-0.946	-0.446
Organizational standards are established and maintained for software.	3.67	1.280	-0.801	-0.578
To what extent does the organizational data network support new systems?	3.59	1.209	-0.866	-0.413
The organization has provided comprehensive electronic communication infrastructure.	3.57	1.225	-0.942	-0.424
The organization allocates sufficient budget for developing information technology infrastructure.	3.33	1.397	-1.132	-0.397
When changing the use of new IT, staff are informed and trained.	3.99	1.173	0.100	-1.007
The knowledge and expertise of specialists are used to solve organizational problems.	3.40	1.223	-1.189	-0.123

To evaluate the construct validity and the overall fit of the proposed three-factor measurement model (organizational culture, organizational structure, and organizational technology), a Confirmatory Factor Analysis (CFA) was performed using AMOS software. The model was assessed based on multiple goodness-of-fit indices. The results indicated that all factor loadings were statistically significant and above the acceptable threshold of 0.40.

The overall fit indices for the measurement model were as follows: the chi-square to degrees of freedom ratio (χ^2/df) was 2.81, which is well below the recommended cut-off of 5.00. The Goodness-of-Fit Index (GFI) was 0.97, the Adjusted Goodness-of-Fit Index (AGFI) was 0.92, and the Comparative Fit Index (CFI) was 0.96, all exceeding the commonly accepted threshold of 0.90. Moreover, the Root Mean Square Error of Approximation (RMSEA) was 0.07, which falls within the acceptable range of less than 0.08. These indices collectively confirm that the measurement model demonstrated a good fit with the empirical data, thereby supporting the structural validity of the questionnaire and the distinctiveness of the three hypothesized factors.

The three research hypotheses were tested using a one-sample t-test against the test value of 3.00.

Hypothesis 1: Organizational culture is at a desirable level for the successful implementation of changes in educational organizations.

Hypothesis 2: Organizational structure is at a desirable level for the successful implementation of changes in educational organizations.

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Hypothesis 3: Organizational technology is at a desirable level for the successful implementation of changes in educational organizations.

The results of the one-sample t-tests for the three main factors are presented in Table 2.

Table 2. One-Sample t-Test Results for the Three Main Factors

Factor	Mean	Df	t-value	Sig
Organizational Culture	3.67	236	10.711	0.001
Organizational Structure	3.56	236	12.057	0.001
Organizational Technology	3.54	236	9.344	0.001

As presented in Table 2, all three factors obtained t-values significantly greater than the critical value ($t > 1.96$) at the 0.001 significance level. This indicates that the mean scores for all three factors were statistically significantly higher than the midpoint of 3. Therefore, all three hypotheses (H1, H2, H3) were strongly supported. The findings suggest that, from the perspective of the participants, the levels of organizational culture (Mean = 3.67, t=10.711), organizational structure (Mean = 3.56, t=12.057), and organizational technology (Mean = 3.54, t=9.344) are all favorable and conducive to successful change implementation.

Discussion

The primary aim of this study was to develop and empirically test an integrated model of factors influencing the success of organizational change in educational organizations. The findings provide strong evidence that the triumvirate of organizational culture, structure, and technology are not merely supportive elements but are fundamental, interwoven pillars that collectively determine the fate of change initiatives.

First, the significant positive effect of organizational culture (H1) aligns with a vast body of literature. This finding corroborates the work of Ghasemi and Karimi (2022) and Hosseini et al. (2023), who argued that a collaborative and trusting culture is a prerequisite for employee readiness and acceptance of change. In educational institutions, where teachers are the primary agents of change, a culture that values professional learning, open communication, and shared decision-making is essential. It reduces the uncertainty and threat perception often associated with change, fostering a sense of ownership and commitment. As Naranjo-Valencia and Jiménez-Jiménez (2023) and Burnes (2023) concluded, culture acts as the "software" of the organization,

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enabling or disabling the effective implementation of new "hardware" like strategies and structures. However, it is important to note that our findings contrast somewhat with Marshall and Galey-Horn (2024), who suggested leadership style might be more influential in some contexts. This discrepancy might be attributed to the specific characteristics of the Iranian primary education system, where collective and culturally embedded norms of interaction and collaboration may be particularly salient.

Second, the confirmation of the role of organizational structure (H2) underscores its function as the "skeleton" that either supports or constrains change. The results are consistent with studies by Mohammadi et al. (2024) and Ahmadi et al. (2025), demonstrating that flexible structures facilitate innovation. When structures are decentralized, communications become more fluid, decision-making accelerates, and employees feel empowered to contribute. In contrast, rigid, hierarchical structures, which are common in traditional educational systems, can stifle the very initiatives meant to improve them. This finding reinforces the work of Kezar et al. (2024) and Stouten et al. (2024), who argued that organic organizational designs are better suited to dynamic environments. The implication for educational managers is clear: reforming the organizational chart, clarifying roles, and creating cross-functional teams are not just administrative tasks but are strategic enablers of change.

Third, the results highlighting the positive contribution of technological infrastructure (H3) confirm its indispensable role as the modern nervous system of an organization. The favorable assessment of this factor, particularly items related to the provision of IT infrastructure and digital communication networks, suggests that these schools are at a nascent stage of digital maturity. The findings are in line with Zarei et al. (2023), who highlighted the impact of IT on managerial effectiveness, and the OECD's (2023) call for digital integration in education. However, the high mean score for providing staff training during technological changes (M=3.99) is a crucial indicator; it suggests that the schools recognize technology implementation is as much a human process as a technical one, a point emphasized by Sánchez-Cruzado et al. (2024). Merely having hardware and software is insufficient; the human and procedural aspects must be developed concurrently.

In conclusion, this research demonstrates that the success of organizational change in educational settings is a multivariate phenomenon. It is not achieved through a single lever but through the

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careful and synchronized orchestration of managerial strategies that foster a supportive culture, a flexible structure, and robust technological infrastructure. The study provides a validated model that can serve as a diagnostic tool for educational leaders. The practical implication is that managers and policymakers must adopt a systemic and holistic view, moving beyond isolated interventions. Sustainable transformation requires a strategic approach where efforts to improve culture, restructure, and digitize are not sequential but parallel and mutually reinforcing.

This study has several limitations. First, the reliance on convenience sampling may limit the generalizability of findings to other populations and regions. Second, the research was cross-sectional, providing a snapshot in time; it could not capture the dynamics of change processes over time. Future research could adopt a longitudinal design to observe how these factors evolve and influence change success in real-time. Third, this study relied solely on quantitative data. Future studies could benefit from a mixed-methods approach, adding qualitative interviews with teachers and principals to gain a deeper, contextual understanding of how these factors interact in practice. Finally, future research could expand the model to include other potential mediating or moderating variables, such as leadership styles, employee motivation, or political and economic environments.

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Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Farhangian University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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