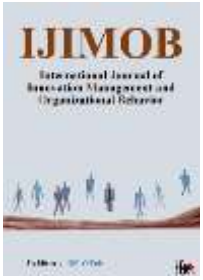
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Digital Transformation and Changes in Corporate Governance Structures: A Qualitative Study of Leading Companies Listed on the Tehran Stock Exchange

Bizhan. Mirzaei[1], Rokhsareh. BabaJafari[1*], Ali. Gholipour Soleimani[2]

[1] Department of Economics, Ra.C., Islamic Azad University, Rasht, Iran
[2] Department of Business Management, Ra.C., Islamic Azad University, Rasht, Iran

*** Corresponding author email address**: r.babajafari@iau.ac.ir

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A B S T R A C T

Objective: This study aimed to explore and explain how digital transformation changes corporate governance structures, decision-making processes, monitoring mechanisms, accountability relationships, and governance capabilities in leading companies listed on the Tehran Stock Exchange.

Methods and Materials: This study employed an exploratory qualitative design. Participants consisted of 20 senior managers, board members, digital transformation and information technology managers, internal audit and risk-management executives, and financial and strategic management specialists from leading companies listed on the Tehran Stock Exchange. Participants were selected through purposive criterion-based sampling, and sampling continued until theoretical saturation was achieved. Data were collected through in-depth semi-structured interviews lasting approximately 45 to 70 minutes. Interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis with the assistance of MAXQDA software. The analytical process included open coding, axial coding, selective integration, constant comparison, and the development of overarching themes. Credibility, dependability, confirmability, and transferability were strengthened through iterative analysis, member checking, documentation of coding decisions, and comparison of interpretations with the original transcripts.

Findings: Analysis of the interviews generated 50 initial conceptual codes, which were consolidated into 14 axial categories and three overarching themes. The first theme, digital reconfiguration of strategic decision-making and board functioning, included real-time access to strategic information, data-driven decision-making, redistribution of decision authority, digitalization of board processes, and increasing demand for digital expertise. The second theme, transformation of monitoring, control, transparency, and risk governance, included automated internal controls, continuous monitoring, enhanced transparency, digital audit and compliance, and cybersecurity and data-governance risks. The third theme,

redesign of governance relationships, accountability, and organizational capabilities, included reduced information asymmetry, transformation of stakeholder communication, changes in accountability relationships, and development of digital governance capabilities. Overall, the findings showed that digital transformation altered the distribution of information, authority, control, expertise, and responsibility within corporate governance systems.

Conclusion: Digital transformation should be understood as a governance transformation rather than merely a technological modernization process, because it simultaneously reshapes board functioning, strategic decision-making, monitoring, accountability, risk oversight, and governance competencies. Effective outcomes therefore depend on aligning technological adoption with board-level digital literacy, data governance, internal controls, cybersecurity oversight, and interdisciplinary governance capabilities.

Keywords: *Digital Transformation; Corporate Governance; Board of Directors; Digital Governance; Strategic Decision-Making; Internal Control; Tehran Stock Exchange*

1 Introduction

Digital transformation has become one of the most consequential forces reshaping contemporary organizations, altering not only operational processes and business models but also the institutional foundations through which corporations are directed, controlled, monitored, and held accountable. The increasing use of integrated information systems, artificial intelligence, advanced analytics, digital platforms, cloud infrastructures, automated control systems, and real-time reporting mechanisms has transformed the informational architecture of firms and, consequently, the conditions under which corporate governance operates. Corporate governance has traditionally been concerned with the allocation of decision rights, oversight of management, accountability to shareholders and stakeholders, transparency, risk control, and the mitigation of agency conflicts. However, as organizations become more digitally intensive, these functions are increasingly mediated by technological infrastructures that affect how information is generated, processed, distributed, interpreted, and used in strategic decision-making. Recent research indicates that digital transformation and corporate governance are becoming increasingly intertwined, as governance arrangements can influence the speed and effectiveness of technological adaptation while digital technologies themselves can reshape the mechanisms through which governance is exercised (Siswanti et al., 2024; Wu et al., 2026; Yang & Jin, 2024). Accordingly, digital transformation should no longer be understood merely as an information technology initiative; rather, it represents a broader organizational transformation with important implications for power relations, decision-making authority, board responsibilities, internal control systems, and stakeholder accountability.

The growing strategic importance of digital transformation has intensified scholarly interest in the governance conditions that enable or constrain organizational adaptation. In increasingly competitive and technologically dynamic environments, established firms must respond not only to internal pressures for efficiency and innovation but also to the entrance of digitally oriented competitors capable of disrupting conventional markets and organizational routines. Evidence suggests that corporate governance factors can produce differential effects on how incumbent firms respond to digital entrants and pursue digital transformation, indicating that board characteristics, ownership arrangements, managerial structures, and governance mechanisms may condition organizational readiness for technological change (Wu et al., 2026). At the same time, digital transformation may itself alter governance by reducing information processing delays, creating new channels of organizational visibility, and expanding the capacity of boards and senior executives to monitor performance in real time. From this perspective, governance is both an antecedent and an outcome of digital transformation. This reciprocal relationship is particularly important because technological change can alter the balance of information between managers, directors, shareholders, auditors, and other stakeholders. As digital systems increasingly provide access to detailed and timely organizational data, traditional forms of managerial information advantage may be reduced, while new forms of informational dependence may emerge around data ownership, analytical expertise, system design, and algorithmic interpretation.

One of the central concerns of corporate governance is the management of information asymmetry between those who control organizational resources and those who monitor

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or bear the economic consequences of managerial decisions. In emerging capital markets, this issue is especially important because governance systems often operate in environments characterized by concentrated ownership, uneven disclosure quality, varying levels of investor protection, and institutional constraints. Research has emphasized the importance of governance quality and transparency in reducing information asymmetry and improving the quality of market relationships (Avinash & Mahesh, 2026). Digital transformation may strengthen these mechanisms by enabling more frequent reporting, improving data traceability, integrating organizational information, and reducing delays in the communication of financial and operational performance. Evidence from the Iranian context also suggests that corporate digital transformation may influence market-related outcomes such as stock liquidity through mechanisms related to financing constraints, internal control, and information disclosure (Zandi, 2025). These findings are important because they suggest that the governance implications of digitalization extend beyond internal managerial processes to affect relationships with investors and the broader capital market. If digital systems improve disclosure quality, strengthen internal controls, and reduce informational opacity, they may contribute to more effective monitoring and more efficient capital allocation. However, these effects depend on whether digital technologies are embedded within appropriate governance arrangements rather than implemented as isolated technical instruments.

Corporate governance structures themselves are multidimensional and depend on the interaction of boards, committees, ownership structures, managerial competencies, audit functions, control systems, and institutional rules. Effective governance therefore requires more than formal compliance with regulatory provisions. In the Iranian corporate environment, research has highlighted the importance of board committees, member competencies, and organizational capabilities for the effective implementation of governance mechanisms (Aslani et al., 2026). Similarly, evaluations of Iran's corporate governance system using qualitative approaches have emphasized the complexity of governance effectiveness and the interaction among institutional, structural, organizational, and behavioral factors (Fahimnejad et al., 2026). These observations are particularly relevant to digital transformation because technologies do not operate independently of governance actors. The value of real-time dashboards, automated reporting systems, artificial intelligence, or digital audit tools depends substantially on whether board members and executives possess the expertise necessary to interpret digital information, question technological assumptions, and incorporate data-driven evidence into governance decisions. As the informational environment becomes more complex, the competencies required from directors and committee members may consequently expand beyond traditional expertise in finance, accounting, law, and industry operations to include digital literacy, cybersecurity awareness, data governance, and understanding of technological strategy.

Board structure and the distribution of authority are also central to understanding how digital transformation may affect governance. Corporate boards operate at the intersection of strategic direction, managerial monitoring, risk oversight, and stakeholder accountability. Their effectiveness depends partly on the ability of directors to obtain reliable information independently of executive management and to challenge entrenched managerial practices when necessary. Recent Iranian research examining staggered board structures has emphasized concerns related to governance entrenchment and the design of board mechanisms capable of preventing excessive concentration of managerial power (Iranbakhsh et al., 2026). Digital technologies may influence these dynamics by changing access to information and the speed with which directors can monitor managerial actions. When directors have direct or near-real-time access to strategic, financial, operational, and risk information, the board may become less dependent on selectively prepared management reports. At the same time, digital transformation can create new forms of dependence on those who design, control, and interpret information systems. Consequently, technological transparency does not necessarily eliminate power imbalances; rather, it can shift the source of power from control over information possession to control over data architecture, analytical interpretation, and technological expertise.

Ownership structure represents another critical element of corporate governance that may shape the consequences of digital transformation. Different ownership configurations can influence managerial monitoring, strategic priorities, risk tolerance, disclosure practices, and the intensity of governance mechanisms (Tan, 2026). In firms with concentrated ownership, powerful shareholders may exert direct influence over strategic technological investments, while in more dispersed structures, boards and professional managers may play a more prominent role in defining digital

strategy. Ownership structures may also affect the willingness of firms to invest in technologies that increase transparency or reduce private informational advantages. These considerations are particularly relevant in capital markets where ownership concentration, institutional investors, state influence, family ownership, and cross-holding structures may coexist. Digital transformation can therefore interact with existing ownership arrangements in complex ways, potentially strengthening monitoring in some firms while reinforcing centralized control in others. Understanding changes in governance structure consequently requires attention not only to technological adoption but also to the institutional and ownership context in which technological change occurs.

The implications of digital transformation also extend to organizational monitoring, internal control, and accountability. Traditional governance mechanisms often rely on periodic reporting, manual verification, hierarchical supervision, and retrospective auditing. Digital technologies increasingly allow firms to embed controls directly into information systems, automate authorization procedures, monitor transactions continuously, detect anomalies, and create comprehensive digital audit trails. These capabilities can strengthen managerial accountability by making organizational actions more visible and traceable. The importance of audit quality and reporting quality in constraining opportunistic corporate practices has been emphasized in international governance research, including studies examining how audit quality moderates relationships between reporting practices and corporate tax behavior (Ben Ali, 2026). Similarly, research on environmental disclosure and tax avoidance demonstrates that disclosure practices and governance outcomes are influenced by broader institutional and cultural contexts (Ardhaoui & Amar, 2026). In a digitally transformed environment, improved traceability and data availability may strengthen auditing and disclosure, but they may also create an illusion of control if the underlying data are unreliable, manipulated, incomplete, or poorly governed. Therefore, digitalization can enhance governance only when information integrity, system reliability, and accountability mechanisms are themselves governed effectively.

The emergence of digital systems also broadens the scope of corporate risk governance. As firms become dependent on interconnected systems, cloud platforms, data infrastructures, artificial intelligence, and automated decision processes, corporate boards face new responsibilities related to cybersecurity, data protection, algorithmic risk, technological continuity, and privacy. These issues are increasingly relevant to governance because technological failures can generate financial losses, operational disruptions, reputational damage, legal exposure, and loss of stakeholder confidence. At the same time, governance systems must continue to address conventional forms of misconduct and organizational opportunism. Recent work on the governance of corporate misconduct through employee whistleblowing demonstrates that effective governance depends on the interaction of multiple actors and institutional incentives rather than on any single monitoring mechanism (Ding et al., 2026). In digitally intensive organizations, whistleblowing systems, compliance reporting, internal investigations, and monitoring processes can themselves become digitally mediated, potentially increasing the speed and reach of governance responses. Yet technological monitoring raises ethical questions concerning surveillance, employee autonomy, privacy, and the legitimate boundaries of organizational control. Digital transformation therefore expands governance capacity while simultaneously introducing new governance dilemmas.

The relationship between digital transformation and governance should also be considered within broader debates concerning corporate purpose and stakeholder responsibility. Contemporary corporations are increasingly expected to address not only shareholder wealth but also environmental, social, ethical, and societal responsibilities. Theoretical work on corporate purpose has demonstrated the tension among competing governance expectations and the difficulty of reconciling managerial authority, stakeholder claims, and democratic legitimacy (Claassen, 2026). At the same time, the concept of soft governance and institutional co-production highlights how firms may participate in broader social and institutional processes beyond conventional market transactions (Morabit et al., 2026). Digital technologies can intensify these pressures by increasing organizational visibility and enabling stakeholders to evaluate corporate behavior more rapidly. Digital platforms also facilitate communication with investors, employees, customers, communities, regulators, and civil society, thereby increasing demands for timely explanation and accountability. In this sense, digital transformation changes not only internal governance structures but also the boundaries of the corporation's accountability relationships. Organizations can disseminate information more efficiently, but they are also subject to faster scrutiny and more immediate stakeholder reactions.

Environmental and sustainability governance provides another important context in which these changes can be observed. Corporate governance has increasingly become associated with environmental disclosure, climate-related performance, and sustainability strategy. Studies have demonstrated that governance mechanisms can play a critical role in the relationship between corporate climate practices and financial outcomes (Van Hoang et al., 2026). Research concerning CEO characteristics and corporate carbon disclosure further indicates that leadership attributes can shape environmental transparency and performance, reinforcing the importance of individual and structural governance characteristics in determining corporate responses to sustainability pressures (Velte, 2026). Digital transformation may support these governance functions by enabling firms to collect environmental data, monitor resource consumption, integrate sustainability indicators into management dashboards, and improve the frequency and reliability of nonfinancial reporting. Consistent with this argument, empirical evidence suggests that corporate governance and financial performance can mediate the relationship between digital transformation and sustainable business outcomes (Siswanti et al., 2024). Likewise, research on manufacturing companies has shown that digital transformation may influence environmental, social responsibility, and corporate governance performance, while top management teams can moderate these relationships (Yang & Jin, 2024). These findings underscore the importance of leadership and governance structures in determining whether digital transformation produces broader organizational benefits.

Leadership characteristics are particularly significant because digital transformation often involves strategic uncertainty, organizational resistance, high investment requirements, and decisions based on incomplete information. Governance systems must therefore address not only structural issues but also cognitive and behavioral characteristics of senior decision-makers. Recent evidence concerning CEO overconfidence demonstrates that group information processing mechanisms can mitigate some of the adverse effects associated with excessively confident executive decision-making (Xu et al., 2026). This perspective has direct implications for digital governance. As organizations adopt increasingly sophisticated analytical tools, governance quality depends not only on the availability of data but also on how information is collectively processed by boards and top management teams. Digital technologies may reduce some informational limitations, but they cannot automatically eliminate managerial biases, strategic overconfidence, or selective interpretation. Effective governance therefore requires institutional arrangements capable of combining technological information with critical deliberation, diverse expertise, and collective decision-making. Digital transformation can enhance the informational foundations of governance, but its value depends on whether boards are capable of interpreting complex information and challenging managerial assumptions.

The institutional foundations supporting digital transformation are equally important. Technological investment occurs within legal and regulatory environments that shape incentives for innovation, intellectual property protection, information disclosure, and digital governance. Research has demonstrated that intellectual property protection can promote corporate digital transformation and that digital governance represents an important mechanism linking institutional protection to technological development (Ding & Yang, 2025). This finding suggests that corporate digitalization should be understood in relation to both internal governance structures and external institutional conditions. Firms are more likely to engage in sustained technological transformation when governance systems protect strategic assets, establish clear responsibilities, and reduce uncertainty. For listed companies, these institutional dimensions are particularly salient because technological investments must be justified to boards, shareholders, auditors, regulators, and capital-market participants. The governance of digital transformation therefore requires alignment between external regulatory frameworks and internal organizational mechanisms.

Governance quality also has direct implications for resource allocation and investment efficiency. In competitive markets, boards and senior managers must decide not only whether to invest in digital transformation but also how to prioritize technological projects, evaluate expected returns, manage implementation risks, and prevent inefficient allocation of corporate resources. Evidence from competitive Islamic markets indicates that corporate governance can shape investment efficiency and influence how firms balance strategic opportunities and resource constraints (Farajzade-Zanjani et al., 2026). This issue is particularly relevant for digital transformation because large-scale digital projects frequently involve substantial initial costs, uncertain returns, organizational disruption, and long implementation horizons. Strong governance structures can help ensure that technological investments are aligned

with corporate strategy and evaluated through appropriate control and accountability mechanisms. Weak governance, by contrast, may allow digital projects to become managerial prestige investments, poorly monitored expenditures, or initiatives disconnected from organizational needs.

Despite the growing literature on digital transformation and corporate governance, several important gaps remain. Much of the existing research has examined the relationship quantitatively, focusing on firm performance, sustainability, market outcomes, investment efficiency, transparency, or the moderating role of governance variables (Siswanti et al., 2024; Wu et al., 2026; Yang & Jin, 2024; Zandi, 2025). Other studies have focused on specific governance dimensions such as board structure, ownership, reporting quality, disclosure, audit quality, managerial characteristics, or governance effectiveness (Aslani et al., 2026; Ben Ali, 2026; Fahimnejad et al., 2026; Iranbakhsh et al., 2026; Tan, 2026). While these contributions provide important evidence, they do not fully explain how organizational actors themselves perceive the structural changes occurring within governance systems as digital transformation progresses. In particular, there remains limited qualitative understanding of how digitalization changes the distribution of information, authority, monitoring responsibilities, board competencies, stakeholder relations, internal-control processes, and accountability mechanisms within listed firms. This limitation is especially significant in the Iranian capital market, where institutional characteristics, ownership patterns, regulatory conditions, technological maturity, and governance practices may produce distinctive patterns that cannot be inferred directly from studies conducted in other economic contexts.

The Tehran Stock Exchange provides an important setting for investigating these issues because listed companies operate under increasing pressure to improve transparency, strengthen corporate governance, attract investment, enhance efficiency, and adapt to technological change. At the same time, Iranian firms face specific institutional, financial, regulatory, and technological conditions that may influence the pace and nature of digital transformation. Existing Iranian studies have already demonstrated the relevance of governance competencies, governance effectiveness, board structures, information disclosure, internal control, and market outcomes (Aslani et al., 2026; Fahimnejad et al., 2026; Iranbakhsh et al., 2026; Zandi, 2025). However, there remains a need to move beyond isolated governance variables and investigate digital transformation as a structural process that can simultaneously affect board functioning, strategic decision-making, monitoring, control, accountability, stakeholder relations, and governance capabilities. Such an approach is particularly valuable because the effects of digitalization may not be fully captured through standardized quantitative measures. Senior executives, directors, auditors, risk managers, and digital transformation professionals possess experiential knowledge regarding how these changes unfold in practice, including tensions, unintended consequences, and organizational adaptations that are difficult to identify through secondary data.

Accordingly, a qualitative investigation can contribute to the literature by developing a more integrated understanding of the governance consequences of digital transformation. By examining the experiences of individuals directly involved in boards, executive management, internal audit, risk management, strategic planning, and digital transformation, it becomes possible to identify the mechanisms through which technological change affects corporate governance structures. Such an inquiry can clarify whether digital transformation merely improves existing governance processes or whether it produces deeper changes in organizational authority, information distribution, board composition, monitoring structures, and accountability relationships. It can also reveal the conditions under which digital technologies strengthen governance and the circumstances in which they create new vulnerabilities. This distinction is critical because digital transformation should not automatically be equated with better governance. Technologies may increase transparency and monitoring capacity while simultaneously generating cybersecurity exposure, information overload, technological dependence, privacy concerns, and new forms of expertise asymmetry. Understanding these competing effects is essential for boards, regulators, investors, and senior managers seeking to align technological modernization with effective governance.

Therefore, the present study aimed to explore and explain how digital transformation changes corporate governance structures, decision-making processes, monitoring mechanisms, accountability relationships, and governance capabilities in leading companies listed on the Tehran Stock Exchange.

2 Methods and Materials

This study employed a qualitative research design with an exploratory and interpretive approach to investigate how

digital transformation has influenced changes in corporate governance structures among leading companies listed on the Tehran Stock Exchange. A qualitative approach was considered appropriate because digital transformation in corporate governance represents a multidimensional organizational phenomenon involving changes in decision-making processes, board functions, managerial control, transparency, accountability, information flows, stakeholder relationships, risk management, and strategic oversight that cannot be adequately understood through quantitative indicators alone. The study population consisted of senior managers, members of boards of directors, corporate governance specialists, information technology and digital transformation managers, internal control and risk management executives, and financial and strategic management experts with direct professional experience in listed companies undergoing substantial digital transformation. Participants were selected through purposive sampling using a criterion-based approach to ensure that all interviewees possessed sufficient knowledge and practical experience regarding both digital transformation and corporate governance mechanisms. The principal inclusion criteria were having at least five years of professional or managerial experience, holding or having previously held a position involving participation in corporate governance, strategic decision-making, digital transformation, information systems, risk management, internal control, or executive management, and having direct experience in a leading company listed on the Tehran Stock Exchange. Individuals whose professional experience was limited to operational technology functions without involvement in organizational governance or strategic decision-making were excluded. Particular attention was given to achieving variation in participants' organizational positions, managerial backgrounds, industries, and areas of expertise so that different perspectives on the governance implications of digital transformation could be captured. A total of 20 participants were interviewed. Recruitment and interviewing continued concurrently with preliminary analysis, and sampling was terminated when theoretical saturation was achieved, meaning that the final interviews no longer generated substantively new concepts, categories, or relationships relevant to the research questions. The participating experts represented leading listed companies from major sectors of the Tehran Stock Exchange, including financial services, banking, petrochemicals, industrial manufacturing, telecommunications and technology-related industries, investment companies, and other large corporate enterprises. This diversity enabled the study to identify both common patterns and context-dependent variations in the ways digital technologies were reshaping corporate governance arrangements. Participation was voluntary, and prior to each interview, the objectives of the research, confidentiality procedures, voluntary nature of participation, and participants' right to discontinue the interview at any stage were explained. Informed consent was obtained from all participants, and identifying information relating to individuals and companies was removed during transcription, coding, and reporting to preserve confidentiality.

Data were collected through in-depth semi-structured interviews because this method allowed the researchers to examine participants' professional experiences in considerable depth while maintaining sufficient consistency across interviews to facilitate systematic comparison. The interview guide was developed on the basis of the research objectives and the conceptual domains of digital transformation and corporate governance and was reviewed prior to formal data collection to ensure clarity, relevance, comprehensiveness, and compatibility with the organizational context of companies listed on the Tehran Stock Exchange. The interviews focused on participants' perceptions of the ways in which digital transformation had altered governance structures and practices, including the role and composition of boards of directors, the distribution of decision-making authority, executive oversight, access to strategic information, organizational transparency, accountability mechanisms, internal controls, audit processes, risk governance, stakeholder communication, and the relationship between boards and executive management. Participants were also asked to describe changes associated with the adoption of technologies such as enterprise information systems, big-data analytics, artificial intelligence, cloud-based platforms, integrated management systems, automated reporting, digital dashboards, and other data-driven decision-support technologies. Additional questions examined whether digital transformation had increased the speed and quality of board-level decisions, modified managerial power relationships, created new requirements for digital expertise among directors and executives, changed monitoring and reporting mechanisms, affected information asymmetry between management and shareholders, and generated emerging governance challenges such as cybersecurity risks, data governance problems, technological dependence, digital ethical concerns, and the need for new forms of organizational

accountability. The semi-structured nature of the interviews enabled the interviewer to use probing questions whenever participants introduced significant experiences or concepts that required further clarification. Examples of probing areas included how digital technologies altered interactions between board members and senior executives, whether real-time access to organizational information affected board independence and monitoring capacity, how data-driven management influenced strategic authority, and what new governance competencies became necessary during digital transformation. Each interview lasted approximately 45 to 70 minutes and was conducted individually in a setting that ensured privacy and minimized organizational influence on participants' responses. With participants' permission, interviews were audio-recorded to ensure the accuracy and completeness of the collected material. Field notes were also prepared during and immediately after the interviews to record contextual observations, emerging analytical ideas, and issues requiring further exploration in subsequent interviews. The recorded interviews were subsequently transcribed verbatim, and the transcripts were reviewed against the original recordings to minimize transcription errors. Data collection and analysis were conducted simultaneously, allowing emerging categories from earlier interviews to inform probing questions in later interviews. This iterative process contributed to theoretical saturation and provided greater depth regarding the mechanisms through which digital transformation was associated with changes in corporate governance structures.

The interview data were analyzed using thematic analysis supported by MAXQDA qualitative data analysis software. Analysis began immediately after the first interviews and proceeded concurrently with data collection so that emerging findings could guide subsequent interviews and facilitate assessment of theoretical saturation. First, each transcript was read repeatedly to achieve immersion in the data and develop an overall understanding of participants' experiences and interpretations. During this stage, significant statements, recurrent ideas, governance-related experiences, and descriptions of organizational changes associated with digital transformation were identified. The transcripts were then subjected to line-by-line open coding, in which meaningful segments of text were assigned initial conceptual codes that remained as close as possible to the participants' expressed meanings. Codes related to similar experiences or organizational processes were continuously compared across interviews using a constant comparative approach. Examples of areas examined during coding included digitalization of board information, real-time managerial monitoring, changes in decision-making authority, data-driven governance, greater transparency, automated internal control, digital audit mechanisms, cybersecurity oversight, digital competence of board members, changes in stakeholder communication, reduction of information asymmetry, and emerging ethical and regulatory responsibilities. In the next stage, related initial codes were compared, merged, differentiated, and organized into broader subcategories and categories according to conceptual similarity and their relationships with the research phenomenon. Axial coding was then used to examine relationships among categories and to identify how technological changes, organizational conditions, governance mechanisms, managerial responses, and governance consequences were interconnected. Particular attention was paid to identifying patterns explaining how digital transformation changed formal governance structures as well as informal distributions of authority, information, responsibility, and control within listed companies. During the final stage of analysis, selective and thematic integration was undertaken to develop overarching themes that represented the principal dimensions of changes in corporate governance structures resulting from digital transformation. Analytical memos were maintained throughout the coding process to document conceptual decisions, relationships among categories, contradictory cases, and the progressive development of the thematic framework. To enhance the trustworthiness of the findings, credibility was supported through prolonged engagement with the interview data, iterative questioning, comparison of perspectives across participants, and member checking of selected interpretations with participants. Dependability was strengthened through systematic documentation of the data collection and analytical procedures and maintenance of an audit trail covering coding decisions and category development. Confirmability was addressed by grounding the final themes in participants' narratives and repeatedly comparing interpretations with the original transcripts to reduce the influence of researcher assumptions. Transferability was facilitated by including participants from different managerial positions and industries and by providing a sufficiently detailed description of the organizational and professional context of the study. Coding and categorization continued until the analytical framework was conceptually coherent and no new substantive themes emerged from the final interviews, indicating that theoretical saturation had been reached.

3 Findings and Results

The study included 20 participants who had direct managerial, governance, strategic, or technological experience in leading companies listed on the Tehran Stock Exchange. Participants were selected to provide diversity in organizational position, professional specialization, industry background, and years of managerial experience. Of the 20 participants, 15 (75.0%) were men and 5 (25.0%) were women. Participants ranged in age from 36 to 61 years, with an average age of approximately 47.8 years. Regarding educational qualifications, 12 participants (60.0%) held master's degrees in fields such as management, accounting, finance, information technology, industrial engineering, and economics, while 8 participants (40.0%) held doctoral degrees in management, finance, accounting, information systems, or related disciplines. In terms of organizational position, 5 participants (25.0%) were current or former members of boards of directors or board committees, 4 participants (20.0%) were chief executive officers or senior executive managers, 4 participants (20.0%) were digital transformation or information technology managers, 3 participants (15.0%) held senior positions in internal audit, risk management, or internal control, and 4 participants (20.0%) were senior financial, strategic planning, or corporate governance managers. Participants had substantial professional experience; 4 participants (20.0%) had between 5 and 10 years of relevant managerial experience, 7 (35.0%) had between 11 and 15 years, 5 (25.0%) had between 16 and 20 years, and 4 (20.0%) had more than 20 years of professional experience. The participants represented companies operating in different sectors of the Tehran Stock Exchange, including banking and financial services, petrochemical and energy industries, industrial manufacturing, investment and holding companies, information and communication technology, and other large corporate sectors. This diversity was particularly important because the governance implications of digital transformation were not experienced uniformly across industries. Nevertheless, comparison of the interviews demonstrated a high degree of convergence around several fundamental changes in governance structures. Continuous comparison of the interviews indicated that theoretical saturation had been reached by the final interviews because no substantively new categories or relationships emerged. Analysis of the interview transcripts ultimately resulted in 50 initial conceptual codes, which were consolidated into 14 axial categories and subsequently integrated into three overarching themes explaining the transformation of corporate governance structures under conditions of digitalization.

Table 1

Overall Thematic Structure of Changes in Corporate Governance Resulting from Digital Transformation

Overarching Theme	Axial Categories	Number of Initial Codes	Central Meaning
Digital Reconfiguration of Strategic Decision-Making and Board Functioning	Real-time access to strategic information; data-driven decision-making; redistribution of decision authority; digitalization of board processes; increasing need for digital expertise	18	Digital technologies altered how boards obtain information, evaluate alternatives, exercise strategic oversight, and interact with executive management
Transformation of Monitoring, Control, Transparency, and Risk Governance	Automated internal controls; continuous monitoring; enhanced transparency and reporting; digital audit and compliance; emergence of cybersecurity and data-governance risks	17	Digital transformation strengthened monitoring capacity while simultaneously generating new technological, informational, and cybersecurity risks requiring governance attention
Redesign of Governance Relationships, Accountability, and Organizational Capabilities	Reduction of information asymmetry; transformation of stakeholder communication; changes in accountability relationships; development of digital governance capabilities	15	Digital transformation modified relationships among boards, executives, shareholders, stakeholders, and control functions and created new governance competencies and accountability requirements
Total	14 axial categories	50 initial codes	Digital transformation was interpreted as a structural governance phenomenon rather than merely a technological modernization process

As shown in Table 1, the qualitative analysis demonstrated that digital transformation affected corporate governance through three interconnected dimensions rather than through isolated technological changes. The first dimension concerned the digital reconfiguration of strategic decision-making and board functioning, which contained 18 initial codes and represented the largest group of concepts identified in the interviews. Participants repeatedly

emphasized that digital platforms, integrated information systems, analytical dashboards, and data-processing technologies had changed both the speed and informational basis of strategic decisions. Boards that previously depended heavily on periodic reports prepared by executive management increasingly gained access to more continuous and detailed organizational information. This development was described as changing not only the technical process of obtaining information but also the balance of authority between boards and executive managers. The second major theme, comprising 17 initial codes, concerned the transformation of monitoring, control, transparency, and risk governance. Participants explained that digital systems had strengthened continuous supervision, automated many internal-control procedures, and increased the traceability of financial and operational activities. At the same time, however, digital transformation introduced new categories of risk, particularly cybersecurity threats, data-quality problems, unauthorized access, technological dependency, algorithmic errors, and privacy concerns. The third theme, derived from 15 initial codes, reflected the redesign of governance relationships, accountability, and organizational capabilities. Digitalization was described as reducing traditional information asymmetries, changing communication with shareholders and other stakeholders, increasing expectations for rapid accountability, and creating a need for new forms of digital competence at the board and senior-management levels. The integration of these three themes suggested that digital transformation should not be understood merely as the adoption of new technologies. Rather, participants consistently portrayed it as a structural organizational process that redistributed information, authority, control, expertise, and accountability within the corporate governance system.

Table 2

Digital Reconfiguration of Strategic Decision-Making and Board Functioning

Axial Category	Main Initial Codes Identified in Interviews	Participants Referring to the Category (n=20)	Interpretive Meaning
Real-time access to strategic information	Immediate access to operational indicators; integrated dashboards; reduction in reporting delays; direct access to performance information	18	Boards became less dependent on delayed periodic management reports and gained greater informational capacity for strategic oversight
Data-driven decision-making	Use of analytics in strategic decisions; evidence-based forecasting; scenario analysis; predictive indicators	17	Intuition-based and experience-dominated decision-making increasingly shifted toward data-supported governance decisions
Redistribution of decision authority	Greater board access to management information; reduced executive monopoly over information; decentralization of selected decisions; faster authorization processes	15	Digital information flows modified traditional distributions of authority between boards, senior executives, and operational units
Digitalization of board processes	Electronic board documentation; virtual and hybrid meetings; automated agenda management; electronic voting and approval; digital board portals	16	Board processes became faster, more continuous, and less constrained by physical meetings and paper-based documentation
Increasing need for digital expertise	Need for technology-literate directors; greater role of IT specialists; digital strategy knowledge; understanding of artificial intelligence and analytics	18	Digital competence emerged as an increasingly important dimension of board effectiveness and director selection

The findings presented in Table 2 demonstrate that one of the most important consequences of digital transformation was the reconfiguration of the informational and decision-making architecture of corporate governance. Eighteen of the 20 participants emphasized that integrated information systems and digital dashboards had substantially increased the availability of strategic information to directors and senior decision-makers. Prior to the extensive use of digital systems, board members often received summarized information through periodic financial, operational, and managerial reports. Participants explained that this structure created a time lag between organizational events and board-level awareness and also increased board dependence on information selected and interpreted by executive management. Digital transformation was perceived as reducing this dependence by allowing directors and board committees to access more detailed, timely, and, in some companies, near-real-time information regarding financial performance, production, sales, liquidity, risk indicators, investment projects, compliance, and other critical variables. Seventeen participants further associated this increased information availability with a transition toward data-driven governance. Strategic decisions concerning investment, financing, market development, cost management, resource

allocation, risk exposure, and corporate restructuring were increasingly informed by analytical models and integrated databases rather than solely by managerial experience or intuition. Participants did not suggest that managerial judgment had become irrelevant; rather, they indicated that professional judgment was increasingly expected to be supported by accessible and verifiable data. This development was particularly important in large listed companies because boards faced complex strategic environments in which decisions could have substantial consequences for shareholders and other stakeholders.

A further structural consequence identified by 15 participants concerned the redistribution of decision authority. Interviewees described information as an important source of organizational power, particularly in the relationship between executive managers and boards of directors. When strategic information was concentrated within the executive hierarchy, boards were necessarily dependent on management for both the timing and interpretation of information. Digital platforms partially changed this relationship by enabling directors, board committees, audit committees, and control functions to access information more directly. As a consequence, several participants perceived a gradual decline in the executive monopoly over strategically relevant information. At the same time, digital workflow systems facilitated the delegation and decentralization of some operational decisions because authorization limits, approval processes, and responsibility assignments could be embedded within information systems and monitored electronically. Sixteen participants also emphasized the digitalization of board processes themselves. Electronic board portals, digital documentation, electronic circulation of reports, online access to board materials, virtual meetings, digital voting, and automated follow-up systems had reduced administrative delays and enabled more continuous interaction among directors. In several companies, this shift was described as transforming board activity from a series of relatively discrete formal meetings into a more continuous governance process.

Another highly prominent finding was the increasing importance of digital competence among board members. Eighteen participants believed that traditional board expertise in finance, accounting, law, industry operations, and general management was no longer sufficient for effective governance in digitally transforming organizations. Directors increasingly needed at least a strategic understanding of information systems, digital business models, data analytics, artificial intelligence, cybersecurity, platform-based operations, and technological investment. Participants distinguished between technical expertise and governance-level digital literacy. They did not generally argue that every director should become a technology specialist; instead, they stressed that directors should possess sufficient knowledge to question technological assumptions, evaluate digital investments, understand cyber and data risks, and assess whether technological initiatives were aligned with corporate strategy. Therefore, digital transformation appeared to influence board composition and competency requirements in addition to changing routine decision processes. Taken together, these findings indicate that the transformation of corporate governance began with the transformation of information. Once information became more immediate, integrated, accessible, and analytically usable, the structure of decision-making, the relationship between directors and executives, and the competencies required for effective board participation were also progressively altered.

Table 3

Transformation of Monitoring, Control, Transparency, and Risk Governance

Axial Category	Main Initial Codes Identified in Interviews	Participants Referring to the Category (n=20)	Interpretive Meaning
Automated internal controls	Automated authorization controls; system-based segregation of duties; automated exception alerts; reduction in manual control procedures	17	Digital systems embedded control mechanisms directly into organizational processes and reduced dependence on retrospective manual supervision
Continuous monitoring	Real-time monitoring; continuous performance tracking; automated identification of deviations; early-warning indicators	18	Governance shifted from periodic and retrospective monitoring toward continuous and preventive supervision
Enhanced transparency and reporting	Greater traceability; standardized information; faster disclosure; integrated reporting; reduced opportunities for information concealment	16	Digital systems increased visibility of organizational activities and strengthened the informational foundations of accountability

Digital audit and compliance	Computer-assisted audit; continuous auditing; digital evidence; automated compliance checks; improved audit trails	15	Internal audit and compliance functions became increasingly technology-based and capable of examining larger volumes of organizational data
Cybersecurity and data-governance risks	Cyberattacks; unauthorized access; data leakage; inaccurate data; privacy concerns; technological dependency; algorithmic risk	19	Digital transformation generated new governance responsibilities requiring systematic board-level oversight of technology, data, and cyber risk

Table 3 shows that the second major dimension of transformation involved the governance mechanisms through which organizational activities were monitored, controlled, documented, and subjected to risk oversight. Seventeen participants described the automation of internal controls as a particularly important consequence of digital transformation. Traditional controls in many organizations had depended extensively on human review, manual documentation, signatures, physical verification, and retrospective inspection. Digital systems enabled several of these controls to be incorporated directly into organizational workflows. Authorization thresholds, segregation of duties, access restrictions, transaction validation, exception reporting, and approval sequences could be configured within enterprise systems, thereby reducing the ability of individuals to bypass formally established procedures without leaving an identifiable digital record. Participants generally interpreted this development as strengthening control consistency and reducing selected forms of human error. However, they also emphasized that poorly designed digital controls could merely automate weak procedures. Therefore, automation was not considered inherently effective unless control design, system configuration, managerial responsibility, and periodic review were appropriately integrated.

Continuous monitoring emerged as one of the strongest categories in the analysis and was discussed by 18 participants. Digital transformation was described as shifting governance from a predominantly retrospective model toward a more continuous and preventive form of supervision. In conventional reporting environments, significant deviations could remain undetected until monthly, quarterly, or even annual reports were prepared. By contrast, integrated digital systems made it possible to establish thresholds, performance indicators, exception reports, and automated alerts that identified unusual changes or deviations much earlier. Participants emphasized that this capability had implications for boards, audit committees, senior executives, risk committees, and internal-control units because information concerning financial deviations, liquidity pressures, production inefficiencies, unusual transactions, credit exposures, or operational disruptions could be communicated more rapidly. This increased capacity for continuous monitoring was generally viewed positively, although participants cautioned that excessive volumes of data could create a new problem of information overload. Consequently, effective digital governance required mechanisms for distinguishing strategically important signals from routine operational information.

Sixteen participants associated digitalization with greater transparency and traceability. Integrated systems created more standardized records and reduced the fragmentation of information across separate organizational units. Participants particularly emphasized the importance of digital audit trails, which allowed organizations to identify who had entered, modified, approved, or accessed specific information. This traceability strengthened internal accountability and was also perceived as potentially improving the quality and timeliness of reporting to shareholders, regulators, auditors, and other stakeholders. Nevertheless, participants noted that transparency depended on data quality. Digital systems could rapidly distribute inaccurate information when underlying data were incomplete, inconsistent, manipulated, or incorrectly classified. For this reason, data integrity emerged as a governance issue rather than a purely technical matter.

Fifteen participants identified substantial changes in internal audit and compliance activities. Computer-assisted auditing, automated testing, continuous auditing, electronic document retrieval, and analysis of large transaction populations had enabled audit functions to move beyond traditional sample-based approaches in selected areas. Digital evidence also improved the ability of auditors to reconstruct transaction histories and identify unusual patterns. Participants believed that these capabilities strengthened the monitoring role of audit committees and internal audit units by improving the breadth and timeliness of assurance activities. At the same time, the most frequently identified issue within this overall theme was the emergence of cybersecurity and data-governance risk, discussed by 19 of the 20 participants. Interviewees consistently emphasized that the benefits of digitalization were accompanied by new vulnerabilities. Cyberattacks, ransomware, unauthorized system access, leakage of confidential information, loss of customer or shareholder data, failures of information infrastructure, dependence on external technology providers,

manipulation of digital information, and errors in automated or algorithmic systems were regarded as risks with potentially serious financial, reputational, legal, and operational consequences.

The importance given to cybersecurity demonstrated a significant expansion of the traditional scope of corporate governance. Participants indicated that cyber risk could no longer be treated exclusively as the responsibility of information technology departments because major cyber incidents could affect business continuity, financial reporting, regulatory compliance, corporate reputation, investor confidence, and even the survival of the firm. Accordingly, boards were increasingly expected to understand their organization's cyber-risk exposure, establish appropriate oversight structures, allocate resources for security, ensure the existence of incident-response mechanisms, and periodically assess the adequacy of data-governance arrangements. The findings therefore revealed a dual effect of digital transformation. On the one hand, digital technologies increased the capacity of governance systems to monitor, control, and document organizational behavior. On the other hand, the same technologies generated new categories of vulnerability that required governance structures themselves to evolve. Digital transformation consequently strengthened some traditional control functions while simultaneously expanding the range of risks for which boards and senior management were expected to accept responsibility.

Table 4

Redesign of Governance Relationships, Accountability, and Organizational Capabilities

Axial Category	Main Initial Codes Identified in Interviews	Participants Referring to the Category (n=20)	Interpretive Meaning
Reduction of information asymmetry	Direct information access; standardized reporting; reduced managerial information monopoly; improved comparability of performance information	17	Digitalization reduced selected information gaps between boards and executives and strengthened informed oversight
Transformation of stakeholder communication	Digital investor communication; electronic disclosure; faster shareholder interaction; online stakeholder engagement; increased communication expectations	14	Stakeholder relationships became faster and more continuous, increasing demands for responsiveness and transparency
Changes in accountability relationships	Greater traceability of decisions; clearer responsibility attribution; measurable performance; rapid expectation of managerial response	16	Digital records made decisions and actions more visible, increasing the ability to identify responsibility for organizational outcomes
Development of digital governance capabilities	Digital literacy of directors; interdisciplinary governance teams; data-governance policies; cyber-risk governance; digital ethics; continuous learning	18	Effective governance increasingly depended on organizational capabilities specifically designed for technologically intensive environments

The third overarching theme, presented in Table 4, concerned changes in relationships among the principal actors involved in corporate governance and the emergence of new organizational capabilities necessary to govern digitally transformed companies. Seventeen participants emphasized the reduction of information asymmetry as one of the most consequential effects of digitalization. In the traditional governance structure, executive managers frequently possessed considerably more detailed information about organizational conditions than non-executive directors, shareholders, and external stakeholders. Such asymmetry could weaken monitoring and increase agency problems by limiting the ability of principals and oversight bodies to evaluate managerial actions. Participants believed that integrated reporting systems, shared dashboards, automated performance indicators, and standardized databases could reduce some of these information gaps. In particular, access to common organizational datasets made it more difficult for different managerial units to provide inconsistent versions of performance information. Although digitalization did not eliminate information asymmetry, it was perceived as changing its nature. Participants noted that control over data interpretation could become as important as control over the data themselves. Thus, while boards might gain access to a larger volume of information, executives or technical specialists could still exercise influence through the selection of indicators, design of dashboards, analytical assumptions, and interpretation of complex datasets.

Fourteen participants discussed significant changes in stakeholder communication. Digital platforms had increased the speed at which companies could communicate with shareholders, investors, regulators, customers, suppliers, and other stakeholders. Electronic disclosure systems, corporate

websites, investor portals, digital annual reports, online meetings, and other communication technologies allowed listed companies to disseminate information more rapidly and at lower cost. Participants considered this development particularly important for capital-market companies because investors increasingly expected prompt access to credible information. Digitalization had therefore increased both the capability and the pressure for more continuous stakeholder engagement. Several participants also observed that digital communication reduced the temporal distance between organizational events and stakeholder reactions. Whereas companies previously had more time to prepare formal responses, digital environments generated expectations of rapid clarification when important financial, operational, or reputational events occurred. Consequently, communication itself became an increasingly important aspect of governance.

Changes in accountability relationships were identified by 16 participants. Digital systems created detailed records of approvals, transactions, communications, system access, and changes to organizational information. Such records made it increasingly possible to determine which individual or organizational unit had performed, approved, delayed, or altered a particular action. Participants viewed this traceability as an important mechanism for strengthening accountability because responsibility became more difficult to diffuse when organizational processes left a digital record. Performance measurement systems also contributed to this development by allowing boards and executives to evaluate managers against more frequent and specific indicators. However, interviewees emphasized that the same mechanisms could create excessive emphasis on measurable indicators if governance systems failed to consider qualitative dimensions of managerial performance. Digital accountability therefore required balance: increased measurability and traceability could strengthen governance, but excessive reliance on numerical indicators could encourage short-termism, defensive managerial behavior, or attempts to optimize measured performance rather than underlying organizational value.

The development of digital governance capabilities was one of the most strongly supported categories and was discussed by 18 participants. According to the interviewees, successful digital transformation required governance capabilities extending beyond the purchase or implementation of technological systems. Boards and senior executives needed the capacity to understand digital strategy, evaluate major technology investments, monitor data quality, oversee cyber risk, assess digital business models, and recognize ethical and regulatory issues associated with emerging technologies. Participants emphasized that such capabilities were interdisciplinary. Effective digital governance required cooperation among board members, executive managers, financial specialists, risk managers, internal auditors, legal advisers, technology professionals, data specialists, and cybersecurity experts. The interviews therefore suggested that traditional functional boundaries were becoming less suitable for governance in technologically intensive organizations.

Another significant aspect of this capability concerned data governance. Participants increasingly regarded organizational data as a strategic corporate asset requiring clear ownership, quality standards, access rules, security controls, retention policies, and accountability mechanisms. Decisions about who could access data, how data could be used, how long information should be retained, and how analytical outputs should influence strategic decisions were described as governance questions with implications extending beyond information technology departments. Digital ethics also emerged within this category, particularly in relation to privacy, automated decision-making, employee monitoring, customer information, and the potential use of artificial intelligence. Participants suggested that companies adopting advanced analytical and artificial-intelligence systems would increasingly need governance frameworks that addressed not only technical performance but also fairness, explainability, accountability, and appropriate limits on automated decisions.

Overall, the third theme indicated that digital transformation modified the relational architecture of corporate governance. Information moved more rapidly across organizational boundaries, boards became less dependent on traditional reporting channels, stakeholders expected faster communication, and organizational actions became increasingly traceable. These developments strengthened the potential for accountability but also increased governance complexity. The findings further indicated that digital transformation did not automatically produce improved corporate governance. Its positive effects depended substantially on the ability of organizations to develop appropriate governance competencies, data policies, risk-management mechanisms, technological literacy, and interdisciplinary coordination. Companies that adopted advanced technologies without corresponding changes in governance capabilities were perceived by participants as

being exposed to significant strategic and operational vulnerabilities.

Across the three overarching themes, the findings revealed a coherent pattern in which digital transformation changed corporate governance through a sequence of mutually reinforcing mechanisms. The increased digitalization of organizational information first altered the availability, speed, and granularity of information accessible to decision-makers. This informational transformation then affected the distribution of decision-making authority, the manner in which boards monitored executive management, and the speed with which strategic and operational decisions could be evaluated. At the same time, automation embedded monitoring and control mechanisms directly into organizational processes, thereby increasing traceability and making selected forms of managerial behavior more visible. These developments reduced some traditional forms of information asymmetry but also generated new dependencies on information systems, data quality, analytical models, technological infrastructure, and specialized expertise. Consequently, the transformation of governance was neither linear nor exclusively beneficial. Participants simultaneously identified improved transparency, monitoring, and decision quality alongside greater exposure to cybersecurity threats, information overload, technological dependence, privacy problems, and risks associated with inadequate understanding of digital systems at the board level.

A further cross-cutting finding was that changes in governance structure were not limited to formal organizational charts or modifications in board composition. Participants frequently described more subtle changes in the distribution of organizational power. Access to data became an increasingly important source of influence, while technological and analytical expertise gained greater strategic importance. Information technology managers, data specialists, cybersecurity professionals, and digital transformation executives increasingly participated in discussions that had previously been dominated by financial and operational managers. This did not necessarily mean that formal governance authority had shifted to technology specialists; instead, their expertise became increasingly necessary for boards and executives to exercise their formal authority effectively. The findings therefore suggest the emergence of a more interdisciplinary governance structure in which technological knowledge, financial expertise, strategic judgment, risk awareness, and legal accountability must be combined.

The analysis also revealed that the effects of digital transformation varied according to organizational maturity. Participants from companies with more integrated information systems generally described stronger improvements in transparency, monitoring, and decision support, whereas organizations with fragmented systems were more likely to experience inconsistencies in data, duplicated information, resistance among organizational units, and difficulty establishing a unified governance perspective. Therefore, digital maturity appeared to act as an important contextual condition influencing the governance consequences of technological change. Merely introducing separate digital tools did not necessarily transform governance. More profound changes occurred when digital technologies were integrated across strategic planning, financial management, operational control, risk management, internal audit, stakeholder communication, and board-level oversight.

Taken together, the findings demonstrate that digital transformation was perceived by senior organizational actors as a fundamental transformation in the architecture of corporate governance among leading companies listed on the Tehran Stock Exchange. Its most significant effects involved the transition from periodic to continuous information flows, from predominantly intuition-based to increasingly data-supported decision-making, from retrospective toward more real-time monitoring, from manually implemented toward technology-embedded controls, and from relatively concentrated toward more distributed access to organizational information. These developments increased the potential capacity of boards to exercise informed oversight and strengthened the traceability of managerial decisions. Nevertheless, they simultaneously created new governance responsibilities concerning cybersecurity, data quality, technology investment, digital ethics, privacy, and algorithmic decision-making. The central finding emerging from the interviews was therefore that digital transformation should be regarded not simply as an operational or technological project but as a process of governance transformation that changes who possesses information, how authority is exercised, how performance is monitored, how responsibility is attributed, and what competencies are required from boards and senior executives.

4 Discussion

The findings of the present study showed that digital transformation has produced substantial changes in the corporate governance structures of leading companies listed on the Tehran Stock Exchange. The qualitative analysis identified three major dimensions of this transformation: the digital reconfiguration of strategic decision-making and board functioning; the transformation of monitoring, control, transparency, and risk governance; and the redesign of governance relationships, accountability, and organizational capabilities. Collectively, these findings indicate that digital transformation should not be interpreted merely as the introduction of new information technologies into existing organizational structures. Rather, it represents a broader governance transformation in which the distribution of information, authority, responsibility, expertise, and control is progressively redefined. The participants consistently described a movement from periodic and fragmented information flows toward integrated and more continuous access to organizational information, from predominantly experience-based decision-making toward greater reliance on data and analytics, and from retrospective monitoring toward more continuous and technology-enabled supervision. At the same time, they emphasized that the benefits of digitalization were accompanied by new challenges involving cybersecurity, data governance, technological dependency, privacy, and the increasing need for digital competence at board and senior-management levels.

The first major finding concerned the digital reconfiguration of strategic decision-making and board functioning. Participants explained that access to integrated dashboards, enterprise information systems, analytical platforms, and real-time performance data had reduced the traditional delay between organizational events and board-level awareness. This development was perceived as strengthening the informational position of boards and enabling directors to participate more actively in strategic oversight. The findings are consistent with studies suggesting that digital transformation changes the relationship between corporate governance and organizational adaptation by modifying how incumbents collect and use information in response to technological competition (Wu et al., 2026). The results also align with evidence that digital transformation can improve corporate governance performance when technological change is supported by appropriate leadership and top-management capabilities (Yang & Jin, 2024). In the present study, board members were not described as passive recipients of periodic management reports; instead, digital infrastructures increasingly enabled them to access more detailed and timely information, thereby potentially strengthening their ability to monitor executives, assess strategic alternatives, and respond to emerging risks.

The findings further revealed that data-driven decision-making was becoming an increasingly important feature of board and executive governance. Participants did not suggest that managerial judgment or experience had lost importance, but they emphasized that strategic decisions were progressively expected to be supported by verifiable data, predictive indicators, scenario analysis, and analytical evidence. This finding can be interpreted in light of research on information processing at the top-management level. Xu et al. showed that group information-processing mechanisms can mitigate the adverse effects of CEO overconfidence, demonstrating that the quality and structure of information processing within senior decision-making groups are central to governance effectiveness (Xu et al., 2026). The present findings extend this logic by indicating that digital technologies can improve the informational infrastructure through which collective governance decisions are made. However, the participants also implicitly confirmed that access to more data does not automatically produce better decisions. If boards lack the competence to interpret analytical outputs or if data are selectively presented, technological sophistication may coexist with poor governance judgment.

Another important result was the redistribution of decision authority associated with digital transformation. Participants reported that greater board access to organizational data could reduce the informational monopoly traditionally held by executive management. This finding is strongly related to the governance problem of information asymmetry. Prior research has emphasized that stronger corporate governance and greater transparency can reduce information asymmetry in emerging capital markets (Avinash & Mahesh, 2026). Similarly, evidence from Iran indicates that corporate digital transformation may affect stock liquidity through improvements in information disclosure and internal control (Zandi, 2025). The current study provides a qualitative explanation for these relationships by showing how digital technologies may change the internal distribution of information before those effects become visible in market outcomes. When boards, audit committees, and control units obtain direct access to

integrated information, managers have less opportunity to control the timing and content of information provision. Nevertheless, the results also showed that information asymmetry may not disappear entirely; it may instead shift toward new forms of expertise asymmetry in which those who understand the technological architecture, algorithms, or data models possess an informational advantage over those who merely receive their outputs.

The growing importance of digital expertise among directors was another prominent finding. Participants repeatedly emphasized that effective board membership increasingly requires knowledge extending beyond traditional expertise in finance, accounting, law, industry, and general management. Digital literacy, cybersecurity awareness, understanding of artificial intelligence, and the ability to evaluate technology investments were regarded as emerging components of governance competence. This result closely corresponds with research from the Iranian context showing that effective corporate governance depends significantly on the functioning of specialized committees and the competencies of their members (Aslani et al., 2026). It is also compatible with the grounded-theory evaluation of Iran's corporate governance system, which has emphasized that governance effectiveness depends on a complex set of institutional, structural, and competency-related conditions (Fahimnejad et al., 2026). The present study extends these findings by indicating that digital transformation changes the content of governance competence itself. In other words, digital competence is no longer a peripheral technical skill but is increasingly becoming part of the strategic capability required from boards and senior executives.

The second major theme concerned the transformation of monitoring, internal control, transparency, and risk governance. Participants described how automated controls, electronic authorization processes, continuous monitoring systems, and digital audit trails had reduced reliance on manual and retrospective supervision. These findings suggest that digitalization can strengthen the consistency and traceability of governance controls. This interpretation is consistent with previous research emphasizing the role of governance quality, transparency, and auditing in constraining opportunistic behavior. Ben Ali demonstrated that audit quality can shape the relationship between reporting quality and corporate tax avoidance, underscoring the importance of monitoring mechanisms in determining the consequences of organizational disclosure practices (Ben Ali, 2026). Ardhaoui and Amar similarly showed that disclosure and governance outcomes are influenced by institutional and cultural contexts, highlighting that transparency is not simply a technical matter but is embedded in broader governance environments (Ardhaoui & Amar, 2026). In the current study, digital technologies were viewed as enabling greater transparency, but participants also emphasized that the quality of governance depended on the reliability and integrity of the data being disclosed.

Continuous monitoring was one of the most strongly supported findings. Participants explained that digital systems allowed organizations to detect deviations, anomalies, risk indicators, and unusual transactions earlier than traditional periodic reporting mechanisms. This shift from retrospective to more continuous monitoring represents an important structural change in corporate governance because it reduces the time between the occurrence of a problem and the capacity of governance actors to respond. It also supports the broader literature showing that digital transformation can improve governance performance and organizational sustainability when it is integrated with appropriate management and control mechanisms (Siswanti et al., 2024; Yang & Jin, 2024). However, the findings also indicated that continuous monitoring can create new difficulties, particularly information overload and excessive dependence on quantitative indicators. Thus, the effectiveness of continuous monitoring depends on the organization's ability to distinguish strategically relevant information from routine data and to avoid substituting numerical visibility for substantive governance judgment.

The participants also emphasized that digital transformation has expanded the domain of risk governance. Cybersecurity, data leakage, system failure, unauthorized access, privacy violations, and algorithmic risk were repeatedly identified as governance concerns rather than merely technical problems. This is an especially important finding because it indicates that the responsibilities of boards are broadening as companies become more technologically dependent. Digital transformation therefore produces a paradox: the same technologies that strengthen monitoring and transparency also create new vulnerabilities requiring additional oversight. This interpretation is compatible with research showing that governance increasingly involves complex interactions among multiple actors and monitoring mechanisms. For example, the governance of misconduct through whistleblowing has been shown to depend on interacting institutional and behavioral dynamics rather than a single control mechanism (Ding et al., 2026). The present

study suggests that a similar logic applies to digital risk: effective cybersecurity governance requires coordination among boards, executives, IT functions, internal auditors, risk managers, and compliance units.

The findings regarding the redesign of governance relationships and accountability further support this interpretation. Participants described reduced information asymmetry, greater decision traceability, faster stakeholder communication, and stronger expectations for managerial responsiveness. These findings are consistent with the idea that digital transformation can alter how firms communicate with and are evaluated by shareholders and other stakeholders. Corporate governance is increasingly expected to address a broader set of social, ethical, and institutional responsibilities, and the concept of corporate purpose has become closely connected with questions of legitimacy and stakeholder accountability (Claassen, 2026). Likewise, the perspective of institutional co-production demonstrates that firms increasingly participate in governance processes extending beyond purely internal corporate relationships (Morabit et al., 2026). The present study indicates that digitalization can intensify these developments by making corporate activities more visible and by enabling stakeholders to demand faster access to organizational information.

The role of ownership structure also provides a useful context for interpreting these results. Ownership characteristics influence governance mechanisms, monitoring intensity, managerial incentives, and the distribution of authority within firms (Tan, 2026). In companies where ownership is concentrated, digital technologies may strengthen the ability of dominant shareholders to monitor management, whereas in firms with more dispersed ownership, enhanced disclosure and digital reporting may strengthen the role of boards and institutional monitoring. The current study did not compare ownership structures directly, but the participants' descriptions suggest that digital transformation may interact with pre-existing ownership arrangements rather than produce identical governance outcomes across all firms. This observation is particularly relevant to companies listed on the Tehran Stock Exchange, where ownership concentration and institutional ownership structures can significantly shape governance dynamics.

The findings also revealed that digital transformation influences investment and strategic resource allocation. Participants suggested that the increasing use of data analytics and digital monitoring has improved the ability of boards to evaluate technological investments and assess organizational performance. This finding is consistent with research demonstrating that corporate governance can shape investment efficiency and help firms allocate resources more effectively in competitive environments (Farajzade-Zanjani et al., 2026). It also aligns with evidence that stronger intellectual property protection and digital governance can support corporate digital transformation by improving institutional incentives and reducing uncertainty surrounding technological investment (Ding & Yang, 2025). The qualitative results of the present study suggest that governance structures play an important role in determining whether digital investments become strategically integrated assets or remain fragmented technological initiatives with limited organizational value.

Another important aspect of the results concerned the relationship between digital transformation, governance, and sustainability. Participants described the increasing use of digital information systems in monitoring performance, reporting nonfinancial indicators, and improving organizational transparency. This finding resonates with research showing that governance can play a critical role in the relationship between climate-related corporate practices and financial performance (Van Hoang et al., 2026). It also supports evidence indicating that leadership characteristics can influence corporate carbon disclosure and environmental performance (Velte, 2026). More broadly, previous studies have shown that governance and financial performance may mediate the contribution of digital transformation to sustainable business outcomes (Siswanti et al., 2024). Therefore, the governance consequences identified in the present study may have implications beyond traditional financial oversight, particularly as listed companies face growing expectations concerning environmental, social, and sustainability-related disclosure.

The findings further demonstrated that digital transformation changes the internal balance of power among organizational actors. Technology specialists, data analysts, cybersecurity professionals, and digital transformation managers were described as increasingly influential participants in strategic governance discussions. This does not necessarily indicate a formal transfer of authority but rather a growing dependence of traditional governance actors on specialized technological knowledge. Such a shift is important because the effectiveness of governance depends partly on the ability to prevent excessive concentration of power and managerial entrenchment. Research in the Iranian context has emphasized the

importance of board structures designed to counter governance entrenchment (Iranbakhsh et al., 2026). The current findings suggest that digital transformation creates new forms of potential entrenchment, not necessarily through formal board tenure or ownership concentration, but through control of technical knowledge and data interpretation. This reinforces the need for boards to develop sufficient digital literacy to critically evaluate information provided by technology specialists.

5 Conclusion

Overall, the results support the view that digital transformation and corporate governance are mutually constitutive processes. Governance arrangements influence the capacity of organizations to adopt and manage digital technologies, while digital technologies reshape the structures through which governance is exercised. The findings are consistent with prior evidence that governance factors affect firms' digital transformation trajectories (Wu et al., 2026), that top-management characteristics influence the governance outcomes of digitalization (Yang & Jin, 2024), and that governance quality is central to disclosure, transparency, monitoring, and investment efficiency (Avinash & Mahesh, 2026; Ben Ali, 2026; Farajzade-Zanjani et al., 2026). The present study contributes to this literature by showing that, in leading companies listed on the Tehran Stock Exchange, digital transformation is experienced as a structural reorganization of information, authority, monitoring, accountability, and competence. The evidence therefore suggests that successful digital transformation requires a parallel transformation of governance systems. Firms that invest in advanced technologies without redesigning governance responsibilities, board competencies, internal controls, data policies, and risk structures may fail to realize the potential governance benefits of digitalization and may instead create new organizational vulnerabilities.

A principal limitation of the present study is that the findings were derived from a qualitative sample of 20 participants drawn from leading companies listed on the Tehran Stock Exchange. Although purposive sampling enabled the inclusion of individuals with extensive experience in corporate governance and digital transformation, the findings cannot be statistically generalized to all listed companies or to smaller firms outside the capital market. The study also relied on participants' interpretations and professional experiences, which may have been influenced by organizational position, personal perceptions, or differences in technological maturity across firms. Moreover, because the study examined companies from multiple industries, sector-specific characteristics may have influenced the governance consequences of digital transformation in ways that could not be fully isolated. The cross-sectional nature of the interviews also limited the ability to observe how governance structures evolve over time as digital transformation progresses.

Future research could extend the present findings through mixed-method and quantitative designs that test the relationships identified in the qualitative analysis across larger samples of listed companies. Comparative studies could examine whether the effects of digital transformation differ according to industry, ownership structure, firm size, board composition, technological maturity, or the presence of specialized governance committees. Longitudinal research would be particularly valuable for examining how governance structures change across different stages of digital transformation and whether improvements in transparency, decision quality, and monitoring persist over time. Future studies could also investigate the governance implications of specific technologies such as artificial intelligence, blockchain, cloud computing, automated auditing, and algorithmic decision systems. Comparative international research could further determine which findings are specific to the institutional environment of the Tehran Stock Exchange and which represent more general patterns across emerging and developed capital markets.

From a practical perspective, the findings suggest that boards of directors and senior executives should treat digital transformation as a governance issue rather than delegating it exclusively to information technology departments. Companies should strengthen the digital literacy of board members, establish clear structures for cybersecurity and data-governance oversight, and ensure that audit and risk committees possess adequate technological expertise. Organizations should also integrate digital monitoring systems with existing internal-control and accountability frameworks rather than implementing them as separate technical projects. Greater attention should be given to data quality, access rights, privacy, algorithmic accountability, and the strategic interpretation of digital information. Listed companies should develop board-level policies for the governance of emerging technologies and ensure that major digital investments are evaluated in terms of strategic alignment, risk, transparency, and stakeholder impact. In

addition, continuous training for directors, executives, auditors, and risk managers can help reduce dependence on a small number of technical specialists and strengthen the organization's overall capacity to govern in a digitally intensive environment.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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