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Identification of Digital Leadership Factors in E-Businesses

ABSTRACT

This study aimed to identify and conceptualize the key factors of digital leadership in e-businesses in Tehran. This qualitative exploratory study was conducted among 20 managers, senior executives, entrepreneurs, digital transformation specialists, information technology managers, and experts with relevant professional experience in e-businesses in Tehran. Participants were selected using purposive sampling based on predefined inclusion criteria, and sampling continued until theoretical and informational saturation was achieved. Data were collected through in-depth semi-structured interviews lasting approximately 45 to 75 minutes. All interviews were recorded with participants' consent, transcribed verbatim, and analyzed through inductive thematic analysis. Meaning units were identified and coded, similar codes were compared and grouped into subthemes, and related subthemes were integrated into broader themes. Credibility, dependability, confirmability, and transferability were considered to enhance methodological rigor. The thematic analysis identified five major dimensions of digital leadership in e-businesses: strategic digital orientation, technological capability and digital intelligence, adaptive and innovative leadership, human-centered digital culture, and data-driven and ecosystem-oriented governance. Strategic digital orientation included digital vision, alignment of digital and business strategies, strategic agility, and opportunity recognition. Technological capability encompassed digital literacy, technology adoption, emerging technology awareness, and cybersecurity. Adaptive and innovative leadership reflected change management, flexibility, experimentation, entrepreneurial orientation, and rapid decision-making. Human-centered digital culture included employee empowerment, digital competency development, collaborative communication, organizational learning, and trust. Data-driven and ecosystem-oriented governance comprised evidence-based decision-making, customer orientation, digital ecosystem management, ethical data use, digital accountability, and risk management. The findings demonstrated that these dimensions were interdependent and jointly shaped effective digital leadership. Digital leadership in e-businesses is a multidimensional capability that integrates strategic, technological, adaptive, human, analytical, and governance competencies, enabling organizations to manage digital transformation, strengthen innovation, improve responsiveness, and sustain competitive performance in dynamic digital environments.

Keywords: Digital Leadership, E-Business, Digital Transformation, Organizational Agility, Digital Strategy, Innovation, Digital Governance

Introduction

The rapid expansion of digital technologies has fundamentally altered the competitive structure, operational logic, and strategic priorities of contemporary organizations. Advances in artificial intelligence, cloud computing, data analytics, digital platforms, automation, cybersecurity, and networked communication have created business environments in which organizational success increasingly depends on the ability to integrate technological capabilities with strategic decision-making. This transformation has been particularly significant for electronic businesses, whose value creation processes are inherently dependent on digital infrastructures, virtual customer interactions, data-intensive decision systems, and rapidly

changing technological ecosystems. In such contexts, conventional leadership approaches that primarily emphasize hierarchical supervision, stable organizational structures, and incremental change are often insufficient for managing the speed, complexity, and uncertainty associated with digital transformation. As a result, digital leadership has emerged as a critical managerial capability through which organizations can align technological opportunities with business strategy, human resources, innovation, and organizational change [1, 2].

Digital leadership extends beyond the simple use of digital tools by managers. It refers to a broader leadership capacity involving strategic vision, technological understanding, organizational agility, employee empowerment, innovation orientation, data-driven decision-making, and the ability to guide organizations through technologically induced change. Digital leaders are expected to understand not only how technologies function, but also how they influence business models, organizational structures, customer expectations, employee roles, competitive dynamics, and strategic opportunities. Recent research has increasingly emphasized that leadership plays a central role in determining whether digital transformation initiatives become integrated organizational capabilities or remain fragmented technological projects with limited strategic value [3, 4]. This distinction is especially important in electronic businesses, where technological change is not peripheral to organizational operations but constitutes a central component of business continuity, service delivery, market positioning, and customer value creation.

The strategic dimension of digital leadership has become increasingly important because technological investments do not automatically generate organizational transformation. Organizations may invest substantially in new systems, platforms, data infrastructures, or artificial intelligence without achieving meaningful changes in performance if these technologies are not aligned with strategic goals and managerial priorities. Digital leaders must therefore formulate a clear digital vision, identify emerging technological and market opportunities, establish priorities for digital investment, and ensure coherence between digital initiatives and organizational objectives. Evidence suggests that digital strategy and leadership jointly contribute to transformation success by shaping how knowledge, resources, and technological capabilities are mobilized throughout the organization [2]. Similarly, digital leadership has been associated with the capacity of firms to strengthen digital platform capabilities and develop innovative digital business models, particularly in entrepreneurial and start-up contexts characterized by uncertainty and rapid market evolution [1]. These findings indicate that digital leadership is not merely an operational competency but a strategic mechanism through which technology can be translated into sustainable competitive advantage.

The importance of leadership becomes even more evident in electronic businesses because such organizations operate within highly dynamic and interconnected digital ecosystems. Customers can rapidly compare services, shift between digital providers, communicate experiences through online platforms, and demand increasingly personalized and responsive interactions. At the same time, organizations are dependent on external actors such as payment platforms, cloud-service providers, technology vendors, digital marketplaces, social media platforms, logistics companies, and software ecosystems. Consequently, leaders must be capable of managing relationships and dependencies that extend beyond traditional organizational boundaries. This requires an ecosystem-oriented perspective in which leadership involves not only internal organizational coordination but also the development of strategic partnerships, platform awareness, data governance, technological interoperability, and external collaboration. Such requirements reinforce the need for leaders who can combine business knowledge with digital intelligence and strategic foresight.

Technological capability represents another core dimension of digital leadership. Although digital leaders are not necessarily expected to possess specialized programming or engineering expertise, they must have sufficient digital literacy to understand emerging technologies, evaluate technological investments, communicate effectively with technical specialists, and assess the strategic consequences of technological decisions. This includes familiarity with artificial intelligence, automation, analytics, digital platforms, cybersecurity, and digitally enabled business processes. The growing role of artificial intelligence has further expanded leadership responsibilities because AI-based systems increasingly influence decision-making, workforce structures, customer engagement, and organizational learning. The integration of artificial intelligence into organizational transformation requires leaders who can balance technological opportunity with human judgment, organizational readiness, and ethical considerations [5]. Leadership in digitally transforming environments therefore involves the continuous development of technological awareness rather than reliance on static managerial knowledge.

At the same time, the increasing dependence of organizations on digital systems creates significant risks related to cybersecurity, privacy, data integrity, digital fraud, and technological disruption. Digital leadership must therefore incorporate responsibility for cybersecurity governance and the development of a protective organizational culture. Cybersecurity cannot be treated exclusively as a technical responsibility delegated to information technology departments because human behavior, leadership priorities, communication practices, and organizational norms substantially influence digital security outcomes. Human-centered cybersecurity governance requires leaders to promote awareness, accountability, responsible technology use, and shared responsibility for protecting digital resources [6]. In electronic businesses, where transactions, customer information, organizational data, and operational systems are extensively digitized, such leadership competencies are particularly critical.

Digital transformation also changes the way employees work, collaborate, communicate, and develop professional competencies. For this reason, digital leadership has a substantial human and cultural dimension. Leaders must create organizational conditions in which employees are willing and able to adopt new technologies, develop digital competencies, share knowledge, participate in innovation, and adapt to changing work processes. Transformational leadership in the digital era has been increasingly linked to employee engagement, suggesting that leadership effectiveness depends on the ability to connect technological change with employee motivation, participation, and psychological commitment [7]. Similarly, digital leadership practices that emphasize collaboration, ethical technology use, and shared responsibility can strengthen organizational readiness for technological change [8]. These perspectives highlight that digital transformation is not simply a technical modernization process but also a social and organizational transformation requiring active leadership of people.

Knowledge sharing is particularly important in digitally transforming organizations because innovation frequently depends on the exchange of expertise across technical, managerial, and functional boundaries. Digital leaders are responsible for reducing information silos, creating opportunities for collaborative learning, and promoting knowledge flows that support organizational adaptation. Research has demonstrated that digital transformational leadership can enhance innovation capability partly by strengthening knowledge-sharing processes [9]. This relationship is highly relevant to e-businesses, where new technologies, customer information, market signals, and operational knowledge must often be integrated rapidly to generate new products, services, or business processes. Consequently, leaders who encourage openness, experimentation, and continuous learning may be better positioned to transform digital information into organizational innovation.

Organizational agility is another central element of digital leadership. Electronic businesses frequently operate in environments characterized by short product cycles, rapidly evolving consumer preferences, technological disruption, and intense competitive pressure. Under these conditions, organizations require leadership approaches that permit rapid adjustment of strategies, processes, structures, and resource allocations. Digital leadership capability, knowledge management capability, and organizational agility have been identified as mutually reinforcing factors that contribute to successful digital transformation [10]. Digital leaders must therefore be able to reduce unnecessary bureaucratic barriers, accelerate decision-making, empower employees, and create flexible structures that enable organizations to respond quickly to emerging opportunities and threats.

This need for flexibility also explains the growing attention to adaptive, transformational, and paradoxical leadership approaches in digital settings. Leaders may simultaneously need to encourage experimentation while maintaining operational discipline, decentralize decision-making while preserving accountability, pursue innovation while controlling risk, and promote rapid change while maintaining organizational stability. Paradoxical leadership has been shown to contribute to digital transformation by balancing innovation culture with organizational agility [11]. Such findings suggest that digital leadership is inherently characterized by tensions that cannot always be resolved through simple either-or decisions. Effective digital leaders may instead need to integrate apparently contradictory demands, such as speed and control, autonomy and coordination, technological efficiency and human-centered management.

Change management is therefore inseparable from digital leadership. Employees may resist new technologies because of uncertainty, fear of job displacement, perceived loss of competence, or disruption of established routines. Successful leaders must communicate the rationale for digital transformation, involve employees in implementation, provide opportunities for training and skill development, and establish mechanisms that reduce uncertainty during organizational change. Research examining digital leadership, change management, and individual competencies has emphasized that digital performance depends on the integration of leadership capabilities with effective management of organizational transitions [12]. Likewise, leadership characteristics can influence the progress of digital transformation, although contextual forces such as regulatory and compliance pressures may shape how leadership effects are expressed in emerging markets [4]. These findings underscore the contextual nature of digital leadership and suggest that effective leadership practices may vary according to organizational and institutional environments.

The development of employees' digital competencies is another important responsibility of digital leaders. Technological systems evolve rapidly, and organizations that fail to continuously update workforce capabilities may experience growing gaps between technological investment and employee readiness. In educational and institutional contexts, digital leadership has increasingly been associated with competencies such as technological awareness, strategic planning, collaboration, adaptability, and responsible innovation [13]. Leadership for digital and artificial intelligence transformation has also been linked to equitable capability development, access to technological resources, and the need to ensure that transformation processes do not exclude individuals who have lower levels of digital readiness [14]. Although these studies have focused partly on educational environments, their broader implications are relevant to electronic businesses because successful digital transformation similarly depends on developing human capabilities alongside technological infrastructure.

Digital leadership also intersects with entrepreneurial leadership, particularly in organizations seeking to develop innovative digital products and services. Entrepreneurial leaders are typically characterized by opportunity recognition,

proactive behavior, innovation orientation, and willingness to manage calculated risks. These capabilities become especially important in digital environments where business opportunities may emerge rapidly from technological advances, platform developments, and changing consumer behaviors. Research in knowledge-based companies has suggested that entrepreneurial leadership contributes to the development of digital entrepreneurship by shaping organizational readiness and opportunity-oriented behavior [15]. For electronic businesses, digital leadership may therefore require not only managerial competence but also an entrepreneurial orientation capable of transforming digital opportunities into commercially viable innovations.

The relationship between digital transformation and organizational performance further reinforces the strategic significance of leadership. Digital transformation can improve organizational efficiency, responsiveness, innovation, and competitive positioning, but these outcomes depend on complementary organizational capabilities. Studies have shown that innovation capabilities and digitally enabled transformation processes can contribute to organizational performance when supported by appropriate leadership and human-resource practices [16]. Moreover, digital adoption in broader sustainability and circular-economy initiatives requires coordination between organizational practices, employee participation, social objectives, and leadership commitment [17]. Such evidence indicates that the effects of digital transformation are embedded in a wider organizational system in which leadership influences the integration of technology, employees, innovation, and strategic outcomes.

Communication is another increasingly important aspect of digital leadership. The expansion of virtual workspaces, professional social networks, digital collaboration tools, and online organizational communities has altered the way leadership is expressed and interpreted. Leadership discourse is no longer limited to formal organizational communication but is also constructed through digital interactions and public professional platforms. Research examining leadership narratives in digital publics has shown that leadership communication can influence perceptions of organizational citizenship behavior and shape how employees and professional communities interpret leadership practices [18]. This development suggests that digital leaders must possess communication competencies suited to environments in which organizational messages can spread rapidly, remain permanently visible, and influence both internal and external audiences.

The growing complexity of digital transformation has also prompted scholars to examine differences in leadership styles and managerial perspectives. Leaders may conceptualize digital transformation differently depending on their experiences, organizational contexts, and strategic priorities. Research using Q-methodology has demonstrated that leaders can hold distinct perspectives and leadership styles in relation to digital transformation, emphasizing different combinations of strategic, technological, relational, and adaptive concerns [19]. Such variation supports the view that digital leadership is not a single behavioral style but a multidimensional phenomenon comprising several complementary competencies and practices. This multidimensionality creates an important need for context-specific research capable of identifying which factors are most salient within particular organizational and economic environments.

The institutional context may be especially important in emerging markets, where digital businesses frequently face infrastructure limitations, regulatory uncertainty, variable access to technological resources, rapidly evolving consumer behavior, and organizational cultures that may still retain relatively centralized decision structures. The effectiveness of digital leadership in these settings may therefore depend on the ability to reconcile global digital practices with local organizational realities. Research on digital leadership in the Iranian banking industry has already demonstrated the relevance of developing

contextually validated models rather than assuming that frameworks developed in other settings can be transferred without modification [20]. However, electronic businesses represent a broader and more heterogeneous organizational environment than banking institutions. They include online retailers, digital platforms, software-based services, financial technology companies, technology start-ups, digital marketing firms, and other organizations whose operations depend extensively on virtual interaction and digital infrastructures.

Despite the expanding literature on digital transformation and leadership, several gaps remain. Much of the existing research has examined digital leadership in manufacturing, education, banking, public institutions, or general digital transformation projects rather than specifically focusing on electronic businesses. Existing studies also tend to emphasize selected dimensions such as organizational agility, innovation, digital competencies, knowledge management, artificial intelligence, cybersecurity, or employee engagement separately. Yet leadership in e-businesses requires the simultaneous integration of strategic, technological, human, cultural, analytical, and ecosystem capabilities. Moreover, digital leadership remains an evolving construct, and the rapid emergence of artificial intelligence, platform-based business models, cybersecurity risks, and data-driven management continually changes the competencies expected from organizational leaders. Consequently, frameworks that focus on only one or two dimensions may not adequately capture the integrated nature of leadership required in contemporary electronic businesses.

Another important gap concerns the limited qualitative exploration of how experienced managers and digital-business specialists themselves conceptualize effective digital leadership. Quantitative studies are valuable for testing relationships among predefined constructs, but they may overlook context-specific factors that emerge from managers' practical experiences. Qualitative inquiry can provide a more detailed understanding of how leaders interpret digital challenges, which capabilities they consider essential, how technological and human dimensions interact, and which organizational conditions enable or constrain effective leadership. Such an approach is particularly relevant in environments undergoing rapid digital development because the conceptual boundaries of digital leadership may still be evolving.

In the context of Tehran, electronic businesses have expanded across multiple sectors and increasingly rely on digital platforms, online customer interactions, data analytics, technology-based operations, and flexible organizational structures. Leaders in these organizations must manage technological uncertainty, changing consumer expectations, cybersecurity concerns, workforce capability development, innovation pressures, and evolving competitive conditions simultaneously. Identifying the factors that constitute effective digital leadership in this context can therefore contribute both theoretically and practically. Theoretically, it can help clarify the multidimensional structure of digital leadership in e-businesses and extend current models by integrating strategic, technological, human, cultural, and governance dimensions. Practically, such findings can support the development of leadership assessment criteria, executive development programs, digital transformation initiatives, succession planning, and organizational policies designed to strengthen leadership readiness for digitally intensive business environments.

Accordingly, the aim of the present study was to identify and conceptualize the key factors of digital leadership in e-businesses in Tehran.

Methodology

This study employed a qualitative exploratory research design to identify and conceptualize the factors underlying digital leadership in e-businesses. A qualitative approach was considered appropriate because digital leadership is a multidimensional and context-dependent phenomenon that involves technological, managerial, organizational, strategic, and human dimensions that may not be adequately captured through predetermined quantitative measures. The study population consisted of managers, senior executives, entrepreneurs, digital transformation specialists, information technology managers, and experts with practical or academic experience in the management and development of electronic businesses in Tehran, Iran. Participants were selected through purposive sampling based on their professional knowledge and direct experience with digital technologies, electronic business models, organizational transformation, and leadership processes in digitally oriented organizations. To ensure that the participants could provide sufficiently rich and relevant information, the inclusion criteria consisted of having at least five years of professional or managerial experience in e-business, digital transformation, information technology, digital marketing, online service delivery, or related managerial fields; having direct experience with organizational decision-making or digital transformation projects; and expressing willingness to participate in an in-depth interview. Individuals whose professional experience was not directly related to the subject of digital leadership or electronic business management were excluded from the study. Data collection and participant recruitment were conducted simultaneously, and sampling continued until theoretical and informational saturation was achieved, meaning that additional interviews no longer generated substantively new concepts or dimensions relevant to the research question. Saturation was achieved after 18 interviews; however, two additional interviews were conducted to ensure that no important new category emerged. Therefore, the final sample consisted of exactly 20 participants from Tehran. Efforts were made to include participants with diverse professional positions and experiences in order to obtain a comprehensive understanding of digital leadership from different organizational perspectives. Prior to participation, the purpose and procedures of the study were explained to all participants, and informed consent was obtained. Participants were also assured that their information would remain confidential, their identities would not be disclosed in any report or publication, and participation was entirely voluntary, with the right to withdraw from the study at any stage without consequence.

Data were collected using in-depth semi-structured interviews designed specifically according to the objectives and conceptual focus of the study. The semi-structured interview method provided a systematic framework for covering the major research issues while simultaneously allowing participants to elaborate on their experiences, interpretations, and perceptions of digital leadership within electronic business environments. The initial interview guide was developed after reviewing the conceptual literature related to digital leadership, digital transformation, electronic commerce, organizational leadership, digital competencies, innovation, and technology-based business management. The interview guide consisted primarily of open-ended questions intended to encourage detailed descriptions rather than predetermined or restricted responses. The interviews began with broad questions concerning participants' understanding of digital leadership and their experiences of leadership in electronically enabled businesses. Participants were subsequently asked to describe the characteristics and competencies they considered necessary for effective digital leaders, the role of technological knowledge in leadership, approaches to managing digital transformation, mechanisms for facilitating organizational innovation, methods of leading employees in technology-intensive environments, the role of digital communication, approaches to data-driven decision-

making, strategies for managing organizational change, and the organizational and environmental conditions affecting the effectiveness of digital leadership. Additional questions addressed issues such as strategic digital vision, digital culture, employee empowerment, organizational agility, customer orientation, technological adaptability, knowledge sharing, risk management, cybersecurity awareness, and the development of digital capabilities. Examples of the central interview questions included inquiries concerning which characteristics distinguish successful digital leaders from traditional leaders, which individual and organizational competencies are essential for managing an e-business, how leaders encourage the adoption of emerging technologies, how digital leaders respond to rapid changes in markets and customer expectations, and which organizational conditions facilitate or restrict effective digital leadership. Probing questions such as “Can you explain this further?”, “Why do you consider this factor important?”, “Can you provide an example from your professional experience?”, and “What consequences does this factor have for an electronic business?” were used when necessary to deepen the interviews and obtain more detailed information.

The content and wording of the interview questions were reviewed before the main data collection process to ensure clarity, relevance, and alignment with the research objectives. The interview protocol was also refined during the early stages of data collection when emerging concepts indicated the need for further exploration of particular issues. Interviews were conducted individually in a setting convenient for the participants, either face-to-face or through secure online communication platforms when an in-person meeting was not feasible. Each interview lasted approximately 45 to 75 minutes. With the participants' permission, all interviews were digitally recorded to ensure the accuracy and completeness of the data. Immediately following each interview, the audio recording was transcribed verbatim, and the researchers reviewed the transcript while referring to the original recording to correct potential transcription errors. Observational and analytical notes were also recorded during and immediately after interviews to document contextual information, preliminary interpretations, recurring ideas, and potential relationships between emerging concepts. Data collection and preliminary analysis were performed concurrently so that concepts emerging from earlier interviews could be explored more extensively in subsequent interviews. To enhance the credibility of the collected data, participants were encouraged to provide concrete examples based on their organizational experiences, and ambiguous statements were clarified during the interviews. Furthermore, selected interpretations and summarized findings were reviewed against the participants' statements throughout the analytical process to minimize the possibility of misinterpretation.

The interview data were analyzed using thematic analysis with an inductive orientation. This method was selected because it enables researchers to systematically identify, organize, interpret, and integrate recurring patterns within qualitative data while remaining sufficiently flexible for exploring an emerging phenomenon such as digital leadership in the context of electronic businesses. Data analysis began immediately after the first interview and proceeded concurrently with the data collection process. Initially, each interview recording was transcribed verbatim, and the resulting transcript was read repeatedly to obtain a comprehensive understanding of the participant's experiences and perspectives. During the first stage of analysis, meaningful words, sentences, and passages directly or indirectly related to digital leadership were identified. Initial codes were then assigned to these meaningful units in a manner that remained as close as possible to the participants' original descriptions. Coding was primarily data-driven, and the researchers avoided imposing predetermined theoretical categories on the interview material. Similar codes were continuously compared, revised, merged, separated, or renamed according to their conceptual similarities and differences.

Following initial coding, related codes were grouped into preliminary subcategories based on their conceptual relationships. Constant comparison was used throughout this process to examine similarities and differences among codes obtained from different participants and to determine whether emerging concepts represented distinct aspects of digital leadership or different expressions of the same underlying phenomenon. The preliminary subcategories were subsequently compared and integrated into broader categories representing major dimensions of digital leadership in e-businesses. At the next analytical stage, relationships among categories were examined to determine the higher-order themes that could provide a coherent explanation of the factors characterizing digital leadership. The emerging themes were repeatedly reviewed against the original transcripts to ensure that they accurately represented the participants' experiences and that important data had not been omitted. Categories that demonstrated substantial conceptual overlap were combined, whereas categories containing conceptually heterogeneous codes were reorganized into more internally consistent groups. Analysis continued until a stable thematic structure was obtained and no new substantive concepts emerged from additional data.

To increase methodological rigor, the study followed the qualitative criteria of credibility, dependability, confirmability, and transferability. Credibility was strengthened through prolonged engagement with the interview data, purposive selection of knowledgeable participants, continuous comparison of emerging interpretations with the original interview material, and examination of interpretations against participants' explanations. Coding and category development were repeatedly reviewed to improve conceptual consistency and reduce subjective interpretation. Dependability was supported by maintaining a systematic record of the stages of data collection, coding decisions, category development, and modifications made during the analytical process. Confirmability was enhanced by maintaining interview transcripts, coding records, analytical notes, and documentation of the process through which themes were generated, thereby establishing an audit trail between the raw data and the final findings. Transferability was facilitated through the inclusion of participants with varied professional experiences and organizational roles within the e-business environment and through detailed description of the research context and sampling criteria. The final themes and subthemes were selected only when they were supported by sufficient evidence across the interviews and demonstrated conceptual relevance to the identification of digital leadership factors in electronic businesses. The analytical process ultimately produced an integrated set of themes, categories, and underlying indicators representing the principal dimensions of digital leadership within e-businesses in Tehran.

Findings and Results

The final qualitative analysis was based on interviews with 20 participants who had professional, managerial, entrepreneurial, or specialist experience related to electronic businesses, digital transformation, information technology, digital marketing, online service delivery, and technology-oriented organizational management in Tehran. Of the 20 participants, 12 were men and 8 were women. The participants ranged in age from 31 to 56 years, with most being between 35 and 49 years of age. Regarding educational attainment, 3 participants held bachelor's degrees, 11 held master's degrees, and 6 held doctoral degrees. Their professional experience ranged from 6 to 24 years, indicating that all participants had substantial exposure to managerial and technological environments. In terms of occupational position, the sample included senior managers and chief executive officers of electronic businesses, information technology and digital transformation managers, digital marketing managers, entrepreneurs and founders of online businesses, business development managers, and university or professional experts with extensive experience in digital business and leadership. Participants represented

a variety of electronic business contexts, including online retail, digital platforms, technology-based service providers, digital marketing companies, financial technology services, software-oriented businesses, and online educational and consulting services. This diversity was deliberately maintained in order to obtain different perspectives on the nature of digital leadership and to identify factors that could be applicable across various types of electronic businesses rather than reflecting the experience of only one organizational sector. Analysis of the interview transcripts produced a large number of preliminary meaning units and initial codes. Through continuous comparison, conceptual refinement, merging of overlapping codes, and categorization of related concepts, the initial codes were progressively organized into subthemes and higher-order themes. The final analytical structure consisted of five main themes comprising strategic digital orientation, technological capability and digital intelligence, adaptive and innovative leadership, human-centered digital culture, and data-driven and ecosystem-oriented governance. These themes represented interconnected dimensions of digital leadership rather than isolated leadership characteristics and collectively reflected the participants' understanding of the capabilities required to successfully lead electronic businesses in rapidly changing digital environments.

Table 1

Main Themes, Subthemes, and Indicators of Digital Leadership in E-Businesses

Main theme	Subtheme	Key indicators identified in the interviews
Strategic digital orientation	Digital vision and foresight	Developing a clear digital vision, anticipating technological trends, recognizing emerging digital opportunities, understanding future customer behavior
Strategic digital orientation	Alignment of digital and business strategies	Integrating digital initiatives with organizational goals, prioritizing technology investments, connecting digital projects with competitive strategy
Strategic digital orientation	Strategic agility	Rapid strategic adjustment, flexible allocation of resources, responsiveness to market changes, continuous reassessment of digital priorities
Technological capability and digital intelligence	Digital literacy	Understanding digital technologies, awareness of platform technologies, knowledge of digital tools and systems, familiarity with emerging technologies
Technological capability and digital intelligence	Technology adoption capability	Evaluating new technologies, selecting appropriate technologies, facilitating implementation, supporting technology acceptance
Technological capability and digital intelligence	Cybersecurity and digital risk awareness	Protecting information assets, recognizing cybersecurity threats, managing technological risks, maintaining digital continuity
Adaptive and innovative leadership	Change leadership	Managing resistance to change, communicating the need for digital transformation, preparing employees for transformation, reinforcing adaptability
Adaptive and innovative leadership	Innovation orientation	Encouraging experimentation, supporting new ideas, accepting calculated risk, enabling rapid testing and learning
Adaptive and innovative leadership	Organizational agility	Accelerating decision-making, reducing bureaucratic barriers, creating flexible work processes, empowering decentralized action
Human-centered digital culture	Employee empowerment	Delegating authority, developing digital competencies, encouraging autonomy, providing access to digital resources
Human-centered digital culture	Digital collaboration and communication	Facilitating virtual collaboration, transparent communication, knowledge sharing, cross-functional digital teamwork
Human-centered digital culture	Learning culture	Continuous professional development, organizational learning, learning from failure, reskilling and upskilling
Data-driven and ecosystem-oriented governance	Data-driven decision-making	Using analytical evidence, monitoring digital performance indicators, using real-time information, reducing intuitive decision bias
Data-driven and ecosystem-oriented governance	Customer-centered digital orientation	Monitoring digital customer needs, personalizing services, improving online customer experience, using customer feedback
Data-driven and ecosystem-oriented governance	Digital ecosystem management	Managing platform relationships, developing strategic partnerships, coordinating suppliers and technology partners, participating in digital networks
Data-driven and ecosystem-oriented governance	Digital governance and accountability	Establishing digital responsibilities, defining technology-related decision rights, ethical data use, monitoring digital performance

As shown in Table 1, digital leadership in electronic businesses emerged as a multidimensional construct that extended considerably beyond technological expertise alone. The first major theme, strategic digital orientation, emphasized that effective digital leaders require the ability to formulate a forward-looking digital vision and connect technological transformation with the long-term strategic direction of the organization. Participants repeatedly stated that purchasing technology or introducing digital systems without strategic alignment was insufficient to create meaningful digital

transformation. Digital leaders were expected to anticipate developments in markets, customer expectations, competitor behavior, and technological infrastructure and to translate these developments into organizational priorities. The second theme, technological capability and digital intelligence, reflected the importance of leaders possessing sufficient technological understanding to assess opportunities, communicate with technical specialists, evaluate investments, and recognize digital risks. Participants did not generally argue that a digital leader must be a technical programmer or engineer; rather, they emphasized the need for an informed level of digital literacy that permits sound strategic and managerial decisions. The third theme, adaptive and innovative leadership, highlighted the importance of leading continuous change, encouraging experimentation, managing uncertainty, and developing agile organizational structures. The fourth theme, human-centered digital culture, showed that digital transformation was perceived as fundamentally dependent on employees, organizational learning, collaboration, and empowerment. Participants consistently emphasized that technology produces limited value when employees lack the willingness or competencies to use it. Finally, data-driven and ecosystem-oriented governance reflected the growing importance of analytical decision-making, customer-centered digital operations, collaboration with external partners, and clear governance of digital responsibilities. Taken together, these themes indicate that digital leadership operates simultaneously at strategic, technological, behavioral, organizational, and ecosystem levels.

Table 2*Strategic and Technological Components of Digital Leadership*

Dimension	Identified factor	Manifestations in e-business leadership	Number of participants referring to the factor
Strategic digital orientation	Digital vision	Clear direction for digital development, future-oriented thinking, understanding disruptive trends	19
	Digital-business alignment	Integration of technology with competitive and organizational strategies	18
	Strategic agility	Rapid adjustment to market and technological changes	17
Strategic digital orientation	Digital opportunity recognition	Identification of new digital markets, services, revenue models, and channels	16
Technological capability	Digital literacy	Understanding digital tools, platforms, technologies, and terminology	20
Technological capability	Emerging technology awareness	Awareness of artificial intelligence, automation, analytics, cloud services, and platform technologies	17
Technological capability	Technology evaluation	Assessing usefulness, feasibility, cost, scalability, and organizational fit of technologies	18
Technological capability	Technology implementation support	Facilitating adoption and reducing implementation barriers	16
Technological capability	Cybersecurity awareness	Recognition of security, privacy, and information-protection risks	15
Technological capability	Digital infrastructure understanding	Recognition of infrastructure requirements, interoperability, scalability, and system integration	14

Table 2 presents the strategic and technological components that were most frequently identified by participants. Digital literacy was the only factor explicitly or implicitly emphasized by all 20 participants, demonstrating that a minimum level of technological understanding was considered a foundational requirement of digital leadership. Participants distinguished digital literacy from highly specialized technical expertise, explaining that leaders must understand the strategic implications, limitations, risks, and opportunities associated with technology even when technical implementation is delegated to specialized teams. Digital vision was mentioned by 19 participants and was described as the ability to define where an electronic business should move technologically and how digital resources could contribute to future competitive advantage. Digital-business alignment and technology evaluation were each emphasized by 18 participants. According to the participants, ineffective digital transformation frequently occurs when technology initiatives are implemented as isolated

projects without a direct relationship to customer needs, operational challenges, or business objectives. Strategic agility and awareness of emerging technologies were each reported by 17 participants, indicating that digital leadership requires continuous environmental scanning rather than dependence on fixed long-term plans. Participants also emphasized that leaders must recognize when established technologies or business models are becoming obsolete and must be prepared to revise priorities accordingly. Technology implementation support and digital opportunity recognition were mentioned by 16 participants, while cybersecurity awareness and digital infrastructure understanding were identified by 15 and 14 participants, respectively. Although these latter factors were mentioned somewhat less frequently, participants who held senior technology-oriented roles considered them particularly important, stressing that rapid digitalization without adequate consideration of cybersecurity, system integration, infrastructure capacity, and data protection can increase organizational vulnerability. Overall, the findings indicate that the strategic and technological aspects of digital leadership are strongly interconnected: technological knowledge enables informed strategic choices, while strategic orientation determines which technologies should be adopted and how they should contribute to organizational value creation.

Table 3

Adaptive, Innovative, and Human-Centered Leadership Factors

Dimension	Identified factor	Key behavioral manifestations	Number of participants referring to the factor
Adaptive leadership	Change management capability	Communicating change, reducing resistance, preparing employees, sustaining transformation	19
Adaptive leadership	Flexibility	Revising plans, modifying processes, adapting leadership behavior to changing conditions	18
Adaptive leadership	Rapid decision-making	Shortening decision cycles and acting effectively under uncertainty	16
Innovation leadership	Encouraging experimentation	Supporting pilot projects, testing ideas, tolerating reasonable failure	18
Innovation leadership	Entrepreneurial orientation	Opportunity seeking, calculated risk-taking, proactive market behavior	15
Innovation leadership	Continuous improvement	Encouraging iterative development and regular process refinement	17
Human-centered leadership	Employee empowerment	Delegation, autonomy, participation in decisions, access to digital resources	18
Human-centered leadership	Digital competency development	Training, reskilling, upskilling, mentoring, and experiential learning	20
Human-centered leadership	Collaborative communication	Transparent communication, virtual teamwork, cross-functional interaction	19
Human-centered leadership	Psychological support during transformation	Addressing uncertainty, reducing fear of technology, maintaining motivation	14
Human-centered leadership	Learning orientation	Knowledge sharing, learning from mistakes, reflective improvement	18
Human-centered leadership	Trust building	Maintaining transparency, reliability, fairness, and openness in digital work environments	17

The results presented in Table 3 demonstrate that participants conceptualized digital leadership as strongly dependent on adaptive behavior, innovation, and the capacity to mobilize human resources. Digital competency development was mentioned by all 20 participants and was therefore one of the strongest findings of the analysis. Participants frequently explained that electronic businesses cannot maintain competitiveness when employees' capabilities remain static while technologies, platforms, and customer expectations change continuously. Accordingly, leaders were expected to establish mechanisms for continuous learning, reskilling, peer learning, mentoring, and practical engagement with new digital tools. Change management capability and collaborative communication were each emphasized by 19 participants. These findings suggest that digital transformation was perceived as a communication-intensive organizational process in which leaders must repeatedly explain why change is required, how it affects employees, and what benefits it is expected to generate. Flexibility, encouraging experimentation, employee empowerment, and learning orientation were each referred to by 18 participants,

demonstrating a substantial degree of overlap between digital leadership and organizational agility. Participants described rigid decision structures, excessive centralization, fear of failure, and bureaucratic approval processes as major obstacles to effective leadership in digital businesses. Leaders were therefore expected to delegate decision authority, permit experimentation within defined limits, and create conditions in which employees could identify and solve emerging digital problems quickly. Trust building and continuous improvement also appeared prominently, with participants emphasizing that virtual and hybrid working environments require greater transparency because leaders often have less direct physical supervision of employees. Psychological support during transformation was mentioned by 14 participants and was particularly associated with organizational resistance to automation, artificial intelligence, and changes in established job roles. The findings therefore show that digital leadership cannot be interpreted merely as the leadership of technology; it is equally the leadership of people through technology-intensive and continuously changing environments.

Table 4

Data, Customer, Governance, and Digital Ecosystem Factors

Dimension	Identified factor	Operational meaning identified from interviews	Number of participants referring to the factor
Data-driven leadership	Evidence-based decision-making	Using data rather than intuition alone for strategic and operational decisions	20
Data-driven leadership	Real-time performance monitoring	Monitoring dashboards, digital KPIs, customer behavior, and operational indicators	17
Data-driven leadership	Analytical capability	Interpreting data, asking appropriate analytical questions, using predictive information	16
Data-driven leadership	Data quality awareness	Attention to reliability, completeness, relevance, and timeliness of data	14
Customer-centered leadership	Digital customer orientation	Continuous understanding of online customer needs and expectations	19
Customer-centered leadership	Customer experience management	Simplifying digital interaction, improving service speed, accessibility, and usability	18
Customer-centered leadership	Personalization and responsiveness	Tailoring services and rapidly responding to digital feedback	16
Ecosystem leadership	Strategic digital partnerships	Collaboration with platforms, technology firms, suppliers, and complementary businesses	17
Ecosystem leadership	Network and platform thinking	Understanding interdependence among actors within digital business ecosystems	15
Digital governance	Clear digital accountability	Defining responsibility for systems, data, projects, and digital outcomes	16
Digital governance	Ethical data management	Protecting privacy, responsible data use, transparent digital practices	15
Digital governance	Digital risk management	Monitoring technological, reputational, operational, and platform-related risks	17
Digital governance	Performance accountability	Linking digital investments to measurable organizational outcomes	16

Table 4 demonstrates that the final dimension of digital leadership involved the effective use of data, strong customer orientation, participation in digital ecosystems, and the establishment of governance mechanisms appropriate to electronic business environments. Evidence-based decision-making was mentioned by all 20 participants and was described as a defining distinction between conventional and mature digital leadership. Participants emphasized that electronic businesses generate large amounts of behavioral, transactional, marketing, operational, and customer data, and that leaders must be able to convert these data into meaningful decisions. However, the participants also cautioned that simply possessing data does not constitute data-driven leadership. Leaders were expected to ask appropriate questions, interpret analytical outputs, distinguish relevant from irrelevant indicators, and combine analytical evidence with strategic judgment. Digital customer orientation was reported by 19 participants, while customer experience management was identified by 18 participants. Participants repeatedly noted that customers in electronic markets can change providers rapidly, compare alternatives easily,

publicly communicate dissatisfaction, and expect continuous availability and personalization. Therefore, digital leaders were expected to consider customer experience not as a narrow marketing responsibility but as a strategic organizational priority involving technology, operations, service design, logistics, communication, and data analysis. Strategic digital partnerships, real-time performance monitoring, and digital risk management were each emphasized by 17 participants. These findings show that leaders of electronic businesses increasingly operate within interconnected ecosystems rather than self-contained organizational boundaries. Dependence on payment providers, cloud platforms, digital marketplaces, social media networks, software suppliers, logistics companies, and technology partners requires leaders to manage relationships and risks extending beyond their own organizations. Participants also emphasized digital accountability, ethical data management, and performance measurement. They stated that rapid digital expansion can create ambiguity regarding who is responsible for technological decisions, data protection, digital project outcomes, and cybersecurity incidents. Consequently, digital leadership requires formal governance structures in addition to flexible and innovative leadership behavior. The findings indicate that mature digital leadership balances speed with accountability, experimentation with risk management, personalization with privacy, and technological investment with measurable organizational outcomes.

Figure 1

Conceptual Model of Digital Leadership Factors in E-Businesses



The integrated analysis of the four tables and the complete set of interview data revealed that the identified dimensions should not be considered independent or sequential components. Instead, participants described digital leadership as an interconnected system in which strategic orientation determines the direction of digital transformation, technological

intelligence enables leaders to evaluate and operationalize digital opportunities, adaptive and innovative leadership facilitates organizational response to environmental change, human-centered leadership creates the employee capabilities and cultural conditions necessary for implementation, and data-driven and ecosystem-oriented governance ensures that digital activities generate sustainable value while remaining accountable and responsive to customers and external stakeholders. Strategic digital orientation appeared to function as an overarching directional mechanism because participants consistently referred to vision, alignment, opportunity recognition, and agility when explaining why some electronic businesses were more successful in digital transformation than others. Nevertheless, strategic direction alone was regarded as insufficient. Participants emphasized that leaders who possess vision but lack technological understanding may make unrealistic or inappropriate investment decisions, whereas leaders with strong technological knowledge but weak strategic orientation may promote technologies that provide limited competitive value.

A particularly important finding concerned the relationship between technological transformation and human capability. Across the interviews, participants repeatedly stated that the primary obstacles to digital development were often organizational and behavioral rather than purely technological. Resistance to change, insufficient employee competencies, lack of collaboration between technical and nontechnical units, centralized decision-making, fear of experimentation, and weak communication were described as factors that could substantially reduce the effectiveness of digital investments. Consequently, digital competency development, employee empowerment, collaborative communication, and organizational learning emerged as central components of the conceptual model. In this sense, the findings indicate that effective digital leaders operate as translators between technological possibilities and organizational realities. They are required to communicate complex technological changes in terms that employees and managers can understand, connect digital projects with practical organizational needs, and create conditions that encourage employees to participate actively in transformation rather than perceive digitalization as an externally imposed technological process.

Another central finding was the importance of speed combined with disciplined governance. Participants consistently associated successful electronic businesses with rapid experimentation, short decision cycles, flexible structures, and continuous adaptation. At the same time, they emphasized that excessive emphasis on speed without adequate governance could produce significant operational, ethical, cybersecurity, reputational, and financial risks. This apparent tension resulted in the identification of digital governance as an essential complementary dimension of digital leadership. Effective leaders were described as individuals who create sufficient autonomy for innovation while simultaneously defining responsibilities for data, systems, digital investments, security, customer information, and performance outcomes. The combination of agility and accountability therefore emerged as a defining characteristic of mature digital leadership.

The analysis also demonstrated that customer orientation is deeply embedded in digital leadership. Participants described electronic markets as highly transparent and competitive environments in which customer expectations change rapidly in response to technological developments and experiences with other digital services. Leaders were therefore expected to monitor digital customer behavior continuously, use feedback and analytical information, simplify interactions, personalize services where appropriate, and ensure that customer experience considerations influence strategic and technological decisions. Participants further emphasized that digital customer experience is generated across multiple organizational units and cannot be assigned exclusively to marketing or customer service departments. Digital leaders must therefore promote cross-functional coordination among technology, operations, marketing, logistics, finance, and customer-facing units.

Finally, the findings showed that digital leadership increasingly extends beyond formal organizational boundaries. Electronic businesses operate through networks of technology providers, online platforms, payment systems, cloud services, logistics networks, digital marketing channels, and complementary businesses. Participants therefore considered the ability to manage strategic partnerships and understand digital ecosystems to be an increasingly important leadership capability. Leaders must evaluate dependencies on external platforms, develop mutually beneficial partnerships, anticipate changes in ecosystem rules, and reduce the risks associated with overdependence on individual technology or platform providers. Overall, the findings indicate that digital leadership in e-businesses is best understood as a comprehensive managerial capability combining strategic foresight, technological intelligence, organizational adaptability, innovation, employee development, collaborative culture, analytical decision-making, customer orientation, ecosystem management, and responsible digital governance. The conceptual model derived from the interviews therefore portrays digital leadership as an integrative capability through which leaders align people, technology, data, strategy, and external networks to achieve sustainable organizational performance in rapidly evolving electronic business environments.

Discussion and Conclusion

The present study aimed to identify the key factors of digital leadership in e-businesses in Tehran. The qualitative analysis resulted in five interconnected dimensions: strategic digital orientation, technological capability and digital intelligence, adaptive and innovative leadership, human-centered digital culture, and data-driven and ecosystem-oriented governance. These findings indicate that digital leadership in e-businesses is not a single managerial skill or a technology-centered form of supervision but rather a multidimensional leadership capability that integrates strategic foresight, technological understanding, organizational adaptability, employee development, analytical decision-making, customer orientation, and digital governance. The findings further showed that digital literacy and employee digital competency development were among the most consistently emphasized factors, while digital vision, change management, collaborative communication, evidence-based decision-making, and digital customer orientation also emerged as central components. Taken together, the results suggest that successful leadership in electronic businesses requires the simultaneous alignment of people, technology, strategy, data, organizational culture, and external digital networks.

The first major finding concerned strategic digital orientation, which included digital vision and foresight, alignment between digital and business strategies, strategic agility, and recognition of digital opportunities. Participants emphasized that technology adoption by itself does not constitute digital transformation and that leaders must be capable of connecting technological investments with broader organizational goals. This finding is consistent with Fang, who demonstrated that digital strategy and leadership operate as major economic and organizational drivers of transformation success, particularly when they are integrated with knowledge management and organizational strategy [2]. Likewise, Ding showed that digital leadership contributes to digital business model innovation through the development of platform capabilities, highlighting the strategic role of leaders in converting technological capacity into new forms of value creation [1]. The present finding therefore supports the view that digital leaders must function as strategic architects rather than merely as adopters of technology.

The importance of strategic agility found in the present study is also supported by previous research. Shoukat and colleagues identified organizational agility as an important mechanism through which digital leadership and knowledge

management capabilities contribute to digital transformation outcomes [10]. Similarly, Su and colleagues demonstrated that leadership capable of managing competing organizational demands can strengthen innovation culture and organizational agility during digital transformation [11]. These findings are highly aligned with the present results because participants repeatedly emphasized the need for leaders to revise priorities rapidly, respond to market and technological changes, reduce bureaucratic delays, and reallocate resources when necessary. This suggests that strategic orientation in digital leadership should not be interpreted as rigid long-term planning. Rather, it involves establishing a clear direction while maintaining sufficient flexibility to respond to environmental uncertainty.

The second major theme was technological capability and digital intelligence. Digital literacy was mentioned by all participants and emerged as one of the most fundamental elements of effective digital leadership. Participants did not define digital leadership as technical specialization but emphasized that leaders must possess sufficient technological understanding to evaluate technologies, communicate with technical teams, recognize risks, and make informed investment decisions. This interpretation is consistent with Gupta and colleagues, who emphasized the importance of digital competencies, contextual understanding, and strategic pathways in leadership for digital transformation [13]. Kalra and colleagues similarly identified leadership as a key driver in navigating digital transformation and emphasized the interdependence between managerial capability and technological adoption [3]. The present study therefore reinforces the proposition that effective digital leadership requires an intermediate position between purely technical expertise and conventional managerial knowledge.

The findings related to emerging technology awareness and technology evaluation are particularly important in the context of artificial intelligence and rapid technological development. Sposato and Dittmar argued that artificial intelligence is reshaping both organizational transformation and leadership development, requiring leaders to understand how AI can be integrated into organizational systems while preserving effective human judgment [5]. In a similar direction, Mariyono and colleagues emphasized that digital and artificial intelligence transformation requires leadership capable of facilitating equitable access, organizational readiness, and responsible implementation [14]. These studies support the present finding that digital leaders must continuously update their knowledge rather than rely on static technological competencies.

Cybersecurity and digital risk awareness also emerged as part of technological capability. Participants emphasized that the expansion of digital operations increases dependence on information systems and creates new vulnerabilities. This finding is consistent with Singh and colleagues, who emphasized that cybersecurity governance must be human-centered and leadership-driven rather than treated exclusively as a technical responsibility [6]. The findings of the present study extend this perspective to e-businesses by suggesting that leaders must integrate cybersecurity, privacy, technological continuity, and reputational risk into broader strategic and managerial decision-making. Thus, digital intelligence includes not only the ability to identify technological opportunities but also the capacity to recognize the organizational consequences and risks associated with technology.

The third major theme was adaptive and innovative leadership. Participants considered change management, flexibility, rapid decision-making, experimentation, entrepreneurial orientation, and continuous improvement to be essential characteristics of digital leaders. This finding is consistent with Susilowati, who identified an important relationship between digital leadership, change management, and individual competence in improving performance in digital environments [12]. It is also supported by Fitriadi and colleagues, whose review highlighted the continuing relevance of transformational leadership in the digital era, particularly in relation to employee engagement and adaptation to organizational change [7].

Together, these findings indicate that digital leadership is strongly associated with leaders' capacity to facilitate rather than simply impose organizational change.

The emphasis on innovation orientation and experimentation is also consistent with the findings of Esmaeilian and colleagues, who showed that entrepreneurial leadership can support the development of digital entrepreneurship in knowledge-based companies [15]. In e-businesses, participants in the present study described innovation as requiring tolerance for controlled failure, rapid testing, experimentation with new services, and proactive identification of opportunities. This closely corresponds to entrepreneurial leadership characteristics such as proactiveness, opportunity recognition, and calculated risk-taking. Moreover, Tuyen and colleagues demonstrated that leadership characteristics can influence digital transformation, while contextual pressures may shape the strength and form of this relationship [4]. These findings support the present interpretation that innovation-oriented digital leadership must be understood within the specific organizational and institutional context in which transformation occurs.

The fourth theme, human-centered digital culture, included employee empowerment, digital competency development, collaborative communication, organizational learning, trust, and psychological support during transformation. The prominence of this theme demonstrates that digital transformation is not simply an issue of technological implementation. Participants consistently described employee readiness and organizational culture as decisive factors in determining whether digital initiatives succeed. This result aligns with Fitriadi and colleagues, who emphasized the relationship between leadership and employee engagement in digitally transforming organizations [7]. It is also consistent with Halid and colleagues, who highlighted collaboration, ethics, and technology integration as central elements of effective leadership in digital environments [8]. Although their study focused on educational leadership, the underlying principle is highly relevant to e-businesses: technology produces sustainable value only when leaders are capable of creating supportive, collaborative, and ethically responsible organizational cultures.

Employee digital competency development was mentioned by all participants, indicating that continuous learning is a core responsibility of digital leaders. This finding can be explained by the rapid obsolescence of digital skills and the continuous emergence of new technologies and platforms. Gupta and colleagues emphasized competency development as a central component of digital leadership, while Mariyono and colleagues highlighted the importance of capability building in successful digital and AI transformation [13, 14]. In the present study, competency development was not limited to technical training but also included reskilling, peer learning, knowledge sharing, and strengthening employees' confidence in using digital tools. This suggests that digital leaders must actively construct learning environments rather than assume that employees will adapt spontaneously to technological change.

Knowledge sharing and collaborative communication also emerged as important components of the human-centered theme. Odai and colleagues demonstrated that knowledge sharing plays a critical role in the relationship between digital transformational leadership and innovation capability [9]. The present findings strongly support this relationship. Participants described organizational silos, poor communication between technical and nontechnical departments, and lack of knowledge exchange as significant barriers to digital transformation. Consequently, effective digital leaders appear to function as facilitators of cross-functional communication and organizational learning. Tunca and colleagues further demonstrated that leadership discourse in digital environments can influence perceptions and organizational citizenship behavior [18]. This

reinforces the importance of communication quality, transparency, and consistency in increasingly virtual and digitally mediated workplaces.

The fifth theme was data-driven and ecosystem-oriented governance. Evidence-based decision-making was mentioned by all participants and was described as a defining characteristic of mature digital leadership. Participants emphasized that leaders must be able to interpret data, monitor performance indicators, evaluate customer behavior, and use analytical evidence in strategic and operational decisions. This finding is consistent with broader research showing that successful digital transformation depends on the integration of leadership, knowledge, technology, and organizational capabilities rather than isolated technology adoption [2, 10]. The present findings add to this literature by demonstrating that leaders' ability to translate data into decisions constitutes a distinct leadership competence in e-businesses.

Customer-centered digital orientation was another prominent finding. Participants emphasized that electronic businesses operate in environments where customer expectations evolve rapidly and where digital experiences can directly influence loyalty, reputation, and competitive position. This finding can be explained by the fact that digital business models allow customers to compare alternatives, provide immediate feedback, and shift providers with relatively low switching costs. Therefore, digital leaders must ensure that technological initiatives are evaluated according to their capacity to improve customer experience and value creation. Ding's findings regarding digital business model innovation support this interpretation because the development of successful digital business models depends on the ability to connect platform capabilities with market opportunities and customer value [1].

Digital ecosystem management and governance also emerged as important components of the findings. Participants described e-businesses as increasingly dependent on external platforms, technology providers, cloud services, payment systems, logistics networks, and digital partners. This requires leaders to manage interorganizational relationships and dependencies rather than focus solely on internal organizational processes. The importance of governance is also supported indirectly by studies emphasizing the need to coordinate leadership, organizational capabilities, sustainability, and digital transformation outcomes [16, 17]. In addition, the present study's emphasis on clear digital accountability is consistent with the argument that leadership must balance innovation with ethical, regulatory, and security responsibilities.

Another important result of the study was the interconnected nature of the identified themes. The findings did not support a fragmented view in which strategy, technology, employees, data, and governance operate independently. Instead, participants described these dimensions as mutually reinforcing. For example, strategic digital vision without technological literacy may result in unrealistic or poorly targeted digital investments, while advanced technological capabilities without employee readiness may generate resistance and implementation failure. Similarly, data-driven decision-making without appropriate governance may create ethical and privacy risks, whereas empowerment without strategic alignment may produce fragmented initiatives. This integrated interpretation is consistent with Yuan and colleagues, who found that leaders may display different but interconnected orientations toward digital transformation [19]. It is also consistent with Shateri and colleagues, whose validation of a digital leadership model in the Iranian banking industry demonstrated that digital leadership is multidimensional and context-dependent [20]. The present study extends this evidence specifically to e-businesses and suggests that effective digital leadership should be conceptualized as an integrated organizational capability rather than a collection of isolated leadership behaviors.

Overall, the findings demonstrate that digital leadership in e-businesses is characterized by the ability to establish strategic digital direction, understand and evaluate technologies, lead organizational change, cultivate innovation, develop employees' digital competencies, promote collaborative learning, use data systematically, prioritize digital customer experience, manage ecosystem relationships, and maintain responsible digital governance. These dimensions collectively enable electronic businesses to respond to technological disruption and competitive uncertainty while sustaining organizational performance. The present results therefore contribute to the digital leadership literature by providing a context-specific framework that combines strategic, technological, adaptive, human, analytical, and governance dimensions within a single conceptual structure.

The present study has several limitations that should be considered when interpreting the findings. First, the study was conducted exclusively among managers, entrepreneurs, and specialists working in Tehran, and the organizational and technological conditions of this setting may differ from those of other cities, regions, or countries. Second, the qualitative design and purposive sampling strategy were appropriate for identifying dimensions and generating an in-depth conceptual framework but do not permit statistical generalization of the findings to all electronic businesses. Third, the results were based on participants' self-reported experiences and perceptions and may therefore have been influenced by personal interpretations, organizational interests, or retrospective bias. Fourth, although participants were selected from different electronic business contexts, the sample could not represent every type of digital industry, organizational size, or business model. Finally, the rapid evolution of digital technologies means that some leadership competencies may change over time, particularly as artificial intelligence, automation, platform governance, and cybersecurity requirements continue to develop.

Future research should examine the proposed dimensions using larger and more diverse samples and should develop and validate a quantitative instrument for assessing digital leadership in e-businesses. Studies could test the factorial structure of the five identified dimensions through exploratory and confirmatory factor analyses and examine their relationships with organizational agility, innovation performance, digital transformation success, employee engagement, customer experience, and financial or nonfinancial organizational performance. Comparative studies across industries, cities, and countries could clarify whether the identified framework is stable across different institutional and technological contexts. Longitudinal research would also be valuable for examining whether specific digital leadership competencies become more or less important as organizations progress through different stages of digital maturity. Future studies could additionally investigate the effects of organizational size, platform dependence, technological intensity, ownership structure, and environmental uncertainty on the relative importance of different digital leadership factors.

From a practical perspective, electronic businesses should treat digital leadership development as a strategic organizational priority rather than as an informal extension of general management training. Organizations can use the identified dimensions as a framework for selecting, assessing, and developing managers who are responsible for digital transformation and technology-intensive operations. Leadership development programs should integrate strategic digital thinking, technology literacy, data interpretation, cybersecurity awareness, innovation management, agile decision-making, change leadership, employee empowerment, and digital communication. Organizations should also establish continuous learning systems to strengthen employees' digital competencies and create cross-functional mechanisms that improve collaboration between technical and nontechnical units. In addition, clear digital governance structures should be developed to define responsibility for data, cybersecurity, digital investments, technological risks, and performance outcomes. By

integrating these practices, e-businesses can create leadership capacity that is better aligned with the demands of rapidly changing digital environments.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

- [1] X. Ding, "Digital leadership, digital platform capability and digital business model innovation of start-ups," *Journal of Innovation & Knowledge*, vol. 14, p. 100970, 2026.
- [2] Z. Fang, "Digital Strategy, Leadership, and Knowledge Management as Economic Drivers of Transformation Success in the Manufacturing Sector," *Journal of Global Information Management*, vol. 34, no. 1, pp. 1-23, 2026, doi: 10.4018/jgim.402044.
- [3] R. Kalra, K. Vazirani, R. Anuradha, and P. V. Ahuja, "Navigating Digital Transformation in HEIs: The Role of Leadership and Key Drivers Using DEMATEL," in *Digital Leadership*: Productivity Press, 2026, pp. 80-100.
- [4] B. Q. Tuyen, T. H. Hung, and M. T. Lan, *Leadership characteristics and digital transformation in an emerging market: The moderating effect of compliance pressure*. (in English), 2025.
- [5] M. Sposato and E. C. Dittmar, "The AI-Powered Future of Digital Transformation: Enhancing Organizations and Leadership Development," *Journal of Work-Applied Management*, 2025, doi: 10.1108/jwam-02-2025-0039.
- [6] M. Singh, S. Srivastava, and R. Mahanandia, "Leadership and Cybersecurity Governance: Building a Human-Centric Protective Culture in the Digital Age," in *The Human Dimension of Cybersecurity: Cultivating a Protective Organizational Culture*: IGI Global Scientific Publishing, 2026, pp. 1-28.

- [7] H. Fitriadi, I. Isnurhadi, Z. Zunaidah, and A. Syathiri, "Transformational Leadership in the Digital Era: A Systematic Literature Review on Employee Engagement," in *Proceedings of the 24th Malaysia-Indonesia International Conference on Economics, Management, and Accounting in Conjunction with the 9th Sriwijaya Economics, Accounting, and Business Conference*: Springer Nature, 2026, p. 248.
- [8] L. I. Halid, I. Nasar, B. A. Sukroyanti, A. Walela, and R. Cancu, "Smart School Leadership in the Digital Era: Integrating Technology, Ethics, and Collaboration in Education," in *Proceedings of the 5th International Conference on Education, Humanities, Health and Agriculture*, 2026: EAI, doi: 10.4108/eai.11-12-2025.2363125.
- [9] L. A. Odai, Y. Xiao, B. Korankye, and I. Ahakwa, "Navigating digital transformation: the critical role of knowledge sharing and digital transformational leadership in boosting innovation capability in Sub-Saharan Africa," *Business Process Management Journal*, vol. 32, no. 2, pp. 653-678, 2026.
- [10] I. K. Shoukat, I. A. Muhammad, M. A. Khan, and A. Kakar, "Does Digital Leadership Capability, Knowledge Management Capability, and Organizational Agility Foster Digital Transformation in China? A Time-Lagged Survey-Based Assessment in Digital Transformation Projects," *Journal of Engineering and Technology Management*, vol. 76, pp. 12-29, 2025.
- [11] Y. Su, M. T. Khan, S. Ullah, M. Kukreti, A. Sami, and A. Dangwal, "Steering the digital transformation: How paradoxical leadership juggles innovation culture and organizational agility," *Human Systems Management*, vol. 45, no. 3, pp. 396-407, 2026, doi: 10.1177/01672533251372833.
- [12] Y. T. Susilowati, "Optimizing Protocol Performance in the Digital Era: A Study of the Integration of Digital Leadership, Change Management, and Personal Competence in the Protocol Scope," *Proceeding of the International Conference on Economics and Business*, vol. 3, no. 2, pp. 59-76, 2025, doi: 10.55606/iceb.v3i2.448.
- [13] D. Gupta *et al.*, "Digital leadership and educational transformation in ASEAN: Competencies, contexts, and strategic pathways," in *Digital Leadership and Educational Transformation in ASEAN*: IGI Global, 2026.
- [14] D. Mariyono, Z. Mazhabi, M. Sulistiono, M. Yunus, and H. Hamiddin, "Educational Leadership for Equitable Digital and Artificial Intelligence Transformation in Global Education," 2026, doi: 10.21203/rs.3.rs-8510829/v1.
- [15] H. Esmaeilian, S. Ahmadzadeh, and M. Bakhshandeh, "Predicting Digital Entrepreneurship Development Based on Entrepreneurial Leadership: Testing a Conceptual Model in Knowledge-Based Companies," *Journal of Entrepreneurship Research*, vol. 4, no. 3, 2026.
- [16] M. A. Shahzad, S. Chen, X. Wang, Z. Li, and T. Iqbal, "Impact of GHRM and Innovation Capabilities on Organizational Performance: The Role of Digital Transformation and Green Leadership," *Journal of Manufacturing Technology Management*, pp. 1-28, 2025, doi: 10.1108/jmtm-11-2024-0639.
- [17] R. Singh, A. Joshi, A. Singh, K. Raghuveer, and V. Kumar, "Synergising HR practices and social performance for adoption of digital circular economy: a case of developing country perspective," *Strategy & Leadership*, vol. 53, no. 4, pp. 434-456, 2025 2025, doi: 10.1108/SL-12-2024-0146.
- [18] S. Tunca, T. Karakaya, and Y. S. Balcioglu, "Leadership discourses and organizational citizenship behavior in digital publics: a computational analysis of LinkedIn comment narratives," *Frontiers in Communication*, vol. 11, p. 1872799, 2026, doi: 10.3389/fcomm.2026.1872799.
- [19] P. Yuan, X. Chen, and H. Song, "School Principals' Perspectives and Leadership Styles for Digital Transformation: A Q-Methodology Study," *Behavioral Sciences*, vol. 16, no. 2, p. 165, 2026, doi: 10.3390/bs16020165.
- [20] T. Shateri, A. Amirkabiri, and M. Rabiei Mandjin, "Validation of a Digital Leadership Model in the Iranian Banking Industry," (in English), *Management, Education and Development in the Digital Age*, pp. 1-14, 2025.