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# Identifying Key Metrics of Digital Transformation Readiness

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## ABSTRACT

This study aimed to identify and conceptualize key organizational metrics that define digital transformation readiness across infrastructural, cultural, and strategic domains. This qualitative research employed a constructivist approach using semi-structured interviews with 26 participants from various organizations based in Tehran, including IT professionals, innovation managers, and strategic decision-makers. Participants were selected via purposive sampling, and data collection continued until theoretical saturation was reached. Interviews were transcribed verbatim and analyzed using thematic analysis, facilitated by NVivo software. The analysis process included open, axial, and selective coding to extract and refine categories and subcategories related to digital transformation readiness. Thematic analysis revealed three overarching categories of digital transformation readiness: organizational capability and infrastructure, human capital and culture, and strategic alignment and governance. Within these categories, key subthemes included IT infrastructure preparedness, cybersecurity infrastructure, data governance, employee digital competency, leadership commitment, learning culture, strategy integration, KPI systems, and policy adaptability. Participants highlighted the interplay between technical systems and human readiness factors, underscoring the importance of alignment between strategic intent and operational capacity. The findings support the notion that readiness is a dynamic, multi-layered construct involving both internal and external organizational dimensions. Comparisons with existing literature further validated these metrics as practical indicators of readiness across sectors. This study provides a comprehensive, empirically grounded framework for assessing digital transformation readiness by integrating infrastructural, human, and strategic components. The findings offer actionable insights for organizations seeking to benchmark their preparedness and design interventions that foster successful digital transitions. Readiness should be treated as an evolving organizational capability that requires continuous evaluation and adaptation in response to technological and environmental change.

**Keywords:** Digital transformation readiness, Organizational infrastructure, Leadership commitment, Cultural change, Strategic alignment.

## Introduction

The literature widely acknowledges that digital transformation readiness is a multidimensional construct involving organizational infrastructure, technological maturity, workforce capabilities, strategic vision, and cultural alignment [1-3]. While many organizations recognize the importance of these components, they often lack systematic approaches to evaluate whether they possess the prerequisites for successful transformation [4, 5]. This gap between intent and readiness often results in the misallocation of resources, failed initiatives, and internal resistance. For instance, organizations may implement advanced technologies without aligning them with existing workflows or employee competencies, thereby undermining adoption and performance outcomes [6, 7].

Current debates on digital transformation focus not only on the implementation of technologies such as AI, IoT, and cloud computing, but also on the human and strategic factors that determine whether such tools create real value [8-10]. Digital readiness is increasingly viewed as a dynamic capability that must evolve alongside technological and market shifts. This includes leadership commitment, agile organizational processes, employee engagement, and policy adaptability—elements that interact to either accelerate or constrain transformation outcomes [11-13]. The challenge, therefore, lies in operationalizing this concept by developing coherent frameworks and measurement tools that help organizations assess their transformation maturity with clarity and precision.

Numerous models have attempted to define and measure digital readiness, with varying degrees of comprehensiveness. For example, the work of Zhu et al. (2023) in the construction industry has illustrated how structured decision-making tools such as the Analytic Hierarchy Process (AHP) and DEMATEL can be used to assess maturity levels [14]. Similarly, Wahyuni and Tjala (2023) have proposed measurement instruments for digital transformation in educational institutions, emphasizing the need for tailored indicators based on sectoral differences [15]. These sector-specific tools highlight the importance of context in designing readiness assessments. However, despite such efforts, there is limited consensus on a universal set of metrics that capture the core enablers of digital transformation readiness across diverse organizational settings.

Research also points to the need to differentiate between digital maturity and digital readiness. While maturity refers to the degree to which digital tools and capabilities have been integrated and optimized, readiness focuses on the initial conditions required for a successful transformation [5, 16]. These include technical infrastructure, data governance, leadership alignment, and employee preparedness. Without readiness, maturity cannot be meaningfully pursued. Thus, organizations need diagnostic tools that allow them to gauge whether they possess the fundamental capacity to undertake transformation before committing to large-scale investments [17, 18].

Importantly, the cultural dimension of transformation is often underestimated. Recent studies emphasize that a supportive and adaptive organizational culture is a decisive factor in determining whether digital initiatives succeed or stagnate [10, 13]. This involves cultivating openness to change, fostering continuous learning, and ensuring psychological safety for experimentation and innovation. As Schank (2023) notes, “Technology fails not because it’s flawed, but because people are unprepared to use it” [7]. Thus, readiness metrics must account for cultural readiness alongside technical and strategic components.

Leadership and governance are also crucial levers of readiness. Leaders who articulate a compelling vision, allocate resources strategically, and build collaborative structures tend to facilitate smoother transitions to digital modes of operation [2, 19]. Moreover, formal governance mechanisms such as digital steering committees, performance monitoring systems, and risk management protocols can enhance coordination and accountability [4, 20]. However, many organizations continue to rely on informal or reactive approaches to digital transformation, resulting in fragmented efforts and inconsistent outcomes [21].

The human resource function plays a pivotal role in promoting readiness through talent development, reskilling, and change management. As Bahiroh and Imron (2024) argue, organizations must embrace innovative HR strategies that align employee capabilities with digital goals [9]. This includes assessing current competency levels, identifying skill gaps, and designing targeted training programs. However, most organizations still lack the mechanisms to systematically track and evaluate these efforts, which limits their ability to adapt to the evolving demands of digital transformation [8].

The role of external partnerships, regulatory compliance, and stakeholder engagement further complicates the readiness landscape. Organizations need to ensure alignment with external actors—such as vendors, policymakers, and customers—who influence the success of digital initiatives [3, 11]. Inadequate attention to legal frameworks, cybersecurity, and ethical considerations can derail even the most well-planned transformations [22, 23]. Thus, readiness must be understood as an ecosystemic condition that goes beyond internal capabilities to include external dependencies and risks.

Given the fragmented nature of current frameworks and the evolving demands of digital ecosystems, there is a pressing need for an empirically grounded, multidimensional framework that can guide organizations in assessing their digital transformation readiness. This is especially true in emerging economies and urban centers such as Tehran, where organizations often face infrastructural constraints and institutional uncertainty while attempting to adopt global best practices [24]. Moreover, localized insights from practitioners and leaders who are actively engaged in digital initiatives can enrich the theoretical understanding of readiness by illuminating real-world challenges, workarounds, and innovations.

This study aims to address this gap by identifying key metrics of digital transformation readiness through qualitative inquiry.

## Methods and Materials

### *Study Design and Participants*

This study employed a qualitative research design based on a constructivist paradigm to explore and identify key metrics of digital transformation readiness in organizations. The qualitative approach was selected to gain in-depth insights into participants' lived experiences and perceptions regarding digital transformation processes. Purposeful sampling was used to recruit 26 participants from various industries and organizational levels in Tehran who were either directly involved in or significantly impacted by digital transformation initiatives within their organizations. Participants included managers, IT professionals, innovation officers, and digital strategy consultants. The inclusion criteria required individuals to have a minimum of three years of experience in digital transformation-related roles.

### *Data Collection*

Data collection was conducted through semi-structured interviews, allowing participants to elaborate on their experiences while providing the flexibility to explore emerging themes. An interview guide with open-ended questions was developed to examine aspects such as organizational culture, infrastructure, leadership commitment, workforce capabilities, and data governance. Follow-up questions were tailored in real-time based on each participant's responses to encourage deeper reflection. All interviews were conducted face-to-face in Persian, recorded with participant consent, and subsequently transcribed verbatim. Data collection continued until theoretical saturation was achieved, meaning that no new themes or insights emerged from additional interviews.

### *Data analysis*

The collected data were analyzed using thematic analysis supported by NVivo software, which facilitated systematic coding, organization, and retrieval of data segments. The coding process began with open coding to identify initial concepts and continued with axial coding to establish relationships between categories. Finally, selective coding was applied to develop

overarching themes that represent key metrics of digital transformation readiness. To ensure the credibility and trustworthiness of the findings, member checking and peer debriefing techniques were applied. The rigor of the analysis was also enhanced through the maintenance of an audit trail and detailed documentation of analytical decisions throughout the research process.

## Findings and Results

The study sample consisted of 26 participants based in Tehran, selected through purposive sampling to ensure relevant and diverse experiences with digital transformation initiatives. Of the total participants, 17 were male and 9 were female. In terms of professional roles, the sample included 7 IT managers, 5 digital transformation consultants, 4 innovation officers, 6 middle-level organizational managers, and 4 senior executives. The participants ranged in age from 32 to 58 years, with the majority (n = 16) falling within the 35–45 age group. Regarding work experience, 12 participants had 10–15 years of professional experience, 8 had more than 15 years, and 6 had 5–10 years. All participants had been directly involved in planning, implementing, or evaluating digital transformation strategies in their respective organizations, with 21 of them working in the private sector and 5 in public sector institutions.

**Table 1**

*Thematic Structure of Digital Transformation Readiness Based on Interview Analysis*

| Category (Main Theme) | Subcategory | Concepts (Open Codes) |
|---|---|---|
| 1. Organizational Capability and Infrastructure | IT Infrastructure Preparedness | Cloud adoption, Reliable internet, Hardware scalability, System integration readiness |
| | Data Management Readiness | Data centralization, Secure storage, Real-time access, Data analytics tools |
| | Change Management Support | Transition planning, Change ambassadors, Resistance handling, Adaptation timeline, Communication channels |
| | Financial Resource Allocation | Budget flexibility, ROI anticipation, Investment in tools, Cost–benefit assessment |
| | Process Digitization | Workflow automation, E-documentation, KPI tracking tools, Paperless operations |
| | Vendor and Technology Partner Support | External expertise, Platform customization, Vendor training, Ongoing tech support |
| | Cybersecurity Infrastructure | Threat detection systems, Encryption practices, Access control, Incident response planning |
| 2. Human Capital and Culture | Digital Competency of Employees | Tech fluency, Self-learning, App usage skills, Tool adaptation, Analytical thinking |
| | Leadership Commitment to Digital | Vision clarity, Long-term digital goals, Active sponsorship, Empowerment culture, Resource prioritization |
| | Organizational Learning Culture | Continuous training, Experimentation tolerance, Feedback mechanisms, Peer learning |
| | Employee Engagement in Transformation | Involvement in planning, Role clarity, Participation incentives, Open feedback |
| | Change Receptivity | Attitude toward innovation, Trust in management, Previous success stories |
| 3. Strategic Alignment and Governance | Digital Strategy Integration | Alignment with vision, Measurable goals, Roadmap articulation, Communication of strategy |
| | Performance Measurement and KPIs | Clear metrics, Real-time dashboards, Regular review meetings, Accountability systems |
| | Governance Structure for Digital Transformation | Defined roles, Steering committees, Decision rights, Risk governance |
| | Policy and Regulatory Readiness | Compliance with laws, Internal policy updates, Data privacy adherence |
| | Stakeholder Involvement in Planning | Cross-departmental collaboration, Customer input, Partner consultations, External benchmarking |

### Organizational Capability and Infrastructure

Participants emphasized the importance of *IT infrastructure preparedness* as a foundational metric of digital transformation readiness. Reliable internet access, scalable hardware systems, and integration across existing platforms were repeatedly cited as critical enablers. One digital strategy consultant stated, “Without stable and fast infrastructure, our efforts

in automation are like building on sand." Several interviewees also highlighted the adoption of cloud services as a signal of digital maturity.

Regarding *data management readiness*, participants noted that having centralized and secure data repositories, access to real-time information, and analytical tools were indicators of preparedness. One participant explained, "We are still storing our data in silos, and that prevents us from making quick, data-driven decisions." Data governance and the availability of advanced analytics were seen as essential building blocks of transformation.

The subcategory of *change management support* revealed the importance of well-planned transition mechanisms, change agents, and structured communication strategies. Many participants pointed to resistance from staff as a major challenge. A senior manager remarked, "People don't fear technology; they fear uncertainty. We needed someone to explain what the change meant for them." Successful change, according to the participants, involved dedicated communication channels and a clear adaptation timeline.

*Financial resource allocation* emerged as another significant subcategory, with participants highlighting the need for flexible budgeting, clear ROI expectations, and investment prioritization. One innovation officer stated, "You can't say you're ready for digital transformation if you're still asking for every tech expense to go through five approval layers." The availability of funds for new tools and training was frequently discussed as a practical indicator of readiness.

In terms of *process digitization*, participants pointed to the importance of automating workflows, implementing electronic documentation, and transitioning to paperless systems. An IT administrator described, "We reduced approval time by 60% after automating our internal requests through a simple workflow app." Performance tracking tools were also mentioned as part of digitization efforts.

The role of *vendor and technology partner support* was also highlighted. Participants described the value of external technical expertise, customizable platforms, and post-implementation support. One project lead said, "Our vendor didn't just sell us software—they trained our team, adapted the tools, and were on-call when things went wrong." Long-term support relationships were considered vital to sustaining digital capacity.

Lastly, *cybersecurity infrastructure* was consistently mentioned as a non-negotiable element. Many organizations had implemented encryption protocols, access controls, and incident response plans. A CIO noted, "Digital readiness doesn't mean much if your data isn't protected. Cybersecurity is the bedrock." Proactive threat detection systems were also emphasized.

**Human Capital and Culture**

The subcategory of *digital competency of employees* encompassed participants' views on the workforce's ability to adapt to new technologies. Participants referenced fluency with tools, self-directed learning, and basic analytical thinking as indicators of readiness. One HR director shared, "Technical skill gaps are easier to fix than motivation gaps. But you need both to move forward." The need for upskilling and comfort with digital platforms was a recurring theme.

*Leadership commitment to digital* was widely regarded as a catalyst for transformation. Participants noted that when leaders had a clear vision and actively sponsored digital initiatives, the rest of the organization followed. A technology manager reflected, "Our CEO put digital on the executive agenda—that's when things started moving." The leaders' ability to allocate resources and create a culture of empowerment was deemed essential.

An *organizational learning culture* also emerged as a core subcategory. Respondents described environments that encouraged ongoing training, peer learning, and tolerance for experimentation as better prepared for transformation. One participant said, “We hold weekly learning hours where teams share what they’ve tried, failed, or succeeded with. That keeps everyone engaged.” Feedback loops and knowledge sharing were emphasized.

*Employee engagement in transformation* was another critical component. Participants emphasized the importance of involving staff in planning and execution stages. When employees understood their role in the bigger picture and felt valued, adoption rates improved. One interviewee noted, “We gave people small digital projects they could own, and that sense of ownership made all the difference.” Incentives and transparency contributed to higher engagement.

In discussing *change receptivity*, participants reflected on attitudes toward innovation, historical exposure to change, and trust in leadership. A veteran employee mentioned, “People who’ve seen change succeed before are more likely to welcome it again. It’s about building trust, not just systems.” Positive past experiences and managerial transparency were key predictors of openness.

**Strategic Alignment and Governance**

Within the domain of *digital strategy integration*, participants identified the necessity for a coherent digital roadmap aligned with the organization’s long-term vision. Clear goals, frequent strategy communication, and internal alignment were seen as readiness indicators. A senior strategist stated, “We don’t just have a digital strategy—we make sure every team knows how they contribute to it.” Integration across departments ensured consistency.

The presence of *performance measurement and KPIs* was another key subcategory. Organizations that regularly tracked digital metrics, maintained real-time dashboards, and tied performance reviews to transformation goals were considered more advanced. One analytics lead mentioned, “Our dashboards tell us not just what’s been done but where we’re lagging behind in digital adoption.”

*Governance structure for digital transformation* was discussed in terms of clearly defined roles, digital steering committees, and structured decision-making. One participant explained, “We created a cross-functional digital council that meets monthly. It helps avoid confusion and silos.” Risk governance frameworks were also highlighted.

Participants also mentioned *policy and regulatory readiness* as a less visible but equally important element. Ensuring compliance with national data protection laws, updating internal policies, and aligning with global standards were emphasized. A legal advisor shared, “Our transformation stalled once because our data policy didn’t allow cross-border storage. You can’t ignore compliance.”

Finally, *stakeholder involvement in planning* emerged as a decisive factor. When organizations actively engaged customers, partners, and interdepartmental stakeholders in shaping digital priorities, outcomes improved. One participant remarked, “We invited clients into the early design phase of our portal. That feedback saved us from costly redesigns later.” Collaboration with both internal and external actors was seen as strategic.

## Discussion and Conclusion

The present study aimed to identify the key metrics of digital transformation readiness by conducting semi-structured interviews with 26 participants involved in digital initiatives in Tehran-based organizations. The thematic analysis yielded three major categories: *organizational capability and infrastructure*, *human capital and culture*, and *strategic alignment and*

*governance*. Each theme encompassed several subcategories that collectively offer a comprehensive understanding of what constitutes digital readiness from the perspective of practitioners.

One of the most salient findings concerns the critical role of organizational capability and infrastructure in laying the groundwork for transformation. Participants consistently emphasized the necessity of robust IT infrastructure, secure data management systems, and scalable technological frameworks. This result aligns with the argument made by Oh et al. (2022), who underscore the foundational importance of digital infrastructure as a prerequisite for transformation initiatives [3]. Similarly, Nasiri et al. (2022) assert that without adequate digital intensity—defined by the extent to which digital technologies are embedded in core operations—organizations lack the momentum to transition toward higher maturity [5]. Our findings further reinforce the insights of Babenkova (2022), who categorizes IT modernization and data integrity as "non-negotiable pillars" of digital readiness [18].

Moreover, the importance of cybersecurity preparedness as part of the infrastructure theme echoes the conclusions drawn by Shvechihin and Sheikina (2022), who identify the integration of safety protocols and cyber-resilience mechanisms as vital indicators of readiness in sectors with high operational risk [22]. In this study, participants referred to incident response planning and access control as standard components of their readiness assessments, aligning well with prior work that stresses the rising complexity of cyber-governance in digital ecosystems [21].

Another important dimension revealed through this research is the centrality of human capital and cultural readiness in determining the trajectory of transformation. Respondents noted that employee digital competency, engagement, and receptivity to change are as critical as technical systems. These insights align with the findings of Bahiroh and Imron (2024), who argue that human resource management strategies—including ongoing digital literacy training and employee participation in planning—are key predictors of transformation success [9]. Likewise, Triani et al. (2023) emphasize that organizational culture must support experimentation, learning, and psychological safety to foster digital innovation [10].

Leadership commitment to transformation emerged as a particularly strong theme, with participants describing the importance of vision clarity, empowerment practices, and resource prioritization. These results are supported by the work of Kelley (2023), who highlights that transformation efforts gain traction only when top-level executives serve as active champions and role models [6]. The findings also resonate with Schank (2023b), who notes that successful transformations begin with a leadership mindset that promotes digital alignment across all organizational levels [7].

Furthermore, the presence of a continuous learning culture within organizations was viewed as a reliable indicator of readiness. This finding complements the conceptual framework proposed by Maazmi et al. (2024), who identify organizational learning agility as a core enabler of successful digital transformation in government sectors [8]. Participants in our study specifically cited peer learning, informal knowledge exchange, and experimentation as tangible signs of readiness, reinforcing Schank's (2023a) proposition that "readiness is not a checklist, but a mindset" [17].

The third major theme—strategic alignment and governance—underscores the importance of a coherent digital strategy, defined roles, measurable KPIs, and regulatory compliance. These components confirm earlier research by Pfister and Lehmann (2023), who emphasize that alignment between digital vision and operational processes increases transformation effectiveness, particularly in SMEs [4]. Likewise, Petrović et al. (2022) highlight that without a well-defined digital governance structure, transformation efforts tend to be fragmented and short-lived [2]. In the present study, participants cited the

establishment of steering committees, regular dashboard reviews, and cross-departmental planning as practical manifestations of such alignment.

Additionally, the significance of policy and regulatory readiness—especially in public and semi-public institutions—reflects the findings of Ledovskoy (2023), who argues that national policy frameworks must evolve in tandem with digital initiatives to support organizational compliance and innovation [20]. Our respondents expressed concern over legal uncertainties, particularly around data privacy and cross-border data storage, which directly affected their ability to implement transformation agendas. These findings further align with the work of Zakharov et al. (2022), who found that regulatory adaptability is a critical but often overlooked dimension of readiness in transition economies [11].

Stakeholder involvement—including customers, partners, and regulators—was also considered an essential element of readiness. The participants emphasized the importance of co-designing digital products with end-users and consulting with external stakeholders during strategic planning phases. This participatory approach echoes the emphasis placed by Cai (2024) on the need for customer-centric and adaptive business models in digitally transforming firms [19]. Furthermore, Pacyna and Langford (2022) argue that performance metrics must extend beyond internal efficiency to include stakeholder responsiveness and adaptability, a notion affirmed by several participants who described success in terms of external alignment [16].

In sum, the findings of this study provide empirical support for the multidimensional nature of digital transformation readiness, affirming prior theoretical models while also offering novel, grounded insights. The results show that readiness encompasses not only technological and infrastructural factors but also leadership vision, organizational culture, strategic alignment, and external adaptability. These dimensions interact dynamically and cannot be assessed in isolation. The study thus contributes to the growing body of literature calling for integrated, context-sensitive frameworks to guide organizations through the digital transition [1, 12, 24].

While this study provides valuable insights, it is not without limitations. First, the sample was limited to 26 participants from organizations based in Tehran, which may restrict the generalizability of findings to other regions or cultural contexts. The participants were also selected through purposive sampling, meaning that their views, while expert, may not represent the broader organizational landscape. Furthermore, the study relied exclusively on self-reported data from semi-structured interviews, which may be influenced by personal biases or organizational politics. Finally, although theoretical saturation was achieved, the diversity of industries represented was not uniform, with a greater representation from service-based sectors than manufacturing or public administration.

Future research should aim to expand the scope of inquiry by including participants from a wider range of sectors and geographic locations to enhance the external validity of the findings. Comparative studies across countries or industries could reveal how contextual factors shape readiness metrics in different ways. Moreover, longitudinal designs could track how readiness metrics evolve over time, offering dynamic insights into how organizations move from readiness to actual transformation. Researchers may also consider integrating quantitative methods, such as surveys or digital maturity assessments, to complement qualitative findings and validate emerging frameworks. Finally, future studies could explore the perspectives of frontline employees, customers, and regulators to create a more holistic view of organizational readiness.

Organizations embarking on digital transformation should begin with a thorough readiness assessment that includes not only technical capabilities but also cultural, strategic, and governance factors. Leaders must communicate a clear digital vision

and actively involve employees and stakeholders in the transformation process. Investing in employee development, cultivating a learning culture, and institutionalizing governance mechanisms are crucial for ensuring sustainability. Moreover, organizations should treat readiness as an ongoing process rather than a one-time evaluation, adapting their metrics as technologies and environments evolve.

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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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