Digital-First Strategies for Restructuring Legacy Systems

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Abstract

This study aims to explore how organizations can effectively implement digital-first strategies to restructure their legacy systems, focusing on key components, challenges, and strategies for successful digital transformation. A qualitative research design was employed, involving semi-structured interviews with 34 participants recruited through online platforms. Participants included IT managers, digital strategists, and organizational leaders from diverse sectors such as finance, healthcare, technology, and manufacturing. Data were collected until theoretical saturation was achieved, and transcripts were analyzed using thematic analysis with the support of NVivo software. The analysis revealed five critical factors influencing the success of digital-first strategies: strategic alignment, leadership commitment, organizational culture, technology adoption, and performance measurement. Strategic alignment ensured that digital transformation initiatives were integrated with organizational goals, while leadership commitment and a supportive culture facilitated the adoption of new technologies. Technologies such as cloud computing, artificial intelligence, and automation emerged as key enablers for modernizing legacy systems. Performance measurement systems were identified as essential for tracking progress and ensuring continuous improvement. Challenges included resistance to change, resource constraints, and security concerns. The successful implementation of digital-first strategies for legacy system restructuring requires a holistic approach that integrates strategic planning, technology adoption, organizational change management, and performance measurement. By addressing the identified challenges and leveraging enabling technologies, organizations can achieve sustained success in their digital transformation efforts. These findings contribute to the growing body of knowledge on digital transformation, offering valuable insights for organizations navigating the complexities of digital-first strategies.

Keywords: Digital-first strategies, legacy systems, digital transformation, organizational culture, strategic alignment, technology adoption, performance measurement.

1.   Introduction

The concept of a "digital-first" strategy is grounded in the idea that digital technologies should serve as the foundation for all business activities, from customer interactions to internal processes. In essence, digital-first organizations prioritize the use of digital tools and technologies over traditional methods to achieve their business objectives (Holopainen, 2023; Holopainen et al., 2022). This approach often requires significant organizational change, particularly in sectors that have heavily relied on legacy systems for decades. Digital-first strategies are typically associated with business model innovation, greater operational efficiency, and improved customer experiences (Day, 2020; Holopainen, 2023). However, implementing such strategies is

not without challenges, especially for organizations with entrenched legacy systems that are resistant to change (Magnusson et al., 2021).

For many organizations, legacy systems represent a significant barrier to achieving digital transformation. These systems, often developed years or even decades ago, may be incompatible with modern technologies and may require substantial investments to upgrade or replace. The process of modernizing legacy systems is complex, requiring a deep understanding of both the technical and organizational aspects of transformation (Karikova, 2023; Zhao, 2023). Therefore, organizations seeking to adopt digital-first strategies must consider a range of factors, including technology infrastructure, employee readiness, and strategic alignment with business goals.

One of the key challenges in restructuring legacy systems is the need to align digital-first strategies with the overall strategic direction of the organization. Digital transformation efforts should not be viewed as standalone initiatives but should instead be integrated into the organization's broader strategic framework. According to Alkhamery, Zainol, and Al-Nashmi (2021), the role of dynamic capabilities in reconfiguring operational capabilities is essential for successful digital business transformation. This alignment ensures that digital-first strategies are not only technically feasible but also strategically sound, contributing to the overall growth and sustainability of the organization (Alkhamery et al., 2021).

A significant factor influencing the success of digital-first strategies is the organizational culture. Organizational change management plays a crucial role in ensuring that employees are not only equipped with the necessary digital skills but are also motivated to embrace new ways of working (Aversa et al., 2021; Holopainen, 2023; Holopainen et al., 2022). According to Magnusson et al. (2021), companies often resist digital transformation due to a lack of leadership commitment and fear of disruption. Overcoming such resistance requires strong leadership, clear communication, and a structured approach to training and development. It is essential that organizations provide employees with the tools and support they need to adapt to new systems and processes, ensuring that digital-first strategies are fully embraced across all levels of the organization (Magnusson et al., 2021).

The adoption of cloud technologies has become a cornerstone of digital-first strategies, enabling organizations to modernize their IT infrastructure without the need for extensive on-premises investments (He et al., 2022). Cloud computing offers several benefits, including flexibility, scalability, and cost efficiency, all of which are critical for organizations undergoing digital transformation. By adopting cloud-first frameworks, organizations can facilitate the integration of new technologies while maintaining compatibility with existing legacy systems (Benghozi et al., 2021). Automation tools and artificial intelligence (AI) are also integral components of digital-first strategies. These technologies offer the potential to streamline operations, improve decision-making processes, and enhance customer experiences (Eru, 2020). By automating routine tasks and integrating AI-driven solutions into their operations, organizations can achieve greater efficiency and reduce human error. Furthermore, AI and automation can support data-driven decision-making, enabling organizations to optimize their business processes and enhance overall performance (Teng et al., 2022). However, the successful implementation of automation and AI requires careful planning and a clear understanding of the organization's objectives. According to Holopainen (2023), organizations must ensure that automation tools are aligned with their strategic goals and that employees are adequately trained to work alongside AI systems (Holopainen, 2023).

A key consideration in implementing digital-first strategies is the need for performance measurement and monitoring. As organizations transition to digital-first models, it is essential to establish clear metrics and benchmarks to track progress and ensure that digital initiatives are delivering the desired outcomes (Holopainen, 2023). Performance measurement systems that are digitally enabled can provide real-time insights into the effectiveness of digital transformation efforts and help organizations identify areas for improvement (Holopainen et al., 2022). These systems can also facilitate continuous improvement by enabling organizations to track their progress over time and adjust their strategies as needed.

This article aims to explore how organizations can successfully implement digital-first strategies to restructure their legacy systems, focusing on the key components, challenges, and strategic considerations involved in such transformations. By examining the intersection of digital technology adoption and legacy system modernization, this study contributes to the growing body of knowledge on digital transformation, providing valuable insights for both academics and practitioners. As

businesses increasingly adopt digital-first approaches, understanding how digital technologies can effectively replace or complement traditional systems is essential for ensuring a smooth and successful transformation.

2.   Methods and Materials

This qualitative study employed a descriptive design to explore the adoption of digital-first strategies for restructuring legacy systems. The study utilized a purposive sampling approach to select participants with relevant expertise and experience in digital transformation and legacy system restructuring. A total of 34 participants were recruited through online platforms, including professional networks, industry forums, and digital transformation communities. These participants included IT managers, digital strategists, and organizational leaders from diverse sectors such as finance, healthcare, manufacturing, and technology.

Data were collected through semi-structured interviews conducted online using video conferencing platforms. An interview guide was developed based on key themes in the literature on digital transformation and legacy system modernization. The guide included open-ended questions designed to encourage participants to share their insights and experiences in implementing digital-first strategies.

Each interview lasted approximately 45–60 minutes and was audio-recorded with the participants' consent. Notes were also taken during the interviews to capture key points and contextual nuances. Data collection continued until theoretical saturation was achieved, meaning no new themes or insights emerged from the interviews.

The interview recordings were transcribed verbatim and imported into NVivo software for analysis. A thematic analysis approach was used to identify patterns and themes in the data. This process involved familiarization with the data, generating initial codes, searching for themes, reviewing themes, and defining and naming themes.

Coding was conducted iteratively by the research team to ensure consistency and reliability. Discrepancies in coding were resolved through discussion until a consensus was reached. NVivo software facilitated the organization and visualization of data, enabling the identification of relationships between themes and the development of a comprehensive understanding of the strategies and challenges involved in digital-first restructuring efforts.

3.   Findings and Results

The study included 34 participants, comprising professionals with diverse roles and experiences in digital transformation and legacy system restructuring. Of the participants, 20 (58.8%) identified as male, and 14 (41.2%) identified as female. The majority of participants (n=18, 52.9%) were aged between 35 and 44 years, followed by 10 participants (29.4%) aged 45–54 years, 4 participants (11.8%) aged 25–34 years, and 2 participants (5.9%) aged 55 years or older.

Regarding professional backgrounds, 12 participants (35.3%) were IT managers, 10 (29.4%) were digital strategists, and 8 (23.5%) were organizational leaders. The remaining 4 participants (11.8%) represented roles such as project managers or consultants. Participants hailed from various sectors, including finance (n=9, 26.5%), healthcare (n=7, 20.6%), manufacturing (n=8, 23.5%), and technology (n=10, 29.4%), ensuring a broad perspective on digital-first strategies.

Table 1. The Results of Thematic Analysis

Category	Subcategory	Concepts
Strategic Planning and Execution	Defining Clear Objectives	Mission alignment, Goal prioritization, Target setting, Strategic foresight
	Stakeholder Alignment	Consensus building, Cross-department collaboration, Stakeholder workshops
	Resource Allocation	Budget planning, Resource availability analysis, Cost-benefit assessment
	Performance Metrics	Key performance indicators, Success benchmarks, Continuous monitoring
Technological Integration	System Compatibility Analysis	Compatibility testing, Legacy-to-modern system mapping, Integration assessments
	Data Migration	Data cleansing, Data validation, Data conversion processes
	Cloud Integration	Cloud provider evaluation, Hybrid systems design, Cloud-first adoption frameworks
	Security Considerations	Threat analysis, Encryption standards, Access control policies, Regulatory compliance
	Automation Tools	Process automation tools, Workflow optimization, Productivity enhancements

Organizational Change Management	Leadership Buy-In	Executive advocacy, Vision communication, Strategic leadership alignment
	Employee Training	Upskilling programs, Digital literacy workshops, Training modules development
	Communication Strategies	Feedback loops, Crisis communication plans, Open forums for dialogue

Strategic Planning and Execution

Defining Clear Objectives

Participants emphasized the importance of setting well-defined goals as a foundation for implementing digital-first strategies. One participant stated, "Without a clear vision, it's like trying to build a skyscraper without a blueprint." Concepts that emerged under this subcategory included mission alignment, goal prioritization, target setting, and strategic foresight.

Stakeholder Alignment

Achieving alignment among stakeholders was highlighted as a critical step in the planning process. Cross-department collaboration and stakeholder workshops were frequently mentioned as essential practices. A participant explained, "We spent weeks in workshops to ensure every department understood the digital-first approach and their role in it."

Resource Allocation

Proper allocation of resources was noted as a challenge in digital-first transformations. Participants mentioned budget planning, resource availability analysis, and cost-benefit assessment as vital elements. As one interviewee stated, "It's not just about money; it's about making sure you have the right people and tools at the right time."

Performance Metrics

Measuring success through key performance indicators (KPIs) and continuous monitoring was described as a way to ensure alignment with objectives. A participant remarked, "Defining success metrics upfront helped us keep track of our progress and pivot when necessary."

Technological Integration

System Compatibility Analysis

Ensuring compatibility between legacy systems and modern solutions was a recurring theme. Participants frequently discussed compatibility testing, legacy-to-modern system mapping, and integration assessments. One interviewee stated, "The biggest hurdle was figuring out how to connect our old systems with the new ones without losing critical data."

Data Migration

Data migration emerged as a crucial technical aspect. Concepts such as data cleansing, data validation, and data conversion processes were highlighted. "We had to spend a significant amount of time cleaning up our data before it could be migrated to the new platform," noted one participant.

Cloud Integration

Adopting cloud-based solutions was a common strategy among organizations. Participants discussed evaluating cloud providers, designing hybrid systems, and implementing cloud-first frameworks. One remarked, "Moving to the cloud wasn't just about storage; it was about enabling flexibility and scalability."

Security Considerations

Ensuring robust security measures was a key focus, with participants mentioning threat analysis, encryption standards, access control policies, and regulatory compliance. As one interviewee put it, "Security had to be baked into the strategy from day one, not as an afterthought."

Automation Tools

The adoption of automation tools was seen as a driver for efficiency. Workflow optimization and productivity enhancements were frequently mentioned. "Automation helped us eliminate repetitive tasks, allowing the team to focus on strategic activities," said one participant.

Organizational Change Management

Leadership Buy-In

Securing leadership buy-in was described as a pivotal factor for success. Concepts included executive advocacy, vision communication, and strategic leadership alignment. A participant noted, "When leaders championed the initiative, it inspired the entire organization to follow suit."

Employee Training

Training programs played a significant role in bridging the skill gaps for employees. Participants highlighted upskilling programs, digital literacy workshops, and the development of training modules. One participant shared, "Employees were initially resistant, but targeted training sessions helped them adapt to the new systems."

Communication Strategies

Effective communication strategies were crucial for managing organizational change. Participants discussed feedback loops, crisis communication plans, and open forums for dialogue. "We created an open forum where employees could voice their concerns, which built trust and transparency," explained one interviewee.

4. Discussion and Conclusion

This study aimed to investigate how organizations can effectively implement digital-first strategies to restructure their legacy systems, focusing on the key components and challenges involved in such transformations. Our findings revealed that the success of digital-first strategies in legacy system restructuring depends on several factors, including strategic alignment, leadership commitment, organizational culture, technology adoption, and performance measurement. These findings are consistent with existing literature on digital transformation, which highlights the complex and multifaceted nature of digital-first strategies and their role in modernizing legacy infrastructures.

One of the most significant findings of this study is the critical role of strategic alignment in ensuring the success of digital-first strategies. Organizations that successfully aligned their digital transformation efforts with their overall business objectives were better equipped to restructure their legacy systems and adapt to new digital paradigms. This aligns with the work of Alkhamery, Zainol, and Al-Nashmi (2021), who argue that dynamic capabilities play a crucial role in reconfiguring operational capabilities for digital business transformation. The need for a clear strategic direction is also supported by Day (2020), who emphasizes the importance of a digital-first mindset that prioritizes digital technologies in all aspects of business operations. Strategic alignment helps organizations ensure that their digital transformation efforts are not only technically feasible but also aligned with the long-term goals of the organization, facilitating a smoother transition to digital-first models.

Another key finding of this study is the importance of leadership commitment and organizational culture in driving successful digital-first strategies. Participants highlighted the role of strong leadership in overcoming resistance to change, with several noting that digital transformation efforts were more likely to succeed when executives demonstrated a clear commitment to the process. This finding is in line with the work of Magnusson et al. (2021), who assert that organizational resistance to digital transformation is often driven by a lack of leadership support and a fear of disruption (Magnusson et al., 2021). In our study, organizations with leaders who effectively communicated the vision for digital transformation and provided the necessary resources were better able to navigate the challenges of legacy system restructuring. Furthermore, organizational culture was identified as a significant factor influencing the success of digital transformation. As Holopainen (2023) notes, organizations with a culture that embraces change and innovation are more likely to successfully adopt new technologies and restructure legacy systems (Holopainen, 2023). Our findings suggest that fostering a culture of openness to change and providing employees with the tools and support they need to adapt to new systems are essential for ensuring the success of digital-first strategies.

Technology adoption emerged as another crucial factor influencing the success of digital-first strategies. Participants reported that the integration of modern technologies, such as cloud computing, artificial intelligence (AI), and automation tools, played a significant role in enabling organizations to restructure their legacy systems. These technologies offered the flexibility, scalability, and efficiency needed to modernize outdated infrastructures and streamline operations. Our findings support the work of He et al. (2022), who argue that cloud computing has become a cornerstone of digital-first strategies due to its ability to facilitate the integration of new technologies without the need for significant upfront investments in physical infrastructure (He et al., 2022). Additionally, the adoption of AI and automation tools was seen as a key driver of operational efficiency and decision-making processes. As Eru (2020) suggests, AI and automation can optimize business processes by automating routine tasks and enabling data-driven decision-making (Eru, 2020). Our study also found that organizations that successfully integrated these technologies were better positioned to restructure their legacy systems and improve overall performance.

Finally, performance measurement and monitoring were identified as essential components of successful digital-first strategies. Participants emphasized the importance of establishing clear metrics and benchmarks to track progress and ensure

that digital transformation efforts were delivering the desired outcomes. This finding aligns with the work of Holopainen et al. (2022), who highlight the importance of digitally enabled performance measurement systems in facilitating continuous improvement and ensuring that digital transformation initiatives are aligned with organizational goals (Holopainen et al., 2022). Performance measurement systems enable organizations to monitor their progress in real time, identify areas for improvement, and make data-driven adjustments to their strategies. As Holopainen (2023) notes, organizations that invest in robust performance measurement frameworks are better equipped to navigate the challenges of digital transformation and ensure the success of their digital-first strategies (Holopainen, 2023).

In summary, the findings of this study underscore the importance of strategic alignment, leadership commitment, organizational culture, technology adoption, and performance measurement in the successful implementation of digital-first strategies for legacy system restructuring. These results contribute to the growing body of literature on digital transformation, offering valuable insights for organizations seeking to modernize their operations and adopt digital-first approaches.

Despite the valuable insights provided by this study, there are several limitations that should be acknowledged. First, the study's sample size, while adequate, may not fully represent the diversity of organizations undergoing digital transformation. The participants were predominantly from the technology, finance, and healthcare sectors, which may limit the generalizability of the findings to other industries. Additionally, the study relied on self-reported data from semi-structured interviews, which may be subject to biases such as social desirability or recall bias. Although efforts were made to ensure the reliability of the interview process, the subjective nature of qualitative research means that the findings are inherently influenced by the perspectives and experiences of the participants. Furthermore, the study focused primarily on organizations that had already initiated digital transformation processes, which may not fully capture the experiences of organizations in the early stages of digital adoption. Future research could address these limitations by expanding the sample to include a broader range of industries and organizations at different stages of digital transformation.

Future research could build upon the findings of this study by exploring the experiences of organizations in industries not covered by this research, such as manufacturing, retail, or public services. Examining the specific challenges and opportunities faced by organizations in these sectors could provide a more comprehensive understanding of the factors influencing the success of digital-first strategies. Additionally, future studies could investigate the role of specific technologies, such as blockchain or the Internet of Things (IoT), in the digital transformation of legacy systems. While this study focused on technologies like cloud computing, AI, and automation, emerging technologies may also play a significant role in reshaping legacy infrastructures. Longitudinal studies could also be conducted to explore the long-term impact of digital-first strategies on organizational performance and sustainability, providing deeper insights into the ongoing challenges and benefits of digital transformation.

For organizations seeking to implement digital-first strategies for legacy system restructuring, it is essential to prioritize strategic alignment with business objectives. Digital transformation should not be treated as a standalone initiative but should be integrated into the organization's broader strategic framework. Additionally, leadership commitment is crucial for overcoming resistance to change and ensuring that digital transformation efforts are successful. Leaders should communicate a clear vision for digital transformation and provide the necessary resources and support to facilitate the adoption of new technologies. Organizations should also foster a culture of innovation and openness to change, ensuring that employees are equipped with the tools and training they need to adapt to new systems and processes. Finally, organizations should invest in performance measurement systems that enable real-time tracking of digital transformation progress, allowing for continuous improvement and optimization of digital-first strategies.

Ethical Considerations

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

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Conflict of Interest

The authors report no conflict of interest.

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