
THE IMPACT OF DIGITAL TRANSFORMATION ON ORGANIZATIONAL PERFORMANCE: AN ANALYTICAL STUDY IN SEVERAL PUBLIC AND PRIVATE HOSPITALS IN HILLA CITY, THE CAPITAL OF BABYLON GOVERNORATE

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ABSTRACT

The research problem lies in exploring the nature of the relationship between digital transformation and organizational performance, and how organizations can maximize their digital investments to achieve outstanding performance. The research aims to study the impact of digital transformation on organizational performance, analyze the relationship between the adoption of digital technologies and organizations' ability to achieve efficiency and effectiveness, and identify the associated challenges.

The research adopted a mixed methodology (quantitative and qualitative), where data was collected through a questionnaire distributed to a sample of organizations in the health and service sectors, with 100 participants from various administrative and executive levels.

The results showed a strong significant impact of digital transformation on improving operational efficiency (correlation coefficient of 0.72), and a strong relationship between digital strategy and service quality (0.68). They also revealed a moderate positive relationship between digital transformation and employee satisfaction (0.55). The most prominent challenges facing the implementation of digital transformation were resistance to change (45%) and lack of digital skills (40%).

The research recommended investing in digital training to develop employees' skills, strengthening digital leadership, developing technological infrastructure, adopting a culture of innovation, and restructuring organizational processes in line with digital transformation requirements.

The research concludes that the success of digital transformation is not limited to investing in technology alone, but requires an integrated interaction between digital tools, organizational capabilities, and effective leadership to achieve sustainable organizational performance.

Keywords: Digital Transformation, Organizational Performance.

1. INTRODUCTION

The contemporary world is witnessing rapid transformations in the field of information and communication technology, which have given rise to a new reality that compels institutions of all types to reconsider their strategies and organizational structures. The concept of digital transformation lies at the forefront of these shifts, representing far more than mere technological upgrading; it has become an inevitable strategic necessity for organizations seeking to enhance their competitiveness and achieve sustainability in a changing business environment. In an era

marked by accelerating technological innovation and rising customer expectations, digital transformation is no longer a luxury but an existential requirement for organizations aspiring to survive and thrive.

Attention today is directed toward the essential relationship between digital transformation and organizational performance. Technology alone does not create excellence; rather, its interaction with human elements, organizational culture, and enlightened leadership determines the success of such transformative initiatives. This may explain the apparent contradiction between organizations that have successfully leveraged modern technologies to achieve qualitative leaps in their performance and those that, despite substantial technological investments, have failed to overcome implementation obstacles. What is the secret then? What factors determine the success or failure of digital transformation in enhancing organizational performance?

This research seeks to shed light on this contemporary issue, attempting to explore the nature of the relationship between digital transformation and organizational performance in the context of Arab organizations facing unique challenges in implementing modern technology. The research adopts a critical realism philosophy that combines objectivity in measuring the impact of digital transformation with a deep understanding of the organizational and human contexts governing this impact. Through this integrated approach, the research aims to provide answers to pivotal questions: Does digital transformation truly lead to improved organizational performance? How does this occur in different organizational contexts? What challenges hinder this path?

Given the importance and vitality of this topic, this research attempts to present a comprehensive scientific framework that contributes to bridging the existing knowledge gap and offers practical insights that senior management can utilize in formulating digital transformation strategies to enhance efficiency, effectiveness, and innovation in their organizations.

First Section: Research Methodology and Previous Studies

First: Research Methodology

1. Research Philosophy

The integrated research philosophy of this topic is grounded in critical realism, which acknowledges the existence of an objective reality (digital transformation has an actual impact) but emphasizes that understanding this reality can only be achieved through individuals' perceptions of it. This necessitates collecting quantitative data to measure "what happened" and qualitative data to understand "how and why it happened."

In brief, the research philosophy regarding "the impact of digital transformation on organizational performance" is an attempt to answer two questions together:

- a) Does digital transformation lead to improved performance? (This requires objectivity and measurement)
- b) How and why does digital transformation affect (or fail to affect) performance in different organizational contexts? (This requires understanding human and cultural processes).

2. Importance of the Research

- This research derives its importance from addressing a contemporary and vital issue in the modern business environment—digital transformation—which has become a strategic necessity for organizations seeking to enhance their competitiveness.
- The research contributes to bridging a knowledge gap concerning how digital transformation reflects on organizational performance, especially in Arab organizations facing challenges in implementing modern technology.

- The research provides a scientific framework that senior management can benefit from in formulating digital transformation strategies to enhance efficiency, effectiveness, and innovation.

3. Research Questions

The research questions can be formulated as follows:

1. What is the impact of digital transformation on organizational performance in organizations?
2. How does digital transformation contribute to improving operational efficiency and strategic effectiveness?
3. What is the relationship between the level of adoption of digital technologies and employee and customer satisfaction?
4. What are the most prominent challenges facing organizations in implementing digital transformation?
5. Does the impact of digital transformation on organizational performance differ according to the nature of the sector (service/production)?

4. Research Hypotheses

Based on the theoretical framework and previous studies, the following hypotheses can be formulated:

- First Hypothesis (H1): There is a significant impact of digital transformation on improving the operational efficiency of institutions.
- Second Hypothesis (H2): Digital transformation contributes to enhancing strategic effectiveness and achieving organizational goals.
- Third Hypothesis (H3): There is a positive relationship between the level of adoption of digital technologies and higher employee and customer satisfaction.
- Fourth Hypothesis (H4): Organizations face organizational and human challenges that limit the effectiveness of digital transformation.

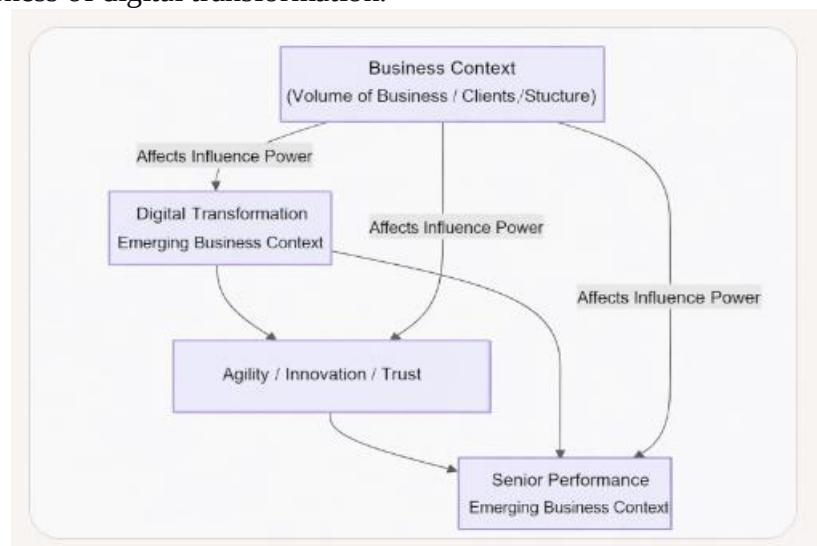


Figure (1): Hypothetical Diagram of the Study

5. Research Objectives

This research aims to:

1. Study the impact of digital transformation on organizational performance and analyze the relationship between organizations' adoption of digital technologies and their ability to achieve higher levels of efficiency, effectiveness, and innovation.
2. Define the concept of digital transformation and its dimensions in modern organizations and demonstrate its importance as a strategic option.
3. Analyze the concept of organizational performance and its core dimensions (efficiency, effectiveness, innovation, employee and customer satisfaction).
4. Identify the most prominent challenges and obstacles facing organizations in implementing digital transformation.
5. Provide practical recommendations to help organizations enhance their organizational performance through effective digital transformation strategies.

Second: Previous Studies in the Literature on Digital Transformation

When exploring the literature on digital transformation and its impact on organizational performance, researchers encounter numerous studies that have investigated important aspects of this complex relationship, varying between those examining direct mechanisms of impact, those exploring mediating factors, and those focusing on the pivotal role of leadership in the success of this transformation.

In the context of seeking a deeper understanding of digitization, we find a study by Moussaoui et al. (2025) titled "Digitization and Organizational Performance: A New Model for Business Success," which attempted to move beyond theoretical propositions to provide a practical framework. Its results highlighted four main dimensions through which digitization positively affects performance: accelerating decision-making processes through real-time data analysis, improving productivity through automation, significantly enhancing customer experience through increased personalization, and markedly reducing operational costs. Thus, the study provided an explanatory model linking digital tools to tangible performance outcomes.

Meanwhile, a study by Candraningrat et al. (2025), "The Strategic Role of Digital Capabilities in Organizational Performance: A Systematic Literature Review," pointed to a complementary direction, showing that although digital capabilities contribute to organizational performance, other factors often influence this effect, meaning that possessing technology alone is insufficient. The practical insights derived from this review emphasize that organizations can enhance their resilience and competitive advantage by strategically developing digital capabilities, making them not merely operational tools but part of the competitive advantage infrastructure.

The literature did not stop at capabilities and technologies but moved to explore the human leadership element as a primary driver. In this context, studies identified how leadership behaviors affect organizational performance in the context of digital transformation, linking these behaviors to four performance dimensions: effective leadership, digital acceptance, digital competence, and digital innovation. These findings suggest that the success of digital transformation depends not only on the quality of technology used but also on leaders' ability to foster a digital culture within the organization and drive teams toward adopting new tools and acquiring the necessary skills.

Extending this logic, the results of Nasrun et al. (2025) indicated that digital leadership represents an essential element in guiding organizations toward adopting disruptive technologies, introducing green innovations, and designing flexible business models. The study concluded that, in light of accelerating transformations, organizations must develop a leadership style characterized by adaptability, innovation, and technology reliance to maintain their competitiveness and

sustainability in the digital age. Here, digital leadership transcends its traditional role in management to become a driver of sustainability and green innovation, reflecting a transformation in the very concept of leadership.

These studies complement each other to present a more comprehensive picture of digital transformation. While the first focused on the direct impact mechanisms of digitization on performance, the second added a strategic dimension related to how to develop digital capabilities, whereas other leadership studies moved to explore the pivotal human role. Collectively, they affirm that successful digital transformation is not merely an investment in technology but a complex interaction among digital tools, organizational capabilities, and leadership patterns capable of guiding this transformation toward achieving sustainable performance.

Summary of the Literature Review

- Most studies confirm a direct positive impact of digital transformation on organizational performance (efficiency, effectiveness, innovation, customer satisfaction).
- There is an indirect impact in enhancing flexible organizational culture and the ability to adapt to changes.
- Challenges identified by studies: resistance to change, lack of digital skills, and investment costs

Second Section: Theoretical Framework

First: Digital Transformation

The modern era has witnessed rapid development in information and communication technology, leading to the emergence of the concept of digital transformation as one of the most influential trends across various sectors, where it has become an inevitable necessity for achieving efficiency, innovation, and keeping pace with global changes (Al-Banna, 2024: 24).

1. Concept of Digital Transformation

Digital transformation is defined as the application of digital technologies to improve processes, products, and enhance value (Rifai, 2020: 14). It is also defined as the process of integrating digital technology into all areas of work, resulting in a radical change in how value is delivered to customers (Westerman et al., 2014: 5). It also refers to converting information into a digital form that can be processed by computers, while bringing about comprehensive change in the organizational culture of institutions (Vial, 2019: 121).

2. Importance of Digital Transformation

The importance of digital transformation lies in improving operational efficiency and reducing costs, in addition to accelerating task completion and improving service quality (Al-Faqih, 2019: 7). It also contributes to enhancing innovation and increasing the competitiveness of institutions in global markets (Bharadwaj et al., 2013: 472). Recent studies have indicated that digital transformation represents a key factor in achieving sustainable economic growth (Al-Hadi, 2018: 15).

3. Objectives of Digital Transformation

Digital transformation seeks to achieve a set of objectives, most notably developing institutional performance, improving service quality, increasing productivity, supporting data-driven decision-making, and achieving competitiveness (Rifai, 2020: 160). These objectives are directly linked to the use of modern technologies such as big data and artificial intelligence (Vial, 2019: 125).

4. Fields of Digital Transformation

The reality of digital transformation in 2026 indicates that it is no longer merely a strategic option

but an inevitable necessity driven by clear technological engines. Artificial intelligence leads this wave with a market value of \$560 billion, while cloud computing holds the largest share (62.65%) of the total market, which reached \$2.54 trillion. However, organizations face fundamental challenges, most notably technical debt consuming 80% of IT budgets, and the acute skills gap from which 90% of organizations suffer. Therefore, success today lies in overcoming the barrier of system integration (a challenge for 95% of leaders) and investing in human resource development to achieve a compound growth rate exceeding 21% until 2031 (Mirzaye & Mohiuddin, 2025: 421).

Digital transformation encompasses many fields, such as education (e-learning), health (digital medical records), business (e-commerce), and government (digital government services). Studies have confirmed that these fields represent the practical application of digital transformation in modern societies (Al-Banna, 2024: 26).

5. Requirements for Digital Transformation

The success of digital transformation depends on the interaction between technology and the human element (Westerman et al., 2014: 9). It requires the availability of a set of essential components, including a strong technical infrastructure, qualified human resources, administrative and strategic support, in addition to an organizational culture supportive of change.

6. Outcomes of Digital Transformation

Digital transformation represents a fundamental shift in how institutions operate and interact with their environment, and its effects are not limited to the technical side but extend to all aspects of organizational and strategic performance (Westerman et al., 2014: 121). The positive outcomes of digital transformation begin at the operational depth (Bharadwaj et al., 2013: 475), where process automation and system integration lead to a notable increase in efficiency and productivity. Instead of draining time and effort on routine and manual tasks, human resources are redirected toward creative and strategic work, while reducing the margin of human error to its lowest levels, which directly reflects on accelerating task completion and improving the use of available resources (McKinsey & Company, 2022: 47). It also contributes to reshaping business models and creating added value for institutions (Al-Faqih, 2019: 10).

It is evident that digital transformation represents a fundamental pillar in achieving development in the modern era, as it is no longer an option but a strategic necessity. Its success requires the integration of technology with human resources and effective management (Rifai, 2020: 180).

7. Challenges of Digital Transformation

Despite the many positive outcomes achieved by digital transformation, its journey is fraught with significant challenges that may hinder its success or limit the realization of its full benefits. The challenges facing digital transformation are multidimensional, involving technical, cultural, financial, human, and legal aspects. At the level of organizational and cultural challenges, cultural resistance is one of the most prominent obstacles facing digital transformation. Many employees and managers hesitate to abandon the traditional methods they are accustomed to, fearing loss of control or difficulty adapting to new systems (Westerman et al., 2014: 87). Moreover, organizations often face difficulty in retraining existing employees to meet new requirements, which may lead to some personnel withdrawing or their performance declining (Nedic, 2019: 433). The absence of unified legal frameworks for dealing with cross-border data adds an additional layer of complexity for organizations operating internationally (Parker et al., 2016: 278). Furthermore, the lack of clear performance indicators to measure progress and transformation

outcomes makes it difficult to evaluate success or correct course in a timely manner (Brynjolfsson & McAfee, 2014: 195). Resistance to change is among the most significant obstacles that may hinder the success of digital transformation within organizations (Al-Hadi, 2018: 20; Vial, 2019: 130).

8. Dimensions of Digital Transformation: Key Academic Models

Many researchers, such as Hajishirzi et al. (2022), Wenzel (2022), and Shivakumar (2024), have presented numerous dimensions of digital transformation. However, the seven dimensions proposed by Shivakumar (2024) represent the most consensual among the presented models and will be adopted in this study, as they provide a comprehensive view of the dimensions of digital transformation.

The Seven-Dimensions Model (Shivakumar, 2024)

Shivakumar (2024), in his book *Elements of Digital Transformation*, presents a comprehensive view of the dimensions of digital transformation. He identifies seven main dimensions that form the pillars of transformation:

- Vision & Strategy: The dimension concerned with setting long-term goals for digital transformation and how they support the organization's overall strategy.
- Process and Governance Changes: Related to restructuring internal processes and establishing governance mechanisms that ensure the transformation proceeds in an orderly and effective manner.
- Customer Experience: The core dimension focused on redesigning the customer journey using digital tools to deliver a distinctive and personalized experience.
- Disruptive Technologies: Includes adopting and employing modern technologies such as cloud computing, the Internet of Things, artificial intelligence, and big data analytics.
- Value Chain Impact: Concerns how digital transformation brings changes to all links of the value chain, from suppliers to the end consumer.
- People and Culture: A critical dimension focused on developing employee skills and building an organizational culture that supports innovation, experimentation, and adaptation to change.
- Technologies and Capabilities: The dimension concerning the technological infrastructure and digital capabilities that the organization needs to build.

Second: Organizational Performance

This section aims to provide an integrated framework for understanding how digital transformation affects the effectiveness of institutions, focusing on the organizational and cultural challenges that determine the success or failure of digital transformation initiatives. The results indicate that digital transformation alone does not necessarily lead to improved organizational performance; rather, its success depends on the extent to which organizations can align their organizational strategies with their digital initiatives.

1. Concept of Organizational Performance

In the context of digital transformation, organizational performance is one of the pivotal concepts in studying the impact of digital transformation on various types of organizations. Organizational performance can be defined as “the measurable outputs of an organization in light of its strategic objectives, reflecting the efficiency and effectiveness of using available resources to achieve those objectives” (Al-Shibili et al., 2025: 4). With digital transformation entering as a key variable, it has become necessary to reconsider performance measurement indicators to include new digital dimensions.

Organizational performance is the organization's ability to achieve its goals efficiently and effectively, measured through productivity, quality, customer satisfaction, and employee satisfaction.

In this context, Zain Abd Al-Hadi (2007: 38) points out that “the digital information industry imposes new performance standards that go beyond traditional measures of productive efficiency to include measures related to response speed, data quality, and the organization's ability to innovate and adapt.”

Organizational performance represents a multidimensional concept that goes beyond traditional financial measures to include operational efficiency, service quality, organizational flexibility, and the ability to innovate. In the context of digital transformation, organizational performance is seen as the product of a complex interaction among technical investments, organizational capabilities, and human resources.

Westerman et al. (2014: 5-12) indicate that organizations that possess “digital mastery” combine two key capabilities: the ability to invest in digital capabilities and the ability to effectively lead organizational transformation.

2. Challenges of Organizational Performance in Light of Digital Transformation

Organizational and Cultural Resistance

The cultural and organizational aspect represents one of the greatest challenges facing organizations in their digital transformation journey. Monod & Jiang (2023: 15) point out that most management consulting trends adopt a technology-focused approach, assuming that artificial intelligence, the Internet of Things, data analytics, and robotics will automatically lead to improved organizational performance. However, reality shows that organizational factors are often neglected, including hidden costs and invisible work, in addition to unintended consequences such as resistance to change.

Skills and Competence Gap

Brynjolfsson & McAfee (2014: 39-57) address the profound impacts of digital technology on the workforce and organizational performance. The authors introduce the concepts of “bounty” and “spread” to describe the growing divide between classes of society and workers in the age of smart machines. They indicate that rapid technological progress, accelerating according to Moore's Law, leads to a fundamental shift in the nature of work and required skills, posing a significant challenge for organizations in maintaining distinguished organizational performance.

Platform Structure Challenges and New Business Models

Parker et al. (2016: 31) provide an in-depth analysis of how platform-based markets are transforming the traditional economy. The authors indicate that transitioning from traditional linear business models to network platform models requires a fundamental change in organizational structure and governance mechanisms. They emphasize that the success of platforms depends on their ability to effectively manage “network effects,” which represents a significant organizational challenge for traditional institutions attempting digital transformation.

3. Strategies for Enhancing Organizational Performance through Digital Transformation

a. Strategic Alignment between Technology and Organization

The results of Duan et al. (2024: 8-9) indicate that successful organizations in digital transformation are those that adopt integrated strategies combining investment in digital technologies with restructuring organizational processes. The study provides practical recommendations for organizations, most notably the need to develop digital leadership

capabilities, foster a culture of innovation, and build flexible governance systems that keep pace with the requirements of the changing digital environment.

b. Developing Leadership and Technical Capabilities

Westerman et al. (2014: 133-173) devote a large part of their book to clarifying how to build the leadership and technical capabilities necessary for successful digital transformation. They propose a practical framework comprising four main stages: formulating the digital vision, engaging the organization broadly, governing the transformation, and building technical and leadership capabilities. They indicate that organizations following this systematic framework achieve tangible results in their organizational performance within a period of 3–5 years.

c. Change Management and Focus on the Human Element

Monod & Jiang (2023: 45-67) emphasize the importance of adopting a process- and human-focused approach rather than a technology-only approach. They review a set of methodologies that have proven effective in managing organizational transformation, including Business Process Management (BPM) and socio-economic approaches to management (SEAM). They indicate that these methodologies help reduce the risks of failure associated with digital transformation by focusing on the integration between technology, business goals, and employees.

4. Main Dimensions of Organizational Performance

Organizational performance is a complex, multidimensional concept, and recent academic literature has identified four main dimensions: profitability, liquidity, growth, and stock market performance. The results indicate that these dimensions should be treated as a set of related dimensions rather than as indicators of a higher-order latent structure. Moreover, the dimensions have a temporal dynamic affected by the degree of environmental stability.

A study by Hamann et al. (2013), published in the journal *Organizational Research Methods*, found that organizational performance consists of four distinct dimensions, not three as previously thought. An important finding of the study was that the dimensions of organizational performance are subject to temporal dynamics, as they are affected by the degree of environmental instability. Robustness analyses showed that these dimensions undergo changes during years when the degree of environmental instability is high, necessitating caution when measuring organizational performance in periods of turbulence. These dimensions include:

Table (1): The Four-Dimensions Model

Dimension	Description	Proposed Indicators
Profitability	The organization's ability to generate profits from its operations	ROA, ROE, Net profit margin
Liquidity	The organization's ability to meet its short-term obligations	Current ratio, Quick ratio, Working capital
Growth	The organization's ability to expand and increase its business volume	Sales growth, Asset growth, Market share growth

Dimension	Description	Proposed Indicators
Stock Market Performance	The financial market's assessment of the organization's performance	Earnings per share, P/E ratio, Market value

The study confirms that these four dimensions represent the best representation of the factor structure of organizational performance, outperforming alternative three-dimensional models or models using hybrid measures.

5. Indicators for Measuring Organizational Performance in the Digital Environment

Najla Ahmed Yass (2013: 150-158), in the context of her discussion of digital libraries, presents a set of proposed indicators for measuring organizational performance in information organizations after digital transformation.

Table (2): Indicators for Measuring Organizational Performance in the Digital Environment

Indicator	Definition	Measurement Method
Usage Rate	Number of times digital content is accessed	Analysis of server logs
Response Time	Time taken to fulfill a user request	Automated system measurement
Retrieval Accuracy	Ratio of relevant results to total results	User evaluation + automated analysis
System Availability	Percentage of uptime for digital services	Server and system monitoring
User Satisfaction	Level of user satisfaction with digital services	Periodic electronic surveys
Return on Investment (ROI)	Benefits achieved versus costs of digital transformation	Cost-benefit analysis

Yass points out that “measuring performance in the digital environment requires sophisticated tools that go beyond traditional methods and rely on automated analysis of the big data generated by user interactions” (p. 152).

6. Sustainability of Organizational Performance under Digital Transformation

Abd Al-Hadi (2007: 78) indicates that “sustaining distinguished performance in the digital environment requires a shift in the business model from traditional management to data-driven management.” Abd Al-Hadi identifies the requirements for performance sustainability as:

1. Continuous Improvement: Digital transformation is not a one-time event but a continuous process of development and updating.
2. Organizational Learning: Building the organization's capacity to learn from data and past experiences.
3. Flexibility and Adaptation: Designing digital systems to be adjustable and scalable.
4. Strategic Partnerships: Collaborating with technical service providers and research and development centers.

For their part, Magnani & Shabila (2019: 12) emphasize that "sustaining performance in the age of big data depends on the organization's ability to convert data into strategic insights, and then transform insights into tangible decisions and actions."

Third Section: Practical Aspect

First: Data Presentation

Data were collected through a field questionnaire distributed to a sample of organizations in the health sector (public and private hospitals in the city of Hilla). The questionnaire included three main axes:

1. Demographic Characteristics: (Gender, age, educational qualification, years of experience, sector).
2. Digital Transformation: (Infrastructure, digital leadership, strategy, innovation culture).
3. Organizational Performance: (Operational efficiency, service quality, employee satisfaction, organizational flexibility).

The following is an analysis of the above axes as shown by statistical analysis:

1. Demographic Analysis of the Sample

The table shows that the sample is predominantly male (60%) compared to 40% female, indicating a tendency toward male representation. In terms of age, nearly half of the participants (50%) belong to the middle age group (30–40 years), while the proportions are equally distributed between younger and older groups (25% each). Educationally, bachelor's degree holders constitute the majority (55%), followed by master's degree holders (30%), then doctorate holders (15%), reflecting a diversity in academic levels with a concentration on the first university degree. Regarding work experience, the majority of participants have intermediate experience (5–10 years) at 45%, while a considerable proportion have long experience (35%), and a relative minority are beginners (20%). Finally, participants are distributed across sectors in a relatively balanced manner, with 45% working in the private sector, 40% in the public sector, while those working in the mixed sector constitute a smaller percentage.

Table (3): Demographic Characteristics of the Sample

Variable	Category	Percentage	Category	Percentage	Category	Percentage
Gender	Male	60%	Female	40%		
Age	30–40	25%	Less than 40	50%	More than 40	25%
Educationa	Bachelor	55%	Master'	30%	Doctora	15%

Variable	Category	Percentage	Category	Percentage	Category	Percentage
Level of Qualification	's		s		te	
Years of Experience	Less than 5	20%	5–10	45%	More than 10	35%
Sector	Public	40%	Private	45%	Mixed	15%

2. Digital Transformation

The features of the dimensions of digital transformation were distributed across four main interconnected axes: technological infrastructure, digital leadership, digital strategy, and innovation culture. Statistical indicators revealed a clear order of priorities, with arithmetic means ranging between (3.96) and (4.25), reflecting variation in the degree of readiness and relative importance of each element.

In the field of technological infrastructure, “modern systems” topped the indicators with the highest arithmetic mean of (4.25) and a relative importance of (85%), confirming that it is the most influential pillar in the success of any digital transformation. “Secure internet” came second within this axis with a mean of (4.18) and relative importance (83.6%), highlighting the growing awareness of the importance of cybersecurity as a guardian of the digital infrastructure. Meanwhile, “device maintenance” ranked last within the axis with a mean of (4.12) and relative importance (82.4%), which does not diminish its intrinsic value as an essential element for infrastructure sustainability.

In the digital leadership axis, the results showed that “top management support” constitutes the most prominent determining factor, with a mean of (4.20) and relative importance (84%), reflecting that the success of digital transformation begins at the top of the organizational pyramid. In contrast, “data-driven decisions” recorded the lowest arithmetic mean within this axis (3.96) and relative importance (79.2%), a clear indicator that this aspect still needs further reinforcement and entrenchment in the culture of institutional work.

Regarding digital strategy, its elements shared priorities in a relatively close manner, with “clear plan” leading the indicators with a mean of (4.25) and relative importance (85%), equaling the importance of modern systems, confirming that a defined strategic vision is no less important than technical tools themselves. “Integration of technologies” came with a mean of (4.18) and relative importance (83.6%), reflecting the necessity of integration among digital tools rather than using them in a fragmented manner.

In the innovation culture axis, “adoption of innovative ideas” topped the indicators with a mean of (4.20) and relative importance (84%), ahead of “encouragement of new solutions,” which recorded a mean of (4.12) and relative importance (82.4%). This ranking reveals that adopting and practically applying new ideas has a higher priority than merely encouraging them, indicating the importance of transforming innovation culture from a theoretical concept into daily institutional practice.

This integrated reading shows that successful digital transformation requires a delicate balance between developing infrastructure, building a clear strategy, enhancing supportive leadership, and instilling an innovative culture capable of embracing and absorbing the new.

Table (4): Arithmetic Means, Standard Deviations, Relative Importance, and Ranking for the Digital Transformation Dimension

Dimension / Item	Arithmetic Mean	Standard Deviation	Relative Importance (%)	Ranking
Technological Infrastructure – Modern Systems	4.25	0.62	85.0	1
Technological Infrastructure – Secure Internet	4.18	0.65	83.6	2
Technological Infrastructure – Device Updating	4.12	0.68	82.4	3
Digital Leadership – Top Management Support	4.20	0.64	84.0	1
Digital Leadership – Data-Driven Decisions	3.96	0.72	79.2	2
Digital Strategy – Clear Plan	4.25	0.62	85.0	1
Digital Strategy – Integration of Technologies	4.18	0.65	83.6	2
Innovation Culture – Encouragement of New Solutions	4.20	0.68	82.4	1
Innovation Culture – Adoption of Innovative Ideas	4.12	0.64	84.0	3

3. Organizational Performance

The top priorities of organizational performance consist of three main elements: time reduction, employee satisfaction with technologies, and quality improvement. In contrast, aspects in need of tangible development emerge, foremost among them adaptation to changes, along with accuracy, responsiveness, and workplace environment improvement, which recorded moderate levels. Overall, organizational performance is based on a delicate balance among operational efficiency, service quality, employee satisfaction, and flexibility. However, the greater focus—according to these indicators—should be on enhancing speed and productivity and investing in service quality as the most influential pillars for achieving institutional excellence.

The indicators of organizational performance dimensions were distributed across four main axes: operational efficiency, service quality, employee satisfaction, and organizational flexibility. Statistical data revealed variation in priorities, with arithmetic means ranging between (3.88) and (4.22), drawing clear contours for the organizational performance improvement map, as follows:

- In the operational efficiency axis, “time reduction” topped the indicators with the highest arithmetic mean of (4.22) and relative importance (84.4%), confirming that improving process speed is the most influential factor in raising organizational performance. “Productivity increase” came second within this axis with a mean of (4.14) and relative importance (82.8%), reflecting a close correlation between speed and output volume.
- In the service quality axis, “quality improvement” topped the indicators with a mean of (4.08) and relative importance (81.6%), indicating that raising the level of services provided is a core priority. “Accuracy and responsiveness” came with a mean of (4.02) and relative importance (80.4%), showing that response speed and accuracy—despite their importance—rank next within this axis.
- Regarding employee satisfaction, the results showed that “satisfaction with technologies” occupies the first rank within this axis with a mean of (4.10) and relative importance (82%), reflecting that providing modern tools and technologies constitutes the most influential entry point for employee satisfaction. “Workplace environment improvement” came with a mean of (4.05) and relative importance (81%), confirming that a positive environment is an important element but has a lower priority compared to providing modern technologies.
- In the organizational flexibility axis, the indicators recorded the lowest overall means, with “easy process modification” leading this axis with a mean of (3.92) and relative importance (78.4%), indicating that the ability to quickly modify procedures represents a relative priority within this dimension. Meanwhile, “adaptation to changes” recorded the lowest mean across all axes (3.88) and relative importance (77.6%), a clear indicator that organizations still need to enhance their ability to face changes and respond to the requirements of a renewed environment, as shown in the table below:

Table (5): Arithmetic Means, Standard Deviations, Relative Importance, and Ranking for the Organizational Performance Dimension

Dimension / Item	Arithmetic Mean	Standard Deviation	Relative Importance (%)	Ranking
Operational Efficiency – Time Reduction	4.22	0.61	84.4	1

Dimension / Item	Arithmetic Mean	Standard Deviation	Relative Importance (%)	Ranking
Operational Efficiency – Productivity Increase	4.14	0.64	82.8	2
Service Quality – Quality Improvement	4.08	0.67	81.6	1
Service Quality – Accuracy and Responsiveness	4.02	0.69	80.4	2
Employee Satisfaction – Satisfaction with Technologies	4.10	0.65	82.0	1
Employee Satisfaction – Workplace Environment Improvement	4.05	0.68	81.0	2
Organizational Flexibility – Adaptation to Changes	3.88	0.76	77.6	1
Organizational Flexibility – Easy Process Modification	3.92	0.74	78.4	2

Third: Hypothesis Testing

The results confirm a strong significant impact of digital transformation on operational efficiency and strategic effectiveness, with a moderately strong positive relationship with employee and customer satisfaction. The results also reveal prominent organizational and human challenges, most notably resistance to change and lack of digital skills, necessitating plans to address these obstacles.

- First Hypothesis (H1): There is a significant impact of digital transformation on improving operational efficiency. → Confirmed statistically, with a correlation coefficient of (0.72) and statistical significance at the (0.01) level.
- Second Hypothesis (H2): Digital transformation contributes to enhancing strategic effectiveness. → The results showed a strong relationship between digital strategy and service quality (0.68).
- Third Hypothesis (H3): There is a positive relationship between the level of adoption of digital technologies and higher employee and customer satisfaction. → The relationship is moderately strong (0.55) but statistically significant.

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- Fourth Hypothesis (H4): Organizations face organizational and human challenges that limit the effectiveness of digital transformation. → Most prominent challenges: resistance to change (45%), lack of digital skills (40%).

Analysis and Results

- The results confirm that digital transformation raises operational efficiency and reduces errors, consistent with previous studies.
- The relationship between digital transformation and employee satisfaction is less strong, indicating that the human element needs greater support through training and motivation.
- The challenges that emerged (resistance to change, lack of skills) are consistent with previous literature indicating that the success of digital transformation depends not only on technology but also on organizational culture and digital leadership.
- The results support the integrative model linking technology and human resources to achieve balanced and sustainable organizational performance.

Fourth Section: Conclusions and Recommendations

First: Conclusions

General Conclusions

1. Confirmation of the Positive Impact of Digital Transformation: The results proved a strong significant impact of digital transformation on organizational performance in the hospitals under study, with a correlation coefficient of (0.72) for operational efficiency and (0.68) for strategic effectiveness, confirming that digital transformation is an inevitable strategic necessity for performance improvement.
2. Variation in Digital Readiness Levels: The results revealed a clear variation in the degree of readiness for different digital transformation dimensions, with “modern systems” and “clear plan” leading the indicators with the highest arithmetic mean (4.25), while “data-driven decisions” came at the lowest levels (3.96), reflecting a deficiency in utilizing data for strategic decision-making.
3. The Gap between Infrastructure and Organizational Culture: Despite the good level of technological infrastructure, the culture of innovation and organizational flexibility still need significant enhancement, as “adaptation to changes” recorded the lowest mean (3.88) across all performance axes.
4. Moderate Relationship with Employee Satisfaction: The results showed that the relationship between the adoption of digital technologies and employee satisfaction was moderately strong (0.55) despite its statistical significance, indicating that investing in technology alone is insufficient to ensure employee satisfaction; rather, a comprehensive approach that takes into account human and organizational aspects is needed.

Detailed Conclusions by Axis

First: Regarding the Relative Importance of the Digital Transformation Dimension

1. Technological Infrastructure: Modern systems (85%) and secure internet (83.6%) constitute the fundamental pillars of digital transformation; however, device maintenance (82.4%) requires more attention to ensure infrastructure sustainability.
2. Digital Leadership: Top management support (84%) is the most influential factor in the success of digital transformation, while reliance on data-driven decisions (79.2%) remains weak, necessitating the development of a data-driven decision-making culture.

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3. Digital Strategy: The results confirm that having a clear plan (85%) and integrating technologies (83.6%) represent two integrated elements that cannot be separated, as effectiveness is achieved through integration between strategic vision and technical tools.
 4. Innovation Culture: Adoption of innovative ideas (84%) has a higher priority than encouraging new solutions (82.4%), indicating the importance of transforming innovation culture from a theoretical concept into daily institutional practice.

Second: Regarding the Relative Importance of the Organizational Performance Dimension

1. Operational Efficiency: Time reduction (84.4%) is the most urgent goal in improving operational efficiency, followed by productivity increase (82.8%), reflecting hospitals' orientation toward improving process speed and output volume.
2. Service Quality: Quality improvement (81.6%) comes at the forefront of service quality priorities, ahead of accuracy and responsiveness (80.4%), which aligns with the nature of the health sector where healthcare quality occupies the highest priority.
3. Employee Satisfaction: Providing modern technologies (82%) is the most influential factor in employee satisfaction, ahead of workplace environment improvement (81%), reflecting employees' expectations of keeping pace with technological developments in the work environment.
4. Organizational Flexibility: Organizational flexibility recorded the lowest levels, with easy process modification (78.4%) and adaptation to changes (77.6%) ranking low, indicating the limited ability of hospitals to respond quickly to environmental changes.

Third: Regarding Hypothesis Testing

1. First Hypothesis (H1): A strong significant impact of digital transformation on improving operational efficiency was proven, with a correlation coefficient of (0.72) at a significance level of (0.01), confirming that investment in digital transformation leads to tangible improvement in process efficiency.
2. Second Hypothesis (H2): It was proven that digital transformation contributes to enhancing strategic effectiveness, as the results showed a strong relationship (0.68) between digital strategy and service quality, confirming the importance of strategic planning for digital transformation.
3. Third Hypothesis (H3): The positive relationship between the adoption of digital technologies and employee and customer satisfaction was confirmed, albeit moderately strong (0.55), necessitating the strengthening of this aspect.
4. Fourth Hypothesis (H4): The most prominent organizational and human challenges limiting the effectiveness of digital transformation were identified as resistance to change (45%) and lack of digital skills (40%), confirming that human and cultural obstacles are no less important than technical obstacles.

Second: Research Recommendations

1. Developing an Integrated Framework for Digital Transformation
 - Building a Comprehensive Digital Strategy: The necessity of developing a clear and integrated digital transformation plan that takes into account the specificity of each hospital, not limited to technical aspects but extending to organizational, human, and cultural aspects.
 - Alignment between Technical Investment and Strategic Goals: Ensuring that all digital transformation initiatives serve the hospital's strategic objectives and contribute to achieving its vision and mission.

2. Strengthening Digital Leadership

- Developing Digital Leadership Capabilities: Training administrative leaders in leadership skills for the digital age, including the ability to make data-driven decisions, manage change, and motivate teams to adopt innovation.
- Involving Top Management: Enhancing the role of top management in leading digital transformation through continuous follow-up, providing necessary resources, and removing organizational obstacles.

3. Investing in Infrastructure and Modern Systems

- Updating Infrastructure: Continuing to develop technological infrastructure with a focus on cybersecurity and ensuring service continuity through disaster recovery plans.
- System Integration: Working to integrate different systems (electronic medical records, management information systems, human resource systems) to ensure smooth information flow and avoid duplication of work.

4. Developing a Culture of Innovation and Enhancing Organizational Flexibility

- Building a Digital Culture: Fostering a culture of innovation and experimentation by motivating employees to submit new ideas, rewarding innovative initiatives, and accepting failure as part of the learning process.
- Enhancing Organizational Flexibility: Designing organizational structures and administrative procedures to be more flexible and quickly adjustable in response to accelerating environmental and technical changes.

5. Developing Human Resources

- Bridging the Digital Skills Gap: Implementing intensive training and development programs to raise employee efficiency in using digital technologies, focusing on technical and specialized digital skills.
- Change Management: Developing specialized change management programs to help overcome resistance to digital transformation through effective communication, involving employees in the transformation process, and clarifying the benefits of transformation for them and the organization.
- Improving the Work Environment: Working to improve the work environment by providing a supportive and stimulating environment for digital transformation that encourages continuous learning, collaboration, and knowledge sharing.

6. Improving Service Quality and Operational Efficiency

- Focusing on Process Speed: Continuing efforts to improve process speed and reduce waiting time through procedure automation, workflow improvement, and using artificial intelligence technologies for appointment scheduling and resource management.
- Enhancing Service Accuracy: Developing clinical decision support systems using artificial intelligence to improve diagnostic accuracy, reduce medical errors, and enhance patient safety.

7. Enhancing Transparency and Data-Driven Decision-Making

- Establishing Business Intelligence Systems: Developing advanced systems for data analysis and information systems and extracting key performance indicators (KPIs) that help monitor performance and make proactive decisions.
- Fostering a Data Culture: Spreading a culture of reliance on data and information systems at all administrative levels and training leaders to use data analysis tools and information systems and extract strategic insights.

8. Improving Employee and Customer Satisfaction

- Involving Patients in Digital Transformation: Developing digital applications and platforms that enable patients to easily access healthcare services (appointment booking, teleconsultations, viewing medical records), with periodic measurement of their satisfaction.
- Motivating Employees: Designing financial and moral incentives for employees who excel in adopting and using digital technologies, linking annual evaluations to the mastery of digital skills.

9. Managing Challenges and Obstacles

- Addressing Resistance to Change: Implementing continuous awareness programs explaining the importance and benefits of digital transformation, involving employees in planning and implementation stages to enhance their sense of belonging to the healthcare institution.
- Securing Sustainable Funding: Developing long-term financial plans that ensure the continuity of investment in digital transformation, exploring diverse funding sources including partnerships with the private sector and donor organizations.

10. Building Strategic Partnerships

- Collaboration with Academic and Research Institutions: Establishing partnerships with universities and scientific research centers to develop innovative technical solutions tailored to the specificity of the health sector in Iraq.
- Exchanging Expertise: Establishing cooperation networks between public and private hospitals to exchange experiences and lessons learned in the field of digital transformation.

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