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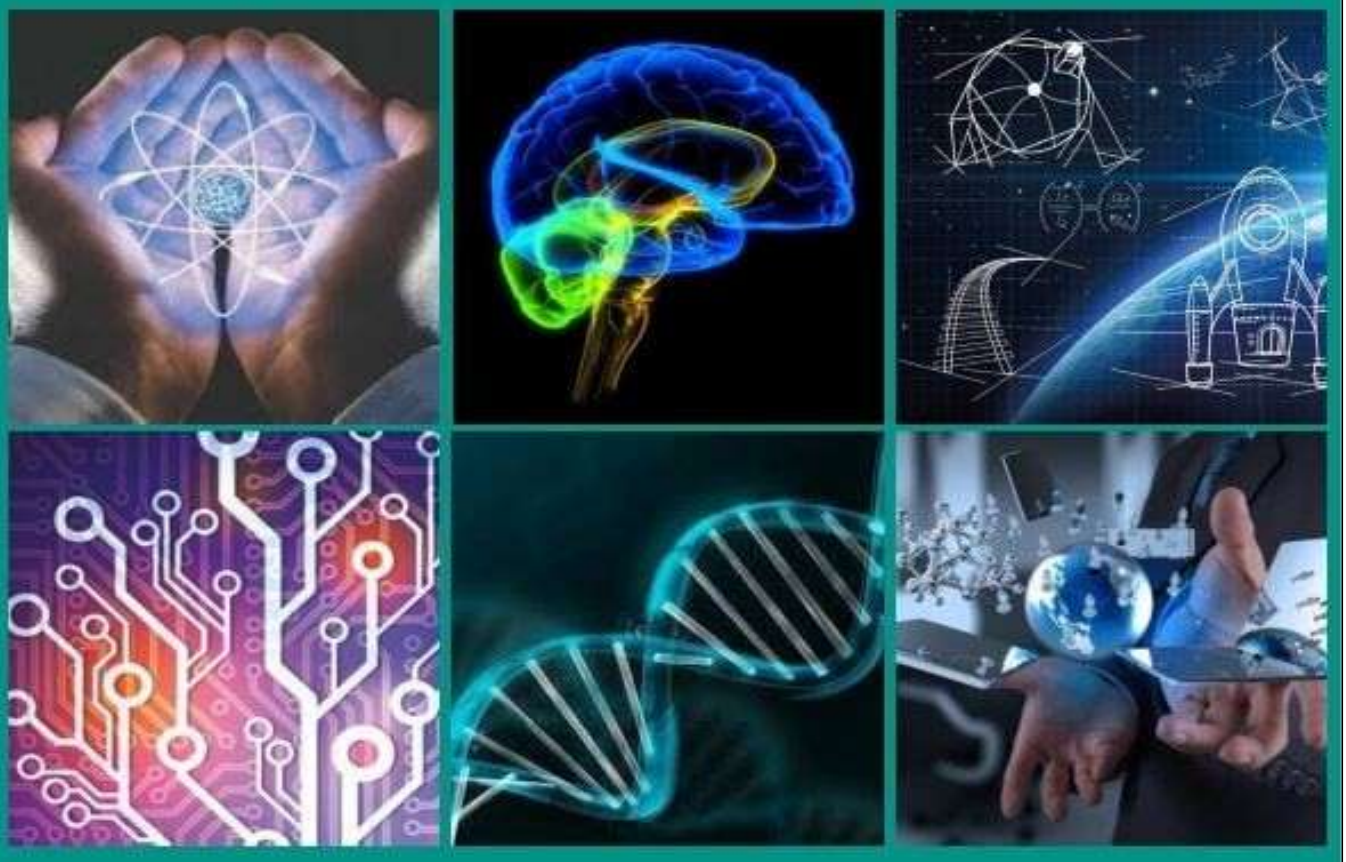

By Universitas Muhammadiyah Sidoarjo

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DIGITAL TRANSFORMATION AS AN APPROACH TO ENHANCING SUSTAINABLE COMPETITIVE ADVANTAGE IN THE PERFORMANCE OF EDUCATIONAL INSTITUTIONS: AN ANALYTICAL STUDY IN SOME COLLEGES OF THE HOLY UNIVERSITY IN KARBALA

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Abstract

General Background: Digital transformation has become a strategic approach for organizations seeking improved operational systems and competitive positioning through the integration of advanced technologies, digital strategies, and data-driven management. **Specific Background:** In higher education institutions, digital transformation involves technological infrastructure, data and analytics, digital strategy, security, and organizational culture to support institutional performance and competitive advantage dimensions such as quality, service excellence, and customer responsiveness. **Knowledge Gap:** Despite increasing global attention to digital transformation in universities, empirical studies examining its relationship with sustainable competitive advantage in educational institutions remain limited, particularly within the context of Iraqi higher education. **Aims:** This study aims to analyze the relationship between digital transformation dimensions and competitive advantage in the performance of educational institutions through a field study conducted in several colleges of the Holy University of Karbala. **Results:** The findings indicate a statistically significant relationship between digital transformation and competitive advantage dimensions. Digital strategy and data analytics show significant relationships with quality and service excellence, while data and analytics demonstrate a significant relationship with customer responsiveness. Overall results show high levels of digital transformation (mean = 4.00) and competitive advantage (mean = 4.17), with an overall mean of 4.09 indicating strong consensus regarding the role of digital technologies in institutional performance. **Novelty:** This study provides empirical evidence linking multiple digital transformation dimensions with competitive advantage indicators within university environments. **Implications:** The results highlight the importance of investing in digital infrastructure, adopting comprehensive digital strategies, and strengthening data-driven decision-making to support institutional performance and long-term competitiveness in higher education.

Highlights:

- Strong institutional agreement regarding digital technology adoption in university operations
- Data analytics shows a significant relationship with responsiveness to user needs
- Strategic digital planning demonstrates statistical association with academic service quality

Keywords: Digital Transformation; Competitive Advantage; Educational Institution Performance; Data And Analytics; Digital Strategy

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Introduction

The delivery, management, and oversight of diverse services have become more challenging due to the swift and enormous growth in their volume. It is crucial to integrate technology with enhanced service performance to enable this control and optimize its advantages. With the goal of making the digital revolution the cornerstone of service delivery in all sectors, institutions, and public bodies, this vision is starting to come to pass through digital transformation, bolstered by a digital culture[1].

Globally and in every industry, technological advancement is an important development. The economic landscape is clearly changing as a result, especially in the financial sector, which is seen as a key driver of future growth and advancement. It is quicker, more accurate, and less expensive than conventional techniques. Additionally, it gets around time and space constraints and allows clients to receive changes continuously, which affects the speed of execution.
By investing in skilled personnel to spearhead and oversee change, firms aim to accomplish their goals through this transition, such as creative and effective digital business models and processes. This enables them to draw in new customers for their offerings[2].

First: The problem of the Study:

This study focuses on the difficulties that educational facilities encounter when putting the digital age into practice, even if it has the potential to enhance the educational process. The online divide, a lack of resources, opposition to ameliorating privacy and safety concerns online, and the viability of digital efforts are some of the major obstacles. These barriers impede the adoption of new teaching techniques, investment in essential infrastructure, equal access to digital technologies, and the long-term sustainability of digital transformation projects. In order to create a more inclusive, efficient, and flexible educational environment, the research aims to investigate these issues, their effects on the viability and standard of education, and solutions.

Digital transformation increases the ability of governments to provide better public services and enhances communication between government agencies. Additionally, it benefits public employees, especially by cutting down on bureaucracy and saving time—issues that have historically been connected to subpar service quality, hindered public services, and encouraged corruption. Additionally, it makes it easier to put into practice social distancing strategies that have been implemented in reaction to previous crises. In the end, these outcomes will result in increased public service experience among citizens[3].

A number of top companies have implemented digital transformation plans for both their distribution and manufacturing processes. Through the development of new, more effective methods and techniques, these tactics have also had an impact on the framework of the company and the way it operates itself.

The challenge of putting technological change into practice is the research problem. The study found that staff knowledge of the significance of this change is still inadequate, despite efforts to set up suitable

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training programs. The influence of digital transformation on employee performance and the near-paralysis of government transactions, especially supplier settlements, as a result of institutional absence of digital conversion were also investigated by the researcher. The researcher developed the research problem in light of these findings.

Second : Research Questions

What is the impact of digital transformation and its dimensions (technological infrastructure, data and analytics, digital strategy, security and confidentiality, and organizational culture) on the performance of educational institutions?

1-What is the level of impact of digital transformation on technological infrastructure and the competitive advantage dimensions in the performance of educational institutions?

2- What is the level of impact of digital transformation on data and analytics and the competitive advantage dimensions in the performance of educational institutions?

3- What is the level of impact of digital transformation on digital strategy and the competitive advantage dimensions in the performance of educational institutions?

4- What is the level of competitive advantage resulting from digital transformation in the performance of educational institutions?

Third : Study Objectives

The objectives of this research on the challenges and implications of digital transformation in education seek to address the key issues identified in the problem statement:.

3.1 Assessment of the digital divide: To evaluate the extent of the digital divide in educational contexts and its impact on students' access to quality education. This goal is to pinpoint specific inequalities in the availability of electronic assets and provide focused solutions.

3.2 Resource barrier analysis: To look at the financial, technological, and human barriers that organizations encounter while putting digital transformation into practice. The goal is to offer direction for effective allocation of resources and investment tactics.
3.3 Examining resistance to change: To find effective change management techniques to promote an innovative and flexible culture, as well as to investigate the reasons behind administrative and academic staff resistance to digital transformation.

3.4 Cybersecurity Measures Analysis: Assess the current level of data protection and Safety in cyberspace practices in higher education organizations and suggest ways to improve security and appropriate use of digital devices.

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3.5 Ensuring the Future Sustainability of Digital Initiatives: Examine the long-term sustainability of initiatives aimed at digital transformation, taking into account their impact on the environment, continuing support, and the development of digital resources. This objective aims to propose strategies for sustaining and expanding digital initiatives over time.

3.6 Improving the work experience: By using digital platforms that help staff and students communicate, receive training, and grow personally.
3.7 Encouraging well-informed choices: Through efficient data collection and analysis, human resource management choices can be made with clarity and soundness.
3.8 Improving communication and teamwork: By utilizing digital tools and techniques to boost employee engagement and encourage cooperation and teamwork.
3. 9 Raising ecological awareness: Technology utilization raises knowledge of new developments in technology as well as the significance of service and environmental practices. It also gives staff members continual training on company sustainability.

Fourth: The methodology used for studying

The academics use a case study approach, which is distinguished by the thorough and in-depth gathering of pertinent data. This method's flexibility makes it especially useful since it makes the most of the instruments available by integrating different research techniques to reach the intended goals and outcomes. Observation, taking notes, and one-on-one interviews with staff members at different levels of the hierarchy are among the methods employed. In order to obtain the most accurate and in-depth data possible, the process also includes the analysis of archival records.

Fifth: The importance of the study

One of the key developments of the current period is digital transformation, which has a big impact on a lot of different disciplines, including human resource management. Several important elements pertinent to this research topic can be found while analyzing how digital transformation affects HRM practices, such as[4]:
4.1 Digital transformation increases productivity and saves time and effort by automating procedures and minimizing paperwork.
4.2 Accurate and current data from digital systems enable well-informed decision-making.
4.3 By utilizing technical tools like email and internal and external platforms for interaction, digital transformation improves communication between faculty, staff, and senior management. This study is especially significant for a number of reasons[5].

4.4 There is a dearth of research on the connection between the digital transformation of university administrations and the effectiveness of teaching and managerial staff on these platforms, particularly in

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Arab universities, particularly those in the Gulf Cooperation Council (GCC) nations.

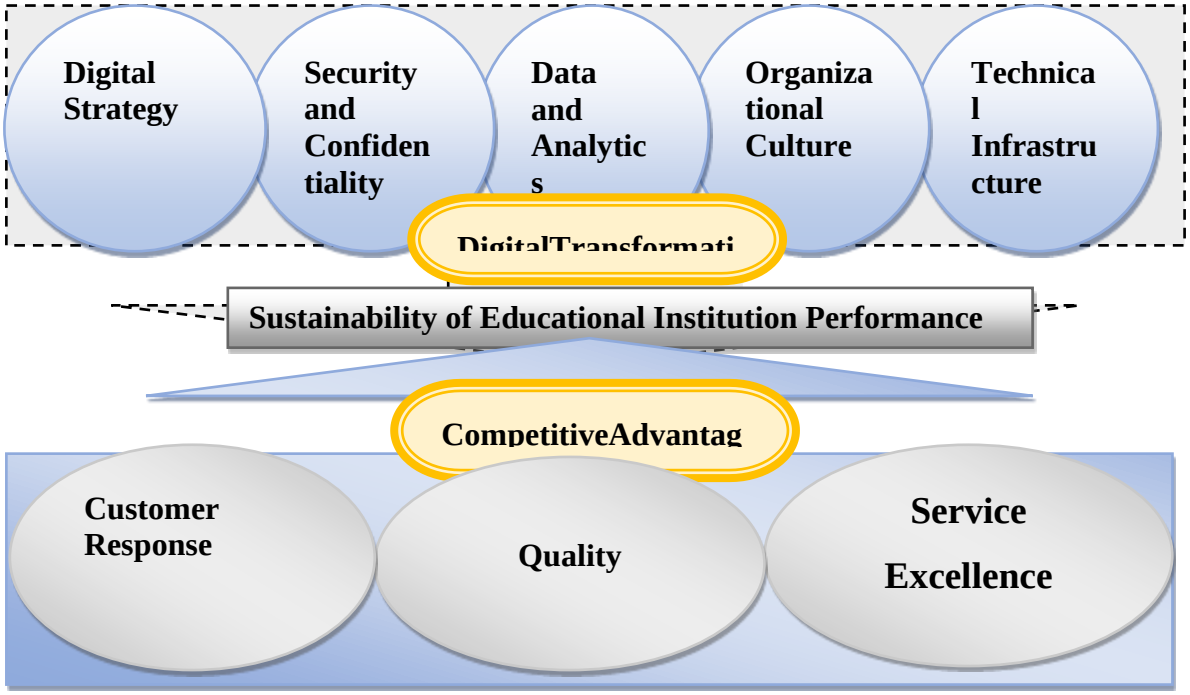
4.5 This study advances knowledge of digital transformation as a sophisticated administrative and teaching strategy and makes it possible to assess how well staff members are executing it in educational establishments.

4.6 It establishes the foundation for upcoming research on digital transformation and specific management science topics.

4.7 It enables quick access to information and saves stakeholders time and effort.

Study model

Picture 1.*The researcher prepared the study model.*



Section Two: Theoretical Framework

First requirement: Digital transformation

Organizations that commit to integrating digital technologies into every facet of their business will undergo a strategic procedure known as "digital transformation," which will fundamentally alter how they operate and generate value. This shift entails utilizing cloud computing, machine learning, and data analytics to spur innovation, customize client experiences, and boost operational effectiveness. Automation is essential for process optimization, accuracy improvement, and freeing up human resources for more strategic activities. This is made possible by technology like automated robotic procedures (RPA)[6].

Advances in digital tools and technology, including cloud computing, artificial intelligence, big data analytics, the Internet of gadgets, and many more, are driving this change[7]. Organizations must create suitable plans to successfully use digital technologies in order to guarantee that their digital transformation is successful [8]. Additionally, upper management is essential in coordinating the interaction between digital change tactics, IT infrastructure, and performance at work[9].

A. The second requirement: Dimensions of digital transformation

1. Technology Infrastructure refers to This includes all of the hardware, software, and communication elements that serve as the basis for the development and operation of digital systems, apps, and services. In order to guarantee that systems, networks, and peripherals are compatible with contemporary technology, it also entails their evolution and update. An organization's capacity to implement hardware platforms and the application systems that go along with them is included in its IT infrastructure. Its capacity, which comprises its efficacy in managing data management services, network communication services, and a portfolio of applications and services created especially for its information systems, indicates the organization's performance in implementing shared infrastructure. By optimizing information generation and distribution, a flexible IT infrastructure boosts an organization's competitive advantage and competitiveness in dynamic situations.

2. Organizational Culture: Organizational culture must change as a result of the digital change in order to become more receptive to technological advances and innovative thinking. For every firm to successfully undergo digital transformation, this culture is essential. Adaptability to change, creativity and teamwork, ongoing learning, digital leadership, customer focus, and flexibility and responsiveness are important components that highlight its significance. Organizations can successfully lead a digital transformation by strengthening their corporate culture through the implementation of these components[10].

3. Analysis and data collection are essential for enhancing higher education institutions' operations and academic results. This data contains financial information, faculty ratings, research activity, student and academic performance information, and more. Organizations use this information to spot trends, pinpoint issues, and come to wise conclusions. Analyzing learning outcomes, enhancing curricula, overseeing funding, carrying out scientific research, assessing performance, and guaranteeing data security and confidentiality are some important applications[11].

4. Security and privacy: To guarantee a safe and secure learning and research environment, higher education and scientific research organizations must take safety and privacy into account. Personal data protection, cyber security, awareness and training, communications and access management, legal and regulatory compliance, research and project safety, and technical systems are some of these factors. 5. Digital strategy: This refers to the steps that an organization or organization's management takes to enhance its visibility and significance on digital media, the degree to which the strategic plan is integrated

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and aligned with clients, and the degree to which the organization innovates in inventive and creative approaches to strategic planning in the field of technology in finance[12].

The researcher thinks that by putting these protocols into place, institutions involved in academic studies and university teaching may improve security and privacy, which contributes to the creation of dependable and secure educational settings. The success of the digital transformation component and the delivery of value-added services to businesses and society are both influenced by these factors[13].

B. Third: Motives for digital transformation

Digital transformation is an all-encompassing idea that goes beyond gadgets and software. In truth, the idea of digital transformation and intelligent systems, whether in the public or private sectors, depends on a number of variables that can be summed up as follows:
The following factors are propelling digital transformation:
1. Making the most of information usage with a platform that can incorporate new innovations.
2. Teaching service providers how to use contemporary technology.
3. Citizens can achieve their government's goals for development and accomplish the digital shift with the help of a highly efficient internet network.
4. Each sector's needs, including those of education, healthcare, agriculture, industry, financial services, etc., must be taken into account while designing gadgets, tools, and apps.

Digital change in the public sector is being propelled by the following factors:

1.Budgetary restrictions and expenses are the main factors propelling digital change in the public business.
2. Expectations of citizens and users.
3. Governmental orders.
4. How quickly services are provided.
Fourth: For a number of reasons, the difficulties and effects of the digital revolution on educational institutions are crucial.
Equitable access to education: Ensuring that all students, regardless of their socioeconomic background, have equal opportunities to access high-quality education requires an understanding of and commitment to closing the digital divide. This study can assist in determining methods to lessen inequality and encourage inclusivity.
1. Better resource utilization: colleges and universities may make more informed judgments about their technological facilities and digital technology investments if they have a better grasp of resource limitations. As a result, financial and technological resources may be used more effectively, maximizing

a) Encouraging change management: Researching educational institutions' reluctance to make changes can yield B. Important insights into managing organizational transformation. This information is crucial for creating a culture that values creativity and flexibility.

2. Enhancing Data Security and Privacy: As digital platforms are included into education more and more, it is critical to comprehend the issues around data security and privacy. This research can aid in the creation of strong plans to safeguard private data and guarantee the moral application of technology. 2.4 Sustainability of Educational Initiatives: To make sure that the advantages of technological change are maintained, it is critical to research the future viability of educational initiatives that use technology. This involves considering the environmental impact, as well as the sustainable maintenance and development of digital resources.

4.Elements of Digital Management [14] Digital management has a set of components, which are:

- Computers
- Computer Programs (Software)
- Communication Networks
- Human Resources (Experts and Specialists)

5. Requirements for Implementing Digital Management

- Administrative Requirements
- Technical Requirements
- Human Resources
- Material Requirements

Sixth: The role of digital transformation in achieving the sustainable development goals of universities:

At the dawn of the year 2000, the definition of information technology expanded to include not only computing and communications, but also consumer electronics. It became essential to examine the administrative and financial aspects that both influence and are influenced by this technology. Many organizations worldwide, in both developed and developing countries, are adopting the concept of electronic management by disseminating their information online. Furthermore, many internal transactions now rely on the internet. In this context, the digital age has brought about numerous changes across all sectors, particularly the banking sector, considered one of the first to embrace digitalization. Due in large part to the extensive use of digital technologies in business processes, this industry is a major force behind growth and sustainability. In addition to accomplishing many benefits and goals, such as gaining a sustainable competitive edge through the adoption of strategies that enable the most efficient and effective execution of financial transactions while optimizing potential, the accessibility of banking services within a digital

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ecosystem has made it possible to promptly satisfy customer wants and needs. In the current business climate, some demand that banks of all kinds be up to date with changes in the banking industry[15].

One of the key factors explaining the growing interest in the digital economy lies in its capacity to generate comprehensive and sustainable development. Advances in technology have allowed everyone to connect with people who were previously inaccessible. Many individuals and institutions can now compete, communicate, cooperate, and form partnerships more easily, at lower costs, and with greater equality than ever before. The opportunities offered by modern technological developments are accessible to all, and their positive effects can extend to all individuals, institutions, sectors, and economic and social activities. Consequently, the development of the digital economy contributes to the achievement of the seventeen Sustainable Development Goals[16]. The digital economy primarily aims to improve the well-being of individuals, organizations, and society. It is also considered a key driver of development, wealth creation, and employment across all sectors of the economy. Meanwhile, digital transformation is the process of converting the business model of a government institution or private sector company to one that relies on digital technologies for service delivery, product manufacturing and human resource management [17].

Second requirement: Competitive advantage .

Many researchers and academics highlight several dimensions of competitive advantage that allow us to measure the extent to which a competitive advantage is achieved within institutions and organizations. This refers to the ability of these organizations to outperform their competitors through their effectiveness, efficiency, and the quality of the products and services they offer their clients. In our study, we will focus on the third dimension: measuring competitive advantage.

Many researchers and academics highlight several dimensions of competitive advantage that allow us to measure the extent to which a competitive advantage is achieved within institutions and organizations. This refers to the ability of these organizations to outperform their competitors through their effectiveness, efficiency, and the quality of the products and services they offer their clients. We shall concentrate on the third dimension in our investigation:

1. Quality

Excellence in quality at all levels is necessary for an organization to thrive in a cutthroat global market[18]. In today's global competition, quality has become crucial, and any company that ignores it runs the danger of losing market share and suffering a drop in profitability[19] .

2. Service Excellence

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Businesses can also set themselves apart from rivals by providing a reputation or service that rivals cannot copy or duplicate. According to [20], there are numerous ways to set a product apart from its rivals, including a wide range of product configurations, distinctive features, first-rate service, spare part availability, technical design and performance, outstanding quality, and a variety of services. The following are some of the main forces behind excellence in order to gain a long-term competitive advantage: • Technological superiority-based excellence.
• Quality is the foundation of excellence.
• Excellent customer service is the foundation of performance.
• Superior worth of money is the foundation of excellence.

3. Customer responsiveness

The capacity to respond quickly to customers and satisfy their requirements is one of an organization's most crucial performance metrics. Given that contemporary advertising views customers as the primary pillar of development and achievement, this is a crucial source of future growth and success for businesses. As a result, businesses work to increase client loyalty by fostering relationships based on trust and providing the highest level of satisfaction and value. Responsiveness is a collection of attributes pertaining to performance dependability, speed, and suppleness [21]. Quality is reflected in the organization's commitment to helping customers and ensuring that they receive timely services. Customers evaluate this dimension by the speed of transaction processing and responses to questions and requests [22].

a) Speed of response is a fundamental element of customer satisfaction because it reduces customer waiting time.

b) Flexibility refers to the ability to adapt to market changes, modify the product and its size, and optimize cost and design.

c) means the ability to rely on the product to meet customer expectations. It contributes to the sustainability of competitive advantage. Companies that want to differentiate themselves by meeting customer needs through low prices or product differentiation succeed.

Humans aspire to progress, excellence, and constant evolution, and wish to build a better future than the present. Therefore, competitive advantages are based on the following elements [23].

a) Discovery, definition, identification of characteristics, research, and study to achieve what others have not: these are fundamental elements for creating a competitive advantage.

b) Innovation in the unknown or unusual domain, the fruit of genius and the inventor.

c) Creativity enabling the achievement of unique characteristics in production, marketing, and finance through expert implementation.

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d) Development and improvement of existing products to make them more efficient, of higher quality, more affordable, and more accessible.

e) Creation of a more attractive, sophisticated, profitable, and receptive market for the product. Competitive advantage is achieved through the following elements (Abu Bakr, 2006) and can be interpreted along two dimensions:

First dimension: customer-perceived value. Organizations can use their various capabilities to increase the perceived value of the goods and services they offer, thereby contributing to their competitive advantage. Competitiveness is essential; for an organization, achieving a competitive advantage means that customers feel they are receiving greater value than its competitors.

Second dimension: differentiation. Competitive advantage can also be achieved by offering products or services that competitors cannot easily imitate or reproduce. Several resources contribute to differentiation, the most important being financial resources, human resources, and organizational capabilities.

Seventh: Previous studies - Arabic and foreign

This study aims to examine the mediating role of innovation capacity between absorptive capacity and competitive advantage, focusing on the manufacturing sector in the state of Mexico. It concludes that innovation capacity is an intermediary variable in the relationship between absorptive capacity and competitive advantage. Furthermore, dynamic capacities such as absorptive capacity and innovation capacity positively influence the creation of competitive advantage in the manufacturing sector of the State of Mexico.

A study M. M. Ávila [24]

titled: "Competitive Advantage and Absorptive Capacity Knowledge: The Mediating Role of Innovative Ability".

This study aims to explore the impact of digital transformation, and in particular its various dimensions (technological infrastructure, legislation and policies, organizational culture, and human resources), on the professional performance of employees at a specialized hospital in Jeddah. A descriptive and analytical approach was used, with an online questionnaire to collect data from a sample of 290 employees at this hospital. The findings demonstrate that, especially in specialized hospitals where it is already well-established, digital transformation has a statistically significant positive impact on professional performance. Additionally, the study found statistically significant differences in how employees perceived the digital shift: individuals over 35 showed greater adoption and a more positive influence than those in other age groups. Additionally, age-related differences were found to be statistically noteworthy: employees under the age of 25 were more open to digital transformation than those with a university degree. The study

found a relationship between professional performance and the aspects of digital transformation, suggesting that every aspect examined had an effect. Therefore, it is crucial to keep working to increase efficiency.

The study conducted by Altoni (2024), entitled "Impact of Information Technology on Digital Transformation and Better Workplace Performance: A Field Study of Employees at the University of Port Said," aims to measure this impact from the perspective of university employees. The sample consisted of 1,235 employees, including 625 senior and middle managers and 610 executives. An electronic questionnaire was distributed to them through the university website, and a descriptive method was used. The results showed a statistically significant correlation between the ability of human resources to embrace digital transformation and employee work performance. The author proposes the implementation of a new technology-driven business model for various sectors of the university and emphasizes that digital transformation at the University of Port Said should not be limited to the technological dimension alone .

In 2020, Park et al. conducted a study entitled "Real-time digital transformation of companies to ensure their sustainability". The researchers aimed to demonstrate how companies can transform digitally, moving from a traditional economic model to a model equipped with real-time digital systems. The sample included 191 employees from 96 companies operating in various sectors. A questionnaire was administered and a descriptive methodology was used. The results show that the role of decision information, communication support and various technologies in achieving fast and consistent performance in different environments (real-time work environments) is not emphasized. In a real-time working environment, information technologies indirectly enable firms to gain competitive advantage by strengthening their capabilities. However, in non-digital traditional work environments, competitive capabilities proved to be weak.

Third Research: Statistical Methodology and Procedures

A. Study Methodology

This study employed a descriptive-analytic approach because it relies on accurate, neutral and objective descriptions of subject characteristics and is free from bias. This method was chosen by the researcher to develop the required survey instrument and interpret the results, thereby testing the hypotheses of the study and finally determining the relationship between the variables. The descriptive component consisted of participants' responses to questions in a specially designed questionnaire[25].

Population and Sampling Studies

First: Study Population: The study population consists of students from several universities in Karbala, totaling 500 faculty and staff members in 2023 (according to the sources cited in the academic research of Iraqi universities).

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Second: Study Sample: The study sample was randomly selected and comprises 299 faculty and staff members (who were contacted). Table 1.3 shows the sample distribution according to the independent and dependent variables.

Table 1. *shows the distribution of the sample according to the independent and dependent variables.*

Percentage%	Sample Size	Categories	Variable
34.2%	102	Female	Gender
65.8%	197	Male	
6.7%	20	Diploma	Educational Qualification
26.75%	0	Bachelor's	
33.1%	99	Master's	
33.4%	100	PhD	
11.37%	34	5 years or less	Years of Service
25.41%	76	10-5 years	
43.14%	129	10-15 years	
20.08%	60	15 years or more	
3.01%	9	Dean and Assistants	Job Title
4.01%	12	Head of Department	
58.87%	176	Instructor	
34.11%	102	Employee	

Table (1) shows that the percentage of males was (65.8%), while the percentage of females was (34.2%). It also shows that (6.7%) of them have a diploma, (26.75%) have a bachelor's degree, (33.1%) have

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a master's degree, and (33.4%) have a doctorate. Furthermore, (11.37%) have 5 years of experience, (25.41%) have less than 10 years of experience, (43.14%) have 10-15 years of experience, and (20.08%) have 15 years of experience or more. The percentage of deans and their assistants is (3.01%), the percentage of teaching staff is (58.75%), the percentage of department heads is (4.01%), and the percentage of employees is (34.11%).

Third: Study tools

To achieve the objectives and expected outcomes of this study, and after reviewing the theoretical literature and previous studies, the researcher developed a questionnaire based on this work, particularly that of Younes (2019) and Fadl (2018).

Fourth: Validity of the scale

The researcher used two types of validation:

a) Face Validity: To verify the face validity, also known as expert validity, of the questionnaire, a preliminary version was submitted to a panel of three (3) experts, as described in Appendix 2. The scale, in its preliminary version, consists of 25 items, with an agreement rate of 80% being the minimum acceptability criterion. Modifications were made based on observations and expert feedback. Following reviewer feedback, the wording of some items was modified, as described in Appendix 3.

b) Construct validity To verify the validity of the scale, the researcher also used the construct validity on a total sample of 299 faculty and staff members, and used Pearson's correlation coefficient to extract the correlation coefficient values of the items with their respective domains.

The correlation coefficients of the items with the overall scale score were calculated, as well as the correlation coefficients of each domain with the overall scale score. A correlation coefficient greater or less than 1% indicates construct

Table 2. *shows the values of the item correlation coefficients*

Correlation with overall grade	Paragraph	Correlation with overall grade	Paragraph	Correlation with overall grade	Paragraph	Correlation with overall grade	Paragraph
0.632	37	0.647	25	0.599	13	0.394	1
0.558	38	0.556	26	0.611	14	0.633	2
0.639	39	0.553	27	0.563	15	0.636	3
0.667	40	0.544	28	0.625	16	0.262	4

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0.565	41	0.523	29	0.663	17	0.511	5
0.558	42	0.602	30	0.627	18	0.422	6
0.473	43	0.647	31	0.637	19	0.408	7
0.552	44	0.556	32	0.501	20	0.521	8
0.601	45	0.553	33	0.473	21	0.466	9
0.646	46	0.550	34	0.537	22	0.604	10
		0.482	35	0.840	23	0.619	11
		0.642	36	0.840	24	0.570	12

**Statistically significant at the significance level ** p < .01)

It is observed from the data in Table (2) that the correlation coefficients of the items were acceptable and statistically significant because they were higher than 1%.

Table 3. *Shows the reliability coefficients of the digital transformation scale as an approach to enhancing sustainable competitive advantage in the performance of*

Cronbach's Alpha	Number of Items	Variable Type	Variable
0.778	6	Independent	Technical Infrastructure
0.872	8	Independent	Data and Analytics
0.745	6	Independent	Digital Strategy
0.798	20	Independent	Digital Transformation
0.772	8	Continued	Quality
0.798	11	Continued	Service Excellence
0.714	7	Continued	Customer Response

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0.843	26	Continued	Competitive Advantage
0.825	46		Overall Scope

)****Statistically significant at the significance level p < 0.01(

Measurement Instruments

To ensure the reliability of the scale (Digital Transformation as an Approach to Sustainably Strengthen the Competitive Advantage of Educational Institutions) (Field study conducted in several faculties of the Holy University of Karbala), the scale was distributed to the study sample. To ensure the internal and external consistency of the scale, Cronbach's alpha coefficient was calculated on all the sample data after validation (23 items, see Table 3).

Correction of study scales

The digital transformation scale, designed to sustainably strengthen the competitive advantage of educational institutions, was developed from 46 items divided into two domains, as detailed in Appendix 4. Respondents were asked to rate the item on a Likert scale of their response.

Item weights were as follows: Strongly Agree (5 points), Agree (4 points), Somewhat Agree (3 points), Disagree (2 points), and Strongly Disagree (1 point). In order to interpret arithmetic means and determine the level of each Digital Transformation Scale as an instrument for sustainable strengthening of competitive advantage of educational institutions (a field study conducted in selected institutions of Karbala Holy University), items were transformed from 1 to 5 points on a scale table (4):

Response	Strongly disagree	Disagree	Neutral	Agreed	Strongly agree
Score	1	2	3	4	5
Arithmetic Mean	1.79-1	2.59-1.8	3.39-2.9	4.19-3.4	5.4.20
Level	Very weak	Weak	Medium	Large	Very large

Variable Analysis

The following independent and dependent variables were included in the study:

A-Personal Variables:

Gender: (Male, Female)

Education: (BTS, Bachelor's, Master's, Doctorate(

Professional Experience: (5 years or less, 5 years or less than 10 years, 10 to 15 years, 15 years or more)

Position: (Director, Branch Manager, Project Manager, Employee, Other(

Name of Bank: (Islamic Bank of Palestine, Islamic Bank of the Arab World, Safa Bank(

B- Independent Variable: Digital Transformation and Maturity: Technical Infrastructure, Organizational Culture, Digital Strategy, Safety and Security, Data and Analytics

C- Dependent Variable: Competitive Advantage and Key Factors: Quality, Service Quality, Customer Responsiveness

5- Study Management Procedures The study was conducted according to the following steps:

1. Information was gathered from various sources (books, articles, newspapers, university websites, etc.) to develop the study's main hypothesis.

2. Statistics on the number of staff employed at universities were obtained.

3. The study population was defined, and then the sample was drawn.

4.The teaching materials were developed based on an analysis of textbooks in the field.

5. Three researchers reviewed the teaching materials.

6.The teaching materials were presented to the initial sample, who were asked to answer the questions honestly and truthfully, after being informed that their answers would be used solely for the study's analysis.

7.The data were entered electronically and analyzed using SPSS software (version 26). Appropriate statistical analyses were performed.

8.The study results were discussed in light of the theoretical literature and previous research, and a set of research hypotheses and recommendations was formulated.

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6- Statistical Analysis

To process the collected data, the researcher used SPSS software (version 26) and performed the following statistical analysis:

1.Arithmetic means, standard deviations, and percentages.

2 .Cronbach's Alpha coefficient for reliability testing. Pearson Correlation test to determine the effectiveness of digital transformation as an approach to enhancing sustainable competitive advantage in the performance of educational institutions (a field study in some colleges at the Holy University of Karbala), as well as to test the validity of the study instruments.

3. Multiple Linear Regression test to test the hypotheses.

Section Four

Presentation of Study Results

4.1 Introduction

4.2 Results Related to the Research Questions

4.3 Results Related to the Research Hypotheses

Introduction

This chapter presents a complete and detailed overview of the study's findings, which the researcher arrived at regarding the topic of the study: (Digital Transformation as an Approach to Enhancing Sustainable Competitive Advantage in the Performance of Educational Institutions) (A Field Study in Some Colleges of the Holy University of Karbala). To answer the study's questions and determine its results, the following scale was used table (5):

Correction key for the Likert scale (five-point scale)	Appreciation
1- 1.79	Very weak
1.80-2.59	Weak
2.60-3.39	Moderate

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3.40-4.19	Large
4.20-5.0	Very large

Results related to the study questions

First: Results related to the main study question, which stated: "Digital transformation as an approach to enhancing sustainable competitive advantage in the performance of educational institutions (a field study in some colleges of the Holy University of Karbala)" To answer the main question, the means and standard deviations for the questionnaire domains were calculated. The means and standard deviations were calculated for all sub-axes and the domain as a whole, as shown in Table (1).

To answer the main question, the means and standard deviations for the questionnaire domains were calculated. The means and standard deviations were calculated for all sub-axes and the domain as a whole, as shown in Table 6.

Table 6. *Arithmetic means and standard deviations for the overall study area*

Variable Number	Variables	Arithmetic Means	Standard Deviations	Response Score
1-Independent	Digital Transformation	4.00	0.332	High
2- Dependent	Competitive Advantage	4.17	0.347	High
Final Sum of Variables		4.09	0.283	High

The results of the main question revealed a strong consensus within the study areas and across the sector as a whole. The overall sector average was 4.09 (standard deviation: 0.283), indicating a high level. The average scores for the study areas were as follows: the reality of competitive advantage (mean: 4.17; standard deviation: 0.347; high level), followed by digital transformation (mean: 4.00; standard deviation: 0.332; high level). The results of the first question are presented below:

Question 1: What is the impact of digital transformation, with its dimensions (technical infrastructure, organizational culture, data and analytics, security and privacy, and digital strategy), on the qualitative dimension of competitive advantage in the faculties of Karbala University?

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To answer the first question, the arithmetic means and standard deviations of the axes of the first variable were extracted, where the arithmetic means and standard deviations were calculated for all sub-axes and variables as a whole, and illustrates this.

Results related to the study hypotheses:

The first hypothesis, which states: (There is no statistically significant effect at the significance level (α<0.05) of digital transformation (with its dimensions of technological infrastructure, organizational culture, data and analytics, security and confidentiality, and digital strategy) on competitive advantage (with its dimensions of quality, service excellence, and customer responsiveness), was examined. (A field study in some colleges at the Holy University of Karbala). By conducting a Pearson correlation test between the dimensions of digital transformation and the dimensions of competitive advantage, the following was revealed:

Table 10.4 shows that the lowest correlation was between technological infrastructure and customer responsiveness (0.086), while the highest correlation was between digital strategy and quality (0.365). Therefore, a statistically significant effect (α < 0.05) of digital transformation (technological infrastructure, digital strategy, and data and analytics) on competitive advantage (quality, service excellence, and customer responsiveness) was observed in a field study conducted in some colleges at the University of Karbala. The correlation was strong (0.000, less than 0.05), indicating a correlation between the dimensions of digital transformation and the dimensions of competitive advantage.

The researcher noted a correlation between the dimensions of digital transformation and the dimensions of competitive advantage. The second hypothesis was examined, which states: There is no statistically significant effect at the significance level (α<0.05) of digital transformation with its dimensions (technical infrastructure, digital strategy, data and analytics), security and confidentiality, and organizational culture on the competitive advantage of the dimension (quality).

Table 7. *Multiple Regression Analysis*

Variables	B Coefficients		Calculated T-value	Significance Level
	Unstandardized	Standardized		
(Constant)	2.382		8.865	0.000
Technical Infrastructure	0.064	0.083	1.552	0.122

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Data and Analytics	0.111	0.118	1.975	0.049
Digital Strategy	0.266	l 0.309	5.176	0.000
R-value	0.392a			
R-squared value	0.154			
Adjusted R-squared value	0.145			
Calculated F value	17.960			

*Dependent variable: Quality

Table (7) shows that the calculated T-value for the technical infrastructure domain was (1.552), while the statistical significance value was (0.122). The T-value for data and analytics was (1.975), while the statistical significance value was (0.049). The calculated T-value for the digital strategy variable was (5.176), while the statistical significance value was (0.00). We conclude from Table (11.4) that the calculated F-value was (17.960), which is significant at the (0.000) level, and the coefficient of determination was (0.154). This indicates that the dimensions of digital transformation (technical infrastructure, data and analytics, and digital strategy) explain (15.4%) of the quality dimension, which means that the null hypothesis was rejected.

Table 8*Multiple Regression Analysis*

Variables	B Coefficients		Calculated T-value	Significance Level
	Unstandardized	Standardized		
(Constant)	2.400		8.251	0.000
Technical Infrastructure	0.066	0.081	1.481	0.140
Data and Analytics	0.134	0.133	2.189	0.029

Digital Strategy	0.239	0.260	5.176	0.000
R-value	0.357a			
R-squared value	0.127			
Adjusted R-squared value	0.118			
Calculated F value	14.430			

*Dependent variable: Service excellence

Table (8) shows that the calculated (T) value for the digital technology domain was (1.481), while the statistical significance value was (0.140). Similarly, the (T) value for the technical infrastructure was (2.189), while the statistical significance value was (0.29). The calculated (T) value for the data and analytics variable was (4.290), while the statistical significance value was (0.00). We conclude from Table (12.4) that the calculated (F) values were (14.430), which is significant at the significance level of (0.000), and the coefficient of determination was (0.118), which indicates that the dimensions of digital transformation (technical infrastructure, data and analytics, digital strategy) explain (12.7%) of the service excellence dimension, which means that the null hypothesis was rejected.

The fourth hypothesis, which states that there is no statistically significant effect at the significance level ($\alpha<0.05$) of digital transformation (with its dimensions of technical infrastructure, data and analytics, digital strategy, security and confidentiality, and organizational culture) on the competitive advantage of the customer response dimension, was examined.

Table 9. *Multiple Regression Analysi*

Variables	B Coefficients		Calculated T-value	Significance Level
	Unstandardized	Standardized		
(Constant)			8.368	0.000
Technical Infrastructure	0.059	0.065	1.146	0.253

Data and Analytics	0.159	0.156	2.478	0.014
Digital Strategy	0.120	0.108	5.710	0.088
R-value	0.241a			
R-squared value	0.058			
Adjusted R-squared value	0.048			
Calculated F value	6.088			

*Dependent variable: Customer response

Table (9) shows that the calculated T-value for the digital transformation variable was (1.146), with a statistical significance value of (0.253). The T-value for the technical infrastructure was (1.710), with a statistical significance value of (0.088). The calculated T-value for the data and analytics variable was (2.478), with a statistical significance value of (0.014). From Table (13.4), we conclude that the calculated F-value was (6.088), which is significant at the (0.000) level, and the challenge coefficient was (0.058). This indicates that the dimensions of digital transformation (technical infrastructure, data and analytics, digital strategy, security and confidentiality, and organizational culture) explain (5.8%) of the response dimensions, meaning that the hypothesis was rejected. Zero.

There was broad agreement in the study area and the field at large, according to the findings pertaining to the primary research issues. The researcher came to the conclusion that the operation and performance of educational institutions are impacted by the introduction of technology and digital transactions based on the replies gathered. This effect results in better academic achievement as well as an increased capacity to create a competitive advantage and stand out in the job market. Additionally, incorporating contemporary technologies into the workplace boosts efficiency, boosts productivity of goods and services, and enhances academic achievement.

Interpretation of Results Related to the Study Questions

Interpretation of Results Related to the Main Question: "Digital Transformation (Technical Infrastructure, Data and Analytics, Digital Strategy, Security and Confidentiality, Organizational Culture (on Quality, Service Efficiency, Competitiveness Advantage, and Public Reaction) (A Field Study in Some Colleges of the Holy University of Karbala)".

This result is consistent with the findings of Yunus's (2019) research, which emphasized the obvious significance of digital transformation in a number of industries, most notably Saudi financial services. Additionally, it validates the results of Fazl's (2018) research, which highlights the necessity of this modern technology's broad application and development in the Islamic financial industry.

The results of the first question showed that the average score for the "digital transformation" variable in the studied sample, in a field study conducted at several institutions of the University of Karbala, was high.

Interpreting the results related to the first question: Digital transformation with its dimensions (technical infrastructure, data and analytics, digital strategy, security and confidentiality, organizational culture) on the dependent variable of competitive advantage in ((a field study in some colleges of the Holy University of Karbala)).

The researcher attributes this result to the participants' positive attitude toward digital technologies in the context of Islamic finance. Arab universities are increasingly prioritizing technology by integrating high-performance tools, and the current trend in digital technologies includes tools that facilitate digital transformation, such as mobile phones and social media.

4.4 : Study Results

Based on the statistical results, the study led to the following conclusions:

1. Universities have a clear and defined digital strategy.

2.Universities are responsible for keeping pace with the evolution of educational technologies.

3. Universities are able to comprehend how new technologies affect academic establishments' efficiency.

4. Iraqi universities are distinguished by their capacity to incorporate contemporary digital innovations and adjust to technological shifts.

4.5: Study Suggestions

The researcher offers the following suggestions in light of the study's findings:

1. To reach the highest level of digital maturity, we advise colleges to make large investments in digital transformation initiatives.

2. We advise college and university administrators to take an integrated strategy to digital conversion and make the most of the opportunities and advantages provided by the digitalization of educational institutions and technology, given the global competition and the trend toward digital transformation.

3. We advise university employees in the sample to take part in continuing education courses to increase their administrative technology proficiency.

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4. We advise administrators at universities (and other higher learning institutions) to leverage the influence of digital transformation on institutional performance by utilizing cutting-edge technology to better understand their consumers and promptly address their demands.

5. To raise their level of digital proficiency, we advise universities (and other higher education institutions) to take part in research conferences and seminars that facilitate the process of digitization.

6. We advise the Ministry of Higher Education and Scientific Research to give encouragement to the process of digitization in institutions top priority, making sure that the facilities and financial backing required for its success are available.

7. We advise scholars, experts, and teaching personnel in particular to step up research on how the use of modern technology affects academic institutions' efficiency.

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