



RESEARCH ARTICLE

The Significance of Requirements for Improving the Readiness of Arab Universities for Digital Transformation: Academic Leaders' and Faculty Members' Perspective

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ABSTRACT

This article surveys the views of faculty members and leaders on the significance of the dimensions of the requirements for the readiness of Arab universities for digital transformation. The research methodology involves using the descriptive approach. The research sample consists of (811) faculty members and (145) academic leaders "faculty deans, faculty deputies, department heads" randomly selected from Arab universities. A questionnaire is used as a research instrument to achieve the research objectives. The findings indicate that the faculty members and leaders emphasized the significance of all six Dimensions of digital leadership competencies necessary to improve the readiness of Arab universities for digital transformation at a very high level. The results also show that the physical and digital infrastructure dimension is ranked first with a mean of (4.89), while the research and innovation dimension is ranked second with a mean of (4.86). It is also found that the teaching and learning dimension is ranked third with a mean of (4.84), while the student experience dimension is ranked fourth with a mean of (4.83). However, the organizational culture dimension is ranked fifth with a mean of (4.67), while the dimension of the administrative and organizational aspects is ranked last with a mean of (4.38). Given the said results, the study recommends a set of measures related to the university and the academic leaders themselves to ensure the successful implementation of the process of improving the readiness of Arab universities for digital transformation.

INTRODUCTION

The phenomenon of digital transformation is not entirely new, as related concepts have existed in various forms for at least 50 years. The first wave of transformation, commonly called digitization, occurred in the 1960s and 1970s and resulted in the automation of small parts of processes with marginal changes to the organization (Gkrimpizi et al., 2023). In the 1980s and 1990s, the second wave of transformation, often called digitalization, was considered the process of using digital

technology and its effects, for example, digitizing a process. Unruh and Kiron (2017) have similar interpretations and describe digitalization as “the innovation of business models and processes that exploit digital opportunities.” The definitions must be clearly distinguished to avoid confusion that can alter the power and importance of digital transformation, potentially putting organizations at risk (Bloomberg, 2018). Thus, Unruh and Kiron (2017) identified the importance of terminology to create a framework that helps managers and policymakers think about using digital technology to address sustainability issues in the world.

Regarding digital transformation, it is the most comprehensive of the three terms that covers the entire organization, not just a specific process. Therefore, since the concept of digital transformation was first formulated in the 1990s, there has been a trend towards digital transformation in recent years. Digitization means the process of changing all types of information “written, audio, images, videos, and all types of data” into a digital language. Digitization can also be defined as broader than transferring analog extensions into discrete “digital” values in order to secure or process this data. It can be described as the use of digital technologies that can even change the business model, as it can be considered the process of moving to digital transformation. Digital transformation is the profound and accelerated transformation of business activities, processes, competencies and models to take full advantage of the changes and opportunities brought by digital technologies and their impact across society in a strategic and priority manner (Demirkan et al., 2016).

The concept of digital transformation involves the implementation and integration of a range of new information and communication technologies to develop a more sustainable and responsive solution. That is, digital transformation can be interpreted as a strategy for changing activities, processes, competencies and models in digital technology (Limani et al., 2019). According to (Daim, 2020; Daniotti et al., 2020), digital transformation simply refers to the change processes through which change is carried out so that digital developments replace traditional methods to achieve digital transformation faster and better performance. Digital transformation in universities aims to identify the needs of universities in providing education, research and community service by leveraging digital technology for all stakeholders (Hakan, 2020). In other words, through digital transformation services, universities hope that lecturers and students can adapt and gain advanced capabilities at the digital level (Altarawneh & Al-Ghammaz, 2023).

Digital transformation services in universities include the Internet, social media, the Internet of Things, big data, cloud computing, fast and high-capacity communications and artificial intelligence, after all, the goal of digital transformation in higher education is to create a digital university (Latifah et al., 2022). Digital transformation in universities aims to achieve a set of goals, including developing new and more advanced effective practices and methods that are compatible with the mission of higher education (Alenezi, 2021). Improving university performance can be achieved by enabling employees to focus on strategic tasks, increasing job satisfaction and collaboration, reducing workload, allowing for the automation of processes and encouraging innovation (Carvalho et al., 2022), analyzing the needs and requirements of stakeholders and providing appropriate education and research services (Kaputa et al., 2022), and transforming universities into smart universities (Sandkuhl & Lehmann, 2017).

Moreover, improving university performance can be achieved by strengthening university performance by enabling employees to improve the university's competitiveness (Mannava, 2021), developing components of the educational process, developing human resources, shaping the nature of institutional culture, developing curricula and courses periodically and continuously to keep pace with modern technological changes (Johnston et al., 2019), creating a culture of data-based decision-making (Mannava, 2021), providing educational opportunities continuously and continuously to achieve the principle of continuous education, achieving self-learning, and developing knowledge in order to increase labor market opportunities (Balyer & Öz, 2018). Also, improving university

performance can be achieved through developing university performance by enabling employees to provide educational opportunities continuously and continuously to achieve the principle of continuous education and achieve self-learning (Balyer & Öz, 2018), developing and improving educational programs and curricula, using virtual reality and augmented reality applications (Eid and Eid, 2022), improving resources (Mannava, 2021), developing the student's ability to: adapt and be flexible, think creatively and critically, take initiative and be responsible, communicate and cooperate through modern technologies (Al-Shammari, 2022).

Digital transformation in universities contributes to providing new opportunities for engaging and interactive learning, giving students the opportunity to investigate complex concepts in interesting ways (Al-Azawi et al., 2019). Universities can undoubtedly improve teaching and learning methods, foster a culture of innovation and flexibility, as well as simplify administrative procedures (Alhasan, 2024). It motivates students to develop essential skills such as critical thinking, digital literacy, and problem solving, and promotes these goals by facilitating innovative approaches to education, encouraging entrepreneurship and innovation, as well as supporting lifelong learning (Alhasan, 2024). Capacity building and professional development for faculty and staff includes training programs, workshops, continuing professional development that emphasize the importance of digital education and the use of digital tools for personalized learning experiences (Alhasan, 2024), investing in research and development for future markets, contributing to green infrastructure, diversity, equity and inclusion, and ensuring jobs of the future (World Economic Forum, 2020).

Digital transformation in universities allows employees to focus their efforts on other aspects, increase job satisfaction, cooperation and teamwork, and reduce the workload in administrative activities (Matkovic et al., 2018). It also contributes to driving growth and competitiveness through a better-trained and skilled workforce, enabling the acquisition of digital skills necessary to encourage innovation (Kerroum et al., 2020; Gkrimpizi et al., 2023) and reducing costs (Branch et al., 2020). It plays a crucial role in promoting a sustainable education system (Kaputa et al., 2022), developing leadership styles for university management, and making new administrative and leadership philosophical features, namely digital management and leadership, which enable the implementation of the principles of empowerment, accountability, integrity and transparency (Amin, 2018).

Moreover, it plays a crucial role in improving the university's reputation, competing with institutional peers, improving financial safety (Brooks & McCormack, 2020), enriching the virtual learning environment, increasing learning opportunities inside and outside the university with the emergence of some new specializations, developing partnerships, alliances, twinning and international cooperation, and providing self-learning and lifelong learning. Also, both academics and their institutions are changing the way they work at a faster pace than expected, as digital technologies allow for significant improvements in processes, business models and interactions between them (Packmohr & Brink, 2021). Digital transformation is based on a set of pillars, including: technology infrastructure (Johnson et al., 2019), data management and analytics (Daniel, 2015), digital literacy and skills development (Beetham & Sharpe, 2019), digital research and innovation (Borgman, 2015); digital content and curricula (Bates, 2019), cybersecurity and privacy (Williamson, 2018), and digital leadership and governance.

Also, Marks et al. (2020) diversifies the dimensions of digital transformation in universities from one study to another and limits the digital transformation maturity processes to teaching and learning processes, enabling processes, research processes, planning and governance processes, and evaluation of the institution's structure and operations management, information and technology infrastructure, human resources capabilities, and financial tools. Dolganova (2020) sees it in the organizational structure, operations management, human resources, and financing tools. Saba (2021) sees it in the information network infrastructure, digital education, IT training, digital library.

However, Al-Asami (2021) limits it to the digital transformation strategy, the student, faculty members, study programs, infrastructure, management and financing, electronic assessment.

Moreover, VINH (2021) limits it to digital information management, creating a large-scale interconnected database system and applying technology 4.0, teaching and learning processes, testing and evaluation of digital documents, digital libraries, virtual laboratories, implementing online training systems, and building virtual universities. Rodríguez-Abitia and Bribiesca-Correa (2021) define it in digital maturity, digital strategy, leadership and culture, market digitization, enhancing logistics, dynamic and digital capabilities. However, Giang et al. (2021) limits it to the education program, learners, training services, and governance. Moreover, Al-Shammari (2022) sees it in management, financing and organizational structure, infrastructure and technology, curricula and activities, teaching methods and evaluation, faculty development, student skills, community partnership and marketing. Equally, Latifah et al. (2022) limit it to flexible learning, teacher training, university readiness (creating educational platforms, managing data, managing IT infrastructure, and overcoming cultural barriers).

In the same context, Mohammed and Mohammed (2023) limit it to digital education, digital library, infrastructure, digital skills, financial and administrative support of senior management. Tsimpanis et al. (2023) sees it in strong leadership and governance on digital issues, policies and strategies that are widely communicated within the institution, widespread use of innovative digital technologies in teaching and learning, rich digital content and the presence of digital skills and competencies in the curriculum, provision of digital training and support for stakeholders based on adequate, modern and widely available digital infrastructure, and participation in research, networks and alliances to improve digital efficiency and capabilities. Mohammad (2024) limits it to the culture of digital transformation, education and learning, digital efficiency, evaluation, and infrastructure. Accordingly, the requirements for universities' readiness for digital transformation include - in the current research study - the following areas: administrative and organizational aspects, physical and digital infrastructure, organizational culture, teaching and learning, student experience, and research and innovation. With this detailed introduction, a review of the related studies is provided in the next section.

LITERATURE REVIEW

Research has documented studies and research work addressing the readiness for the digital leadership in universities. Marks et al. (2020) developed a framework for assessing the maturity of digital transformation in higher education and the challenges it faces. The results indicated a significant discrepancy between respondents' perceptions of digital transformation maturity levels, basic requirements for digital transformation maturity, lack of comprehensive vision, digital transformation efficiency, and data structure and processing. The study proposed a new framework based on Deloitte's 2019 Digital Transformation Assessment Framework with Petkovic's 2014 Greater Higher Education Process Mapping.

Also, Giang et al. (2021) analyzed the characteristics of the digital university model to determine the criteria for evaluating the availability of the digital transformation process. The results found that under the influence of digital transformation, there are four main factors including the education program, learners, training services, and governance that need to be radically changed, creating the core values of higher education institutions to improve the quality and effectiveness of higher education in the Fourth Industrial Revolution.

Moreover, Zabi and Baatbash (2021) revealed the role of strategic leadership through its five dimensions "determining strategic direction, exploiting and investing strategic capabilities and talents, developing human capital, supporting and enhancing organizational culture, implementing balanced organizational control" in achieving digital transformation at Mohamed Boudiaf University.

The results found a strong correlation and influence between the dimensions of strategic leadership and the digital transformation of Mohamed Boudiaf University.

Besides, Zidane (2021) measured and evaluated the digitization project within higher education institutions by analyzing and diagnosing the current situation by applying it to Al-Azhar University using the SWOT analysis method. The results showed that the university's adoption of a growth and expansion strategy represented in employing sources of strength to seize the best opportunities by activating the partnership with the Supreme Council of Universities and the Ministry of Communications to benefit from state-funded projects in establishing a Data Center "the cornerstone of the digitization process" in addition to qualifying human resources.

In addition, Seyam et al. (2021) revealed the impact of digital transformation on the performance of higher education institutions in Egypt after the recent waves that led to digital transformation around the world, such as the Covid-19 pandemic. The study concluded that the use of the Internet as a tool for digital transformation affects business performance in higher education institutions and digital technologies affect the performance of universities. Finally, it was found that digital transformation leads to accurate data analysis, which helps in the rational decision-making process.

Also, Abd Al-Khair (2021) revealed the role of digital transformation "digital learning" at King Khalid University in developing and effective e-learning in light of the Covid-19 pandemic. The study concluded that King Khalid University is distinguished by the presence of an effective electronic system and that the technical environment of information technology has enabled King Khalid University to confront the rapid change in the work environment. The study recommends that digital transformation is no longer an option, but rather a necessity. Therefore, it is necessary to keep pace with technical developments and benefit from them in the transition to digital learning.

Besides, Al-Asami (2021) revealed the reality of digital transformation "digital transformation strategy in the faculty, students, faculty members, study programs, faculty infrastructure, administration and finance, and electronic evaluation" at the Faculty of Education, Tanta University, in light of the spread of the Corona virus. The results found that the responses of the sample members of the faculty members were mean for the first, third, fourth, and fifth dimensions, while their responses to the second, sixth, and seventh dimensions were low. The results also found statistically significant differences on the overall questionnaire and its dimensions at the level (0.05) due to the difference in the position variable, as all these differences are in favor of those who held an administrative position. There were also statistically significant differences between the responses of the sample members according to the scientific degree variable for the overall questionnaire, in favor of the professor category.

Likewise, VINH (2021) investigated the impact of digital transformation on universities from a global perspective and also looked at how Vietnamese universities can seize the opportunities and overcome the challenges brought by digital transformation. The results found that digital transformation is taking place strongly in universities around the world, putting pressure on Vietnamese universities to change and adapt to new circumstances. It was also found that the digital transformation is characterized by enhancing the quality of education, making teaching and learning processes more flexible, and the application of digital transformation in university management helps to manage and control daily work efficiently.

Also, Ahmed (2022) revealed the impact of organizational change management in its dimensions on digital transformation with its requirements "administrative requirements of the institution, human requirements, technical requirements, security requirements, communication networks" in university institutions to achieve a competitive advantage in its dimensions at the Faculty of Agriculture - Alexandria University. The results found a strong correlation between the impact of organizational change and the requirements for implementing digital transformation in university

institutions to achieve a competitive advantage. The study also recommended the need to accelerate the national project for digital transformation, which is one of the most important tools for achieving sustainable development sought by the political leadership, developing the university work environment and providing electronic services, and moving towards the digital economy.

Besides, Aditya et al. (2022) tested a theoretical framework for identifying barriers to implementing digital transformation in higher education. The study identified the main barriers to implementing digital transformation in higher education in Indonesia, including eight contextual issues, one technical issue, and two cultural issues with different levels of importance and difficulty. Based on the matrix created, this study also provided a list of the top 11 barrier priorities. Also, Asad and Jumblatt (2022) identified digital transformation and its importance in universities and measured the impact of digital transformation on student satisfaction at Tishreen University. The study concluded that there is a statistically significant effect for each of "digital transformation, digital customer experience, digital process transformation, and digital business models" on student satisfaction at Tishreen University.

Also, Al-Bashir and Al-Tal (2022) revealed the reality of digital transformation at Jazan University according to the government digital transformation model (Eighth Measurement - 2019). The study concluded that the overall level of the reality of Jazan University's achievement of the stages of digital transformation in the dimensions of "Eighth Measurement - 2019" is in the "providing services" stage based on the achievement of the perspectives as a whole, which is the second stage among the five stages of digital transformation "construction, provision of services, excellence and improvement, integration, creativity".

Moreover, Benavides et al. (2022) validated the content of a tool that identifies organizational, social, cultural and technological characteristics that promote digital transformation in higher education institutions using the Delphi method. The results showed that the instrument has content validity and there is strong consensus among the validators, as the instrument consisted of 29 questions: 13 modified items and 2 combined items. Also, Al-Shammari (2022) revealed the requirements for achieving digital transformation for Saudi universities in light of the Kingdom's Vision 2030. The study concluded that the degree of availability of each of the elements needed for digital transformation at Hail University is well available, reaching 65.48%. There are also statistically significant differences in the academic degree in favor of the professor's degree and in gender in favor of males.

Likewise, Ali (2022) developed the administrative performance of academic leaders at Fayoum University in light of the requirements of digital transformation of universities. The study concluded that the administrative performance practices of academic leaders at Fayoum University in light of the requirements of digital transformation of universities are at a medium level. The technological infrastructure available to academic leaders at Fayoum University as requirements for digital transformation was also found at a medium level. The study recommended the necessity of training academic leaders to master the knowledge and skills necessary to employ digital transformation technologies in performing administrative operations through specially prepared programs and providing the necessary technological infrastructure to support the use of digital transformation applications in all aspects of administrative performance of academic leaders at Fayoum University.

Besides, Latifah et al. (2022) analyzed the readiness of higher education in Indonesia to face digital transformation. The results found that in the focus of students, the theme of flexible learning was revealed, which means that students can study anytime and anywhere without restrictions. One theme was found in the focus of teachers, which is trained teachers, which means that teachers must have the competencies to adapt to digital transformation. Finally, four themes were found in the focus of institutions, which are creating learning platforms, managing data, managing IT infrastructure, and

overcoming cultural barriers, where these themes can be achieved through online classes and changing the mindset at the university.

Additionally, Ahmed (2023) presented a proposed vision for developing the digital administrative performance of employees in the administrative apparatus at the Faculty of Early Childhood Education, Minia University. The results found that there is a dimension of the human element supervising and performing digital administrative performance at a below medium level. The findings showed the presence of a dimension of the supporting infrastructure for digital administrative performance at a below medium level, the achievement of a dimension of university support for digital administrative performance at a below medium level, and obstacles to administrative development at a medium level. The research concluded with presenting a proposed vision for developing digital administrative performance at the faculty.

Similarly, Al-Balawi (2023) revealed the role of heads of academic departments in promoting the culture of digital transformation at Tabuk University from the perspective of faculty members. The results showed that the role of department heads in promoting the culture of digital transformation at Tabuk University in general (overall) is high with a medium of (3.86). The role of department heads in promoting the culture of digital transformation in the three dimensions was found at a high level. Equally, Gkrimpizi et al. (2023) classified the barriers to successful implementation of digital transformation initiatives in higher education institutions through a systematic literature review consisting of five stages: (1) formulating research questions, (2) research process, (3) summarizing, (4) analyzing, and (5) evaluating. The results revealed twenty distinct barriers to digital transformation in higher education organized into six broad categories, namely environmental, strategic, organizational, technological, people-related, and cultural. The results provided a comprehensive understanding of the barriers faced, facilitating the development of effective strategies and interventions.

Likewise, Al-Hazmi (2023) revealed the reality of governance and its role in digital transformation and the obstacles to its implementation at Princess Nourah bint Abdulrahman University. The results found that the reality of digital transformation governance "policies and procedures - technology - organizational effectiveness" had a mean of (3.74) and a medium degree. There were also no statistically significant differences between the medium estimates of the study sample for the reality of digital transformation governance as a result of the variables "academic qualifications, administrative positions". There were also statistically significant differences between the medium estimates of the study sample attributed to the variable of years of experience in favor of those with more than (10) years of experience.

Besides, Khawaji (2023) identified the requirements for transformation in Saudi universities from the perspective of faculty members at Umm Al-Qura University. The results showed that requirements related to human resources ranked first with a mean of (2.25), followed by organizational requirements with a mean of (1.95). Technical requirements ranked last with a mean of (1.64). The participants "faculty members" also presented some proposals related to the mechanism that could contribute to implementing digital transformation in Saudi universities.

Moreover, Mohammed (2023) revealed the reality of intellectual capital at Benha University and the requirements for its development in light of the digital transformation. The results found some problems related to the reality of intellectual capital at Benha University, including the university's weak attraction of qualified faculty members, the university's weak possession of professors with an international academic reputation, the human capital's weak possession of technical skills related to designing educational materials and interactive courses, the university's weak possession of a technological infrastructure that enables it to digitally transform in all its activities, the lack of cooperation protocols with sectors of society to provide technological support, and the weak

establishment of partnerships with productive institutions to finance scientific research and apply its results.

Furthermore, Lamin and Momen (2023) revealed the obstacles to digital transformation in Libyan public universities. The results found that there are obstacles to digital transformation ranked in order of importance: financial obstacles, human obstacles, technical obstacles, and organizational obstacles. The results also showed no statistically significant differences in the responses of sample members regarding the obstacles that can be attributed to "gender, age, marital status, experience, academic qualification, and academic degree".

Also, Los et al. (2023) revealed the role played by information and communication technology (ICTP) projects in achieving the digital transformation of Egyptian universities. The results found that there is insufficient financial support for the continued development of digital transformation projects at the university, weak availability of modern technologies necessary for digital transformation, weak technological infrastructure for projects, insufficient security requirements for information and data security in projects, insufficient qualified and trained human cadres working in projects, weak digitization of various departments, and weak periodic and regular training and workshops for all university members.

Besides, Fernández et al. (2023) identified the digital transformation initiatives undertaken by higher education institutions and the new processes and technologies used to implement them. The results showed that the digital transformation initiatives implemented focus primarily on providing high-quality and competitive education (24% of the 184 digital transformation initiatives from 39 different universities analyzed). It was also found that the most used emerging technologies are advanced analytics (23%), cloud (20%) and artificial intelligence (16% of the total digital transformation initiatives). Also, it was found that the higher education institutions are in the early stages of digital maturity as only 1 in 4 have a digital strategy and 56% have launched isolated digital transformation initiatives that are not integrated into a plan and do not have a high strategic return value for the organization.

Additionally, Mohammed and Mohammed (2023) assessed the digital readiness of higher education and scientific research institutions. The study concluded that digital education and e-library are the most important determinants of "digital readiness in higher education and scientific research institutions", while infrastructure, digital skills and senior management support are the most important factors. Also, Yavuz et al. (2023) studied the digital transformation activities of universities and used the qualitative research method through document analysis where 207 university websites were examined. The results revealed the emergence of six broad dimensions, such as research, education, culture, process, and technology and community service in relation to the digital transformation activities of higher education institutions. With regard to the digital transformation activities of higher education institutions, infrastructure studies, educational activities for research and supply, and the use of smart systems to provide various cooperation opportunities were discussed within the scope of the research dimension. It was also found that there are online scientific studies, online educational programs, digital resources and open access opportunities in the education dimension.

Similarly, Akbar et al. (2024) developed a model to measure the readiness for digital transformation in Indonesian higher education institutions using digital enablers. The results found that the implementation of Industry 4.0 has a significant impact on organizational resilience, while the implementation of Industry 4.0 has a positive and insignificant impact on digital transformation readiness. It was also found that organizational resilience and innovation management have a positive and significant impact on digital transformation readiness, while the direct implementation of Industry 4.0 to prepare for digital transformation has an impact but not significant. Also, there should be organizational intervention in shaping digital transformation readiness. The

implementation of Industry 4.0 in organizations also showed positive and beneficial things for organizational development to become ready for digital transformation. By shaping the university from a normal organization to an agile organization, it will be able to go through a dynamic external environment and build an organization that moves forward, becoming ready for digital transformation.

Mohammed (2024) identified the requirements and obstacles to digital transformation in Egyptian universities within the framework of Egypt's Vision 2030. The study concluded that there are high levels of obstacles to digital transformation “administrative, legislative, technical, human, financial”, and that the university needs all the requirements of digital transformation “culture, education and learning, digital competence, evaluation, infrastructure” to a high degree. Given the previous literature review, the research problem is furnished in the next section.

Research Problem

Of late, the continuous development of information and communication technologies has given birth to the so-called digital age or Industry 4.0, a change that has been reinforced by the crucial role of digital transformation. Digital transformation has significant positive implications for the Sustainable Development Goals set out in the United Nations Agenda 2030, which countries, institutions and organizations should commit to the goal of reducing the digital divide to avoid the potential negative effects of digital exclusion (Kulkarni & Ghosh, 2021). Integrating the potential offered by ICT into higher education institutions leads to the development of new strategic options using policies and plans in accordance with the new requirements of the labor market. Therefore, new educational models must be developed where students and teachers must acquire and develop new skills (Bryndin, 2019).

Higher education institutions are facing a destabilizing scenario with the emergence of new business models within the education and training sector. These models need to meet the needs of external and internal stakeholders, seek their commitment and improve their experience in the organization, as these changes lead to the digital transformation of the higher education institution (Arango Serna et al., 2018). The introduction of digital transformation concepts into higher education institutions is a different concept that has attracted attention because it enables us to put in place complex relationships between actors in the technology-enabled education sector. More than 20 years after the beginning of the 21st century, digital transformation has been identified as a new goal for higher education institutions, as it is a natural and necessary process for organizations that aim to create transformational leaders and be able to compete in their industry. Therefore, it has been determined that universities cannot implement digital transformation beyond renewing their technological infrastructure to a strategic vision and an integrated transformation model (Hannan et al., 2023).

According to Sklyarov et al. (2020), digital transformation is about taking advantage of digital technology and being able to interpret digital technology in everyday life so that we can get the benefits. Digital transformation is more related to changes in the mindset and way of working and managing in a digital environment. Therefore, digital transformation should be understood as a deep and radical process of change that pushes universities in new directions and brings them to a completely different level of effectiveness. It is like the profound changes that occur in the university as a result of adopting and integrating digital technologies into every aspect of it, where information is digitized, processes and roles that make up the university's functions are digitized, and the university and its strategy are digitally transformed, going beyond technology alone, and also paying attention to changes in value, culture and organizational structure and considering it a long-term and iterative process.

According to certain researchers, universities have lagged behind other sectors in digital transformation (Rodríguez-Abitia & Bribiesca-Correa, 2021). Prior to the COVID-19 pandemic, higher

education was one of the least digitized and most labor-intensive industries. However, prior to the pandemic, the higher education sector was beginning to face increasing pressure to reorient itself towards more digitally oriented and outcome-focused economic models, with the onset of the pandemic helping to radically change higher education towards digital transformation in all its operations (Bucăța et al., 2022). In response to the changing needs and expectations of students, faculty, and stakeholders, digital transformation has become essential for higher education institutions (Khalid et al., 2018). The primary goal is to enhance the quality, availability, and effectiveness of higher education while equipping students with the skills vital to success in this fast-paced digital age. In recent times, higher education institutions around the world have accepted the need to adapt to the digital age (Alenezi, 2023).

Moreover, Benavides et al. (2022) add that higher education institutions have become saturated with technological advances and are forced to face digital transformation in its organizational, technological and sociocultural dimensions. However, it was with the COVID-19 pandemic, where lockdowns and mandatory social distancing forced them to rapidly move from traditional classroom teaching to online learning. According to reports from the United Nations (2020) and UNESCO (2020), the COVID-19 pandemic has caused the largest disruption to education systems in history, affecting nearly 1.6 billion students in over 190 countries and all continents. The closure of learning spaces has affected 94% of the world's students. To address the massive disruption to education, UNESCO issued recommendations in 2020 to ensure continuous learning and teaching worldwide.

The lockdown led to the adoption of digital technology tools for online learning and teaching by 1.6 billion students and 63 million teachers in over 200 countries (Shen et al., 2022). As a result, governments around the world were forced to shift to online teaching and learning almost overnight with no time to plan, strategize, and adapt (Zhang et al., 2020). Therefore, this shift was forced with a problem in emerging countries to use these strategies because most of the vulnerable population did not have internet access or the digital tools necessary to access educational platforms. Thanks to the above, it can be said that the pandemic played an important role in the implementation of ICT in higher education, bringing with it challenges such as changes in the strategies used in teaching and learning processes with the emergence of new needs that must be covered to provide quality education (de Pirela et al., 2023).

In addition, higher education institutions have been under pressure to seek pedagogical innovations and make use of innovative methodologies, as well as digital materials and interactive tools to promote digital interconnection between elements of the academic community (Rodríguez-Abitia et al., 2020). According to Sebaaly (2019), there are justifications and reasons for the digital transformation of universities, including digital motivations such as technological forces driving digital transformation and related to mobile and hyper-technologies that allow access to information, the ability to interact or make decisions at any time and place, social media, analytics and big data that allow for informed readings and the development of data-based scenarios, the Internet of Things that provided unlimited possibilities for interaction through links and smart communication, automation of current roles and functions in universities and replacing them with advanced technology applications related to the Fourth Industrial Revolution, and modernity of communications and information technology and business motivations, which calls on universities to implement digitization in response to new market requirements in line with the digital age.

As put by Bejinaru (2019), there are many reasons that led to digital transformation, including increasing speed: as digital transformation helps universities in the decision-making process in order to adapt to the requirements of the market, students, faculty and staff and speed up its completion, enhance competitiveness, control costs, time and effort, and develop the experiences of beneficiaries. On the other hand, Amin (2018) believes that there are several justifications for digital transformation in universities, including those related to the student and his traditional study system

and university attendance according to a specific study schedule in time and place, justifications for the geographical distance of the student's residence in relation to the university, the high costs of university education and scientific research in traditional universities in light of the increase in university productivity, the increasing trend towards meeting the requirements of the educational and research labor market, global market forces and their culture, and cognitive and technological revolutions and what they have caused in the nature of business systems and university functions.

In addition, in the context of globalization of higher education, universities are entering global competition (Gafurov et al., 2020). Under these conditions, the competitiveness of universities will be determined by the timely introduction of new technologies and the degree of significant types of digital transformation activities (Maltese, 2018). Without successful digital transformation, universities may fail to be a place that attracts, trains, and leads scholars, students and companies, and their competitiveness declines (VINH, 2021). Also, in this complex environment, the education sector is no exception. The demand for digital reform, especially in higher education institutions, has been a necessity since the early 1960s, and has arisen from a variety of external and internal sources.

Moreover, the radical changes taking place in the education sector are driving change. The universalization of education, where educational services are widely provided, should not be ignored. In the democracy of knowledge, huge amounts of learning content can be accessed online. In the post-truth era, experts tend to have less influence in shaping public opinion. In professional changes, there are many changes in professions and increasing global competition. However, globalization and the competitive environment impose pressures and make it difficult for higher education institutions to keep up with the speed of change and push them to redesign strategies to remain relevant and competitive. In response to these pressures, many educational institutions have undertaken radical reforms, including the move towards digital transformation (Gkrimpizi et al., 2023).

Now that higher education worldwide faces high technological and competitive challenges, digital transformation frameworks are required as an inevitable option for developing education in a smart environment. Artificial intelligence, big data, blockchain and other emerging technologies will change the way teaching and learning take place and lead to a reimagining of education, its culture and environment. The main trends of global digital transformation are being integrated into university activities and strategies, and shared knowledge resources become a reliable basis for decision-making throughout the life cycle of infrastructures, where changes in the system and structure of educational institutions are inevitable (VINH, 2021). Doering et al. (2021) argue that the reasons for digital transformation within universities vary, but they often include the pursuit of improving the availability of services, the speed of services, the sustainability of operations and services, data security, improving the university's external image, and social responsibility and transformation, as internal digital transformation may enable a better response to the ongoing digitization of industry and society, where needs and requirements can be met.

The interest in digital transformation in universities is due to the expectations and commitments of governments regarding higher education institutions. University leaders have begun to make a series of structural changes, such as focusing on performance, reducing costs, and increasing competitiveness, with the aim of improving the quality of education and thus increasing the demands placed on higher education in terms of social responsibility, quality, and efficiency, which made digital transformation necessary (Carvalho, et al., 2022). To meet these challenges on the one hand and gain a competitive advantage on the other (Hamidi & Jahanshaheefard, 2019), digital technologies are a major means of realizing this potential (Selwyn, 2020a, b), as Murphy (2020) stated that technology will reshape universities by 2030.

Digital transformation has been recognized as a systemic change that includes four entities: human, hardware, software, and infrastructure. From this statement, digital transformation readiness is

linked to the impact of higher education stakeholders, namely students, teachers, and educational institutions, where students act as implementers, teachers as lecturers, and institutions as major contributors (Latifah et al., 2022). Therefore, digital transformation in universities requires rethinking, restructuring, and reinvention through its multi-purpose, multi-process, multi-disciplinary, multi-state, and multi-actor nature, as it is a collective effort that places the person at the center of the development and transformation process and its impact on society. This means that digital transformation must be an integrated and comprehensive transformation of the higher education institution and must be approached from technological, organizational and social perspectives (Benavides et al., 2022).

According to Tsimpanis et al. (2023), universities need to maintain their competitiveness in the rapidly evolving digital landscape, and this requires a strong online presence and ensuring that digital technologies are seamlessly integrated into all aspects of the institution's operations, including teaching, learning, research, administration and communication. Therefore, many Arab studies have called for the need for universities to focus on providing all the necessary requirements to achieve their readiness for digital transformation in the highly complex, uncertain and ambiguous digital age (Sabaa, 2021; Al-Asami, 2021; Al-Shammari, 2022; Mohammad, 2024). Accordingly, the research problem is reflected in answering the following main question: What is the degree of the faculty members' and academic leaders' perception of the significance of the dimensions of Arab universities' readiness for digital transformation?

Research Significance

The significance of the research is reflected in enriching Arab libraries with scientific material on digital transformation and the readiness of universities for digital transformation, especially since there is a scarcity of Arab research and studies that have addressed this aspect in universities in general. Moreover, it is hoped that the research results will contribute to aiding with decision-makers in Arab universities to work on improving the readiness of Arab universities for digital transformation, especially since the research study provides a set of requirements in six basic dimensions that must be available to improve this readiness. This study also helps officials in ministries of higher education and universities to increase the competitive capabilities of Arab universities in achieving their functions considering the requirements and objectives of digital transformation.

In the same context, it is hoped that this study will be a starting point for other studies in which other variables are added and linked to digital transformation considering the university's functions: education, scientific research, and community service. Hopefully, this study will also employ the study instrument in monitoring reality and expectations, and thus develop the necessary plans, strategies and programs to improve the readiness of Arab universities for digital transformation as an approach through evaluating and developing relevant university practices considering it. The study presents a set of conclusions related to theoretical contributions, practical implications, limitations, results, and recommendations, which decision-makers and researchers can benefit from to expand research and studies in this field to develop Arab universities considering modern trends towards digital transformation.

Research Terms & Definitions

According to Ahmed (2020), digital transformation as an intentional change in the pattern of services, functions, administrative, educational, research and service practices of the university from the usual traditional form to a digital electronic image through smart human resources, digital technical infrastructure components and smart technological applications via the Internet within the university campus. On the other hand, Brooks and McCormack (2020) define it as a series of deep and consistent culture, human resources, and digital transformations that enable new educational

and operational models, transform the university's business models, strategic directions, and value proposition across the entire university, requiring innovative leadership at all levels, as well as coordination between units, and flexibility that expands university patterns.

Moreover, Serna Gómez (2021) defines it as the phenomenon in which old management patterns are broken and reinvented through creative change supported using digital technology to achieve more effective management and build new relationships. Also, Sabaa (2021) defines it as the university's ability to realize an advanced and modern process that aims to bring about a qualitative change to move from traditional systems to modern systems that rely entirely on technology and modern techniques that achieve distinguished functional performance. Besides, Al-Asami (2021) defines it as the use of information, communications and global Internet technology to improve the performance of its tasks and various educational processes and transfer them to those who need them inside and outside it through the flowing and available information, the information technology and systems used, and the human resources assigned to it to carry out these tasks.

However, VINH (2021) sees it as a comprehensive change in business models using digital technologies in educational management, teaching, learning, testing and evaluation. Regarding Los et al. (2023), they define it as the university's ability to create and activate projects that achieve digital transformation to become able to evaluate its services and activities digitally and qualify its members to acquire all technical and digital skills, which makes the university able to keep pace with global changes and developments in the era of digital transformation. Also, Lamin and Momen (2023) define it as a radical change in the way universities operate by using digital technology instead of traditional technology to accomplish business. Moreover, Mohammed (2024) defines it as designing a distinctive business system that allows the university to invest in information and communication technologies to the maximum extent, which gives it a head start in competition, as it is operated and built on the basis of digital technologies to achieve the university's goals and provide high-quality services at the lowest cost and in the fastest time within the framework of the available legal regulation.

Regarding the readiness of universities for digital transformation, Tsimpanis et al. (2023) see the existence of a systematic approach as a reliable and comprehensive assessment framework for measuring digital readiness in higher education institutions. By measuring digital readiness, universities can identify gaps and prioritize investments in areas that are most needed, and this helps ensure that the university is well positioned to benefit from digital technologies in all aspects of the institution's operations. The requirements for improving the readiness of Arab universities for digital transformation are defined procedurally as the degree to which Arab universities must obtain them through the answers of faculty members and academic leaders to the questionnaire items related to the requirements for improving the readiness of Arab universities for digital transformation, which consists of 6 dimensions "administrative and organizational aspects, physical and digital infrastructure dimension, organizational culture dimension, teaching and learning dimension, student experience dimension, and research and innovation dimension".

Research Limitations

The findings of this research study can be generalized considering the following limitations:

Human Limitations: This research is limited to a random sample of faculty members and leaders in Arab universities.

Spatial Limitations: This research study is conducted in Universities of Arab countries.

Temporal Limitations: This research study is conducted in the second semester of the academic year 2023/2024.

Objective Limitations: This research is limited to surveying the views of faculty members and leaders of the significance of the dimensions of the requirements for Arab universities' readiness for digital

transformation “administrative and organizational dimension, physical and digital infrastructure dimension, organizational culture dimension, teaching and learning dimension, student experience dimension, and research and innovation dimension”.

METHODS

Research Approach

The descriptive approach is used to achieve the research objectives, as it is the most appropriate approach for such a study, along with using the questionnaire as a research instrument for collecting data related to the research study.

Research Sample

The research sample consists of (811) faculty members and (145) academic leaders “faculty deans, faculty deputies, department heads” randomly selected from Arab universities randomly selected to answer the questionnaire on surveying the views of faculty members and leaders on the significance of the dimensions of the requirements for Arab universities’ readiness for digital transformation “administrative and organizational dimension, physical and digital infrastructure dimension, organizational culture dimension, teaching and learning dimension, student experience dimension, and research and innovation dimension”.

Research Instrument

Utilizing the theoretical literature and previous studies (see, Marks et al., 2020; Dolganova, 2020; Seven, 2021; Al-Asemy, 2021; VINH; 2021; Rodríguez-Abitia & Bribiesca-Correa, 2021; Giang et al., 2021; Al-Shammari, 2022; Benavides, 2022; Latifah et al., 2022; Mohammed & Mohammed, 2023; Tsimpanis et al., 2023; Mohammed, 2024), along with the views of validators and educational specialists, a 77-item questionnaire was developed and distributed over six dimensions: Administrative and organizational dimension, physical and digital infrastructure dimension, organizational culture dimension, teaching and learning dimension, student experience dimension, and research and innovation dimension to measure the perception of faculty members and academic leaders in Arab universities of the significance of the dimensions of the requirements for Arab universities’ readiness for digital transformation. A five-point Likert scale was adopted for the questionnaire, as follows: (5) very high, (4) high, (3) medium, (2) low, (1) very low. The sections are regular, and all the questions in the two questionnaires fall within a five-point Likert scale.

Arab Universities’ Readiness Questionnaire for Digital Transformation

Research Instrument Validity

Face Validity

Face validity is used to check the research instrument validity by reviewing the questionnaire in its initial forms from (23) experienced and specialized faculty members in Arab universities. The comments, modifications, and recommendations proposed by the validators are considered, as the items have obtained an approval rating of (80%) or more. The necessary action is taken with the items suggested to be deleted, modified, or reformulated, and thus the questionnaire in its final form consists of (58). This method is suitable for checking the face validity of the questionnaire, that is, its items can measure what they are set to measure.

Internal Consistency Validity

By applying the questionnaire to a pilot sample of (69) faculty members, the correlation coefficient is calculated between each item score and its dimension total score as shown in Table (1).

Table 1: Correlation Coefficients between Each Item Score and its Dimension Total Score

Administrative and Organizational Dimension		Physical and Digital Infrastructure		Organizational Culture		Teaching and Learning		Student Experience		Research and Innovation	
Item	Correlation	Item	Correlation	Item	Correlation	Item	Correlation	Item	Correlation	Item	Correlation
1	.798**	16	.864**	31	.900**	43	.801**	56	.832**	67	.654**
2	.619**	17	.800**	32	.846**	44	.846**	57	.674**	68	.611**
3	.811**	18	.804**	33	.608**	45	.907**	58	.731**	69	.798**
4	.866**	19	.843**	34	.712**	46	.716**	59	.700**	70	.806**
5	.876**	20	.750**	35	.734**	47	.740**	60	.654**	71	.798**
6	.716**	21	.673**	36	.819**	48	.691**	61	.763**	72	.802**
7	.684**	22	.712**	37	.850**	49	.644**	62	.808**	73	.811**
8	.830**	23	.704**	38	.809**	50	.698**	63	.729**	74	.760**
9	.876**	24	.806**	39	.865**	51	.754**	64	.608**	75	.757**
10	.803**	25	.843**	40	.670**	52	.707**	65	.698**	76	.649**
11	.818**	26	.870**	41	.636**	53	.816**	66	.764**	77	.800**
12	.734**	27	.867**	42	.658**	54	.847**				
13	.698**	28	.810**			55	.820**				
14	.608**	29	.806**								
15	.674**	30	.803**								

As shown in Table (1), the values of the correlation coefficients have ranged from (0.907) to (0.608), where they are all positive and statistically significant at the level (0.01), indicating the internal consistency between each item score and its dimension total score.

Research Instrument Reliability

The research instrument reliability is checked by calculating the reliability coefficient by applying Cronbach's Alpha formula on all dimensions. The Cronbach's Alpha formula measures the extent of consistency in the respondents' answers to all questionnaire items as shown in Table (2).

Table 2: The Reliability Coefficients of the Arab Universities' Readiness Questionnaire for Digital Transformation

Dimension	Internal Consistency
Administrative and Organizational Aspects	0.804
Physical and Digital Infrastructure	0.760
Organizational Culture	0.811
Teaching and Learning	0.749
Student Experience	0.764
Research and Innovation	0.808
Overall Readiness of Arab Universities	

As shown in Table (2), the reliability coefficients of the Arab universities' readiness questionnaire for digital transformation have ranged between (0.749) and (0.808), where the highest reliability coefficient is the administrative and organizational aspects, while the lowest is teaching and learning.

Research Instrument Correction and Statistical Processing

The following statistical methods are used to answer the research questions and process the data statistically.

Means, standard deviations, ranks, and degrees are used to answer the main research question.

Cronbach's Alpha coefficient is used to find the internal consistency coefficient of the research instrument.

To determine the degree of the study sample of the significance of the dimensions of Arab universities' readiness for digital transformation from the faculty members' and leaders' perspective, the five-point Likert scale was used for degrees of agreement, as follows: very high (5) degrees, high (4) degrees, medium (3) degrees, low (2) degrees, and very low (1) degree. The following statistical criterion was also used to distribute the means: (1 to less than 1.80) very low, (1.80 to less than 2.60) low, (2.60 to less than 3.40) medium, (3.40 to less than 4.20) high, and (4.20 to less than 5.00) very high.

RESULTS AND DISCUSSION

First: Results related to the Main Research Question

What is the degree of the faculty members' and academic leaders' perception of the significance of the dimensions of Arab universities' readiness for digital transformation?

To answer this question, the means and standard deviations of responses of faculty members to the questionnaire on the degree of the perception of the significance of the dimensions of Arab universities' readiness for digital transformation are calculated. Table (3) illustrates those results.

Administrative and Organizational Aspects

Table 3: Means and Standard Deviations for the Perception of the Significance of the Administrative and Organizational Aspects Dimension

Text of Item	AM	SD	Degree of Agreement	Rank
Having a comprehensive and clear strategic vision for digital transformation that recognizes the needs and diversity of actors, stakeholders, processes, practices and technologies.	4.93	0.76	Very High	1
Managing a clear digital transformation strategy that is in line with contemporary global trends.	4.92	0.81	Very High	2
Restructuring the university's academic and administrative governance model to allow for a flexible and supportive infrastructure that adapts quickly and accurately to the new requirements of the digital world.	4.90	0.73	Very High	3
Having sufficient financial resources allocated to implement and sustain the digital transformation strategy.	4.87	0.84	Very High	4
Ensuring the alignment of institutional information through enterprise architecture and effective data governance and management.	4.84	0.88	Very High	5
Having data security and protection in line with current regulations through clear policies, advanced security protocols and regular audits.	4.81	0.76	Very High	6
Implementing comprehensive and integrated digital ecosystems that link different administrative functions.	4.76	0.80	Very High	7
Developing the capabilities needed for data-driven decision-making with the increasing reliance on modern digital systems.	4.70	0.77	Very High	8
Digitizing and automating administrative workflows, implementing electronic document management systems, digital signatures, and automated approval processes	4.67	0.70	Very High	9

Text of Item	AM	SD	Degree of Agreement	Rank
Developing continuous professional development programs to ensure that its employees can effectively use new digital tools and adapt to changing work processes.	4.61	0.82	Very High	10
Implementing performance management and analytics tools to monitor key performance indicators in real time across various administrative functions.	4.58	0.79	Very High	11
Having effective change management strategies that ensure stakeholder engagement and resistance to change.	4.56	0.69	Very High	12
Ensuring that the university's digital transformation initiatives are aligned with sustainability goals to achieve the Sustainable Development Vision 2030, such as implementing green IT practices and using digital solutions to reduce the university's environmental footprint,	4.53	0.70	Very High	13
Adopting a mobile-first approach, allowing all beneficiaries to access services and information via smartphones and tablets.	4.50	0.66	Very High	14
Managing digital transformation initiatives with agility that allows for flexibility and rapid adaptation to changing needs.	4.46	0.85	Very High	15
Overall Dimension	4.38	0.81	Very High	

As revealed in Table (3), the means of the sample's agreement on the availability of the significance of the dimension of the administrative and organizational aspects ranged between (4.46) and (4.95) with a very high degree for all items, with an overall mean of (4.38), and a very high degree. In detail, the item stipulating "Having a comprehensive and clear strategic vision for digital transformation that recognizes the needs and diversity of actors, stakeholders, processes, practices and technologies" is ranked the highest with a very high degree, while the item stipulating "Managing digital transformation initiatives with agility that allows for flexibility and rapid adaptation to changing needs" is ranked the lowest with a very high degree. This result is due to the study sample's awareness of the importance of the availability of these administrative and organizational requirements to improve the readiness of Arab universities for digital transformation.

Also, this is consistent with Benavides et al. (2022) on the necessity for the university to have a clear strategic vision for digital transformation, which comprehensively recognizes the needs and diversity of actors, stakeholders, processes, practices and technologies. The university should also automate its business processes, use multiple platforms, digitize data, increase its flexibility, and allow unrestricted access around the clock to all the information and services that users need. Also, there should be strategic alignment between management and acquisition teams, digital units and business units, ensuring flexibility, collaboration and digital expertise in implementing the digital transformation strategy, achieving greater flexibility, making informed decisions and reducing IT-related risks. The university should ensure the alignment of institutional information through enterprise architecture and effective data governance and data management. Successful digital transformation also requires effective change management strategies, including clear communication, stakeholder engagement, and addressing resistance to change (By, 2005).

Also, digital transformation initiatives should also be aligned with sustainability goals, including implementing green IT practices and using digital solutions to reduce the university's environmental footprint (Wabwoba et al., 2013). Administrative interfaces should adopt a mobile-first approach, allowing staff and students to access services and information via smartphones and tablets. This enhances accessibility and user experience (Alrasheedi & Capretz, 2018). Continuing professional

development programs should also be developed to ensure staff are able to effectively use new digital tools and adapt to changing work processes (Jackson, 2019). Universities should digitize and automate administrative workflows, including implementing electronic document management systems, digital signatures, and automated approval processes (Seres et al., 2018). Nour (2015) argues that universities need to implement comprehensive and integrated digital ecosystems that link different administrative functions. This includes enterprise resource planning systems that seamlessly link finance, human resources, student information, and other core administrative processes. Daniel (2015) adds that managers need to develop the capabilities needed for data-driven decision-making, which requires implementing advanced analytical tools and promoting a data literacy culture among employees.

PHYSICAL AND DIGITAL INFRASTRUCTURE

Table 4: Means and Standard Deviations for the Perception of the Significance of the Physical and Digital Infrastructure Dimension

Text of Item	AM	SD	Degree of Agreement	Rank
Investing in advanced wired and wireless networks capable of handling increasing data traffic and supporting multiple connected devices.	4.97	0.85	Very High	1
Owning digital teaching and learning platforms that meet contemporary educational standards and methods.	4.96	0.78	Very High	2
Owning a flexible modular architecture that handles adaptive and emerging administrative, teaching and research processes.	4.94	0.71	Very High	3
Owning a flexible platform that handles adaptive and emerging administrative, teaching and research processes.	4.94	0.73	Very High	3
Owning sufficient technological assets to implement the strategic vision.	4.94	0.76	Very High	3
Having a physical infrastructure that meets contemporary educational and research standards and methods such as innovation institutes, face-to-face and virtual teaching laboratories, and digital training centers.	4.93	0.79	Very High	6
Availability of a comprehensive and easy-to-use Learning Management System (LMS) to support blended learning and online learning initiatives.	4.92	0.81	Very High	7
Having a mix of public, private and hybrid cloud computing and storage solutions to meet diverse needs while ensuring data security and compliance.	4.92	0.85	Very High	7
Availability of smart classrooms and labs equipped with smart technologies to enhance the learning experience such as interactive whiteboards, video conferencing systems, augmented and virtual reality equipment, interactive whiteboards, video conferencing systems, augmented and virtual reality equipment.	4.90	0.77	Very High	9
Availability of robust cybersecurity measures to protect data and its privacy.	4.89	0.84	Very High	10
Availability of modern high-performance data and computing centers equipped with high-performance computing capabilities to support data-intensive research and advanced analytics.	4.87	0.80	Very High	11
Using effective digital identity management systems to secure access to university resources.	4.83	0.76	Very High	12

Text of Item	AM	SD	Degree of Agreement	Rank
Employing modern and integrated enterprise resource planning systems to streamline administrative processes from student information management to financial operations.	4.81	0.79	Very High	13
Investing in artificial intelligence and machine learning platforms to enhance various aspects of their operations from personalized learning experiences to predictive analytics for student success and institutional research.	4.77	0.68	Very High	14
Availability of tools to support the creation and dissemination of digital learning materials to provide faculty with easy-to-use digital content creation tools, video production facilities and digital asset management systems.	4.75	0.75	Very High	15
Overall Dimension	4.89	0.79	Very High	

As revealed in Table (4), the means of the sample's agreement on the availability of the significance of the Physical and Digital Infrastructure dimension ranged between (4.75) and (4.97) with a very high degree for all items, with an overall mean of (4.89), and a very high degree. In detail, the item stipulating "Investing in advanced wired and wireless networks capable of handling increasing data traffic and supporting multiple connected devices" is ranked the highest with a very high degree, while the item stipulating "Availability of tools to support the creation and dissemination of digital learning materials to provide faculty with easy-to-use digital content creation tools, video production facilities and digital asset management systems" is ranked the lowest with a very high degree. This result is due to the study sample's awareness of the significance of the availability of physical and digital infrastructure requirements to improve the readiness of Arab universities for digital transformation. This agrees with Grajek (2020) that universities must invest in advanced wired and wireless networks capable of handling increasing data traffic and supporting multiple connected devices. Also, the need to equip smart classrooms and laboratories (Zhu et al., 2016).

Moreover, Sultan (2010) believes that universities need to adopt cloud computing and storage solutions, and this transformation allows for more efficient allocation of resources, facilitates remote access, and supports collaborative work environments. A comprehensive and user-friendly learning management system is critical to supporting blended and online learning initiatives. A modern learning management system should integrate seamlessly with other digital tools, support mobile learning, and provide analytics capabilities to track student engagement and performance (Dahlstrom & Bichsel, 2014; Dahlstrom et al., 2014). Strong cybersecurity measures have also become paramount, as institutions must develop comprehensive cybersecurity policies and provide ongoing training for staff and students. Universities also need modern, high-performance data and computing centers equipped with high-performance computing capabilities, and these facilities must be energy-efficient and scalable to meet increasing computational demands (Asadi & Nilashi, 2015).

Also, effective digital identity management systems are also critical to securing access to university resources (Cser et al., 2018). Universities also need integrated enterprise resource planning (ERP) systems to streamline administrative processes. Modern cloud-based ERP solutions also provide greater flexibility and real-time access to data (Abugabah & Sanzogni, 2010). Universities also need to invest in AI and machine learning platforms to enhance various aspects of their operations, from personalized learning experiences to predictive analytics for student success and institutional research (Zawacki-Richter et al., 2019). Finally, to support the creation and dissemination of digital learning materials, universities need to provide faculty with easy-to-use digital content creation tools,

video production facilities, and digital asset management and distribution systems (Porter et al., 2014). The university should have a physical infrastructure that meets contemporary educational standards and methods, i.e. innovation institutes, face-to-face and virtual teaching laboratories, and digital training centers (Benavides et al., 2022).

ORGANIZATIONAL CULTURE

Table 5: Means and Standard Deviations for the Perception of the Significance of the Organizational Culture Dimension

Text of Item	AM	SD	Degree of Agreement	Rank
Fostering a culture that embraces innovation and experimentation.	4.87	0.87	Very High	1
Developing digital competencies among administrators and faculty leaders.	4.84	0.81	Very High	2
Establishing a culture of interdisciplinary collaboration across academic departments to share knowledge.	4.81	0.77	Very High	3
Adopting more agile decision-making processes to keep pace with technological changes through more flexible and responsive administrative structures.	4.75	0.85	Very High	4
Developing a data-driven culture by building data literacy across the institution.	4.72	0.69	Very High	5
Providing ongoing training opportunities and recognize digital skills development to foster a culture of lifelong learning.	4.70	0.74	Very High	6
Establishing a student-centered culture that prioritizes enhancing the learning experience and outcomes.	4.65	0.79	Very High	7
Providing transparent and open communication by clearly articulating the vision for digital change, addressing concerns, and celebrating successes.	4.61	0.77	Very High	8
Fostering a culture of ethical digital practices including respect for privacy, data protection, and the responsible use of artificial intelligence and analytics.	4.57	0.85	Very High	9
Focusing on an inclusive culture that prioritizes digital accessibility for all members of the university community, including those with disabilities.	4.53	0.81	Very High	10
Promoting a green IT culture as an entry point to achieving sustainability and the Kingdom's Vision 2030.	4.49	0.76	Very High	11
Focusing on developing a global mindset that employs digital technologies to enhance international cooperation in preparing students for a globalized world.	4.44	0.69	Very High	12
Overall Dimension	4.67	0.83	Very High	

As revealed in Table (5), the means of the sample's agreement on the availability of the significance of the Physical and Digital Infrastructure dimension ranged between (4.44) and (4.87) with a very high degree for all items, with an overall mean of (4.67), and a very high degree. In detail, the item stipulating "Fostering a culture that embraces innovation and experimentation" is ranked the highest with a very high degree, while the item stipulating "Focusing on developing a global mindset that employs digital technologies to enhance international cooperation in preparing students for a globalized world" is ranked the lowest with a very high degree. This result is due to the study sample's awareness of the importance of having an organizational culture that supports digital transformation, as the digital transformation of universities goes beyond technological applications, which requires a

fundamental shift in organizational culture. This is supported by the assertion that universities must foster a culture that embraces innovation and experimentation, which includes encouraging risk-taking, accepting failure as an opportunity to learn, and rewarding creative problem-solving.

Universities also need to move away from traditional hierarchical structures towards more flexible and responsive models (Kotter, 2014). Leadership at all levels must demonstrate digital fluency and champion the digital transformation process, which requires developing digital competencies among administrators and faculty leaders (Sheninger, 2019). Developing a data-driven culture to inform decision-making at all levels (Daniel, 2015). A culture of collaboration is also essential for successful digital transformation, which includes breaking down barriers between departments, promoting interdisciplinary initiatives, and enhancing knowledge sharing (Kezar & Holcombe, 2017). Moreover, digital transformation should also be driven by a student-centered culture that prioritizes enhancing the learning experience and outcomes, including regularly seeking and acting on student feedback regarding digital initiatives (Flavin & Quintero, 2018).

Also, clear and open communication should be provided by clearly articulating the vision for digital change, addressing concerns, and celebrating successes (Lewis, 2019). Universities should also foster a culture of ethical digital practices, including respect for privacy, data protection, and the responsible use of artificial intelligence and analytics (Prinsloo & Slade, 2016). Focus on an inclusive culture that prioritizes digital accessibility for all members of the university community, including those with disabilities (Seale, 2013). Digital transformation should be aligned with a culture of sustainability, considering the environmental impact of technology and promoting green IT practices. Finally, universities should develop a global mindset that leverages digital technologies to foster international collaboration and prepare students for a globalized world (Leask, 2015).

TEACHING AND LEARNING

Table 6: Means and Standard Deviations for the Perception of the Significance of the Teaching and Learning Dimension

Text of Item	AM	SD	Degree of Agreement	Rank
Developing advanced digital literacy skills to effectively leverage new technologies in teaching such as proficiency in learning management systems, digital content creation tools, and emerging educational technologies.	4.94	0.77	Very High	1
Adopting blended learning approaches that effectively combine face-to-face and online components.	4.93	0.68	Very High	2
Focusing on designing curricula and teaching methods to take full advantage of physical and virtual learning environments.	4.91	0.84	Very High	3
Developing interactive and engaging digital content to keep students engaged in online and blended learning environments such as creating multimedia resources, interactive simulations, and engaging learning experiences.	4.88	0.80	Very High	4
Implementing adaptive learning technologies to personalize the learning experience based on individual needs and progress.	4.86	0.83	Very High	5
Facilitating collaborative and interactive learning across digital platforms to support group projects, discussions, and knowledge sharing among students.	4.85	0.81	Very High	6
Integrating virtual reality and augmented reality technologies to create immersive and meaningful learning experiences.	4.84	0.75	Very High	7

Text of Item	AM	SD	Degree of Agreement	Rank
Focusing on using and creating open educational resources to enhance accessibility and reduce costs for students.	4.82	0.67	Very High	8
Committing to the principles of universal design in developing courses to ensure that all students, including those with disabilities, have access to digital educational materials and digital platforms.	4.79	0.87	Very High	9
Providing the necessary digital tools to provide immediate feedback and formative assessment that enhances the learning process, including automated grading systems, digital tests, and AI-powered writing feedback tools.	4.77	0.83	Very High	10
Providing synchronous and asynchronous learning options through appropriate pedagogical techniques and methods for each mode.	4.74	0.80	Very High	11
Providing continuing professional development for faculty to keep pace with evolving educational technologies.	4.73	0.67	Very High	2
Promoting the use and addition of open educational resources to enhance accessibility and reduce costs for students.	4.71	0.65	Very High	13
Overall Dimension	4.84	0.78	Very High	

As revealed in Table (6), the means of the sample's agreement on the availability of the significance of the Teaching and Learning dimension ranged between (4.71) and (4.94) with a very high degree for all items, with an overall mean of (4.84), and a very high degree. In detail, the item stipulating "Developing advanced digital literacy skills to effectively leverage new technologies in teaching such as proficiency in learning management systems, digital content creation tools, and emerging educational technologies" is ranked the highest with a very high degree, while the item stipulating "Promoting the use and addition of open educational resources to enhance accessibility and reduce costs for students" is ranked the lowest with a very high degree. This result is due to the study sample's awareness of the importance of providing supportive teaching and learning requirements to improve universities' readiness for digital transformation, as Redecker (2017) believes that faculty members must develop advanced digital literacy skills. He adds that universities need to adopt blended learning approaches that effectively combine face-to-face education with online components to benefit from physical and virtual learning environments (Redecker, 2017). Ensuring that all students, including those with disabilities, have access to digital educational materials and platforms is also crucial, which requires adherence to the principles of inclusive design in course development (Burgstahler, 2015).

Also, digital tools that provide immediate feedback and formative assessment can enhance the learning process (Nicol & Macfarlane-Dick, 2006). Also, leveraging learning analytics can provide insights into student engagement, performance, and learning patterns. This data can inform instructional design and enable targeted interventions (Siemens & Long, 2011). Providing synchronous, real-time, and asynchronous learning options can accommodate students' diverse needs and schedules, requiring appropriate pedagogical techniques and approaches for each mode (Hrastinski, 2008). Developing engaging and interactive digital content is also critical to maintaining student engagement in online and blended learning environments, including the creation of multimedia resources, interactive simulations, and engaging learning experiences (Woo, 2009). Implementing adaptive learning technologies can personalize the learning experience based on individual students' needs and progress. These systems use data analytics and artificial intelligence to adjust the difficulty and pace of content (Hwang, 2014).

Digital platforms that facilitate collaborative learning and peer interaction are also essential, as these tools should support group projects, discussions, and knowledge sharing among students (Dillenbourg et al., 2009). Furthermore, the integration of virtual reality and augmented reality technologies can create immersive learning experiences, particularly useful for subjects that require visualization of complex concepts or practical skills training (Merchant et al., 2014). Universities should also promote the use and creation of open educational resources to enhance accessibility and reduce costs for students, which requires the development of policies and platforms for sharing and adapting open resources (Siemens & Long, 2011). Continuing professional development for faculty is also essential to keep up with evolving educational technologies, including training programs, workshops, and communities of practice (Avalos, 2011). Finally, universities should promote the use and creation of open educational resources to enhance accessibility and reduce costs for students, which requires the development of policies and platforms for sharing and adapting open resources (Hilton, 2016).

STUDENT EXPERIENCE

Table 7: Means and Standard Deviations for the Perception of the Significance of the Student Experience Dimension

Text of Item	AM	SD	Degree of Agreement	Rank
Employing AI to create personalized learning environments to adapt content and pace to individual student needs.	4.93	0.83	Very High	1
Providing seamless digital integration through integrated systems that allow access to learning management systems, library resources, student services, and administrative functions with a single sign-on.	4.91	0.84	Very High	2
Adopting a mobile-first approach to connect all digital services—from course materials to campus information—to be available to students the whole week.	4.88	0.79	Very High	3
Providing flexible learning options that combine face-to-face and online components to meet diverse student needs and preferences.	4.87	0.74	Very High	4
Providing robust platforms for virtual teamwork “peer-to-peer learning, and faculty interaction.”	4.85	0.77	Very High	5
Providing AI-powered chatbots to provide immediate responses to student inquiries and needs the whole week.	4.83	0.80	Very High	6
Developing digital skills in the curriculum and preparing students for the digital workplace.	4.81	0.73	Very High	7
Providing resources and tools to support students’ digital wellbeing, including strategies for managing screen time and maintaining work-life balance.	4.80	0.78	Very High	8
Using digital platforms to support students’ personal development, including connecting students with alumni mentors, internship opportunities, and job market insights.	4.77	0.70	Very High	9
Ensuring all digital content and platforms meet accessibility standards and accommodate students with diverse learning needs and preferences. Develop early warning systems to identify students at risk and provide timely interventions.	4.76	0.71	Very High	10
Developing early warning systems to identify students at risk and provide timely interventions.	4.74	0.68	Very High	11
Overall Dimension	4.83	0.85	Very High	

As revealed in Table (7), the means of the sample's agreement on the availability of the significance of the Teaching and Learning dimension ranged between (4.74) and (4.93) with a very high degree for all items, with an overall mean of (4.83), and a very high degree. In detail, the item stipulating "Employing AI to create personalized learning environments to adapt content and pace to individual student needs" is ranked the highest with a very high degree, while the item stipulating "Developing early warning systems to identify students at risk and provide timely interventions". This result is due to the study sample's awareness of the importance of enhancing the student experience requirements for digital transformation, as the digital transformation of universities has profoundly affected the student experience, reshaped expectations, and necessitated new approaches to engagement, learning, and support. Pardo et al. (2019) believe that universities should create personalized learning environments by implementing adaptive learning platforms that adapt content and pace to individual student needs, and leverage data analytics and artificial intelligence to provide personalized learning paths. Dahlstrom et al. (2014) add that seamless digital integration is required through integrated systems that allow access to learning management systems, library resources, student services, and administrative functions with a single login. The university should also adopt a mobile-first approach and ensure that all digital services, from courses to campus information, are optimized for mobile devices (Alrasheedi & Capretz, 2018).

Moreover, Universities should also integrate digital skills development into their curricula and prepare students for the digital workplace, including offering courses in data literacy, coding, and emerging technologies (Gallardo-Echenique et al., 2015). Creating immersive learning experiences is particularly beneficial for disciplines that require practical skills or conceptualization of complex concepts (Elmqaddem, 2019). Digital well-being should also be supported by universities providing resources and tools to support students' digital well-being, including strategies for managing screen time and maintaining work-life balance (Jisc, 2020). Supporting personal career development, as digital platforms can facilitate personalized career guidance, connect students with alumni mentors, internship opportunities, and job market insights tailored to their interests and skills (Venable, 2010). Also, universities should offer flexible learning options that combine face-to-face and online components and cater to students' diverse needs and preferences (Graham et al., 2013). Universities should also provide robust platforms for virtual teamwork, peer-to-peer learning, and interaction with faculty (Deng & Tavares, 2013). Universities shall also implement AI-powered chatbots, virtual assistants, and online help desks to provide immediate responses to student inquiries and support needs to provide digital support services the whole week (Jesús & Raluca, 2023). Also, all digital content and platforms should comply with accessibility standards and accommodate students with diverse learning needs and preferences (Seale, 2013), and universities can develop early warning systems to identify students at risk and provide timely interventions (Sclater et al., 2016).

RESEARCH AND INNOVATION

Table 8: Means and Standard Deviations for the Perception of the Significance of the Research and Innovation Dimension

Text of Item	AM	SD	Degree of Agreement	Rank
Implementing robust digital platforms to improve seamless communication and secure data sharing among researchers.	4.95	0.83	Very High	1
Investing in continuing professional development programs to ensure faculty develop the capacity to adapt to new digital tools and methodologies.	4.93	0.84	Very High	2
Developing open science practices and data sharing to accelerate innovation and enhance research reproducibility.	4.90	0.79	Very High	3

Text of Item	AM	SD	Degree of Agreement	Rank
Employing accessible high-performance computing facilities and cloud computing resources to support data-intensive research and complex simulations.	4.88	0.74	Very High	4
Requiring faculty to adhere to legal and ethical frameworks in scientific research such as data privacy, algorithmic bias, and the ethical use of artificial intelligence in research.	4.87	0.77	Very High	5
Promoting interdisciplinary collaboration in conducting scientific research to address complex societal challenges.	4.84	0.80	Very High	6
Empowering digital platforms to foster partnerships with industry in conducting and translating research into real-world applications.	4.83	0.73	Very High	7
Empowering faculty to adopt software-based agile research methodologies to respond quickly to new discoveries.	4.81	0.78	Very High	8
Developing new evaluation frameworks for scientific research that consider digital outputs, open science contributions, and societal impact.	4.80	0.70	Very High	9
Taking strong cybersecurity measures to protect sensitive research data and intellectual property.	4.75	0.71	Very High	10
Overall Dimension	4.86	0.87	Very High	

As revealed in Table (8), the means of the sample's agreement on the availability of the significance of the Teaching and Learning dimension ranged between (4.75) and (4.95) with a very high degree for all items, with an overall mean of (4.86), and a very high degree. In detail, the item stipulating "Implementing robust digital platforms to improve seamless communication and secure data sharing among researchers" is ranked the highest with a very high degree, while the item stipulating "Taking strong cybersecurity measures to protect sensitive research data and intellectual property". This result is due to the study sample's recognition of the importance of providing supportive research and innovation requirements to improve universities' readiness for digital transformation. Tian et al. (2020) argue that implementing robust digital platforms for seamless communication and data sharing is crucial as these platforms should facilitate real-time collaboration, version control, and secure data exchange. Carretero et al. (2017) add that researchers must develop advanced digital literacy to effectively leverage emerging technologies, with universities needing to invest in continuing professional development programs to ensure their research staff are able to adapt to new digital tools and methodologies.

Moreover, Huda et al. (2016) argue that the pace of digital change requires more flexible and adaptive research methodologies. Also, to support data-intensive research and complex simulations, universities must invest in high-performance computing facilities and cloud computing resources. They must also address issues such as data privacy, algorithmic bias, and the ethical use of AI in research (Floridi & Cowls, 2019). Research innovation also requires fostering collaboration across disciplines, particularly between STEM and social sciences/humanities, to address complex societal challenges (Hecklau et al, 2016). Fostering relationships with industry partners is also critical to translating research into real-world applications (Perkmann et al, 2021). Research institutions must also implement comprehensive data protection strategies to protect sensitive research data and intellectual property.

Theoretical Contributions

This research study reveals the requirements for improving universities' readiness for digital transformation due to the importance of having a systematic approach as a reliable and

comprehensive assessment framework to measure and improve digital readiness in universities. Due to the importance of digital readiness for universities to develop the ability to withstand and adapt in the face of crises, it contributes to enhancing the protection of digital data, transparency, independence and trust, improving communication methods between administrative and academic bodies and officials inside and outside the university, developing the professional performance of faculty members, providing sufficient opportunities for students to innovate, create and think critically, developing the ability to take individual initiative and respect it and positive cognitive competition, achieving equality and equal educational opportunities for all students to participate effectively in the educational process, and improving knowledge-based research processes.

Moreover, it helps in improving the performance of university leaders by contributing to the speed of completing work, reducing employee errors, achieving justice, equality and equal educational and research opportunities, facilitating the updating of information content, enhancing capacity, flexibility and rapid response to variables and events, and helping students and faculty members by enabling students to research and innovate, developing the professional and academic performance of faculty members, increasing revenues and enhancing productivity and creating more value through innovation and enhancing the brand reputation and newness of universities, spreading the culture of digital transformation, and building a digital mindset among all university members and leaders, and others to cover all university functions. Digital transformation readiness is linked to the impact and influence of stakeholders, and stakeholders in higher education are students, faculty members and the university, as digital readiness requires a culture of innovation and collaboration and encourages faculty members, staff and students to experiment with new technologies and work together to create new knowledge and solutions.

Also, this contributes to gaining a deep understanding of the requirements of these universities' readiness for digital transformation in a digital age of great ambiguity, complexity and uncertainty. Therefore, the results of this study contribute to the advancement of scientific discourse on the requirements for improving the readiness of universities for digital transformation. The study of this dimension is still emerging and renewed and needs great attention from decision-makers in universities. Therefore, this research makes an important contribution to initiating and/or sponsoring discussion and dialogue in this field to enhance the capabilities of Arab digital universities to achieve a competitive advantage and occupy their place among the world's elite universities.

This research also enriches the Arab library and makes this study an agenda for future research on digital transformation in universities and linking it to many variables related to the three functions of the university: education, scientific research and community service, or outside the university and addressing pre-university education institutions or other educational institutions. Another unique contribution of this study stems from its use of data from Arab universities, which provides new insights into a unique socio-cultural environment. It can also increase the generalizability of theories related to the requirements of digital transformation that have been studied in the West to other cultural contexts. Also, by presenting several studies and literature related to digital transformation, the research can guide university leaders to enhance behaviors and practices to enhance digital transformation in education, teaching, research and administration. This research can help universities and educational institutions in general understand how to improve the readiness of universities for digital transformation and provide guidance, suggestions, and items for Arab universities to improve their readiness for digital transformation, which will help universities achieve higher levels of digital performance and achieve readiness for digital transformation and push Arab universities towards a more digital and sustainable direction.

Practical Implications

Considering the requirements of Arab universities' readiness for digital transformation from the perspective of faculty members and leaders, this study contributes to digitalizing Arab universities

by having a scientific systematic approach as a reliable and comprehensive assessment framework to measure and improve digital readiness in Arab universities. Universities can identify gaps and prioritize investments in areas that are most needed, and this helps ensure that the university is well positioned to benefit from digital technologies in all aspects of the institution's operations. It is necessary for Arab universities to focus on the entire digital transformation system "inputs-processes-outputs-feedback", seamlessly integrating digital technologies into all aspects of university operations, including teaching, learning, research, administration and communication, developing a comprehensive digital strategy that is consistent with its mission and overall vision, and investing in the necessary infrastructure, tools and skills to improve digital readiness.

Likewise, digital readiness requires a culture of innovation and collaboration, where faculty, staff and students are encouraged to experiment with new technologies and work together to create new knowledge and solutions. The study also helps Arab universities in the university focus on the following aspects to improve universities' readiness for digital transformation:

Physical and Digital Infrastructure: It includes robust network infrastructure, cloud computing and storage solutions, learning management systems, smart classrooms and labs, cybersecurity infrastructure, data centers and high-performance computing, digital identity management systems, enterprise resource planning systems, artificial intelligence and machine learning platforms, digital content creation and distribution tools.

Research and Innovation: It includes digital literacy and skills development, collaborative digital platforms, open science and data sharing, advanced computing infrastructure, ethical and legal frameworks, interdisciplinary approaches, industry-academia partnerships, agile research methodologies, digital research evaluation metrics, cybersecurity and data protection.

Teaching and Learning: It includes faculty digital literacy, blended learning design, interactive and engaging digital content, adaptive learning technologies, collaborative learning platforms, real-time feedback and assessment, virtual and augmented reality in education, learning analytics, open educational resources, accessibility and inclusive design, synchronous and asynchronous learning options, continuing professional development.

Student Experience: It includes personalized learning environments, seamless digital integration, mobile-first approach, blended and online learning options, digital collaboration tools, 24/7 digital support services, data-driven student success initiatives, digital skills development, immersive learning experiences, personalized professional development, digital wellbeing support, accessible digital content.

Organizational Culture: It includes an innovation mindset, digital leadership culture, collaborative environment, agile decision making, data-driven culture, continuous learning, student-centered approach, open communication, ethical digital practices, inclusivity and accessibility, focus on sustainability, and a global perspective.

Administrative and Organizational Aspects: It includes integrated ecosystems, data-driven decision making, strategic planning, cybersecurity and data governance, digital workflow and process automation, cloud-based administrative systems, mobile-first approach, continuing professional development, agile project management, CRM systems, performance management and analytics, change management strategies, sustainability and green IT.

Furthermore, the current research study helps universities to realize their position in the digital world and understand the meaning of the vision and strategy of digital transformation, how to implement and enhance the digital transformation of the university, how to integrate technology into learning, develop digital skills of faculty, staff and students, and how to increase efficiency through digital systems. This study also helps universities to realize the resistance to all the obstacles and

barriers to digital transformation, such as lack of digital culture, resistance to change and risk aversion, lack of appropriate IT infrastructure, budget constraints, lack of leadership for change, lack of strategic planning, security and privacy risks, negative attitudes and beliefs, lack of integration of digital technologies into educational systems, lack of comprehensive vision, lack of time due to workload of faculty members, inadequate IT support service, lack of flexibility, data fragmentation, barriers related to regulatory framework and legal issues, conservative/bureaucratic culture, lack of business plan and institutional policy, legacy systems, narrow view of return on investment, organizational barriers, lack of coordination between departments.

CONCLUSION

In nutshell, this research paper surveys the views of faculty members and leaders on the significance of the dimensions of the requirements for the readiness of Arab universities for digital transformation. The results indicate that the faculty members and leaders emphasized the significance of all six dimensions of digital leadership competencies necessary to improve the readiness of Arab universities for digital transformation at a very high level. The results also show that the physical and digital infrastructure dimension is ranked first with a mean of (4.89), while the research and innovation dimension is ranked second with a mean of (4.86). It is also found that the teaching and learning dimension is ranked third with a mean of (4.84), while the student experience dimension is ranked fourth with a mean of (4.83). However, the organizational culture dimension is ranked fifth with a mean of (4.67), while the dimension of the administrative and organizational aspects is ranked last with a mean of (4.38).

Limitations and Recommendations

Of note, this study still has flaws and limitations, which may affect the representation of its results. Although this study makes some fundamental contributions to understanding the dynamics of improving Arab universities' readiness for digital transformation, the limitations imposed by the study emphasize areas where future studies can enhance our understanding of the topic. Among these limitations is the possibility of generalizing the results, which is limited by the specific sample and the context on which it is based, which may limit the possibility of generalizing its results, especially due to the different capabilities of Arab countries and thus Arab universities.

Secondly, a semi-homogeneous sample was taken for each scale, as subsequent studies should replicate this study by using heterogeneous samples and measuring the differences between responses. Thirdly, the study used scales only, as it relied on a scale of faculty members' and leaders' awareness of the importance of the availability of requirements for Arab universities' readiness for digital transformation, which is subject to common methods and potential biases in response, as subsequent studies should take into account the inclusion of diverse data sources to increase the validity of the results and integrate multiple data sources to a more comprehensive understanding of the relationships being examined.

Fourthly, the current study relied on considering Arab universities as a single entity, and neglected the circumstantial elements that affect these responses. Therefore, we recommend that researchers in subsequent studies study the impact of social, economic, technological, and political environments on the responses of the examinees, as, for example, the capabilities, interests, orientations, and financial support of Arab countries for digital transformation differ. Fifthly, the current study focused on the dimensions of improving the readiness of Arab universities for digital transformation in general, as subsequent studies can focus more precisely on addressing one of these aspects in more detail.

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