

Applying Artificial Intelligence (AI) and Digital Competencies to Drive Organizational Excellence

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Abstract: In this study, the purpose is to investigate how artificial intelligence, and digital competencies might enhance the organizational excellence of Arab universities. The purpose of the study was achieved by using a questionnaire to investigate the assigned relationships at Arab universities. Data was submitted by 410 respondents. The study approach was created using quantitative design. Frequency and percentage calculations were performed using the SPSS software for the validity and reliability assessments of the scale items, and the resulting data were then incorporated into the study. The findings showed that digital competences and artificial intelligence had a statistically significant effect on Arab universities' organizational excellence.

Keywords: Artificial Intelligence, Digital Competencies, Organizational Excellence, Arab Universities.

1. Introduction

In today's rapidly evolving digital landscape, organizations across various sectors must embrace technological advancements and digital transformation to remain competitive (Astapciks, 2023). This imperative is particularly relevant for institutions of higher education, which recognize the significance of digital transformation for advancing human skills and values, as well as elevating nations (Al-Dajani and Al-Aeur, 2013). Universities that undergo successful digital transformation can enhance their technical competencies, convert instructional and administrative processes to digital formats, focus on cost optimization, and improve service quality and student accessibility (Al-Zayn, 2016).

While the global COVID-19 pandemic, economic factors, and shifts in trade patterns have catalyzed changes across various sectors, the education landscape in the Arab world continues to face unique challenges. Among these are the slow progress in global university rankings and the lack of competitiveness of Arab higher education institutions, with no Arab university ranked within the top 100 worldwide (Daradkah et al., 2023). This delay can be attributed to

deficiencies in academics, applied sciences, technology, and research - areas that have been significantly transformed by the pervasive technological and digital revolution (Abdulhamed, 2021). In this evolving environment, Arab universities are compelled to leverage contemporary technologies to enhance productivity, flexibility, and innovation, ultimately striving for success and excellence (Al-Shuhna, 2021).

The idea of organizational excellence has evolved from the quality management movement (Mandor, 2014). In this context, digital transformation and digital competencies have become crucial to achieving and maintaining organizational excellence and sustainability. Therefore, digital competencies now represent a strategic direction in line with the requirements of our changing times, in pursuit of organizational excellence (Benbia et al., 2020). In addition, artificial intelligence (AI) is the most revolutionary technological advance in recent years, which has led to a growing interest in computer science. Artificial intelligence has significantly enhanced human life in various sectors, including manufacturing, services, and education (Verma, 2018).

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1.1 Problem of the study

The rapid advancement of AI is profoundly influencing education, offering potential benefits such as enhanced student learning experiences, increased motivation, and lower dropout rates. To keep up with the evolving technological landscape, universities must integrate AI to boost student engagement, enrollment, and funding, and to enhance communication skills. Failure to adopt AI may hinder their ability to provide improved learning opportunities, attract and retain students, and promote equity, inclusion, and accessibility in education. Insufficient AI integration could also worsen existing inequalities by not providing personalized learning experiences that address the unique needs of each student (Sharawy, 2023). This study aims to study the impact of artificial intelligence and digital capabilities in enhancing organizational excellence in Arab universities.

1.2 Questions of the study

1. How important is the impact of artificial intelligence in improving the organizational excellence of Arab universities?
2. How important is the impact of digital competencies on the organizational excellence of Arab universities?
3. What is the impact of artificial intelligence on the organizational excellence of Arab universities?
4. What is the impact of digital competencies on the organizational excellence of Arab universities?

1.3 Objectives of the study

In light of the research questions, this study seeks to achieve the following objectives:

1. Evaluating the value of artificial intelligence in enhancing organizational excellence in Arab universities.
2. Evaluating the importance of digital capabilities in achieving organizational excellence in Arab universities.
3. Discussing the role of artificial intelligence in the organizational excellence of Arab universities.
4. Showing how digital competencies contribute to the organizational excellence of Arab universities.

a. The significance of study

Scientific Significance

This research focuses on the presence and integration of artificial intelligence and digital competencies, highlighting their role in guiding the institution towards organizational excellence.

Practical Significance

Based on field research, the study provides practical

recommendations to help academic institutions achieve organizational excellence. It also encourages researchers to conduct additional studies on these variables and explore their application in different industries.

This paper is organized into five sections. The first section is the introduction. The second section covers the conceptual background and reviews previous studies on the topic. The third section outlines the research methods. The fourth section presents data analysis and findings. Finally, the fifth section is dedicated to discussion and conclusion.

1. Conceptual Background and Literature Review

a. Conceptual Background

i. Artificial Intelligence

According to Verma (2018), artificial intelligence is created by combining the terms artificial and intelligence. Artificial intelligence is something that is not genuine or natural; intelligence is described as the ability to think, evoke new ideas, perceive, and learn. Artificial intelligence, another name for computer science, is the study of building intelligent machines with human-like behavior and reactions.

Benbya et al. (2020) defined artificial intelligence (AI) as the capacity of robots to carry out cognitive tasks that are equivalent to those carried out by humans. These can include perception, sensing, problem-solving, inventiveness, and decision-making, as well as the mechanization of tasks like moving and managing objects. AI is currently regarded as the most important and disruptive new technology for large corporations.

Artificial intelligence systems are efficient since most of them function without the assistance of humans. Artificial intelligence has enabled machine learning, which is based on information and trends that the system utilizes to make decisions (Alpaydin, 2020). The phrase "artificial intelligence" encompasses several information technology concepts, such as data transfer, software development, and calculation. On the other hand, as artificial intelligence advances, so do cyber-attacks. These days, a lot of businesses and corporations use artificial intelligence to protect their information systems and data (Mohammad, 2020).

ii. Digital competencies

Ilomäk et al. (2011) defined digital competences as one of the key ideas and contemporary technologies that characterizes and encompasses all technological abilities. Over the past few years, they have drawn more and more notice. These digital technology-related abilities and competences have been referred to by a variety of names, including information technology skills and current talents relevant to the first century. Twenty: eliminating illiteracy Including digital skills, digital literacy, and informatics.

"Digital competencies" are the capabilities of a citizen,

student, teacher, etc. to use information technology (IT) in a particular situation (Rizza, 2014).. According to Abu Borhom, (2023) defined digital competences as the combination of cognitive, social, technical, and emotional skills required to complete tasks using digital technologies in an efficient and effective manner with the goals of developing a state-of-the-art digital workplace, improving workers' proficiency with the newest tools and systems, and adjusting to the demands of a digital lifestyle in a way that promotes environmental and digital safety while addressing technological obstacles.

iii. Organizational Excellence

According to Mohammed and Al-Zeidi (2022), the application of best management practices, which are characteristic of high-performing companies and, when correctly executed, foster a culture committed to quality and long-term results throughout a balanced system of measurement, is what is known as organizational excellence. The ability to manage an organization's components at the highest levels of integration and interdependence, coordinate and harmonize them, and achieve output levels that meet the needs and expectations of all stakeholders is known as organizational excellence.

According to Barnawi (2022), organizational excellence is the continuous process of creating an internal framework of rules and procedures designed to motivate staff members to provide customers with goods and services that meet their needs while staying within budgetary constraints. It is the accomplishment of consistently high performance inside an organization, demonstrated by results that exceed requirements, objectives, or expectations.

b. Literature Review

i. The relation between Artificial Intelligence and The Organizational Excellence

According to Jha (2018), as artificial intelligence (AI) becomes more and more commonplace in business, some businesses are already reaping the benefits. However, there is also concern that those that are currently experimenting with AI may fall behind. He was certain that despite intense worries and potential negative effects, artificial intelligence (AI) has a great deal of promise for workforce empowerment. It gives us the means to automate repetitive tasks, identify trends in both new and old data, and uncover important insights that can improve daily life.

Fontaine et al. (2019) found that the key to maximizing the potential of AI for businesses is comprehending the organizational and cultural obstacles that AI efforts face and devising strategies to overcome them. It is anticipated that new AI applications will lead to fundamental and occasionally challenging changes in roles, workflows, and organizational culture, which managers and executives will need to manage their companies through. They proposed that in a world where humans and machines collaborate to perform better than either one of them working alone,

companies who are adept at implementing AI throughout the company will have a competitive advantage.

Hemalatha and Kumari (2020) determined the AI components that, in relation to broader Chennai, are in charge of the entire organizational success of IT organizations. also identified AI technologies that are currently being used in enterprises. The findings confirm that artificial intelligence significantly affects organizational effectiveness.

From the literature presented above, this study assumes that Artificial Intelligence will have a direct effect on The Organizational Excellence; and hence proposes the following hypothesis:

H1: Artificial intelligence has a statistically significant effect on Arab universities' organizational excellence.

ii. The relation between Digital Competencies and The Organizational Excellence

Mahmoud (2022) aimed to ascertain the extent of digital transformation in non-governmental organizations through descriptive research. Recognize the connection between non-governmental organizations' institutional excellence and digital transformation. Learn about the challenges that digital transformation presents to these organizations' efforts to attain institutional excellence. He found that non-governmental organizations had high standards for digital transformation, high levels of institutional excellence, and a direct, statistically significant relationship between the attainment of institutional excellence in private associations and the requirements for digital transformation. He made these discoveries using the social survey approach.

The impact of digital leadership on successful firms was the subject of a study conducted by Khalil et al. (2022). The descriptive analytical method was used to look at and characterize the sample members' perspectives on the research variables. The departments, staff, and faculty of Tikrit University comprise the study population. The sample consists of eighty-two university workers who work in electronic administration and were selected at random. The viewpoints expressed by sample members about the definitions of organizational excellence and digital leadership are among the most important conclusions reached. The study's conclusions corroborated the theory that digital leadership plays a major role in achieving institutional excellence. Additionally, companies that use digital leadership perform very well organizationally.

Using the German University in Cairo as a case study, Ibrahim (2023) examined the effects of four dimensions of digital transformation on organizational excellence in private Egyptian universities: strategic requirements, organizational culture requirements, human resource requirements, and technological and legal requirements. The study's goals were achieved by the application of the descriptive analytical approach. 199 faculty members from different university colleges, who were selected using a

stratified random selection process, were given questionnaires. 92.6% of the questions, or 185 out of the total, were answered correctly. The study found a statistically significant correlation between digital transformation and attaining organizational excellence.

From the literature presented above, this study assumes that Digital Competencies will have a direct effect on The Organizational Excellence; and hence proposes the following hypothesis:

H2: Digital competencies have a statistically significant effect on Arab universities' organizational excellence.

2. Research Methodology

Artificial intelligence and digital competency's role in enhancing the organizational excellence of Arab universities is investigated using a quantitative methodology. The research employs a descriptive explanatory design to describe the link between the variables, and the hypotheses were derived from theoretical perspectives. Figure 1 shows the research framework along with the research variables.

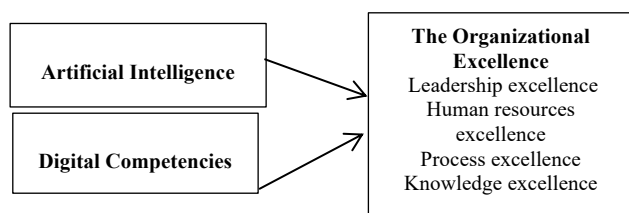


Fig. 1: the framework for research

The variables under study could include the following:

- **Independent variable:** Artificial intelligence and digital competencies
- **Dependent variable:** The organizational excellence with dimensions (Leadership excellence, Human resources excellence, Process excellence, Knowledge excellence)
- The following is a possible formulation for the research hypotheses: **H1: Artificial intelligence has a statistically significant effect on Arab universities' organizational excellence.**
 - H1.1: Artificial intelligence has a statistically significant impact on Arab universities' leadership excellence.
 - H1.2: Artificial intelligence has a statistically significant impact on Arab universities' human resources excellence
 - H1.3: Artificial intelligence has a statistically significant impact on Arab universities' process excellence.

- H1.4: Artificial intelligence has a statistically significant impact on Arab universities' knowledge excellence.
- **H2: Digital competencies have a statistically significant impact on Arab universities' organizational excellence.**
 - H2.1: Digital competencies have a statistically significant impact on Arab universities' leadership excellence.
 - H2.2: Digital competencies have a statistically significant impact on Arab universities' human resources excellence
 - H2.3: Digital competencies have a statistically significant impact on Arab universities' process excellence.
 - H2.4: Digital competencies have a statistically significant impact on Arab universities' knowledge excellence

The target population is defined as employees working in Arab universities. Primary data was collected using questionnaire adopted from previous studies (see table 1). The research variables measurements are illustrated in Table 1. Respondents were asked to rate their agreement to each statement on a Likert 5 item scale where 1= strongly disagree to 5= strongly agree. The questionnaire form was created and sent to the target population, which is employees working in Arab universities, where the researcher will select a sample consisting of 410 of employees in the Arab universities. Table 1 illustrates samples of questionnaire statements.

Table 1: Questionnaire Statements

Variable	Sample of statements	Resource
Artificial Intelligence	<ul style="list-style-type: none"> - your university use artificial intelligence systems for administrative tasks. - you university use technology in the educational process. 	Khawaja and Ehsan, 2023
Digital Competencies	<ul style="list-style-type: none"> - Your university uses email or Whats App groups, employee portals, and digital newsletters as means of communicating with its staff. - Your university employs digital purchasing centers and online orders as means of communication with vendors. 	Agustín et al., 2021
Organizational Excellence		

Leadership excellence	<ul style="list-style-type: none"> - The university presents a strategic plan that can be applied at all levels. - The university grant employees broad powers to raise the level of their expertise. 	Hammad and Al-Kubaisy, 2020
Human resources excellence	<ul style="list-style-type: none"> - University employees possess the necessary skills to perform their job duties. - University employees have the ability to express their opinions. 	Hammad and Al-Kubaisy, 2020
Process excellence	<ul style="list-style-type: none"> - The procedures that offer different services are always being improved. - The management of the university takes a contemporary stance on service delivery. 	Naser and Al Shobaki, 2017
Knowledge excellence	<ul style="list-style-type: none"> - Your university supports participation in local and international competitions. - your university maintains training programs to keep pace with the evolving cognitive level. 	Naser and Al Shobaki, 2017

degree appear the most frequently (122 responses, or 29.8% of all responses).

Table 2: Descriptive Analysis for the Respondents Profile

Items	Frequency	Percent%	Total
Gender			
Male	216	52.7	410
Female	194	47.3	
Age			
From 18 to 25	63	15.4	410
From 26 to 40	128	31.2	
From 41 to 55	134	32.7	
More than 55	85	20.7	
Education Level			
University Student	77	18.8	410
Bachelor Degree	122	29.8	
Master Degree	108	26.3	
PHD Degree	103	25.1	
Marital Status			
Single	200	48.8	410
Married	210	51.2	

3. Data analysis and findings

a. A Descriptive Study of the Respondents' Profile

Descriptive statistics are useful tools that can assist explain the characteristics of a given data set by providing brief descriptions of the respondents and the methods used to apply diversity in the selection of a representative sample for the population under study. The researcher may also be able to determine whether the research factors could be enhanced. Tables of frequencies, which display the quantity and proportion of respondents sharing in each category on the questionnaire, are used to describe the data in this section. The frequencies for the responder profile in Table 2 demonstrate this.

According to table 2 and pie chart of each variable, in terms of gender, at 52.7%, there are more male respondents (n = 216) than female respondents (n = 194). When age is taken into consideration, it can be seen that the age group of "41-55" respondents appear the most frequently, accounting for 134 respondents or 32.7% of the study sample. In terms of marital status, the percentage of married respondents (n = 210) is higher than that of single respondents (51.2%). Comparably, out of all respondents, those with a bachelor's

Figures 2-5 show the percentages

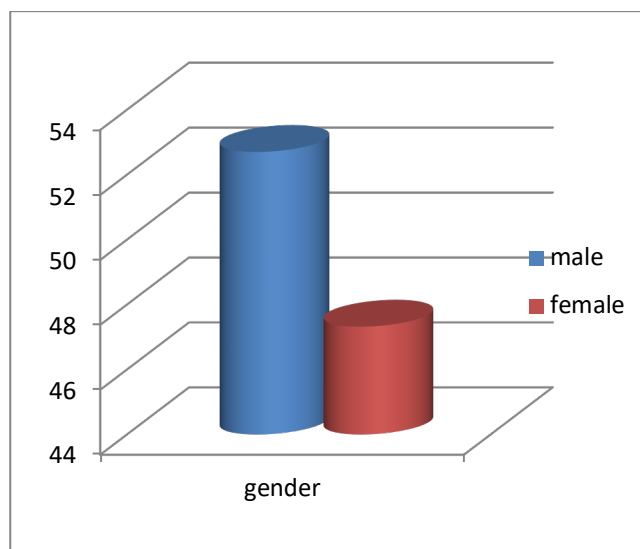


Fig. 2: percentages pie chart of gender

Figure 2 shows the percentages of male and female, it can be observed that male with percentage 52.70% more than female with percentage 47.3%.

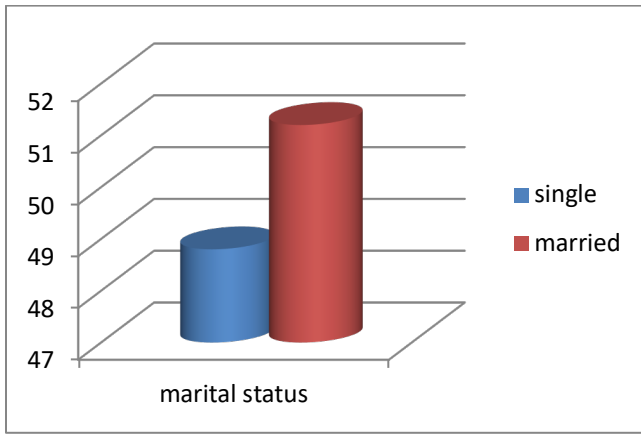


Fig. 3: percentages pie chart of marital status

Figure 3 shows the percentage of marital status, it can be observed that single respondents with percentage 48.80% less than married respondents with a percentage of 51.20%.

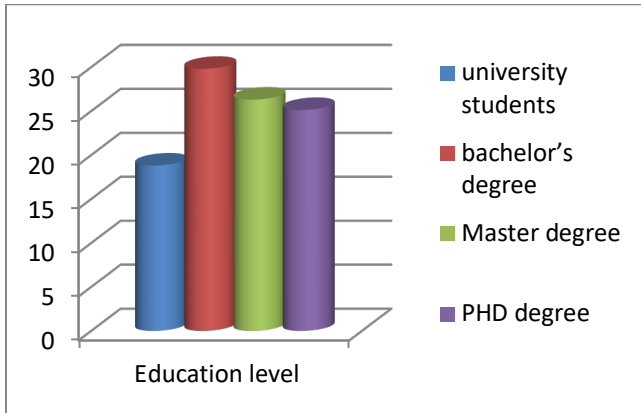


Fig. 4: percentages pie chart of Education level

Figure 4 shows the percentage of educational level, it can be observed that university students with percentage 18.80%, bachelor's degree with percentage 29.80%, Master degree with percentage 26.30% and PHD degree with percentage 25.10%.

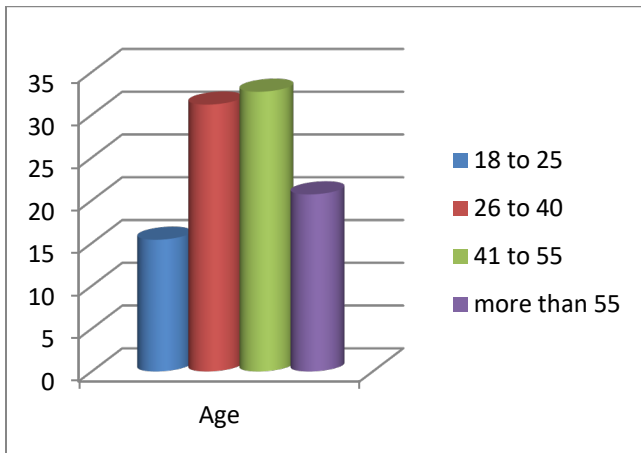


Fig. 5: percentages pie chart of Age

Figure 5 shows the percentage of age, it can be observed that respondents from 18 to 25 with percentage 15.40%, respondents from 26 to 40 with percentage 31.20%, respondents from 41 to 55 with percentage 32.70% and respondents more than 55 with percentage 20.70%.

b. The Research Variables' Validity and Reliability

When the constructs' validity is evaluated, as **Table 3** illustrates, the Average Variance Extracted (AVE) ranges from 81% to 97% (AVE > 50%). Furthermore, factor loading (FL > 0.4) is found to range from 0.607 to 0.903. In addition, the degree to which the assertions consistently form the corresponding construct can be assessed using Cronbach's alpha, the most widely used reliability test. Alpha values indicate sufficient reliability when they are between 0.950 and 0.979 (Alpha > 0.7).

Table 3: Validity and Reliability

Variable	AVE	Cronbach's Alpha	Items	Factor Loading
Artificial Intelligence	75.619%	0.838	AI1	0.633
			AI2	0.795
			AI3	0.840
Digital Competencies	78.739%	0.969	DC1	0.835
			DC2	0.822
			DC3	0.739
			DC4	0.673
			DC5	0.832
			DC6	0.669
			DC7	0.825
			DC8	0.821
			DC9	0.828
			DC10	0.829
Leadership excellence	76.056%	0.921	LC1	0.636
			LC2	0.609
			LC3	0.866
			LC4	0.903
			LC5	0.790
Human resources excellence	76.327%	0.845	HRE1	0.875
			HRE2	0.708
			HRE3	0.708
Process excellence	73.044%	0.815	PE1	0.848
			PE2	0.617
			PE3	0.727
Knowledge excellence	74.526%	0.829	KE1	0.744
			KE2	0.816
			KE3	0.676

Using the research variables' mean, minimum, maximum, and standard deviation, Table 4 presents the descriptive analysis for the variables. Table 4 displays the descriptive analysis of the research variables using their mean, minimum, maximum, and standard deviation. The results show that the mean value of leadership excellence is 4.9683, with a standard deviation of 0.17543. The minimum and maximum values are, respectively, 4.00 and 5.00. Furthermore, the average value of human resources excellence is determined to be 4.9780, with a standard deviation of 0.14670. The lowest and maximum values are, respectively, equal to 4.00 and 5.00. Furthermore, it is

discovered that the minimum and maximum values of Process Excellence are 4.00 and 5.00, respectively, and that the mean value is 4.9829 with a standard deviation of 0.12970. Additionally, the minimum and maximum values of Knowledge excellence are determined to be 4.00 and 5.00, respectively, with a mean value of 4.9732 and a standard deviation of 0.16178. Artificial intelligence has been shown to have a mean value of 4.9756, a standard deviation of 0.15445, and a minimum and maximum of 4.00 and 5.00, respectively. The average score for digital competencies is 4.9878, with a standard deviation of 0.10989. The lowest and maximum scores are, respectively, 4.00 and 5.00.

Table 4: Descriptive Analysis of the Research Variables

Research Variables	N	Minimum	Maximum	Mean	Std. Deviation
Leadership excellence	410	4.00	5.00	4.9683	.17543
Human resources excellence	410	4.00	5.00	4.9780	.14670
Process excellence	410	4.00	5.00	4.9829	.12970
Knowledge excellence	410	4.00	5.00	4.9732	.16178
Artificial intelligence	410	4.00	5.00	4.9756	.15445
Digital competencies	410	4.00	5.00	4.9878	.10989

c. Normality Test for the Research Variables

To ascertain whether a data set is normal, it is necessary to confirm one of the assumptions. The researcher might use the Spearman Correlation technique for parametric analysis if the data were regularly distributed. As a result, one may contend that confirming the normalcy of the data is a necessary step before beginning an inferential analysis because it establishes whether parametric or non-parametric tests can be used to address the research objectives. The method most frequently used to determine if a data set is normal is the Kolmogorov-Smirnov test of normality, which verifies the normality assumption for samples bigger than 50 observations. The data is considered to be regularly distributed if the P-value is greater than 0.05, also known as the formal normality test.

i. Formal Normality Test for the Research Variables

To ascertain whether a data collection is normal, it is necessary to verify certain assumptions, one of which is normality. There are two kinds of testing done to verify that the data are normal: formal and informal testing. In Table 5, the Kolmogorov-Smirnov test of normality is used to formally evaluate the normality assumption for the research variables. Because the associated P-values are less than 0.05, it is reasonable to draw the conclusion that the research variables are not regularly distributed.

Table 5: Formal Test of Normality for the Research Variables

Research Variables	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
Leadership excellence	.540	410	.000
Human resources excellence	.538	410	.000
Process excellence	.535	410	.000
Knowledge excellence	.539	410	.000
Artificial intelligence	.538	410	.000
Digital competencies	.532	410	.000

ii. Informal Test of Normality

Since the formal test suggests that the values are not normally distributed, an informal test is conducted to assess the data's normality. Table 6 presents result from the non-official test of normality. As can be seen, several skewness and kurtosis values exceed the tolerance level of ± 1 , suggesting that the study's data are not normal. Because of this, non-parametric tests are used to characterize the correlations between the research variables. Since the results of the normality test indicated that the study's data are not regularly distributed, the Spearman correlation is used to evaluate the research hypothesis.

Table 6: Informal Test of Normality for the Research Variables

Research Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Leadership excellence	-5.365-	.121	26.913	.240
Human resources excellence	-6.549-	.121	41.092	.240
Process excellence	-7.483-	.121	54.263	.240
Knowledge excellence	-5.878-	.121	32.712	.240
Artificial intelligence	-6.189-	.121	36.483	.240
Digital competencies	-8.922-	.121	77.975	.240

d. Multicollinearity Assumption Test

In this part, the multicollinearity assumption between the independent variables in the performed model is investigated and verified. To make sure the model in discussion doesn't contain redundant data, this is one of the fundamental assumptions that must be made. It happens in a model when two or more predictors have a significant correlation with one another. Due to this, there are technical issues with creating the multiple regression model and difficulties determining which predictors, as specified by the criterion, contribute to the variance. This leads to the provision of extraneous criteria details. Multicollinearity may be found using the variance inflation factor (VIF), a

statistic that evaluates the level of correlation and correlation between the predictor variables in a regression model. As shown in **Table 7**, based on collinearity statistics, as can be seen, The VIFs of the research variables are all less than 10, it can be conducted that there is no multicollinearity problem.

Table 7: the Research Variables VIF Values

Variables of Research	VIF
Leadership excellence	6.862
Human resources excellence	9.028
Process excellence	6.370
Knowledge excellence	9.204
Artificial intelligence	2.237
Digital competencies	9.149

e. Testing the Research Hypotheses

This section provided an empirical study that measured the variables derived from the literature review using descriptive, correlation, and regression analysis using SPSS in order to evaluate the research hypotheses.

Table 8: Correlation test between artificial intelligence and Leadership excellence of Arab universities

Correlations			Artificial Intelligence	Leadership excellence
Spearman's rho	Artificial Intelligence	Correlation Coefficient	1.000	.693**
		Sig. (2-tailed)	.	.000
		N	410	410
	Leadership excellence	Correlation Coefficient	.693**	1.000
		Sig. (2-tailed)	.000	.
		N	410	410

Table 9 shows the regression model fitted for the effect of artificial intelligence on Leadership excellence of Arab universities. Given that the regression coefficient (β) is 0.787 ($\beta > 0$) and the P-value is 0.000 (p -value < 0.05), it is

Table 9: Regression Model for the Relationship between artificial intelligence on Leadership excellence of Arab universities

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	R-Squared
	B	Std. Error	Beta			
1	(Constant)	1.050	.202		5.205	.000
	Artificial Intelligence	.787	.041	.693	19.432	.000

2. H1.2: Artificial intelligence has a statistically significant effect on Arab universities' human resources excellence.

Table 10 shows the correlation between artificial

Table 10: Correlation test between Artificial intelligence and Human resources excellence of Arab universities

			Artificial Intelligence	Human resource excellence
Spearman's rho	Artificial Intelligence	Correlation Coefficient	1.000	.516**
		Sig. (2-tailed)	.	.000
		N	410	410
	Human resource excellence	Correlation Coefficient	.516**	1.000
		Sig. (2-tailed)	.000	.
		N	410	410

Tests the two assigned study hypotheses based on the responses. Each hypothesis is investigated in its own subsection and put to the test using regression and correlation.

i. Testing the First Hypothesis

The First Hypothesis is to test relationship between artificial intelligence and the organizational excellence of Arab universities (Leadership excellence, Human resources excellence, Process excellence, Knowledge excellence). This Hypothesis is divided into four-sub hypothesis discussed as follows.

1. H1.1: Artificial intelligence has a statistically significant effect on Arab universities' leadership excellence.

Table 8 shows the correlation between artificial intelligence and Leadership excellence of Arab universities. It could be observed that there is a positive significant relationship between artificial intelligence and Leadership excellence of Arab universities as (P -Value < 0.05).

clear that artificial intelligence and leadership excellence at Arab universities are positively and significantly correlated. Moreover, the R^2 is 0.481, which means 48.1 % of the variation in Leadership excellence of Arab universities can be explained by the model.

intelligence and Human resources excellence of Arab universities. It could be observed that there is a positive significant relationship between artificial intelligence and Human resources excellence of Arab universities as (P -Value < 0.05).

Table 11 shows the regression model fitted for the effect of artificial intelligence on Human resource excellence of Arab universities. There is a positive significant relationship between artificial intelligence and Human resource excellence of Arab universities, given that the P-

value is 0.000 (p -value < 0.05) and the regression coefficient (β) is 0.490 ($\beta > 0$). Also, the R^2 value is 0.266., which means 26.6 % of the variation in Human resource excellence of Arab universities can be explained by the model.

Table 11: Regression Model for the Relationship between artificial intelligence on Human resource excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	2.540	.201		12.666	.000	.266
	Artificial Intelligence	.490	.040	.516	12.163	.000	

3. H1.3: Artificial intelligence has a statistically significant effect on Arab universities' process excellence.

Table 12 shows the correlation between artificial intelligence and Process excellence of Arab universities. It could be observed that there is a positive significant relationship between artificial intelligence and Process excellence of Arab universities as (P -Value < 0.05).

Table 12: Correlation test between Artificial intelligence and Process excellence of Arab universities

		Artificial Intelligence	Process excellence
Spearman's rho	Artificial Intelligence	Correlation Coefficient	1.000
		Sig. (2-tailed)	.000
		N	410
Process excellence	Process excellence	Correlation Coefficient	.467**
		Sig. (2-tailed)	.000
		N	410

Table 13 shows the regression model fitted for the effect of artificial intelligence on Process excellence of Arab universities. There is a positive significant relationship between artificial intelligence and Process excellence of

Arab universities, because the regression coefficient (β) is 0.392 ($\beta > 0$) and P -value is 0.000 (p -value < 0.05). Moreover, the R^2 is 0.218, which means 21.8 % of the variation in Process excellence of Arab universities can be explained by the model.

Table 13: Regression Model for the Relationship between artificial intelligence on Process excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	3.030	.183		16.560	.000	.218
	Artificial Intelligence	.392	.037	.467	10.679	.000	

4. H1.4: Artificial intelligence has a statistically significant effect on Arab universities' knowledge excellence.

intelligence and Knowledge excellence of Arab universities. It could be observed that there is a positive significant relationship between artificial intelligence and Knowledge excellence of Arab universities as (P -Value < 0.05).

Table 14 shows the correlation between artificial

Table 14: Correlation test between Artificial intelligence and Knowledge excellence of Arab universities

		Artificial Intelligence	Knowledge excellence
Spearman's rho	Artificial Intelligence	Correlation Coefficient	1.000
		Sig. (2-tailed)	.000
		N	410
Knowledge excellence	Knowledge excellence	Correlation Coefficient	.659**
		Sig. (2-tailed)	.000
		N	410

Table 15 shows the regression model fitted for the effect of artificial intelligence on Knowledge excellence of Arab universities. There is a positive significant relationship between artificial intelligence and Knowledge excellence of

Arab universities, because the regression coefficient (β) is 0.690 ($\beta > 0$) and P -value is 0.000 (p -value < 0.05). Moreover, the R^2 is 0.434, which means 43.4 % of the variation in Knowledge excellence of Arab universities can be explained by the model.

Table 15: Regression Model for the Relationship between artificial intelligence on Knowledge excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	1.540	.194		7.929	.000	.434
	Artificial Intelligence	.690	.039	.659	17.684	.000	

Therefore, based on the previous results H1: "Artificial intelligence has a statistically significant effect on Arab universities' organizational excellence." is fully supported

ii. Testing the second Hypothesis

The second Hypothesis is to test relationship between digital competencies and the organizational excellence of Arab universities (Leadership excellence, Human resources excellence, Process excellence, Knowledge excellence). This Hypothesis is divided into four-sub hypothesis

discussed as follows.

1. H1.1: Digital competencies have a statistically significant effect on Arab universities' leadership excellence.

Table 16 shows the correlation between digital competencies and Leadership excellence of Arab universities. It was observable that there is a positive significant relationship between digital competencies and Leadership excellence of Arab universities as (P-Value < 0.05).

Table 16: Correlation test between digital competencies and Leadership excellence of Arab universities

		Digital Competencies	Leadership excellence	
Spearman's rho	Digital Competencies	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.000	
		N	410	
	Leadership excellence	Correlation Coefficient	.487**	1.000
		Sig. (2-tailed)	.000	.
		N	410	410

Table 17 shows the regression model fitted for the effect of Digital Competencies on Leadership excellence of Arab universities. It demonstrates that there is a positive significant relationship Digital Competencies and Leadership excellence of Arab universities, because the

regression coefficient (β) is 0.778 ($\beta > 0$) and P-value is 0.000 (p-value < 0.05). Moreover, the R^2 is 0.237, which means 23.7 % of the variation in Leadership excellence of Arab universities can be explained by the model.

Table 17: Regression Model for the Relationship between Digital Competencies on Leadership excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	1.089	.344		3.162	.002	.237
	Digital Competencies	.778	.069	.487	11.269	.000	

2. H1.2: Digital competencies have a statistically significant effect on Arab universities' human resources excellence.

Table 18 shows the correlation between Digital Competencies and Human resources excellence of Arab universities. It was observable that there is a positive significant relationship between Digital Competencies and Human resources excellence of Arab universities as (P-Value < 0.05).

Table 18: Correlation test between Digital Competencies and Human resources excellence of Arab universities

		Digital Competencies	Human resource excellence	
Spearman's rho	Digital Competencies	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.000	
		N	410	
	Human resource excellence	Correlation Coefficient	.590**	1.000
		Sig. (2-tailed)	.000	.
		N	410	410

Table 19 shows the regression model fitted for the effect of Digital Competencies on Human resource excellence of Arab universities. It demonstrates that there is a positive

significant relationship Digital Competencies and Human resource excellence of Arab universities, because the regression coefficient (β) is 0.788 ($\beta > 0$) and P-value is

0.000 (p-value < 0.05). Moreover, the R² is 0.348, which means 34.8 % of the variation in Human resource excellence of Arab universities can be explained by the model.

Table 19: Regression Model for the Relationship between Digital Competencies on Human resource excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	1.049	.266		3.942	.000	.348
	Digital Competencies	.788	.053	.590	14.760	.000	

4.5.2.3 H1.3: Digital competencies have a statistically significant effect on Arab universities' process excellence.

Competencies and Process excellence of Arab universities. It was observable that there is a positive significant relationship between Digital Competencies and Process excellence of Arab universities as (P-Value < 0.05).

Table 20 shows the correlation between Digital

Table 20: Correlation test between Digital Competencies and Process excellence of Arab universities

		Digital Competencies	Process excellence	
Spearman's rho	Digital Competencies	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.000	
		N	410	
	Process excellence	Correlation Coefficient	.500**	1.000
		Sig. (2-tailed)	.000	.
		N	410	410

Table 21 shows the regression model fitted for the effect of Digital Competencies on Process excellence of Arab universities. It demonstrates that there is a positive significant relationship Digital Competencies and Process

excellence of Arab universities, because the regression coefficient (β) is 0.590 ($\beta > 0$) and P-value is 0.000 (p-value < 0.05). Moreover, the R² is 0.250, which means 25 % of the variation in Process excellence of Arab universities can be explained by the model.

Table 21: Regression Model for the Relationship between Digital Competencies on Process excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	2.040	.252		8.078	.000	.250
	Digital Competencies	.590	.051	.500	11.661	.000	

4.5.2.4 H1.4: Digital competencies have a statistically significant effect on Arab universities' knowledge excellence.

Competencies and Knowledge excellence of Arab universities. It was observable that there is a positive significant relationship between Digital Competencies and Knowledge excellence of Arab universities as (P-Value < 0.05).

Table 22 shows the correlation between Digital

Table 22: Correlation test between Digital Competencies and Knowledge excellence of Arab universities

		Digital Competencies	Knowledge excellence	
Spearman's rho	Digital Competencies	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.000	
		N	410	
	Knowledge excellence	Correlation Coefficient	.257**	1.000
		Sig. (2-tailed)	.000	.
		N	410	410

Table 23 shows the regression model fitted for the effect of Digital Competencies on Knowledge excellence of Arab universities. It demonstrates that there is a positive significant relationship between Digital Competencies and Knowledge excellence of Arab universities, because the

regression coefficient (β) is 0.378 ($\beta > 0$) and P-value is 0.000 (p-value < 0.05). The R² is 0.066, which means 6.6 % of the variation in Knowledge excellence of Arab universities can be explained by the model.

Table 23: Regression Model for the Relationship between Digital Competencies on Knowledge excellence of Arab universities

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R-Squared
		B	Std. Error	Beta			
1	(Constant)	3.089	.351		8.789	.000	.066
	Digital Competencies	.378	.070	.257	5.363	.000	

Therefore, based on the previous results H₂: “Digital competencies have a statistically significant effect on Arab universities' organizational excellence” is fully supported.

4 Results

In this section, the empirical study that tested the research hypotheses was reported. It measured the variables that were determined from the literature review using descriptive, correlation, and regression analyses using SPSS. Table 24 presents an overview of the analysis that was done.

Table 24: Summary of Research Hypotheses

Hypothesis	Description	Results
H ₁	Artificial intelligence has a statistically significant effect on Arab universities' organizational excellence.	Fully Supported
H ₂	Digital competencies have a statistically significant effect on Arab universities' organizational excellence.	Fully Supported

5 Discussion and Conclusion

The fundamental goal of the research is to know whether artificial intelligence, digital competencies have an impact on the organizational excellence in Arab university. This research has looked at the effect of artificial intelligence, digital competencies in Arab universities by using a descriptive, correlation and regression analysis. According to the results, artificial intelligence and digital competencies significantly affect organizational excellence, which is consistent with the previous studies such as (Jha, 2018; Fountaine, 2019; Hemalatha and Kumari, 2020; Mahmoud, 2022; Khalil, 2022; Ibrahim, 2023).

The study's conclusion, which aligns well with earlier findings, is that artificial intelligence and digital competencies significantly affect organizational excellence. It is important to note that when comparing our findings to those of previous research, they are all consistent in demonstrating that artificial intelligence (AI) and digital competencies are definitely improving organizational excellence. Regarding the study's shortcomings, it should be noted that only data from Arab universities were gathered, and the study only looked at how employees in Arab universities saw artificial intelligence and digital competencies.

Conflicts of Interest Statement

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

References

- [1] Abdulhameed, A. A. (2021). The requirement for achieving digital transformation at Al-Azhar University for meeting challenges of the fourth industrial revolution. *Journal of Education*, 1(190), 129-173. <https://doi.org/10.21608/jsrep.2021.180710>
- [2] Abu Borhom, M. I. (2023). The Role of Digital Competencies as a Mediating Variable in the Relationship between Organizational Agility and Achieving Institutional Excellence in Secondary Schools in the Southern Governorates. *Journal of Educational and Psychological Sciences*, 7(40), 1 – 27.
- [3] Agustín, Jiménez, and Fernandez, 2022. The role of human resource practices in the implementation of digital transformation. *International Journal of Manpower*, 395-410.
- [4] Albadarneh, A, Daradkah, A, Telfah, E, AlKhatib, F, Mahmoud, A, Alta'at, E, Al-Shunnaq,y , Tawalbeh, M, Ali, S(2024). Green Transformational Leadership as an Approach to Achieving Sustainable Environmental Development in Arab Universities. *Pakistan Journal of Life and Social Sciences*, 22(1),: 3016-3048.
- [5] Albadarneh, A, Daradkah, A, Telfah, E, Haggag, H, Ghawanmeh, F, Al-Shunnaq,y , Tawalbeh, M, Mahmoud, A Shahine, K, Daradkah, h (2024). Integrating Artificial Intelligence-Powered Large Language Models in English as a Foreign Language EFL Teacher Education Programs. *Pakistan Journal of Life and Social Sciences*, (2024), 22(1), 3006-3015.
- [6] Al-Momania, m, Daradkah,a Houriehc ,A , Albadarnehb, A, Alsadi, M(2024). Organizational excellence achievement in Jordanian universities: Academic leader perceptions. *Journal*

- Multidisciplinary Rev*, May 24, 1-7.
- [7] Al-Dajani, I. A., & Al-Aeur, R., W. (2013, April 29-30). The role of postgraduate courses in the faculties of education and commerce at the Islamic university of Gaza in developing the skills of human resources [Paper presentation]. Graduate studies between reality and prospects for reform and development conference, Gaza. Alpaydin, E., 2020. Introduction to machine learning. MIT press.
- [8] Al-Shuhna, A. H. (2021). Requirements for implementing digital transformation in private higher education institutions in the Arab Republic of Egypt. *Educational Administration Journal*, 32, 225-355. <https://doi.org/10.21608/emj.2021.234105>
- [9] Al-Zayn, U. S. (2016, April 22-24). The transformation of the era of digital learning: knowledge progress or systematic retreat [Paper presentation]. Eleventh International Conference: Learning in the Age of Digital Technology, Scientific Research Center, Tripoli, Lebanon.
- [10] Astapciks, I. (2023, March 20). Why do companies need digital transformation? *Forbes*.
- [11] Barnawi, M.B.O., 2022. Organizational Excellence Models Failure and Success Factors of Organizational Excellence and Challenges Mitigation. *Open Journal of Business and Management*, 10(6), pp.2915-2938.
- [12] Benbya, H., Davenport, T.H. and Pachidi, S., 2020. Artificial intelligence in organizations: Current state and future opportunities. *MIS Quarterly Executive*, 19(4)2-24.
- [13] Daradkah, A., 2017. Administrative empowerment and its relationship with organizational excellence among the academic leaders of Ta'if University from the perspective of the faculty members, *Al-Najah University Journal For Research And Humanities*, An-Najah University, 31(8), 1251-1296
- [14] Daradkah, A., Alqudah, R., Hasan, A and Daradkah, H.2023. The Benefits, Challenges, & Proposed Solutions of Using Artificial Intelligence Applications (AIP) in University Education: The Higher School Administration Diploma Students' Perspective at Ajloun National University. *International Journal of Educational Sciences and Arts (IJESA.)* 2 (5),10-35.
- [15] Daradkah, A., Alotaibi, T., Badarneh, H., Momani, K., Hamadin, K., Alqudah, R., AL-Momani, M., Allbrahim, A., Ashour, M., Almawadeh, N. & Mahmoud, A. (2023a). Proposed vision of the transformation of the Arab Universities into smart digital universities. *Information Sciences Letters*, 12(9), 2355- 2374.
- [16] Daradkah, A., Alotaibi, T., Mahmoud, A., Awais, B., Al-Qudah, M., AL Shannaq, R., AL-Momani, M., AL Ruheel, A., Albadarneh, A., Alqsaireen, E., Alkenani, R., Badarneh, H. & Mahmoud, S. (2023b). Proposed model for integration and cooperation between university, industry, and government in Arab countries: Innovation Triple Helix Model. *Applied Mathematics & Information Sciences*, 17(6), 1109-1144.
- [17] Daradkah, A., Mahmoud, A., AL-Momani, M., Al-nemrat, A., Badarneh, H., Hamadin, K., Almawadeh, N., Alqudah, R., Ashour, M., AlKhatib, F., Mahmoud, S. (2023c). Degree of the requirements for improving human capital management in Arab universities as a gateway to achieving sustainable development. *Information Sciences Letters*, 12(10), 2617- 2640.
- [18] Fountaine, T., McCarthy, B. and Saleh, T., 2019. Building the AI-powered organization. *Harvard Business Review*, 97(4), 62-73.
- [19] Hammad, A.J. and Al-Kubaisy, S.A.D., 2020. The role of knowledge management in achieving strategic excellence, field research in some Iraqi private banks. *Journal of Economics and Administrative Sciences*, 26(122), 1-17.
- [20] Hemalatha, A. and Kumari, D.P.B., 2020. A Study on Impact of Artificial Intelligence on Organizational Effectiveness. Available at SSRN 3897494.
- [21] Ibrahim, G.E.E.D., 2023. The Impact of Digital Transformation in the Egyptian Private Universities on Achieving Organizational Excellence, Using the German University in Cairo as a Model. *International Journal of Business and Management*, 18(5), pp.1-47.
- [22] Ilomäki, L., Kantosalo, A., & Lakkala, M. (2011). What is digital competence? Brussels: European School net.
- [23] Jha, S., 2018. The impact of AI on business leadership and the modern workforce.
- [24] Khalil, S.I., Farhan, O.M. and Hamad, H.A., 2022. THE ROLE OF DIGITAL LEADERSHIP IN ACHIEVING ORGANIZATIONAL EXCELLENCE AN APPLIED STUDY AT THE UNIVERSITY OF TIKRIT. *World Economics and Finance Bulletin*, 12,.85-94.
- [25] Khawaja, E.A. and Ehsan, H., 2023, June. Work in Progress: A Survey of Artificial Intelligence Educational Resources for Pre-College Education. In 2023 ASEE Annual Conference & Exposition.
- [26] Mahmoud Mohamed Abdalaziz, E., 2022. The requirements of digital transformation as a mechanism to achieve institutional excellence in NGOs. *The journal Future of Social Sciences*, 9(2),.97-140.
- [27] Mandoor, H. (2014). The Requirements to achieve of organizational excellence in Egyptian university: Analytical Study. *Educational Administration Journal*,

(2), 277-330

- [28] Mohammad, S.M., 2020. Artificial intelligence in information technology. Available at SSRN 3625444.
- [29] Mohammed, R.M. and Al-Zeidi, N.J.A., 2022. knowledge sharing and its role in Organizational excellence. *Sciences*, 12(2),.105-118.
- [30] Naser, S.S.A. and Al Shobaki, M.J., 2017. Organizational excellence and the extent of its clarity in the Palestinian universities from the perspective of academic staff. *International Journal of Information Technology and Electrical Engineering*, 6(2), pp.47-59.
- [31] Rizza, C. (2014). Digital competences. In Springer eBooks (pp. 1614–1619). https://doi.org/10.1007/978-94-007-0753-5_731
- [32] Verma, M., 2018. Artificial intelligence and its scope in different areas with special reference to the field of education. *Online Submission*, 3(1),.5-10.
- [33] Sharawy, F.S., 2023. *The Use of Artificial Intelligence in Higher Education: A Study on Faculty Perspectives in Universities in Egypt* (Master's thesis, The American University in Cairo (Egypt)).