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Research Article

Climate Change in Digital Transformation: An Analytical Study for Sumer University Leaders

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Abstract: This research aims to analyze the impact of change leadership on the digital transformation of universities through strategic capabilities as an intermediary factor, highlighting Sumer University as a model for the study. The study focused on diagnosing the reality of the application of change leadership and the university's readiness for digital transformation, in addition to measuring the relationship between these variables. The research relied on the descriptive analytical approach and the size of the community was (284) in (9) colleges of Sumer University, which included a random sample of 161 leaders at Sumer University (the university president, the university president's assistant, the dean, the assistant dean, the head of the department, and the division director). A questionnaire was designed as the main tool for collecting data, based on solid measures on the research variables (change leadership, digital transformation) with the results analyzed using SPSS and Amos software. The research concluded the importance of enhancing change leadership as a means of improving digital transformation and developing university performance. Statistical methods were used, including (validity and reliability test, normal distribution test, confirmatory factor analysis, mean, standard deviation, coefficient of variation, relative importance, Pearson correlation coefficient, simple linear regression, etc.) to test the main and sub-hypotheses of the research. A set of conclusions were reached, the most important of which is that the dimensions of change leadership play an effective and influential role in one of the dimensions of digital transformation, which is digital leadership in general.

Keywords: Climate Change; Digital Transformation; Sumer University Leaders

1. Study Methodology

1.1 The Study Problem

Today universities are required more than ever to face the challenges that have emerged in this era. In order to play this role, they need to correct the course of university education so that traditional universities are transformed into more interactive and vibrant universities according to the needs of the era. Digital universities are an integrated university that contains the technical infrastructure in the university sectors and provides classrooms with the necessary technologies and trains faculty members on those technologies. The following question branches out from it: (What is the impact of change leadership on the digital transformation of leaders at Sumer University).

1.2 The Importance of the Study

a. The importance of the studied variables, which are important variables and through which the university's capabilities can be enhanced over its competitors.
b. The study may be interested in addressing some of the gaps that the university suffers from, which stand in the way of the digital transformation process by enhancing change leadership.

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1.3 Study Objectives

The main objective is the extent to which change leadership affects the ability to achieve digital transformation of universities and achieve a set of the following objectives:

a. The study aims to diagnose the level of change leadership at Sumer University
b. The study aims to diagnose the level of digital transformation at Sumer University
c. Knowing the impact of change leadership on the digital transformation of universities.

1.4 Study Methodology

This research is considered one of the descriptive studies that aim to describe and monitor the phenomenon related to the impact of change leadership on the digital transformation of universities, as the research includes accurate monitoring of events over a specific time period or across multiple time periods. The aim of this is to reach results and generalizations that contribute to understanding reality and drawing a comprehensive and accurate picture of it. The researcher relied in his method on the descriptive analytical method to achieve the objectives.

1.5 Hypothetical Research Plan

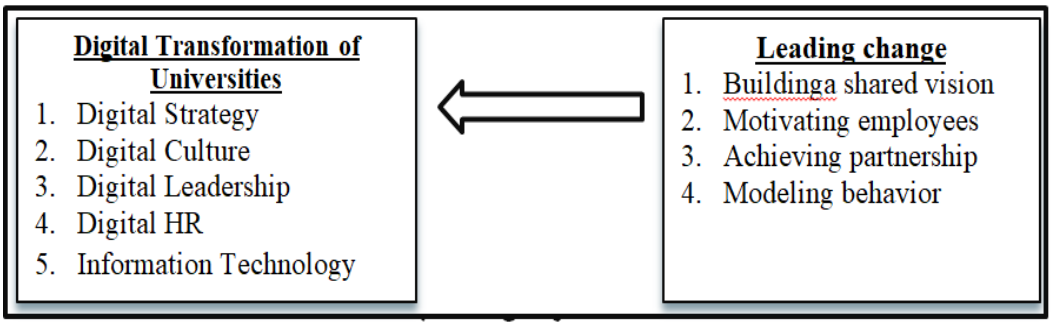

Figure 1. Hypothetical research plan

1.6 Research Hypotheses

The hypothesis is usually based on testing the relationship between the dependent and independent variables. The research was launched to embody the relationship between the independent variable and the dependent variable through the following hypothesis, which stated: (There is a significant effect of leading change in the digital transformation of universities).

1.7 Research Sample

The university leadership was represented (the university president/the university vice president/the college deans/the heads of departments/the directors of the departments) and their number reached (284). A sample was taken from them and their number reached (161). (161) questionnaires were distributed.

2. Change Leadership

2.1 Change Leadership Concept

It is the elicitation of employee attitudes and behaviors to support change, and its impact is not expected to exceed the specific change situation; on the other hand, transformational and interactive leadership affect followers' responses across situations. The basic argument of the broad and long-term literature on change is that by engaging in change leadership behaviors, change leaders are able to generate employee support for the proposed change, which will then lead to the success of the change. By creating and communicating a vision related to change, involving employees in the change decision-making process, helping people deal with the challenges associated with change, and providing regular feedback on the change process, change leadership is able to reduce the uncertainty associated with change and create the value of change among employees. Since commitment develops from will, motivation, and attribution, change leadership behaviors are expected to increase employee commitment to the change initiative by motivating and creating positive will among employees [1].

2.2 Dimensions of Change Leadership

2.2.1 Developing a Shared Vision

Developing a shared vision is the leader's ability to challenge the status quo through the ability to search for new ideas and encourage employees to solve problems in creative ways, and support new models in working methods. Leaders work to raise awareness and encourage the adoption of new ways of working and addressing old situations in modern ways and viewpoints that keep pace with global developments, which generates a kind of innate confidence in developing employees as it is positively linked to the positions of leaders. As joint management works to transfer the visions of the institution to the conscience of its employees to ensure the achievement of goals regardless of the job position they occupy in the organization, whether administrative or executive, and in order to achieve these goals, tools are shared and roles are evaluated fairly, energies are released and freedoms are granted to all employees, each according to his vision of the strategic goal that was set in order to reach the main goals, which shows that this works to involve everyone within the institution in using tools and means to achieve the desired goals in a manner that is not subject to domination, and tactical goals, if they do not serve the strategic goal, become a waste of time, effort and money [2].

2.2.2 Modeling Behavior

Through this characteristic, the transformational leader is a model that subordinates follow. They show persistence and determination in pursuing goals and display high levels of ethical behavior with their high sense that ideally raises the ethics, morale and values of subordinates to higher levels according to what is expected. Modeling behavior is defined as Kazdin, "a term with a broad meaning that refers to that field that derives its methods from research related to the psychology of learning in particular and includes environmental and

social conditions or reorganizing them with the aim of changing apparent behavior and not changing internal psychological processes that are believed to act as a driver for this behavior.

2.2.3 Change Structure

Leaders act according to this characteristic in ways that motivate and inspire those around them by promoting the spirit of the group, showing enthusiasm and optimism, making followers focus and think about attractive and multiple future situations, and motivating them to study very different and desirable alternatives. This characteristic expresses the leader's ability to express himself attractively, arouse their motivations, and spread the spirit of enthusiasm towards achieving goals. That is, motivating subordinates is a process of focusing on the behavior and conduct of the transformational leader, which makes subordinates love challenges, and arouses feelings and emotions in employees [3].

2.2.4 Motivating Employees

This characteristic refers to the behavior of the leader who shows interest and care for his followers, and works to achieve the comfort and permanent well-being of subordinates and is directed to team members. The individual consideration with inspiring motives for the leader is frequently linked to the future goals of the organization, which are seen as significant and challenging for business and personal goals, and subordinates are motivated and inspired to achieve the goals of the organization. Binder defined motivation in the field of work as a set of active forces that help in his work and determine its direction, form, intensity, and duration. Others have considered motivation as distinguished performance because of its association with the individual's performance of his work. This is considered to motivate employees as basic characteristics that distinguish human nature, determine his behavior at work, the most important of which are human needs. Maslow proposed his famous theory where he arranged human needs through five levels: [4].

3. Digital Transformation

3.1. The Concept of Digital Transformation

The Industrial Revolution in the 18th century helped humanity overcome the limitations of muscle power; with the digital revolution, we are exceeding the limits of the human mind. In the fast-moving digital world, there is no time for procrastination, digital disruption is upon us. In the digital world, people, processes, and things are closely linked. There is no doubt that digital technology empowers people (293): [5] The concept of digital transformation had a different connotation than that considered during the C19 pandemic. Previously, higher education institutions were looking to enable remote registration and allow students to do so not from their homes but from ATM-like terminals in cities to withdraw money, so that they would have the opportunity to develop the remote registration process with reference to how to access the library through digital mechanisms. The digital transformation of higher education institutions has two very clear aspects. One is administrative, where the

management of institutions must use everything that technology offers to be more efficient, for example, considering techniques to ensure that files can be tracked and accessed from other institutions from anywhere in security and technological assurance. The second aspect is to transform the teaching and learning environment. Our primary task as teachers is to make students learn [6] which is the most aggravating administrative challenge for current companies in the past and coming decades. However, digital possibilities must come together with skilled employees and executives in order to reveal its transformative power. Therefore, digital transformation requires both technology and people [7].

3.2 Dimensions of Digital Transformation First

3.2.1 Digital Strategy

Is the strategic form of companies' digitalization intentions, short- and medium-term goals are to create or maintain new competitive advantages? Within the digital strategy, digital technologies and methods are applied to products, services, processes and business models. In order to develop a digital strategy, the company and its environment must be analyzed as a basis for several future scenarios. The digital strategy consists of vision, mission, strategic objectives, strategic success factors, values and metrics. The digital strategy is part of or equal to the company's strategy. The integrated approach to developing the digital strategy is based on a six-stage roadmap (external strategic analysis, scenario development, internal strategic analysis, digital strategy statement, strategic options, digital strategy formulation) [8].

3.2.2. Information Technology

In recent years, there has been a rapid spread of information and communication technology (ICT) in the field of higher education, as ICT is considered a new potential opportunity to improve the efficiency of the educational process, especially due to the stimulation of motivation. [9].

3.2.3. Digital Human Resources

It is an intelligent system designed to provide effective and personalized human resources management services. Development of human resources management platforms and digital technologies with the rapid advancement of digital technologies, human resources management platforms have become increasingly important in organizations. Traditional human resources management systems primarily focus on functions such as data management, process automation, and report generation. However, these solutions have some limitations. First, they lack customization capabilities, and are unable to provide customized services based on the needs and characteristics of individual employees. [10] .

3.2.4 Digital Leadership

Leadership is described as the ability to direct a company towards achieving its goals and creating a sustainable competitive advantage. To maintain a sustainable competitive advantage, companies must have technology products and systems that accelerate and enable production, communication, and reduce costs, in addition to the ability to use these products

and systems optimally. In short, companies must embrace digital transformation. To achieve sustainable and effective digital transformation, a strong digital transformation plan requires leaders who can guide employees towards digital transformation. [11].

3.2.5 Digital Culture

The concept of digital culture is a complex structure that must be addressed through globalization, popular culture, network society, new media, computer games, digital advertising, consumption, supervision and postmodernism. It is multi-layered and different from any previous type of culture in terms of its context, structure and spread. Given the level of technical development and accessibility, media culture as a form of culture cannot be compared to anything. In particular, the pressure created by new media in the form of acculturation is important in terms of its rapid and effective spread to large audiences at the social level. The digital culture that appears on the Internet has the potential to spread faster than imperial culture. [12].

4. Data Analysis

4.1. Instrument Reliability

The reliability of the scale was tested by knowing the extent of internal consistency of its items using Cronbach's Alpha coefficient. Cronbach Alpha is the most common estimate of internal consistency of the items in the scale, as it measures the extent to which the answers of the scale tool are related to each other. The range of statistics ranges from (0.00 to 1.00), while the value is acceptable if it is greater than (0.65) [13], as shown in Table (1) below.

Table 1. Cronbach's alpha values for the main variables dimensions

Key Variables	Dimensions	Cronbach Alpha
Leading Change	Building a shared vision	0.940
	Motivating employees	0.948
	Modeling behavior	0.939
	Achieving partnership	0.937
Digital Transformation of Universities	Digital strategy	0.938
	Digital culture	0.938
	Digital human resources	0.943
	Digital leadership	0.943
	ICT	0.939

Source: Prepared by the researcher based on the outputs of SPSS v.26.

It is clear from the results shown in Table (1) that the Cronbach's alpha coefficient for all the scale's paragraphs is greater than (0.65), which indicates the availability of internal consistency for its paragraphs as well as its suitability for conducting other statistical analyses.

4.2. Linear Relationship Test

To further ensure the absence of multicollinearity between the research variables, a correlation test is performed, which indicates the strength of the relationship between the

variables, and most of the correlations must not exceed (0.90) so that there is no multicollinearity between the variables, as follows:

4.2.1. The Relationship Between the Change Leadership Variable and The Digital Transformation Variable.

Table 2. Correlation values between change leadership and the digital transformation variable of universities

		Digital Leadership	Information and Communication Technology	Digital Strategy	Digital Human Resources	Digital Culture	Digital Transformation of
Building a shared vision	Correlation	**.697****	**.658****	**.640****	**.520****	**.510****	**.474****
	Moral	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Motivating employees	Correlation	**.530****	**.430****	**.394****	**.350****	**.390****	**.420****
	Moral	**.000**	**.000**	**0.000**	**.000**	**.000**	**.000**
Modeling behavior	Correlation	**.394****	**.526****	**.621****	**.771****	**.558****	**.545****
	Moral	**.000**	**.000**	**0.000**	**.000**	**.000**	**.000**
Achieving partnership	Correlation	**.405****	**.422****	**.700****	**0.510****	**.495****	**.458****
	Moral	**.000**	**.000**	**0.000**	**.000**	**.000**	**.000**
Leading change	Correlation	**.477****	**.521****	**.527****	**0.530****	**.585****	**.602****
	Moral	**.000**	**.000**	**0.000**	**.000**	**.000**	**.000**

Source: Prepared by the researcher based on the outputs of SPSS v.26.

It is clear from Table (2) that the strength of the correlation between change leadership and digital transformation of universities is (0.602), which is a positive relationship with significance (0.000), and that all values are limited between (0.350 and 0.771), and that the greatest correlation was for the behavioral modeling dimension of the change leadership variable with the digital human resources dimension of the digital transformation variable of universities.

4.2.2. Structural Validity of the Research Model

To further confirm the goodness of the model's fit, it is clear from Table () which shows the amount of estimates for the effect of the study dimensions on the variables, where the structural validity of the scale and through testing the suitability of the dimensions to the study variables was significant and most of the paragraphs are greater than the standard critical table value (C.R) of (1.66) and this is what the P value shows where they were all less than (0.05) and this indicates the validity and goodness of the choice of dimensions for those variables and that the indicators of the quality of the fit obtained from the outputs of (Amos V24) are close to the indicators of the standard quality of the fit (Goodness Of Fit).

Table 3. Confirmatory factor analysis parameters for study variables

Dimensions	Direction	Variables	P	C.R	S.E	Estimate	SAW
Building a shared vision	--->	Leading Change				1	0.894
Motivating employees	--->		***	15.187	0.058	0.886	0.858
Modeling behavior	--->		***	7.798	0.109	0.852	0.561
Achieving partnership	--->		***	14.632	0.057	0.841	0.842
Digital strategy	--->	Digital Transformation of Universities	***	17.486	0.061	1.06	0.916
Digital culture	--->					1	0.888
Digital human resources	--->					1	0.619
Digital leadership	--->		***	8.816	0.11	0.971	0.879
ICT	--->		***	8.969	0.11	0.987	0.903

5. Description and Analysis of the Research Variables and Interpretation of Their Results:

5.1. Description and Analysis of the Change Leadership Variable in General:

This paragraph includes a description and diagnosis of change leadership in general, as it is clear from Table (4) the results of the availability of the level of the change leadership variable, which was measured by four sub-dimensions, as this variable achieved a total mean of (4.15) and a standard deviation of (0.389) and a coefficient of variation of (0.093) and a relative importance of (90%), which confirms that change leadership has achieved a high level based on the responses of the sample members.

Table 4. Descriptive measures of the change leadership variable

NO.	Paragraphs	Mean	Standard deviation	Coefficient of variation	Relative importance%
1	Building a shared vision	4.13	0.58	0.140	86%
2	Motivating employees	4.22	0.88	0.209	79%
3	Modeling behavior	4.19	0.60	0.143	86%
4	Achieving partnership	4.12	0.65	0.158	84%
Overall average of the change leadership variable		4.15	0.389	0.093	

Source: Prepared by the researcher based on the results of Microsoft Excel 2021 (SPSS V.26) programs.

Table 5. Description and analysis of the digital transformation of universities in its dimensions

NO.	Paragraphs	Mean	Standard deviation	Coefficient of variation	Relative importance%
1	Digital Strategy	3.91	0.65	0.165	83%
2	Digital Culture	4.02	0.66	0.165	83%
3	Digital Human Resources	3.93	0.88	0.225	78%

4	Digital Leadership	4.04	0.78	0.192	81%
5	ICT	3.92	0.72	0.184	82%
Overall average of the digital transformation variable for universities		3.99	0.593	0.148	

Source: Prepared by the researcher based on the results of Microsoft Excel 2021 (SPSS V.26).

6. Testing the relationship of influence between research variables

The main hypothesis: It states that there is a significant effect of change leadership on the digital transformation of universities. Table (6) shows the results of the simple linear regression estimation that represents the value of the effect of change leadership and its dimensions combined on the dimensions of the digital transformation of universities independently, and the sub-hypotheses branched out from it. The main hypothesis stated that (change leadership has a significant effect on the digital transformation of universities), as the relationship will be analyzed according to the simple linear regression model as follows:

Y= a+ β(X)

Digital transformation of universities= 1.149 + 0.449 (Leading change)

Table (6) indicates that the effect is significant, as indicated by the calculated F value for the dimensions of change leadership in the digital leadership dimension, which amounted to (41.034), which is greater than the tabular (F) value of (3.9) at a significance level of (0.05). This indicates that the dimensions of change leadership have an impact on digital leadership with a degree of confidence of (0.95). This proves that the dimensions of change leadership have an effective and influential role in digital leadership in general. In addition, the value of the interpretation coefficient (R2) was (0.513), indicating that the dimensions of change leadership together explain (51.3%) of digital leadership, while the remaining percentage of (48.7%) is due to other variables not included in the research.

Table 6. Values of the impact of change leadership dimensions on vision sharing

Dimensions of Change Leadership	Dependent Variable	Constant value a	Coefficient of determination R2 value	Calculated F value	The value of the marginal slope coefficient β	Calculated t value	Sig	Significance
Building a Shared Vision	**Digital Leadership**	**0,811**	**0.513**	**41.034**	**0.319**	**3.471**	**0.001**	**Moral**
Motivating Employees					**0.018**	**0.263**	**0.793**	**Non-moral**
Modeling Behavior					**0.083**	**0.873**	**0.384**	**Non-moral**

Achieving Partnership					**0.365**	**3.838**	**0.000**	**Moral**

Source: SPSS V26 output

At the level of dimensions, the above table shows that the value of the fixed limit reached (0.811) and the value of the coefficient of determination reached (0.531), as the previous table shows that the impact of the dimensions (building a shared vision, achieving partnership) which reached (0.319, 0.365) respectively for each significant dimension in (digital leadership) and this is what was shown by the calculated t value for these dimensions which reached (3.471, 3.383) respectively for each dimension and it is greater than the tabular t value, so the significance for each of them was (0.001, 0.000) which is less than (0.05). While the effect of the dimensions (staff motivation, behavior modeling) was insignificant, reaching (0.018, 0.083), this was shown by the calculated t value, which reached (0.263, 0.873), which is less than the tabular value, and with a significant significance of (0.793, 0.384)), which is greater than (0.05). To further confirm the above results, the researcher tested the relationship of influence using the structural modeling equation (SEM), which is one of the statistical tools that have the ability to deal with large numbers of independent and dependent variables, using the Amos v24 program, where the relationship of the impact of the dimensions of change leadership was tested together in the first dimension (digital leadership) of the dimensions of digital transformation, where (7) displays the results obtained, which represent the strength of the impact of those dimensions, as shown in Table (7).

Table 7. Values of the impact of the dimensions of change leadership combined in digital leadership

Dependent Variable	Direction	Dimensions of the independent variable	Estimate	SRW	S.E.	C.R.	P
Digital Leadership	<---	Building a shared vision	0.319	0.2	0.101	3.515	***
	<---	Motivating employees	0.018	0.036	0.049	0.266	0.79
	<---	Modeling behavior	0.083	0.212	0.101	0.884	0.377
	<---	Achieving partnership	0.365	0.438	0.093	3.887	***

Source: AMOS V24 outputs

The table above shows that all values match the results obtained through testing in SPSS V26.

7. Conclusions and Recommendations

7.1. Conclusions

a. Sumer University is keen to follow and adopt leadership behaviors that lead it to build a successful leader and to be an organized and practical process through which the

organization is transformed from the current reality to the desired reality and to develop strategies directed towards the future and to continuously search for new work options for the purpose of building a new vision.

b. The results show that Sumer University uses an effective and electronically fortified information system and a set of tools and technologies to store, process and transfer information digitally.

c. The results show that the dimensions of change leadership play an effective and influential role in one of the dimensions of digital transformation, which is digital leadership in general.

7.2. Recommendations

a. It is necessary for the university administration to continuously work on the gradual transformation of all its operations towards digital transformation and the promotion of digital technologies.

b. The university must work to enhance cyber security, including the protection of data and systems from cyber attacks.

c. Work to recognize the importance of digital leadership in the university and that it facilitates many procedures by transforming its old routine operations and gradually replacing them towards digital leadership.

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