"Exploring the Relationship between Digital Leadership and Digital Transformation in Employee Engagement at Saudi Universities context -Makkah Region"

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Abstract:

The purpose of this study is to investigate how digital leadership influences the level of digital transformation in Saudi organizations "Makkah Region", and how this in turn effects employee engagement. To ensure diverse representation, data obtained from 109 employees at various levels of administration of universities. The findings revealed notably high levels of digital leadership, digital transformation, and employee engagement, indicating an advanced readiness within universities to adapt to technological changes. The results also demonstrated a strong relationship between digital leadership and the universities ability to achieve digital transformation, as well as a positive relationship between digital transformation and employee engagement. Furthermore, the study found that digital transformation plays a significant mediating role in enhancing the effect of digital leadership on employee engagement, operating indirectly through transformation practices. These findings align with Saudi Arabia Vision 2030, which emphasizes digital transformation as a national priority. Accordingly, the study ensure the achievement of digital efforts within Saudi universities, the study highlights the importance of supporting leadership development, enhancing training programs, and establishing a culture of change.

Keywords: Digital Leadership ،Digital Transformation ،Employee Engagement ،Artificial Intelligence ،Change Management ،Saudi Universities.

Introduction:

As the Kingdom of Saudi Arabia (KSA) is witnessing a new horizon of unprecedented change and an inevitable necessity for transformative leadership styles in many sectors of the society in KSA, and in line with the Saudi Vision 2030, many organisations need to embrace such rapid changes in the view of Saad Alessa (2021a).

In a particular, the study by Baroudi (2022) focused on the behavior of a leader in educational institutions and organizations as well as the general idea of a leader's behavior because resistance from subordinates forces a leader to use transformative leadership until the change becomes a routine, palatable habit.

Digital leadership (DL) plays a crucial role in boosting employee commitment in educational institutions in Saudi Arabia, leading to increased motivation, job satisfaction, and institutional loyalty in the explores of Alhajjuj (2023).

This transformational leadership at Saudi universities driven by technological advancements in education, resulting in increased job engagement and a stronger sense of institutional loyalty.

Study objectives:

This research investigates the relationship between digital leadership (DL), digital transformation (DT), and employee engagement (EE) in Saudi universities located in the Makkah Region. It examines participant's views on the aspects of digital leadership, digital transformation, and their engagement levels.

Research Questions:

In particular, this research study will address the following overarching primary research question:

Does the transformation which leader training in the skills of digital leadership contributes to the innovation creativity in achieving the strategic goals of universities? From the perspectives of staff (recipients), as well as leaders (instructors)?

I will further consider as the following secondary research question:

Do the transformational leaders apply the skills they learned in training in the real work environment?

Do they adopt technology and use it effectively to enhance innovation and creativity within the organization?

Does adopting new ideas by using artificial intelligence (AI) tools at application organization to execute work scheduled for employees in the workday, it will be gradually in relation of the Digital Transformational Leadership vision?

These questions may create a perception of why the development, training and application of leaders and staff would bring us to an effective performance in the organizations, which will contribute to the employee engagement.

Research gap:

The researcher, via extensive search of the internationally renowned academic databases have found a limited number of research studies in the realm due to the novelty of the topic. In particular, the researcher also found that there are limited studies in the field of Employees and Leaders Regarding the Digital Transformation and its Relationship with Job Engagement in Kingdom of Saudi Arabian Universities – Makkah Region.

Literature review:

This chapter explores the relevant and related literature on the use of transformative and digital leaders in Saudi universities, focusing on the motivation of administrative staff to apply these leaders in digital transformation. It presents previous studies and gaps in knowledge, aiming to support the study's understanding of the required dynamic changes in universities.

Theoretical Framework:

Burns (2012)says that Transformative leadership introduced as a concept in 1978, characterizing it as a leadership approach that inspires self-confidence and improves team morale, subsequently inspiring and motivating people to achieve a shared objective. With amazing efficacy and efficiency, this behavior may use to move companies and convert them from one condition to a much better state by using digital technology. In another way Tichy and Devanna (1986) declares that it is process by which transformational leaders inside companies observe the need for change and develop a new vision. To make the change long lasting, they strive to formulate this vision and spearhead it. moreover transformative leadership work on empowering the employees to become controllers of their abilities and bring about a wide range of changes Mohrman (1987).

McAffee et al. (2011)advice that the digital transformation will help to covers the use of data and analysis for decision-making, the creation and execution of technology advancements, the adoption of digital initiatives, and the encouragement of digital teamwork and communication to be in sync with the emerging digital transformation trend.

Digital Transformation:

The digital transformation can be understood as the changes that the digital technology causes or influences in all aspects of human life from the point of view for Stolterman and Fors (2004).

Mention that digital transformation is the use of technology to improve the performance or reach of enterprises.

Overview of Saudi Universities:

We are reviewing the Saudi universities to which the study will apply (King Abdul Aziz University, Jeddah University, University of Business and Technology) with a simple overview, based on the website of each university.

King Abdulaziz University (KAU):

King Abdulaziz University, established in 1967, is a public university in Saudi Arabia promoting higher education in the western region. With 80,000 students, it ranks among the top universities in the Middle East and first in the Arab world in the British QS classification index.

Objectives: The University will become a leader in:

Developing standards of assessment for student performance.

High-quality research and development programs.

Cultural contributions.

Garnering the trust of society and the corporate world.

Human Resources: Developing human capital.

Digital Transformation: Completing the digital transformation.

Mission of KAU: The promotion of society through an educational and research distinction is pioneering.

Vision of KAU: A leading international university that contributes to achieving the Kingdom's vision.

Since the company is a part of the government and follows to ministry of education policies and procedures, all departments will have the similar culture (KAU).

The University of Jeddah (UJ)

Established in 2013, the University of Jeddah is a non-profit public higher education institution in Makkah, offering courses and programs with a selective admission policy, focusing on values like Passion, Respect, Pride, Initiative, Responsible, and Excellence (UJ).

The University of Business and Technology (UBT):

The University of Business and Technology (UBT) in Saudi Arabia, established in 2012, serves over 5000 students through four colleges and offers 18 undergraduates and (7) masters' programs. It has an Executive Education Centre and the English Language Academy, providing professional certifications. UBT has a Teaching and Learning Centre, a Faculty Development Centre, and has increased research activities and graduate programs. It is a member of several reputable organizations and aims to contribute to society through high-quality market-driven programs and executive education (UBT).

Other Privet and public Universities in Makkah region such as Um Al Qura, Effat University…ETC

Previous Studies:

Based on the results of the review of the results of scientific articles by researchers, and also according to research objectives, transformative leadership has been applied on the World University campus with organizational development from several studies carried out on the subject, with a view to drawing on the theoretical literature contained therein and linking the results and the ranking of the studies from the latest to the oldest.

Susanto et al. (2023) studied that by developing a supportive work environment, promoting accountability; collaborative problem solving, innovation, and creativity, transformative leadership has a positive impact on employee commitment, satisfaction, and performance.

According to the studied of Ly (2023), The emphasizes the significance of digital transformation in organizations, emphasizing the need for individuals and the organization to acquire new digital skills, requiring transformative leadership, policies promoting openness, and involving the private sector in strategy development.

Philip (2021) emphasizes the importance of leadership in successful digital transformation, highlighting the need for further exploration and scholarly thought. The study distinguishes between planned and forced digital changes, emphasizing the need for effective leadership and a digital view. It proposes research on leadership, subordinate trends, and implementation instructions.

Al Jabri et al. (2021) examines the impact of transformative leadership on employee performance in Saudi Water Partnership Companies (IWPPs). Results show that transformational leaders motivate staff, but more is needed, including encouragement, training, and commitment to enhance skills.

The study's focus is Saudi Arabia's government universities' present transformative leadership. The studies on transformative leadership around (47,400,000) have been published. Only 22 studies, nevertheless, were thoroughly examined and carried

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out at Saudi universities. The results of the study show that transformative leadership is utilized in Saudi Arabian government universities along four dimensions: ideal influence, intellectual motivation, inspiring motivation, and individual concern Saad Alessa (2021b).

Elg et al. (2021) declares that the Universities should promote digital management by fostering an administrative transformation environment, fostering a digital management culture among leaders, and enhancing technology in management activities and colleges for competitive capabilities development.

According to Bass and Riggio (2006), transformative leadership fosters intellectual motivation, individual consideration, inspiring motivation, and trust among people of the company, all of which serve as fuel for innovation. Transformative leadership in higher education enables employees to take part in training programs, grow and develop their abilities, and produce notable outcomes. As new ideas are the foundation of innovation, it strengthens the will to overcome setbacks and promotes their creation.

Bass and Steidlmeier (1999) suggests in their study a transformational leadership approach for digital leaders, which encourages positive changes and teamwork. Transformational leaders are dynamic, enthusiastic, and passionate, focusing on helping each individual achieve their goals. This style aligns with digital leaders' characteristics, as identified by Exploratory Factor Analysis (EFA). In addition Birgisdóttir and Ahlquist (2020) says an effective digital transformation with a contented team is ideal, as it facilitates successful collaboration and teamwork in the digital transformation process.

Participants and Data Collection Methodology

The study will choose an exploratory sequential Quantitative method research; Data collection utilized an electronic questionnaire via Google Forms, engaging 109 participants from King Abdulaziz University, the University of Jeddah, other Saudi universities, and private universities. The data collection commenced on September 30, 2025. Afterward, the data underwent statistical processing after quality cleaning and verification, extraction and analysis.

Questionnaire Variables

Demographic Variables:

These variables do not directly assess the phenomenon examined; instead, they depict the attributes of the sample participants. They generally employed in descriptive analysis to elucidate the characteristics of the participants and in inferential analysis to contrast the responses of various groups.

Classification	Definition and Role	Possible examples in this questionnaire
Demographic Variables	Characteristics of the participants that help describe the sample and segment the results	Age, gender, years of experience, job title, department/division.

Items/Sub-variables:

These are the basic units of measurement. Each main dimension (such as digital leadership) measured through a set of specific questions (items). The responses to these items are collected using a **Likert scale** (typically 1-5), and then their average is calculated to form the score of the main dimension.

Classification	Definition and Role	Possible examples in this questionnaire
Sub-variables (Items)	The specific questions that form the main dimensions. They are the actual measurement tools.	Questions that measure Digital Leadership (The leader encourages continuous learning). Questions that measure Employee Engagement (I feel proud when mentioning my company s name).

Independent and Dependent Variables:

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This classification depends on the research objective (Are we trying to establish a causal or correlational relationship?). Since the questionnaire measures three main dimensions, the study is likely aiming to examine how one dimension influences another. The most common assumption in this type of study is:

Independent Variable (IV): The presumed cause or influencing factor.

Dependent Variable (DV): The outcome or phenomenon affected by the influencing factor.

Classification	The likely assumption in the context of the study	Possible examples in this questionnaire
Independent Variable (IV)	The factor that is believed to influence the other factors	Digital leadership (DL) (assumed to influence engagement and transformation)
Dependent Variable (DV)	The factors whose relationship to, or effect from, the independent variable is being measured	Employee engagement(EE) and/or digital (DT) transformation indicators (assumed to be influenced by digital leadership)

Statistical Processing:

• Frequencies and percentages.

• Arithmetic mean (weighted mean).

• Standard deviation.

A rating scale adopted according to the five-point Likert scale:

Table (1)

Rating Scale According to the Five Point Likert Scale

Response	Weighted Mean	General Interpretation
Unsatisfactory	1.00 - 1.80	Strongly Disagree
Somewhat Satisfactory	1.81- 2.60	Disagree
I Don t Know	2.61- 3.40	Neutral
Satisfactory	3.41- 4.20	Agree
Very Satisfactory	Above 4.20	Strongly Agree

Accordingly, the weighted mean of the responses to the questions used based on the five-point Likert scale in order to determine the general trend of employees opinions.

RESULTS AND GRAPHICAL PRESENTATION

Axis 1: Digital Leadership (DL) :

(It measures employees' perception of their leaders' digital leadership practices, such as vision clarity, support, motivation, and adoption of modern technologies)

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Table (2): Axis 1 Digital Leadership

No.	Item	Very Satisfactory (5)	Satisfactory (4)	I Don t Know (3)	Somewhat Satisfactory (2)	Unsatisfactory (1)	Weighted Mean	Standard Deviation	General Interpretation
1.	The leader sets a clear vision for digital transformation	51	37	16	2	3	4.20	0.95	Strongly Agree
2.	The leader motivates employees to use digital technologies	62	26	15	3	3	4.29	0.99	Strongly Agree
3.	The leader encourages innovation and new ideas	71	26	9	1	2	4.50	0.83	Strongly Agree
4.	The leader provides adequate resources and support for digital transformation	51	27	20	6	5	4.04	1.13	Agree
5.	The leader role-models effective use of digital tools	54	29	19	3	4	4.16	1.04	Agree
6.	The leader explains how digital initiatives link to the university s strategic goals	52	34	15	5	3	4.17	1.01	Agree
7.	My management/leader cares about training and guiding me regarding digital transformation	47	31	23	4	4	4.04	1.06	Agree

Axis 2 digital transformation (DT) initiatives :

(It measures the effectiveness of digital initiatives in improving work, such as process simplicity, training, data usage, collaboration, and adoption of new tools like artificial intelligence)

Table (3): Axis 2 Digital Transformation (DT) Initiatives

No.	Item	Very Satisfactory (5)	Satisfactory (4)	I Don t Know (3)	Somewhat Satisfactory (2)	Unsatisfactory (1)	Weighted Mean	Standard Deviation	General Interpretation
1.	Digital initiatives at the university improved process speed	56	36	11	4	2	4.28	0.92	Strongly Agree
2.	The current digital systems made my daily work easier	63	32	8	5	1	4.39	0.88	Strongly Agree

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| 3. | Training on digital initiatives was sufficient | 27 | 31 | 32 | 13 | 6 | 3.55 | 1.15 | Agree |
4.	Data and dashboards are effectively used in decision-making	32	34	32	8	3	3.77	1.04	Agree
5.	Digital initiatives helped enhance collaboration among colleagues	43	38	21	4	3	4.05	0.99	Agree
6.	I believe that Artificial Intelligence (AI) can help me in performing my work	59	31	15	2	2	4.31	0.91	Strongly Agree
7.	My daily tasks have become easier after digital transformation	58	39	8	1	3	4.36	0.88	Strongly Agree
8.	I prefer completing my tasks using digital transformation rather than traditional methods	67	32	8	0	2	4.49	0.79	Strongly Agree
9.	Providing devices and digital infrastructure enhances the success of digital transformation	74	24	9	0	2	4.54	0.80	Strongly Agree

Axis 3 Employee Engagement (EE):

(It measures employees' involvement and engagement at work, through their sense of achievement, teamwork, appreciation from management, and ability to adapt to digital changes)

Table (4): Axis 3 Employee Engagement

No.	Item	Very Satisfactory (5)	Satisfactory (4)	I Don t Know (3)	Somewhat Satisfactory (2)	Unsatisfactory (1)	Weighted Mean	Standard Deviation	General Interpretation
1.	I feel enthusiastic about my work under digital initiatives	62	31	11	3	2	4.36	0.91	Strongly Agree
2.	I get absorbed in my work to the extent that time passes quickly	54	35	14	3	3	4.23	0.97	Strongly Agree
3.	Digital initiatives increased my sense of accomplishment	58	28	19	2	2	4.27	0.94	Strongly Agree
4.	I feel that my efforts are appreciated by my management	47	37	12	7	6	4.03	1.14	Agree
5.	Digital changes made me more engaged with my team	50	39	14	3	3	4.19	0.96	Agree
6.	I face difficulty adapting to digital changes	19	16	16	21	37	2.62	1.51	Neutral

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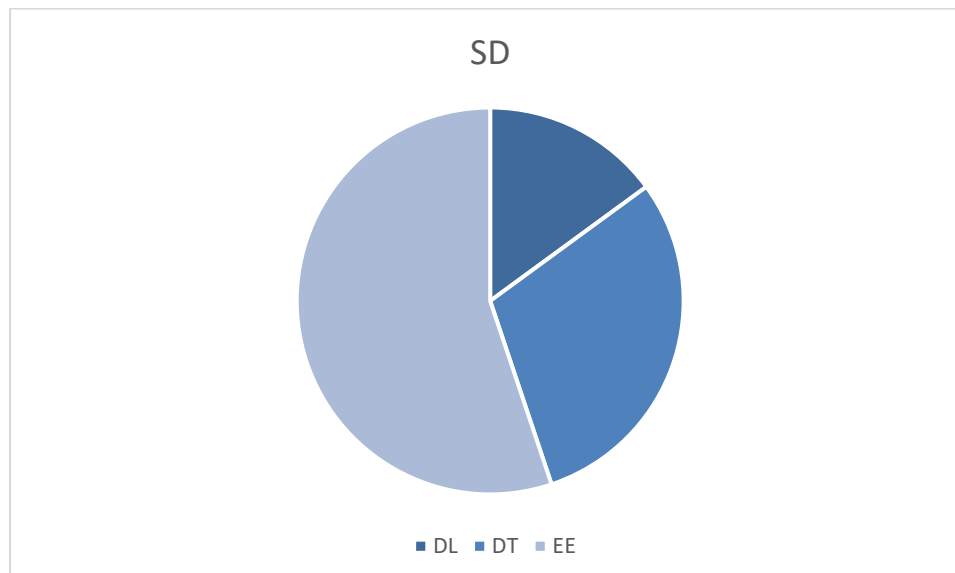
WEIGHTED MEAN OF THE AXES "DIGITAL LEADERSHIP (DL), DIGITAL TRANSFORMATION (DT), EMPLOYEE ENGAGEMENT (EE) ":

Figure (1)
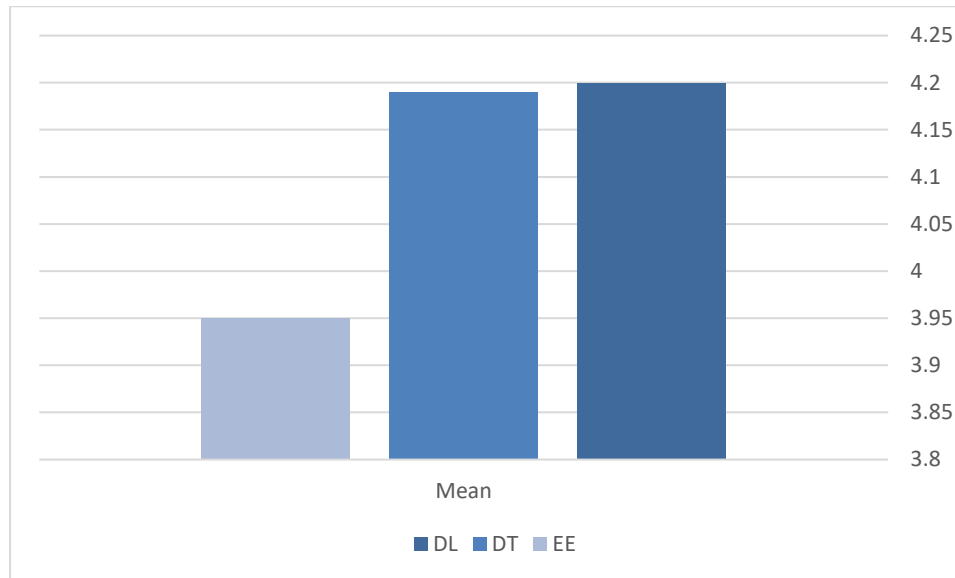
STANDARD DEVIATION OF THE AXES "DIGITAL LEADERSHIP (DL), DIGITAL TRANSFORMATION (DT), EMPLOYEE ENGAGEMENT (EE)":

(Figure 2)

Statistical analysis :

Axes: (Digital Leadership (DL) Digital Transformation (DT) Employee Engagement (EE)

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Basic Study Information:

Sample Size: 109 participants

Main Axes: 3 axes

Measurement Tool: Five-point Likert scale (1-5)

Descriptive Statistics:

Table (5)

Axis	Mean	Minimum	Maximum	Evaluation
Digital Leadership	4.2	4.04	4.5	Very Good
Digital Transformation	4.19	3.55	4.54	Very Good
Employee Engagement	3.95	2.26	4.36	Very Good

Key Findings:

Highest Item: Provision of supportive devices and infrastructure (4.54).

Lowest Item: Difficulty adapting to digital changes (2.62).

Overall Range of Means: From 2.6 to 4.5 ranging from average to very high.

Summary of results analysis:

The survey data, comprising 109 responses, analyzed to examine the impact of digital leadership and digital transformation on employee engagement among administrative staff in universities - Makkah region. The study aimed to extract insights into employees' perceptions and experiences in this context.

The results indicated high levels of digital satisfaction and statistically significant, strong relationships among the three axes, with digital transformation emerging as a key mediating factor that strengthens the relationship between digital leadership and employee engagement.

Additionally, the findings highlighted clear opportunities for improvement in areas such as training, managerial recognition, and support for adapting to change, all of which addressed in the recommendations.

Conclusion and recommendations:

1. Invest in Digital Training and Development: Universities should create intensive, ongoing programs that are suited to various job categories in light of the low levels of training adequacy.

To improve employees' efficient use of digital systems and digital work skills, training should keep up with AI technologies and digital transformation.

 2. Strengthen Change Management and Facilitate Adaptation: Some employees face challenges adapting to digital changes. Specialized change management programs should address psychological and behavioral aspects, including awareness sessions, ongoing technical and behavioral support, and fast-response help channels to ensure smooth transitions.

3. Empower and Support Administrative Leadership: Results indicate the need for stronger resources and support for leaders. Administrative leaders should be equipped with the necessary tools and authority efficiently lead digital transformation initiatives.

Training on digital leadership, motivation, and performance management in data-driven, dynamic work environments recommended.(OpenAI, 2025)

4. Leverage Employees Digital Enthusiasm: High levels of digital engagement present a strategic opportunity. Employees should be involved in designing digital initiatives and improving processes, with continuous feedback, enhancing their sense of belonging and the effectiveness of new technology adoption.

5. Enhance Integration between Digital Leadership and Digital Transformation: Digital transformation plays a key mediating role in strengthening the effect of digital leadership on employee engagement.

Policies should align leadership strategies with digital transformation plans to ensure consistency between leadership vision and technological systems, maximizing performance and institutional engagement.

6. Support the Goals of Saudi Vision 2030: These recommendations align with national initiatives promoting digital transformation and human capacity development.

Implementing them contributes to building an advanced, efficient digital university environment, fostering innovation, improving operational efficiency, and supporting sustainable development goals in line with Vision 2030.

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(OpenAI, 2025),The text was linguistically proofread using ChatGPT

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"استكشاف العلاقة بين القيادة الرقمية والتحول الرقمي في اندماج الموظفين في الجامعات السعودية بمنطقة مكة المكرمة"

إعداد الباحثة:

سمر بنت عمر كردي

ملخص الدراسة:

يهدف هذا البحث إلى فهم كيفية تأثير القيادة الرقمية في الجامعات السعودية بمنطقة مكة المكرمة على مستوى التحول الرقمي، ومدى انعكاس ذلك على اندماج الموظفين الإداريين في بيئة العمل. اعتمدت الدراسة على بيانات جُمعت من 109 موظفين وموظفات في جامعات مختلفة داخل منطقة مكة المكرمة، وشملت مستويات إدارية متعددة لضمان تمثيل متنوع، حيث أظهرت النتائج أن مستوى القيادة الرقمية والتحول الرقمي واندماج الموظفين كان مرتفعًا بشكل ملحوظ، مما يشير إلى استعداد متقدم داخل الجامعات للتعامل مع المتغيرات التقنية. كما بينت النتائج وجود علاقة قوية بين القيادة الرقمية وقدرة الجامعة على التحول الرقمي، إضافة إلى علاقة إيجابية واضحة تربط التحول الرقمي باندماج الموظفين. وتوصلت الدراسة إلى أن التحول الرقمي يلعب دورًا مهمًا في تعزيز تأثير القيادة الرقمية على اندماج الموظفين، كما لوحظ أن هذا التأثير يتم بصورةٍ غير مباشرة عبر ممارسات التحول. وتتسجم هذه النتائج مع التوجه السعودي نحو ترسيخ التحول الرقمي كأحد محاور رؤية المملكة (2030م)، وهو ما يبرز الحاجة إلى الاستثمار في تطوير القيادات الإدارية، تحسين برامج التدريب، وتعزيز ثقافة التغيير لضمان نجاح التحولات التقنية داخل الجامعات السعودية.

كلمات مفتاحية: القيادة الرقمية، التحول الرقمي، اندماج الموظفين، الذكاء الاصطناعي، إدارة التغيير، الجامعات السعودية.