

The Impact of Digital Transformation on Human Capital Performance at Mohamed Khider University – Biskra

أثر التحول الرقمي على أداء رأس المال البشري في جامعة محمد خيضر – بiskra

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Abstract:

This study aims to explore the effect of digital transformation in human resource management on the performance of human capital at Mohamed Khider University – Biskra. The descriptive analytical approach was used to apply the study to a random sample of 50 professors and administrative employees, selected randomly from Mohamed Khider University, Biskra. The questionnaire included two main axes: the first axis focuses on digital transformation in human resource management (digital planning, digital recruitment, digital training, and digital evaluation), while the second axis focuses on human capital performance.

The results of the study showed a positive and statistically significant relationship between all dimensions of digital transformation and human capital performance, where digital planning and digital training had the greatest impact on developing individuals' skills and administrative competence, while digital recruitment and digital evaluation showed a positive but relatively lower effect. The results also revealed that employees and faculty members are willing to adopt the use of digital systems in their work, which enhances transparency, accelerates decision-making, and improves the overall level of performance.

keyword: Digital Transformation ; Human Resource Management ; Human Capital Performance ; Digital Planning ; Digital Training ; Digital Recruitment ; Digital Evaluation.

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1. Introduction :

The current era is witnessing major and rapid technological developments that have given rise to what is known as the digital or smart era, which has significantly affected work methods in institutions of all types, including higher education institutions. Digital transformation has become an indispensable strategic option to ensure the continuity of institutions, enhance their competitiveness, and improve the quality of academic and administrative performance, in line with the rapid changes in local and global work environments.

Digital transformation is no longer limited to digitizing administrative processes only; rather, it now includes a comprehensive re-engineering of administrative and academic systems, and the development of innovative tools for human resource management, enabling improved efficiency of procedures, accelerating decision-making processes, and providing a dynamic work environment that keeps pace with modern developments. Digital transformation also contributes to improving the level of institutional performance by enhancing transparency, reducing errors, and providing accurate and real-time information to support planning and strategic decision-making.

In this context, human capital emerges as one of the most important strategic resources of the university, as employees and faculty members represent the main driving force for achieving outstanding performance and institutional innovation. Investing in developing the skills of workers—especially digital skills and the ability to adapt to modern technologies—is considered one of the key elements for the success of academic institutions in the digital transformation era.

In this regard, many studies have shown that digital human capital can become a major competitive strength, as qualified and innovative human resources can contribute to improving the quality of education, enhancing the efficiency of administrative operations, and achieving the academic and administrative goals of the university more effectively. Digital transformation also enhances communication and collaboration among various departments within the university and contributes to building a more interactive and innovative educational and research environment.

From this standpoint, this study seeks to shed light on the impact of digital transformation taking place at the University of Biskra on the performance of its human capital, with a focus on evaluating efficiency,

developing digital skills, and enhancing creativity in the university work environment, thereby contributing to achieving outstanding institutional performance and sustainability in providing educational and administrative services.

1.1. Problem Statement:

In light of the rapid and profound technological transformations experienced by higher education institutions in Algeria, which have made digital transformation an indispensable strategy, there arises a need to examine the impact of digital transformation on the performance of human capital at the University of Biskra. This study seeks to identify the effect of applying digital technologies in developing competencies, improving performance, and enhancing the university work environment in line with the requirements of the digital age. Accordingly, the following question is posed: *Is there an impact of digital transformation on the performance of human capital at Mohamed Khider University – Biskra?*

Sub-questions:

1. Is there an impact of digital human resource planning on human capital performance at Mohamed Khider University – Biskra?
2. Is there an impact of digital human resource recruitment on human capital performance at Mohamed Khider University – Biskra?
3. Is there an impact of digital human resource training on human capital performance at Mohamed Khider University – Biskra?
4. Is there an impact of digital human resource evaluation on human capital performance at Mohamed Khider University – Biskra?

1.2. Study Hypotheses:

Main Hypothesis: There is a statistically significant impact of digital transformation, in its various components (digital planning, digital recruitment, digital training, digital evaluation), on human capital performance at Mohamed Khider University – Biskra.

Sub-hypotheses:

- ☐ There is a statistically significant impact of digital human resource planning on human capital performance at Mohamed Khider University – Biskra.

☐ There is a statistically significant impact of digital human resource recruitment on human capital performance at Mohamed Khider University – Biskra.

☐ There is a statistically significant impact of digital human resource training on human capital performance at Mohamed Khider University – Biskra.

☐ There is a statistically significant impact of digital human resource evaluation on human capital performance at Mohamed Khider University – Biskra.

1.3. Significance of the Study

This study gains its significance from the growing role that digital transformation plays in enhancing human capital performance within higher education institutions, particularly at Mohamed Khider University – Biskra, where this transformation has become a strategic necessity imposed by modern technological changes.

At the academic level, the study contributes to enriching the scientific output related to the relationship between digital transformation and human capital management—a relatively recent and increasingly important area as the use of digital systems expands within universities. It also helps clarify the impact of digital applications—whether in planning, recruitment, training, or evaluation—on employees’ competencies and creative skills, making it an important reference for researchers and scholars interested in digital human resource management.

At the practical level, the study gains importance from its ability to provide a practical tool for university management to evaluate the effectiveness of current digital transformation strategies and determine the extent of their impact on the development of human performance. It also contributes to guiding the design of training programs and digital skill development for employees and faculty members, in addition to offering a clear vision on how to leverage digital tools to improve academic and administrative performance within the university.

At the strategic level, the study assists in shaping future orientations that support optimal investment in human capital and enhance the university’s competitiveness amid rapid digital changes. It also provides a scientific basis for making more rational strategic decisions regarding digital transformation, thereby contributing to

achieving high quality in educational and administrative services and supporting innovation and productivity in a continuously evolving university environment.

1.4. Study Objectives

1. To identify the extent of digital transformation implementation in human resource management at the university.
2. To assess the level of human capital in terms of efficiency, digital skills, and creativity.
3. To analyze the impact of digital transformation on the overall performance of employees and faculty members.
4. To provide recommendations for enhancing human capital performance through digital transformation.

2. Definition of Study Terms :

2.1. Digital Transformation :

Terminologically: Digital transformation is considered a process of investing in the development of thinking and changing organizational behavior, allowing for a radical change in work methods through the utilization of rapid technological advancement, with the aim of providing faster, more efficient, and higher-quality services to beneficiaries (Shahada 2022, p. 66).

The concept of digital transformation has emerged in light of the increasing expansion of information and communication technologies in various fields of life and the growing need to improve public services. The Organisation for Economic Co-operation and Development (OECD) defines it as: "A comprehensive process of employing digital technologies to bring about fundamental changes in public service delivery and administrative decision-making."

In public administration, digital transformation represents a shift from a traditional bureaucratic administrative model to an interactive digital model that relies on improving the citizen experience, enhancing performance efficiency, and promoting the principles of transparency and accountability (Ghanem 2019, p. 22).

Operational Definition : Digital transformation refers to the degree to which Mohamed Khider University – Biskra relies on digital systems in various human resource management practices. This is manifested in the level of utilization of digital technologies in human resource planning,

electronic recruitment processes, digital training programs, as well as electronic mechanisms for employee performance evaluation.

2.2. Human Capital :

Terminologically: Human capital refers to the total knowledge acquired by an individual throughout their life stages, in addition to the ideas they employ in producing goods and services within or outside the market. It is considered a personal asset that an individual brings to the organization, encompassing education, training, skills, prior experiences, age, professional and technological experience, and other characteristics. These components constitute fundamental elements that contribute to positive effects enhancing professional and technical development, naturally leading to an increase in the individual's value in the eyes of organizational management (Ratiaa et Hosseini 2020, p. 145).

Operational Definition : Human capital represents the set of digital capabilities, professional knowledge, skills, and levels of creativity possessed by the employees and faculty members of Mohamed Khider University – Biskra, as reflected in their performance within the university work environment.

2.3. Human Capital Performance :

Terminologically : Human capital performance refers to the level of results and efficiency achieved by individuals within the organization, as it represents the ultimate output reflecting the institution's ability to achieve its objectives. It is considered one of the most important indicators for measuring organizational effectiveness and success, as it is linked to productivity improvement and work quality enhancement. It also forms a core element in management science and organizational behavior, where researchers emphasize that focusing on individual performance and its development contributes to enabling the organization to achieve its goals efficiently and effectively, at the lowest possible cost (Badaoui 2024, p. 1282).

Operational Definition : Human capital performance refers to the level of effectiveness and productivity demonstrated by employees as a direct result of using digital tools within the university. This includes employees' and faculty members' ability to complete tasks, adapt to digital systems, the quality of performance, and the level of professional creativity.

2.4. Digital Planning :

Terminologically : Digital planning is a coordinated process for managing and determining technical and human resources within the organization, aimed at supporting its functions and achieving integration among them through modern information systems. It involves estimating available tools and technologies, identifying hardware and software needs, and developing human resource skills, ensuring the efficient implementation of digital plans aligned with organizational goals (Abdel Alim, Al-Sharif et Bayoumi 2013, p. 354).

Operational Definition : Digital planning refers to the extent to which Mohamed Khider University – Biskra uses electronic systems and digital databases in managing human resource planning processes, including data collection, forecasting future human resource needs, and analyzing them using digital tools and applications.

2.5. Digital Recruitment :

Terminologically : Digital recruitment is the use of information and communication technology, including the Internet, in all procedures for providing the organization with the necessary human resources. This includes using electronic tools and computerized programs to match labor supply and demand, while maintaining confidentiality and employing job description lists to facilitate recruitment, selection, and appointment processes (Sakr 2009, p. 22).

Operational Definition : Digital recruitment represents the university's level of reliance on digital platforms, electronic portals, and professional communication tools in attracting competencies, advertising job vacancies, receiving applications, and managing selection stages electronically. This variable is measured through items in the second section of the digital transformation axis in the questionnaire.

2.6. Digital Training :

Terminologically : Digital training refers to training activities and programs delivered using technological, informational, and communication tools, aiming to meet individuals' training needs at any time and place, and in any specialization, in an organized and pre-planned manner to enhance their efficiency and professional performance (Al-Zaioud 2024, p. 118).

Operational Definition : Digital training refers to the extent to which the university uses modern technologies and electronic platforms in designing and implementing training programs, providing a digital

learning environment that enables employees to develop their professional and digital skills through tools such as e-courses, virtual lectures, and digital simulations.

2.7. Digital Evaluation :

Terminologically : Digital human resource evaluation is the process of measuring individuals' performance using advanced digital tools and technologies, such as electronic tests, learning management systems, and interactive evaluation tools, aiming for greater accuracy, speed, and flexibility, while providing immediate feedback and continuous performance improvement (Al-Tarawna et Hassan 2025, p. 349).

Operational Definition : Digital evaluation refers to the extent to which Mohamed Khider University – Biskra relies on digital systems to assess employee performance, including using electronic programs for attendance tracking, performance monitoring, maintaining job data, and analyzing evaluation results in an automated and transparent manner. This variable is measured through items in the fourth section of the digital transformation axis in the questionnaire.

3. Practical Aspect :

3.1. Study Methodology :

This study relied on the descriptive-analytical method as it is considered the most suitable for the nature of the research topic. This method allows for observing the phenomenon under study as it exists in reality, describing its characteristics, and analyzing its dimensions in order to understand the potential relationships between its variables. This methodology is one of the most appropriate for studies aiming to collect accurate real-world data on social and organizational phenomena. It is defined as a method that studies variables as they appear in their natural environment without any interference, while analyzing the relationships existing between them (Obaidat et al 1996, p. 36).

3.2. Study Population and Sample :

Abdelkader Abbas defines the research population as "the group on which the researcher focuses in his study, that is, determining the complete group the researcher wishes to study and identifying the individuals to whom the research results will be applied" (Abbas 2013, p. 118).

In the current study, the study population includes all administrative employees and faculty members at Mohamed Khider

University – Biskra, representing the original and total population of the study. Identifying this population aims to collect accurate and comprehensive information regarding the application of digital transformation at the university and its impact on efficiency and digital skills.

The sample is defined as a portion of the study population from which field data is collected, chosen so that it is representative of the entire original population for conducting the study (Al-Shafai et Suzanne 1999, p. 07).

The study was applied to a sample consisting of 50 professors and administrative staff at University – Biskra, selected using a random sampling method due to the difficulty of conducting a comprehensive survey of all employees.

3.3. Characteristics of the Study Sample :

Table (01) : Distribution of Sample Individuals by Gender

Gender	Frequency	Percentage %
Male	28	56
Female	22	44
Total	50	100

Source : Prepared by the student based on SPSS25 outputs

The table shows that the study sample, consisting of 50 professors and administrative staff at University – Biskra, is relatively evenly distributed between the two genders, with males representing 56% (28 individuals) and females 44% (22 individuals).

This distribution indicates that the study sample adequately represents the university's workforce in terms of the presence of both genders across various administrative and academic positions. The relative balance in representation helps achieve equilibrium in responses and reduces the likelihood of bias towards a specific gender, thereby enhancing the credibility of the data obtained regarding the impact of digital transformation on human capital performance.

Table (02): Distribution of Sample Individuals by Job Position

Position	Frequency	Percentage %
Professor	38	76
Administrative Staff	12	24
Total	50	100

Source: Prepared by the student based on SPSS25 outputs

The table shows that the majority of the study sample belongs to the professor category, accounting for 76% (38 professors), while administrative staff represent only 24% (12 staff members) out of 50 participants.

This distribution reflects the nature of the organizational structure at University – Biskra, where professors constitute the largest segment of human resources. The higher representation of professors allows for a more precise understanding of the impact of digital transformation on academic performance specifically, while maintaining adequate representation of administrative staff to study the administrative aspect of the research topic as well.

Table (03): Distribution of Sample Individuals by Age

Age Group	Frequency	Percentage %
30 years or less	00	00
31 to 40 years	09	18
41 to 50 years	31	62
51 years or more	10	20
Total	50	100

Source: Prepared by the student based on SPSS25 outputs

The table presents the distribution of the study sample according to age groups. It is evident that the age group of 30 years or less is completely absent, indicating that all participants have professional experience and have spent a considerable period working within the university.

The results show that the largest proportion of the sample belongs to the 41 to 50 years age group, representing 62%. This group typically possesses extensive professional experience and a high ability to assess the impact of digital transformation due to their continuous and direct engagement with traditional and modern administrative and academic processes.

The 31 to 40 years age group accounts for 18%. This relatively younger group is expected to be more in tune with the use of modern technology, enriching their perspectives on digital transformation applications.

Meanwhile, the 51 years or more age group represents 20% of the sample. This group has long-standing experience, and their view of digital transformation may differ regarding ease of adaptation or

acceptance of change, adding valuable diversity to perspectives within the study.

This distribution shows that the majority of the sample belongs to age groups with significant professional experience, enhancing the quality of the collected data and providing the study's results with greater credibility and analytical depth in understanding the impact of digital transformation on human capital performance at Mohamed Khider University – Biskra.

Table (04): Distribution of Sample Individuals by Educational Qualification

Educational Qualification	Frequency	Percentage %
Secondary or less	02	04
Bachelor's	01	02
Master's	07	14
Engineer	02	04
Magister	02	04
Doctorate	36	72
Total	50	100

Source: Prepared by the student based on SPSS25 outputs

The table shows that the majority of the study sample possesses a high educational level, with doctorate holders representing the largest proportion at 72% of the total sample, reflecting the academic nature of the respondents, who represent a wide segment of faculty members.

The data also show a limited percentage of Master's degree holders at 14%, in addition to small proportions for Magister, Engineer, and Secondary or less, ranging between 2% and 4%. This indicates limited representation of administrative staff who may not hold higher degrees like the faculty members.

This distribution reflects the high academic level of the majority of the sample, which is a positive factor for the study, as the respondents are expected to have the cognitive and technological awareness necessary to provide accurate and objective evaluations of the impact of digital transformation on human capital performance.

Table (05): Distribution of Sample Individuals by Marital Status

Marital Status	Frequency	Percentage %
Married	44	88
Divorced	00	00
Widowed	01	02
Single	05	10

Total	50	100
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Source: Prepared by the student based on SPSS25 outputs

The table shows that the majority of the study sample are married, representing 88%, a high proportion reflecting social stability among most respondents. This stability may positively influence their attitudes toward adopting digital transformation, as family stability is often associated with increased job commitment and interest in self-development and keeping up with technological changes.

The results also indicate that only 10% are single, while the percentage of divorced individuals is almost zero (00%), and widowed individuals are very few (02%). This social composition appears to reflect the nature of the university workforce, where older age groups—who are often married—tend to represent the largest portion of employees and faculty members.

Table (06): Distribution of Sample Individuals by Work Seniority

Seniority	Frequency	Percentage %
Less than 5 years	01	02
5 to 10 years	03	06
11 to 15 years	10	20
More than 15 years	36	72
Total	50	100

Source: Prepared by the student based on SPSS25 outputs

The table shows that the majority of the sample possesses long professional experience within the university, with 72% having seniority exceeding 15 years. This high percentage reflects the dominance of highly experienced employees and professors within the study population. It also indicates that most participants have a deep understanding of university work and the changes it has undergone over the past years, enhancing the study's credibility in assessing the impact of digital transformation.

Additionally, 20% of the sample have seniority ranging between 11 and 15 years, representing a group with considerable experience capable of evaluating the evolution of work systems before and after the introduction of digital technologies. In contrast, the 5–10 years and less than 5 years categories constitute very small percentages (06% and 02% respectively), indicating limited representation of new or recently hired employees.

3.4. Study Tool:

A questionnaire is defined as a research tool consisting of a set of questions related to the study topic, presented to a specific sample of individuals to collect accurate data and information about the research problem (Akel 1977, p. 37).

The questionnaire was adopted as the main tool for data collection. It was designed to cover two main axes: digital transformation in human resource management at the university (including digital planning, digital recruitment, digital training, and digital evaluation), and human capital performance (related to efficiency, digital skills, and creativity of employees and faculty members).

3.5. Reliability and Normality Test

First: Study Reliability

Table (07): Distribution of Sample Individuals by Work Seniority

Variables	Number of Items	Reliability Coefficient	Validity Coefficient
Axis one: Digital Transformation in Human Resource Management	20	0.903	0.950
First: Digital Planning for Human Resources	05	0.784	0.885
Second: Digital Recruitment for Human Resources	05	0.752	0.867
Third: Digital Training for Human Resources	05	0.770	0.877
Fourth: Digital Evaluation for Human Resources	05	0.913	0.955
Axis Two: Human Capital Performance	10	0.753	0.867
Questionnaire as a Whole	30	0.914	0.956

Source: Prepared by the student based on SPSS25 outputs

The table related to testing the reliability and validity of the measurement tools used in this study shows that the reliability coefficients calculated using Cronbach's alpha were high for all axes of the questionnaire. Reliability values ranged between 0.752 and 0.913, exceeding the minimum acceptable limit in social research (0.70), indicating that the items exhibit a high degree of internal consistency and that the questionnaire measures the concepts under study reliably.

Additionally, the validity coefficients, derived from the square root of the reliability coefficient, all ranged between 0.867 and 0.956, which

are high values, indicating strong construct validity and the appropriateness of the items for measuring theoretical variables.

Second: Normality Test

Table (08): Distribution of Sample Individuals by Work Seniority

Variable	Skewness Coefficient	Kurtosis Coefficient
First: Digital Planning for Human Resources	-0.209	-0.892
Second: Digital Recruitment for Human Resources	-0.278	0.150
Third: Digital Training for Human Resources	0.043	-0.009
Fourth: Digital Evaluation for Human Resources	-0.712	1.041
Axis One: Digital Transformation in Human Resource Management	0.232	-0.108
Axis Two: Human Capital Performance	-0.007	0.453

Source: Prepared by the student based on SPSS25 outputs

The table shows that all values fall within statistically acceptable limits, ranging between ± 1 , which is the agreed-upon threshold in social research for assuming normal data distribution.

Regarding the skewness coefficients in the table, they ranged between -0.712 and $+0.232$, indicating that the data distribution slightly leans to the left or right; however, this inclination remains within acceptable limits and does not affect the distribution's nature.

As for the kurtosis values, they ranged between -0.892 and $+1.041$, which also fall within the range allowing the data to be considered normally distributed.

4. Presentation and Analysis of Study Results

4.1. Presentation and Analysis of the First Axis Statements

Table (09): Sample Evaluation of the First Axis Statements

No.	Statements	Mean	Std Deviation	Acceptance Level	Rank
	1-Digital Planning for Human Resources	4.36	0.501	Very High	-1-
01	It is essential for the university to rely on updated digital databases to plan its human resources.	4.64	0.525	Very High	01
02	It is preferable to use digital tools such as artificial intelligence to analyze human resources data.	4.22	0.815	Very High	04

03	Digital technologies help the university determine its future staffing needs.	4.50	0.543	Very High	02
04	The university should rely on digital platforms to plan the career paths of employees.	4.32	0.683	Very High	03
05	Digital technologies contribute to accurately identifying the required competencies.	4.12	0.798	High	05
2-Digital Recruitment for Human Resources		4.03	0.613	High	-2-
01	To achieve transparency, job vacancies should be announced through the university's digital platforms.	4.58	0.537	Very High	01
02	Using digital means is essential for attracting and appointing qualified personnel.	4.26	0.876	Very High	02
03	Transparency in recruitment requires conducting interviews virtually.	3.34	1.171	High	05
04	Digital platforms should be used to receive, sort, and update job applications.	4.18	0.628	High	03
05	Recruitment committees should use algorithms to analyze and evaluate applicants' data.	3.82	0.962	High	04
3- Digital Training for Human Resources		4.02	0.563	High	-3-
01	The university should identify its training needs through digital platforms.	4.16	0.765	High	03
02	Digital simulation programs can be used to train and develop employees.	4.16	0.710	High	02
03	Training effectiveness evaluation relies on electronic feedback.	3.94	0.793	High	04
04	A suitable digital environment should be provided for conducting online training courses.	4.32	0.620	Very High	01
05	The university provides an electronic record to track employees' participation in development programs.	3.54	0.973	High	05
4-Digital Evaluation for Human Resources		3.70	0.868	High	-4-
01	Digital attendance records should be used to analyze work commitment.	3.88	0.939	High	01
02	Employees' digital performance indicators are recorded in a centralized database.	3.74	0.964	High	03

03	Professional performance is evaluated electronically through an effective digital system.	3.46	1.073	High	04
04	Evaluation criteria and results are transparently announced via digital platforms.	3.68	1.058	High	04
05	Employees and faculty can submit appeals electronically regarding evaluation results.	3.76	1.001	High	02
First Axis: Digital Transformation in Human Resource Management at the University		4.03	0.499	High	/

Source: Prepared by the student based on SPSS25 outputs

The table above shows that the axis as a whole recorded an overall mean of (4.03) with a standard deviation of (0.499), indicating a high acceptance level among respondents toward digital transformation in human resource management at the university. These results confirm that the university has made significant strides in digitizing planning, recruitment, training, and evaluation processes, although some areas—particularly digital evaluation—still require development to enhance the effectiveness of digital transformation in managing human capital.

Digital Planning for Human Resources: The overall mean of this dimension (4.36) and standard deviation (0.501) indicate a very high acceptance level among the sample, reflecting strong awareness of the importance of relying on digital technologies in human resource planning. The statement "It is essential for the university to rely on updated digital databases to plan its human resources" ranked first with a mean of (4.64), showing institutional awareness of the need for accurate and updated data as a basis for strategic decision-making. The statement about the role of digital technologies in determining future needs ranked second with a mean of (4.50), indicating belief in the role of digital transformation in proactive decision-making. Conversely, the statement "Digital technologies contribute to accurately identifying the required competencies" ranked last, despite a high acceptance level (4.12), reflecting some challenges in using advanced digital tools, such as AI systems, in identifying competencies.

Digital Recruitment for Human Resources: This axis recorded an overall mean of (4.03), indicating a high acceptance level and a clear tendency toward enhancing digital recruitment practices at the university. The statement "To achieve transparency, job vacancies

should be announced through the university's digital platforms" received the highest mean (4.58), emphasizing the importance of digital platforms in supporting equal opportunity. The statement regarding using digital tools for recruitment received a mean of (4.26), showing strong acceptance of digitizing the recruitment process. The statement on virtual interviews received the lowest mean (3.34), indicating that this procedure still requires promoting its use or providing better digital capabilities for effective implementation. Overall, the results show that the university is moving toward improving recruitment efficiency and transparency through digital tools and platforms.

Digital Training for Human Resources: The overall mean of this axis (4.02) indicates a high acceptance level, reflecting awareness of the importance of digitization in developing human resource skills. The statement "A suitable digital environment should be provided for conducting online training courses" received the highest mean (4.32), highlighting the importance of technical infrastructure in supporting e-training. The statements on identifying training needs via digital platforms and using simulation programs had the same mean (4.16), indicating good acceptance of smart and interactive training tools. The statement regarding tracking employees' participation via electronic records ranked last with a mean of (3.54), suggesting possible gaps in the applications used or a low level of commitment from employees. Nevertheless, all statements received high acceptance, indicating a positive tendency toward enhancing digital training at the university.

Digital Evaluation for Human Resources: The mean of this dimension (3.70) reflects a high acceptance level, though it is the lowest among the four axes, indicating some challenges in implementing digital evaluation. The statement about using digital attendance records for analyzing work commitment had the highest mean (3.88), reflecting tangible reliance on these systems. The statement "Employees and faculty can submit appeals electronically regarding evaluation results" received a good mean (3.76), indicating a move toward enhancing transparency in evaluation. Other statements with lower means, such as "Professional performance is evaluated electronically through an effective digital system" with a mean of (3.46), suggest that some electronic evaluation systems may require development or improvement to increase satisfaction and effectiveness. Overall, the results indicate

that the university implements digital evaluation at an acceptable level, with areas needing improvement.

4.2. Presentation and Analysis of the Second Axis Statements

Table (10): Sample Evaluation of the Second Axis Statements

No.	Statements	Mean	Standard Deviation	Acceptance Level	Rank
01	Personally, I strive every time to develop my work style in a way that enhances my skills.	4.24	0.743	Very High	04
02	I ensure that I perform my duties properly and on time.	4.34	0.688	Very High	02
03	I easily interact with the university's digital platforms and electronic systems.	4.04	0.754	High	06
04	The university provides opportunities to develop my skills in handling digital data and technologies.	3.40	1.049	High	09
05	I have previously proposed new digital solutions to address some work-related problems.	2.88	1.042	Medium	10
06	I find no difficulty in dealing with the new digital systems implemented by the university.	3.82	0.918	High	08
07	I am willing to learn modern digital technologies and new work methods that digital transformation may require at the university.	4.44	0.611	Very High	01
08	Using digital platforms contributes to improving administrative performance efficiency for employees within the university.	4.08	0.723	High	05
09	I usually use professional email to interact and communicate with colleagues and various university departments and administrative entities.	4.30	0.735	Very High	03

10	In some cases, I can complete my tasks using mobile or tablet applications.	3.96	0.968	High	07
Second Axis: Human Capital Performance		3.95	0.466	High	/

Source: Prepared by the student based on SPSS25 outputs

The overall mean for the second axis on human capital performance (3.95) with a standard deviation of (0.466) indicates a high acceptance level, reflecting a positive evaluation of employees' and faculty members' performance at Mohamed Khider University – Biskra in terms of efficiency, digital skills, and readiness to adapt to the digital work environment. The results show that the sample members are highly motivated to develop their skills and professional performance, with the statement "I am willing to learn modern digital technologies and new work methods that digital transformation may require at the university" recording the highest mean (4.44), followed by "I ensure that I perform my duties properly and on time" with a mean of (4.34), and "Personally, I strive every time to develop my work style in a way that enhances my skills" with a mean of (4.24), indicating employees' focus on self-development and enhancing professional competencies.

The data also show good ability among individuals to interact with the university's digital platforms and electronic systems, with the statement "I easily interact with the university's digital platforms and electronic systems" receiving a mean of (4.04), and "I find no difficulty in dealing with the new digital systems implemented by the university" a mean of (3.82), reflecting a reasonable level of adaptation to the digital work environment. Furthermore, the results indicate that using digital tools for communication and interaction with colleagues and administrative departments is effective, as the statement "I usually use professional email to interact and communicate with colleagues and various university departments and administrative entities" recorded a very high mean (4.30), demonstrating these tools' contribution to improving administrative and job performance efficiency within the university.

Despite the positive results, some statements, such as "I have previously proposed new digital solutions to address some work-related problems" with a mean of (2.88), indicate room for stimulating creativity and digital innovation among employees, representing a challenge the university can address through training programs and strategies for

developing advanced digital skills. Overall, the results of the second axis reflect that human capital performance at the university is high and strongly relies on integrating digital technologies into the work environment, with some gaps in digital innovation that can be addressed through continuous support and specialized training.

5. Testing and Discussing the Study Hypotheses

5.1. Testing and Discussing the Main Hypothesis

Table (11): Results of the regression analysis of human capital performance on digital transformation in human resource management

Independent Variable X	Coefficient B	T Value	Significance Level	R	R ²
Digital Transformation in Human Resource Management	0.607	5.932	0.000	0.650	0.423

Source: Prepared by the student based on SPSS25 outputs

he results of the regression analysis shown in the table indicate a positive and statistically significant effect of digital transformation in human resource management on human capital performance at Mohamed Khider University – Biskra. The regression coefficient ($B = 0.607$) indicates that digital transformation directly contributes to improving the efficiency of employees and faculty members, as well as developing their skills and creative capacities. It is important to note that the strength of the relationship is not determined by the regression coefficient but by the correlation coefficient, which reached ($R = 0.650$), reflecting a strong association between the two variables.

Regarding statistical significance, the Sig. value was 0.000, which is below the theoretical significance level of 0.05, confirming that the model is statistically significant. Additionally, the computed T-value (5.932) exceeds the critical T-value at the 0.05 significance level, meaning we fall within the rejection region of the null hypothesis H_0 . Therefore, digital transformation has a real and non-random effect on human capital performance.

The results also show that the coefficient of determination ($R^2 = 0.423$) indicates that 42.3% of the variance in human capital performance can be explained by digital transformation in human resource management, while the remaining variance is attributable to other factors not included in the model.

Based on these results, the main hypothesis of the study is confirmed, indicating a statistically significant effect of digital transformation in human resource management on human capital performance.

5.2. Testing and Discussing the Sub-Hypotheses

- First Sub-Hypothesis

Table (12): Results of the regression analysis of human capital performance on Digital Planning of Human Resources

Independent Variable X	Coefficient B	T Value	Significance Level	R	R ²
Digital Planning of Human Resources	0.523	4.705	0.000	0.562	0.316

Source: Prepared by the student based on SPSS25 outputs

The results of the regression analysis for the first sub-hypothesis indicate that digital planning of human resources has a positive and statistically significant effect on human capital performance, with a regression coefficient ($B = 0.523$), showing its direct contribution to improving employees' and faculty members' skills and competencies. The strength of the relationship is reflected by the correlation coefficient ($R = 0.562$), indicating a moderate to strong association. Regarding statistical significance, the Sig. value (0.000) is less than the theoretical significance level (0.05), confirming the model's significance, and the computed T value (4.705) exceeds the critical T-value at 0.05, placing it in the rejection region of the null hypothesis H_0 . The coefficient of determination ($R^2 = 0.316$) shows that 31.6% of the variance in human capital performance can be explained by digital planning, while the remaining variance is due to other factors not included in the model. Based on these results, the first sub-hypothesis is confirmed, indicating that digital planning of human resources has a statistically significant positive effect on human capital performance.

- Second Sub-Hypothesis

Table (13): Results of the regression analysis of human capital performance on Digital Recruitment of Human Resources

Independent Variable X	Coefficient B	T Value	Significance Level	R	R ²
Digital Recruitment of Human Resources	0.306	3.048	0.004	0.403	0.162

Source: Prepared by the student based on SPSS25 outputs

The results of the regression analysis for the second sub-hypothesis indicate that digital recruitment of human resources has a positive and statistically significant effect on human capital performance, with a regression coefficient ($B = 0.306$), reflecting its contribution to enhancing employee and faculty competencies. The correlation coefficient ($R = 0.403$) shows a moderate association between digital recruitment and performance. The significance value ($\text{Sig.} = 0.004$) is less than the theoretical level of 0.05, confirming the statistical significance of the model, and the computed T value (3.048) exceeds the critical T-value at 0.05, placing it in the rejection region of the null hypothesis H_0 . The coefficient of determination ($R^2 = 0.162$) indicates that 16.2% of the variance in human capital performance can be explained by digital recruitment, with the remaining variance attributed to other factors not included in the model. These results confirm the second sub-hypothesis, showing that digital recruitment has a statistically significant positive impact on human capital performance.

- Third Sub-Hypothesis

Table (14): Results of the regression analysis of human capital performance on Digital Training of Human Resources

Independent Variable X	Coefficient B	T Value	Significance Level	R	R ²
Digital Training of Human Resources	0.487	5.039	0.000	0.588	0.346

Source: Prepared by the student based on SPSS25 outputs

The results of the regression analysis for the third sub-hypothesis indicate that digital training of human resources has a positive and statistically significant effect on human capital performance, with a regression coefficient ($B = 0.487$), reflecting its strong contribution to enhancing employees' and faculty members' skills, competencies, and creative abilities. The correlation coefficient ($R = 0.588$) demonstrates a strong relationship between digital training and performance. The significance value ($\text{Sig.} = 0.000$) is below the theoretical level of 0.05, confirming the statistical significance of the model, and the calculated T value (5.039) exceeds the critical T-value at 0.05, placing it in the rejection region of the null hypothesis H_0 . The coefficient of determination ($R^2 = 0.346$) shows that 34.6% of the variance in human capital performance can be explained by digital training, with the remaining variance due to other factors not included in the model. These

results confirm the third sub-hypothesis, highlighting digital training as a key driver of human capital performance.

- Fourth Sub-Hypothesis

Table (15): Results of the regression analysis of human capital performance on Digital Evaluation of Human Resources

Independent Variable X	Coefficient B	T Value	Significance Level	R	R ²
Digital Evaluation of Human Resources	0.272	4.060	0.000	0.506	0.256

Source: Prepared by the student based on SPSS25 outputs

The results of the regression analysis for the fourth sub-hypothesis indicate that digital evaluation of human resources has a positive and statistically significant effect on human capital performance, with a regression coefficient ($B = 0.272$), reflecting its contribution to improving employee and faculty performance. The correlation coefficient ($R = 0.506$) shows a moderate relationship between digital evaluation and human capital performance. The significance value ($\text{Sig.} = 0.000$) is below the theoretical level of 0.05, confirming the statistical significance of the model, and the calculated T value (4.060) exceeds the critical T-value at 0.05, placing it in the rejection region of the null hypothesis H_0 . The coefficient of determination ($R^2 = 0.256$) indicates that 25.6% of the variance in human capital performance can be explained by digital evaluation, while the remaining variance is due to other factors not included in the model. These results confirm the fourth sub-hypothesis, highlighting digital evaluation as an important factor influencing human capital performance.

Based on these results, it can be concluded that all elements of digital transformation in human resource management—planning, recruitment, training, and evaluation—positively affect human capital performance, with variations in the strength of influence. Digital training and planning appear as the most influential drivers for improving performance, efficiency, digital skills, and creative capacities of university staff.

6. Conclusion

Digital transformation in human resource management is considered one of the key elements that contribute to enhancing human capital performance in higher education institutions in Algeria, including the University of Biskra. This study aims to analyze the impact of digital transformation on efficiency, skills, and creativity among faculty members and administrative staff at the university.

The study results, based on the analysis of the research sample responses, indicate that digital transformation encompasses four main dimensions: digital planning, digital recruitment, digital training, and digital evaluation of human resources, all of which have a positive and statistically significant effect on human capital performance. Digital planning and digital training were found to have the strongest impact on performance, with digital planning improving the accuracy of identifying future human resource needs, while digital training supports enhancing the efficiency and skills of university staff. Digital recruitment and digital evaluation also showed positive effects, though relatively smaller, highlighting the importance of strengthening these processes to achieve full integration of digital transformation.

Furthermore, the study revealed that university employees are highly willing to adopt digital technologies in their work and emphasize the importance of utilizing digital tools to develop their professional and administrative skills. The results suggest that implementing digital transformation contributes to improving the university work environment, enhancing transparency, accelerating decision-making, and raising the overall performance of employees and faculty members.

Study Recommendations :

1. **Enhancing investment in digital transformation tools:** The university should adopt advanced digital human resource management systems, including planning, recruitment, training, and evaluation, to ensure sustainable development of human capital performance.
2. **Developing digital training programs:** Design continuous training programs for employees and faculty members to enhance digital skills and the ability to work with modern technological systems.

3. **Activating digital recruitment and evaluation platforms:** Adopt digital platforms to facilitate recruitment procedures, competency screening, and performance evaluation management, thereby increasing transparency and accuracy.
4. **Promoting a culture of digital innovation and creativity:** Encourage digital initiatives and proposals from employees to foster a creative work environment and enhance institutional performance efficiency.
5. **Monitoring and evaluating digital transformation:** Establish a follow-up unit to ensure the effectiveness of digital transformation implementation and measure its impact on performance, with continuous improvements based on results and technological developments.

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