Title: The role of information and communication technology in improving human resource performance at the Directorate of Tourism in Medea.

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Abstract: This study aimed to explore the impact of information and communication technology on improving human resource performance at the Directorate of Tourism of the province of Medea. The study adopted a descriptive approach and used an electronic questionnaire to collect data from all 83 employees of the directorate, with 80 valid questionnaires retrieved for analysis. The questionnaire covered two main areas: information and communication technologyand human resource performance. The data were analyzed using SPSS software. The results showed positive and statistically significant correlations between all dimensions of information and communication technology and human resource performance, with hardware, equipment and communication networks having the greatest impact, followed by databases and software. The study recommends investing in technical infrastructure and intensifying training programs to ensure optimal use of technology and improve administrative efficiency in the local tourism sector.

***Keys words*:** **Information and Communication Technology, Human Resource performance, hardware and equipment, databases, software, communication networks.**
***JEL classification codes*:**M12; M15; J24; L83.

ملخص:هدفت هذه الدراسة إلى استكشاف أثر تكنولوجيا المعلومات والاتصال في تحسين أداء الموارد البشرية بمديرية السياحة لولاية المدية. اعتمدت الدراسة المنهج الوصفي، واستخدمت الاستبيان الإلكتروني كأداة لجمع البيانات من جميع موظفي المديرية البالغ عددهم 83 موظفاً، حيث تم استرجاع 80 استبياناً صالحاً للتحليل.
شمل الاستبيان محورين رئيسيين: تكنولوجيا المعلومات والاتصال (الأجهزة والمعدات، البرمجيات، قواعد البيانات، شبكات الاتصال) وأداء الموارد البشرية. تمت معالجة البيانات وتحليلها باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية.(SPSS)
أظهرت النتائج وجود علاقات ارتباط إيجابية وذات دلالة إحصائية بين جميع أبعاد تكنولوجيا المعلومات والاتصال وأداء الموارد البشرية، حيث كان للأجهزة والمعدات وشبكات الاتصال الأثر الأكبر، تليها قواعد البيانات والبرمجيات. توصي الدراسة بضرورة الاستثمار في البنية التحتية التقنية وتكثيف البرامج التدريبية لضمان الاستخدام الأمثل للتكنولوجيا وتحسين الكفاءة الإدارية في قطاع السياحة المحلي.

الكلمات المفتاحية:تكنولوجيا المعلومات والاتصال، أداء الموارد البشرية، الأجهزة والمعدات، قواعد البيانات، البرمجيات، شبكات الاتصال.
تصنيف JEL: M12، M15، J24،L83.

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1-Introduction

Amidst the profound transformations brought about by the digital revolution, information and communication technology is no longer merely a tool, but has become an indispensable strategic pillar for achieving competitive advantage and ensuring sustainability in an ever-changing global business environment. This technology has reshaped traditional management concepts and established a new business model based on rapid data flow and accurate information. At the heart of this transformation, human resource management has emerged as one of the most affected and evolving functions, shifting from an executive administrative role to that of an active strategic partner contributing to the achievement of organisational goals. Through the use of integrated information systems, smart databases, and instant communication networks, it has become possible to attract, develop, motivate, and evaluate the performance of talented individuals using precise scientific methods, thereby enhancing the added value of human resources and transforming them into real intellectual capital. Based on this pivotal importance, this study seeks to move from general theoretical propositions to practical reality by analysing the impact of information and communication technology on human resource performance in a specific institutional context. While many previous studies have focused on reviewing theoretical dimensions or analysing global trends, there is a need for a deeper understanding of the dynamics of this relationship within the Algerian work environment, with its specific characteristics and challenges. Accordingly, this study targets a vital sector, namely tourism, whose success depends largely on the efficiency and quality of its human performance.

From this perspective, the main research problem crystallizes in an attempt to answer the following question:

What is the role of information and communication technology in improving human resource performance at the Directorate of Tourism in Medea?

Sub-questions:

- Is there a relationship between information technology in its four dimensions and improving human resource performance at the Directorate of Tourism in Medea?
- Does the dimension of hardware and equipment have an impact on improving human resource performance at the Directorate of Tourism in Medea?
- Does the dimension of databases have an impact on improving human resource performance at the Directorate of Tourism in Medea?
- Does the dimension of software have an impact on improving human resource performance at the Directorate of Tourism in Medea?
- Does the dimension of communication networks have an impact on improving human resource performance at the Directorate of Tourism in Medea?

Study hypotheses:

First: The main hypothesis

There is a statistically significant effect of information and communication technology on improving human resource performance.

Second: Sub-hypotheses:

- **H1_1:** There is a statistically significant effect of hardware and equipment on improving human resource performance.
- **H2_1:** There is a statistically significant effect of databases on improving human resource performance.
- **H3_1:** There is a statistically significant effect of software on improving human resource performance.
- **H4_1:** There is a statistically significant effect of communication networks on improving human resource performance.

Study approach and tools:

In this study, we adopted a descriptive approach, utilised an electronic questionnaire as a data collection tool, and employed SPSS software to analyse the collected data.

Previous studies:

Table 1. Comparison of the current study with previous studies

Study **Roul, J., Mohapatra, L. M., Pradhan, A. K., & Kamesh, A. V. S. (2024)**	
Title of study	Analysing the role of modern information technologies in HRM :management perspective and future agenda
Objective	Analysing the integration of modern technologies (artificial intelligence, machine learning, internet of things (IoT), big data) in human resource management and identifying future prospects for improving organisational performance.
Approach and tools used	Approach: Comprehensive bibliometric analysis. Tools: Scopus database for analysing research published between 1991 and 2022.
Difference with the current study	This study focused on a global bibliometric theoretical analysis without field application, whereas the current study combines theoretical and practical dimensions through the use of an electronic questionnaire to collect data from 80 individuals at the Directorate of Tourism of the province of Medea, employing statistical analysis tools to study the impact of information technology on human resource performance.
Study **Aziz, A. L., et al. (2024)**	
Title of study	Does human resource information system influence performance management?
Objective	Study the impact of human resource information system

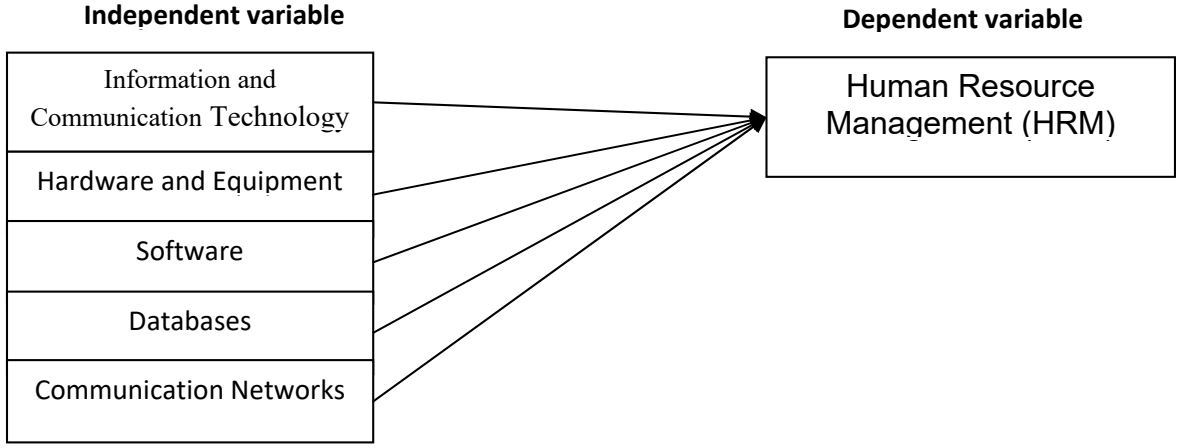
	(HRIS) on performance management and explore the factors that influence this area.
Approach and tools used	Approach: Systematic review. Tools: Analysis of 41 articles from the Scopus and Web of Science databases between 2001 and 2024.
Difference with the current study	This study relied on a systematic literature review without any field application, while the current study is theoretical in nature, based on an electronic questionnaire and statistical analysis of the relationship between information technology and human resource performance in a local context.
Study **Smirnova, A., Zaychenko, I., &Bagaeva, I. (2019)**	
Title of study	Exploring Digital Transformation in Human Resource Management in the Digital Age. Formation of requirements for human resources in the conditions of digital transformation of business.
Objective	Exploring digital transformation in human resource management, with a focus on technological drivers and the impact of technologies such as 5G and artificial intelligence on selection, training and assessment processes.
Approach and tools used	Approach: Theoretical analysis. Tools: Literature review and analysis of technological trends.
Difference with the current study	A purely theoretical study focuses on the general context of digital transformation, whereas the current study combines theoretical analysis and field application within a local Algerian work environment.
Study **Various Authors (2024)**	
Title of study	The influence of technology on the future of human resource management
Objective	Discuss the impact of technology on human resource practices (training, recruitment, performance management) and identify future challenges such as the lack of human interaction.
Approach and tools used	Approach: Theoretical analysis. Tools: Review of relevant literature and previous studies.
Difference with the current study	This study is a general theoretical analysis that lacks practical application, unlike the current study, which relies on field and statistical tools in a realistic work environment to determine the impact of information technology on human resource performance.

Source: Prepared by researchers

Similar to what we mentioned in previous studies, our study was comprehensive, focusing on human resources in terms of their experience, mastery of technology, and scientific competence. It also examined the extent to which these workers have access to technology, such as software and equipment, and the extent to which employees at the administrative headquarters of the municipality of Sidi Aissa are proficient in using these technical tools to perform their tasks quickly, accurately and efficiently.

Study model: Based on what has been discussed in previous studies, the following study model was developed:

Fig 1. Study model



Source: Prepared by researchers

2- Fundamentals of Information Technology and Human Resource Performance

2.1. Definition of Information and Communication Technology:

According to **Rowley**, information and communication technology is defined as a set of processes that include collecting, storing, processing, transmitting and using information. This concept is not limited to the physical aspect represented by hardware or software, but goes beyond that to include the pivotal role played by the human element and the goals it seeks to achieve through the use of this technology **(Rowley, 1996, p. 4)**. This concept also takes into account the values and principles that individuals adopt when making decisions related to the use of information and communication technology, reflecting the human and ethical dimensions that frame this use.

It is also defined as a set of interconnected elements that work together to collect, process, store, and distribute information to support decision-making, coordination, control, and conceptual analysis within an organization. These systems are a key tool in enhancing organizational efficiency by facilitating the

flow of information and ensuring its accuracy and relevance to administrative requirements **(Laudon & Laudon, 2006, p. 8).**

Meanwhile, **Jane Laudon and Kenneth Laudon** argued that, given the rapid changes taking place in the digital world, information and communication technology should be defined as a management tool consisting of five main components **(O'Brien &Marakas, 2008, p. 14).**

- **IT equipment**: This includes the physical hardware necessary to operate IT systems.
- **Software:** Applications and operating systems that enable hardware to be operated and controlled.
- **Storage technology**: This refers to the physical media used to store data, such as hard drives and optical discs, as well as the software that organises the storage of data on these media.
- **Communication technology:** This includes physical means and hardware, as well as software used to connect different system components, enabling data to be transferred from one location to another.
- **Networks**: This refers to connecting computers to each other to exchange data or share available resources.

Based on the above definitions, it can be said that information and communication technology is an integrated system that includes the collection, storage, processing, transmission and use of information. Its role is not limited to hardware and software, but also includes storage technology, communication technology and networks.

In addition, human resources and ethical values play a pivotal role in utilizing these tools to achieve administrative and strategic objectives. Therefore, this technology is considered an administrative and strategic tool that contributes to improving performance and organizing resources within a systematic and logical framework.

2.2. Components of Information and Communication Technology

Based on the above definitions of the concept of information and communication technology, it is clear that this concept consists of a set of integrated elements, including four integrated elements(**Stair & Reynolds, 2010, P.28**):

- **Computer hardware**, which includes the physical equipment for processing, storing, and retrieving information;
- **Software**, consisting of operating systems and applications that manage tasks and data;
- **Databases**, which are organized collections of data (e.g., inventory, costs) supporting decision-making;
- **Telecommunications**, which include the networks and technical means connecting different locations to ensure data flow. These elements work synergistically to support administrative and strategic objectives.

2.3. Characteristics of Information and Communication Technology

Information and communication technology has a number of essential characteristics that contribute to enhancing its efficiency and effectiveness within organisations. The most notable of these characteristics can be summarised as follows **(Turban et al., 2011, p. 45)**:

- **Interactivity**, allowing role exchange between sender and receiver;
- **Asynchrony**, enabling communication without temporal synchronization;
- **Decentralization**, ensuring operational continuity;
- **Connectivity**, integrating diverse devices;
- **Mobility**, allowing access while moving;
- **Non-readiness (Targeting)**, directing messages precisely to specific audiences;
- **Prevalence**, covering large geographical areas;
- **Globalisation**, facilitating cross-border data flow and enabling institutions to operate internationally.

2.4. Benefits of Information and Communication Technology:

Information and Communication Technology (ICT) is a fundamental pillar for developing institutions and enhancing their competitiveness in a fast-paced business environment. This technology offers a range of benefits that support organisational performance, contribute to the achievement of strategic objectives, and enhance an institution's ability to adapt to market requirements. The most notable of these benefits are presented below in a logical sequence **(Post et al., 2011, p. 17):**

- Developing senior management tools: Supports the organisation of user competencies through advanced information systems, thereby enhancing decision-making accuracy and administrative processes efficiency.
- Improved internal recruitment: HR management systems enable the identification of required skills and the effective allocation of resources, reducing waste and improving performance.
- Increased productivity and efficiency: Contributes to the development of services and products through automation and specialised software, reducing errors and speeding up processes.
- Quick response to customer requirements: Customer relationship management (CRM) systems provide the ability to efficiently meet customer needs, thereby enhancing customer satisfaction and loyalty.
- Encouraging innovation and renewal: Supports research and development to deliver new products and services, helping the enterprise maintain its market share.
- Expanding the distribution network: Enables the design of offers that suit customer needs and access to new markets via e-commerce platforms.
- Supporting creativity and development: It forms the basis for creating innovative products and services, and opens up prospects for exploring new markets, thus enhancing competitiveness.

- Improving service quality: Technologies such as artificial intelligence and data analysis are used to provide personalized services that meet customer expectations.
- Building lasting relationships with customers: Digital communication channels provide continuous interaction, which enhances trust and communication between the enterprise and its customers.
- Expanding e-commerce: Supports the proliferation of secure, easy-to-use digital platforms, enabling access to a wider customer base and promoting growth.

2.5. Human resource performance:

Human resource performance is a pivotal concept in managing institutions, and researchers have offered a variety of definitions to highlight its different dimensions. These definitions agree in considering performance as an indicator of how effective individuals are in achieving organisational goals, but differ in their focus on specific aspects such as quantity, quality, or meeting job requirements. The following is a review of the most prominent definitions:

Human resource performance is defined as the degree to which an individual performs their job duties, measured by the quantity and quality of output provided **(Armstrong, 2014, p. 112)**. This definition highlights the importance of measuring performance through both quantity and quality criteria, which reflect the individual's efficiency in completing the tasks assigned to them.

Human resource performance also refers to an individual's level of accomplishment of job-related tasks, which reflects their ability to meet job requirements or achieve job goals **(Noe et al., 2017, p. 245)**. This definition focuses on the relationship between performance and the achievement of job objectives, emphasising the role that individuals play in meeting organisational expectations.

Despite the different points of view, these definitions show agreement that human resource performance reflects the extent to which an individual contributes to the success of the institution.

Performance evaluation is therefore considered an essential tool for identifying strengths and weaknesses and directing efforts towards improving organisational efficiency. In addition, these definitions highlight the need for objective criteria for measuring performance, thereby enhancing the institution's ability to achieve its strategic objectives.

2.6. Human resource performance determinants:

Human resource performance determinants refer to those factors that affect the level of performance of individuals in institutions. They are classified into two main categories based on their association with the individual or the surrounding environment: internal and external determinants.

Other factors affecting performance, such as the absence of specific objectives and poor management, should also be added to this list. The following is a brief and organised overview of the most prominent of these determinants:

2.6.1. Internal determinants: These include elements related to an individual's characteristics and skills, which are **(Dessler, 2013, p. 204):**

- **Effort**: This refers to the mental and physical energy expended by an individual to accomplish their tasks, with the aim of achieving the highest levels of performance.
- **Capabilities**: These include personal skills and characteristics, such as quick thinking, which are influenced by factors such as education, training, and professional experience, and directly affect performance quality.
- **Role perception**: Reflects an individual's understanding of their job responsibilities and directs their efforts based on that understanding. This perception is influenced by factors such as role ambiguity or conflict, which can hinder performance.

2.6.2. External determinants: These include factors beyond the individual's control, namely **(Robbins & Judge, 2015, p. 189):**

- **Job requirements**: These include duties, responsibilities, and tools used to accomplish tasks, which affect performance efficiency.
- **Regulatory environment**: This represents the internal framework for work, where a positive environment promotes job satisfaction, leading to improved performance.
- **External environment**: This includes factors such as market competition, low incentives, and differences in functional systems between institutions, which may positively or negatively affect performance.
- **Additional determinants**: In addition to internal and external determinants, other factors influence human resource performance (**Boxall & Purcell, 2011, p. 88):**
    - **Absence of specific objectives**: Unclear objectives and performance criteria make it difficult to assess individual performance, hindering performance improvement.
    - **Lack of participation in decision-making**: This weakens employees' sense of belonging, reducing their motivation and negatively affecting their performance.
    - **Job satisfaction issues:** Low satisfaction leads to grumbling and reduced enthusiasm for completing tasks, which affects performance quality.
    - **Administrative negligence**: This involves wasting working time on unproductive activities, which increases the financial burden on the institution and reduces its efficiency.

3. Field study of information technology and its contribution to improving human resource performance in the municipality of Sidi Aissa

3.1. Study approach and tools:

3.1.1. Study approach: This study adopted a descriptive approach to analyse the phenomenon under study. Initially, the theoretical framework was reviewed to formulate a set of hypotheses. Subsequently, data was collected through a questionnaire and converted into numbers to facilitate processing. Appropriate

statistical tools were then used to test the hypotheses, contributing to the accurate and objective achievement of the study's objectives.

Study tools:A questionnaire was used as a tool for data collection, and SPSS software was used to analyse the collected data. The questionnaire was divided into two main sections:

Section I: Personal and professional data. This section covers the characteristics of the study sample, namely: gender, age, academic qualification, current job field, years of experience, and automation control.

Section II: Questionnaire themes: Consists of two themes:

First theme: Information and communication technology (independent variable): Focuses on the dimensions of information and communication technology, namely: hardware and equipment, databases, software, and communication networks, and includes 23 items.

Second theme: Human performance (dependent variable): Addresses human performance and contains 8 items.

Study population and sample: **First: Study population**: The study population consists of all 83 employees of the Directorate of Tourism in the province of Medea.

Second: Study sample: A comprehensive survey of the study population was conducted, with an electronic questionnaire distributed to all employees of the Directorate of Tourism in the province of Medea. However, 80 questionnaires were recovered, which is acceptable for covering all aspects of the study, as they represent 96.3% of the study population.

Table 2. Illustrates how the items are distributed across the dimensions of the two variables

Variable	Dimension	N of Items
Information and Communication Technology	Hardware and equipment	From 1 to 8
	Software	From 9 to 13
	Databases	From 14 to 18
	Communication networks	From 19 to 23
Human resources		From 1 to 8

Source: Prepared by researchers

3.2. Study tool reliability: The Cronbach's alpha test is considered one of the most prominent statistical tools for measuring tool reliability. The results of this test for the study focuses are summarised in the following table:

Table 3. Cronbach's alpha coefficient

Dimension / Questionnaire themes		N of Items	Cronbach's alpha coefficient
Information and Communication Technology	Hardware and equipment	8	0.85
	Databases	5	0.872
	Software	5	0.938
	Communication networks	5	0.876
Human Resources Performance		15	0.945

Source: Prepared by researchers

All Cronbach's alpha values are above 0.7, indicating a good to excellent level of internal consistency of items within each dimension.
The Y dimension achieves the highest value (0.945), reflecting excellent internal consistency, followed by X3 (0.938).
Dimension X1 achieves the lowest value (0.850), but it is still considered very good.
These values indicate that the questions used to measure each dimension are reliable and internally consistent, which enhances the quality of the data for subsequent analyses.

3.3. Descriptive study: This table presents a summary of the descriptive data for the study sample.

Table 4. Statistical description of the study sample

Variable	Variable categories	Frequency	Percentage
Gender	Male	48	60.00
	Female	32	40.00
Age	Under 30 years old	5	6.25
	From 30 to under 40 years old	20	25.00
	From 40 to under 50 years old	49	61.25
	50 years old and above	6	7.50
Academic qualification	Secondary education	5	6.25
	Senior Technician	9	11.25
	Graduate (bachelor's degree)	37	46.25
	Engineer/master's degree	22	27.50
	Postgraduate studies	7	8.75
Current job field	Non-supervisory administrative jobs	29	36.25
	Supervisory administrative jobs	43	53.75
	Technical jobs	8	10.00
Years of experience	Less than 5 years	7	8.75
	From 5 to less than 10 years	18	22.50
	From 10 to less than 15 years	55	68.75

Source: Prepared by researchers using SPSS software.

The descriptive data for the study sample, comprising 80 employees, reveals demographic and professional characteristics that reflect remarkable diversity, which could have a direct impact on the adoption of information and communication technology within the Directorate of Tourism in the province of Medea. In terms of gender, males constitute the majority with 60% (48 individuals), compared to 40% females (32 individuals), reflecting a relative male dominance in the work environment, which may influence the dynamics of interaction with technology depending on possible differences in digital attitudes or skills.

As for the age structure, the results show a clear dominance of the 40 to under 50 age group with 61.25%, followed by the 30 to under 40 age group with 25%, then the 50 and over age group with 7.5%, and finally the under-30 age group with 6.25%. This distribution reflects a relatively mature age profile, which may indicate an abundance of practical experience, but at the same time may pose challenges in adopting new technological tools for some older age groups.

In terms of educational level, the vast majority of respondents hold university degrees: 46.25% hold a bachelor's degree, 27.5% hold an engineering or master's degree, and 8.75% hold postgraduate degrees (master's/doctorate). While 11.25% held higher technician certificates and 6.25% had secondary education. These figures reflect a notable increase in academic level, which is a positive factor in supporting adaptation to digital transformation and benefiting from modern information systems.

In terms of job nature, the sample is distributed among supervisory administrative jobs (53.75%), followed by non-supervisory administrative jobs (36.25%), and finally technical jobs (10%). This structure highlights the focus on organisational and administrative aspects within the Directorate of Tourism in the province of Medea, which justifies the importance of strengthening digital skills among decision-makers and those supervising operations.

In terms of years of experience, the results show that most employees (68.75%) have between 10 and 15 years of experience, while 22.5% have between 5 and 10 years of experience, and the least experienced group (less than 5 years) represents 8.75%. This indicates an experienced workforce, which promotes organisational stability, but may require additional efforts to update technical skills to ensure they are in line with the requirements of the digital age.

Accordingly, these data show that the working environment within the Directorate of Tourism in the province of Medea is characterised by strong professional experience and high academic qualifications, which constitutes a solid foundation for adopting information systems and modern technology applications, provided that appropriate training and digital skills development are provided to all groups to ensure the effectiveness of digital transformation and the achievement of administrative performance objectives in this vital sector.

3.4. Testing the nature of distribution: After testing the nature of distribution followed by the study sample using the Kolmogorov-Smirnov test, the results were shown in the following table:

Table 5. Testing the nature of distribution

Kolmogorov-Smirnov test for a sample						
		Hardware and equipment	Databases	Software	Communication networks	Human resource performance
N		80	80	80	80	80
Normal distribution[a,b]	Mean	3,07294277563750	2,879	2,959	2,523	3,05073221377500
	Standard deviation	,748685088319888	,8004	,8601	,7267	,803256038273411
Most extreme differences	Absolute	,046	,078	,086	,048	,049
	Positive	,046	,062	,086	,046	,036
	Negative	-,037	-,078	-,063	-,048	-,049
Test statistics		,046	,078	,086	,048	,049
Bilateral asymptotic significance		,200[c,d]	,200[c,d]	,200[c,d]	,200[c,d]	,200[c,d]
a. The distribution of the test is normal.						
b. Calculated from data.						
c. Lilliefors Significance Correction.						
d. This is the lower bound of true significance.						

Source: SPSS software output

Based on the results of **the Kolmogorov-Smirnov test**, it is clear that **all variables follow a normal distribution**, as the probability values (Sig. = 0.200) exceeded the significance threshold of 0.05. Therefore, the data is normally distributed, allowing for the use of parametric statistical tests.

3.5. Analysis of the relationship between study variables: Pearson's correlation coefficient was used to test the relationship between the dimensions of the independent variable (information and communication technology) and the dependent variable (human resource performance). The results are summarised in the following table:

Table 6. Correlation Matrix

Correlations						
		Hardware and equipment	Databases	Software	Communication networks	Human resource performance
Hardware and equipment	Pearson correlation	1	,448**	,455**	,345**	,696**
	Sig. (bilateral)		,000	,000	,002	,000
	N	80	80	80	80	80
Databases	Pearson correlation	,448**	1	,266*	,391**	,607**
	Sig. (bilateral)	,000		,017	,000	,000
	N	80	80	80	80	80
Software	Pearson correlation	,455**	,266*	1	,283*	,541**
	Sig. (bilateral)	,000	,017		,011	,000
	N	80	80	80	80	80
Communication networks	Pearson correlation	,345**	,391**	,283*	1	,574**
	Sig. (bilateral)	,002	,000	,011		,000
	N	80	80	80	80	80
Human resource performance	Pearson correlation	,696**	,607**	,541**	,574**	1
	Sig. (bilateral)	,000	,000	,000	,000	
	N	80	80	80	80	80
**. The correlation is significant at the 0.01 level (bilateral).						
*. The correlation is significant at the 0.05level (bilateral).						

Source: SPSS software output

The results of the correlation matrix test showed varying degrees of positive correlation between the dimensions of information technology and human resource performance at the level of the Directorate of Tourism in the province of Medea. A strong positive relationship was recorded between hardware and equipment and human resource performance, with a correlation coefficient of

0.696 at a significance level of Sig = 0.000, indicating that the effectiveness of technical infrastructure plays a vital role in supporting and improving individual performance. The relationship between databases and performance was also strong (0.607), reflecting the importance of well-organised databases in supporting decision-making and achieving administrative efficiency. In the same context, software showed a moderately positive correlation with human resource performance (0.541), reflecting software's contribution to task automation and increased efficiency. Communication networks, on the other hand, recorded a relatively strong positive correlation (0.574), indicating that the flow of information and ease of internal communication contribute significantly to raising performance levels. In terms of internal correlation between independent variables, statistically significant positive relationships were observed, most notably between hardware, equipment and databases (0.448), between hardware and software (0.455), and between databases and communication networks (0.391). These results reinforce the complementary nature of IT components, confirming that their effectiveness can only be achieved through their integration into a comprehensive management system that supports human resource performance.

3.6. Testing hypotheses and analysing results: A set of statistical tests was used to answer the main problem and sub-questions, and the results were summarised in the following tables.

Table 7. Model Summary

Model	R	R- Square	Adjusted R-Square	Std. Error of the Estimate
1	,839[a]	,705	,689	,448074884968228

a. Predictors: (Constant), hardware and equipment, databases, software, communication networks.

Source: SPSS software output

Table 8.ANOVA test

ANOVA[a]

Model		Sum of squares	Ddl	Mean square	F	Sig.
1	Regression	35,915	4	8,979	44,721	,000[b]
	Residual	15,058	75	,201		
	Total	50,972	79			

a. Dependent variable: Human resource performance.

b- Predictors: (Constant), hardware and equipment, databases, software, communication networks.

Source: SPSS software outpu

Table 9. Coefficient testing

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Deviation	Beta		
1	(Constant)	-,355	,260		-1,365	,176
	Hardware and	,408	,083	,380	4,939	,000
	equipment	,271	,073	,270	3,693	,000
	Databases	,204	,067	,218	3,058	,003
		,304	,078	,275	3,911	,000
	Software					
	Communication networks					

a. Dependent variable: Human resource performance.

Source: SPSS software output

Reading and analysing the study results: Based on the test results obtained, we will evaluate the study model before testing and discussing the results.

First: Study model quality:

The results of the multiple correlation coefficient (R = 0.839) showed a strong positive correlation between the combined dimensions of information and communication technology and human resource performance. The coefficient of determination (R^2 = 0.705) showed that 70.5% of the changes in human resource performance can be explained by the independent variables included in the model, reflecting the strength and suitability of the model for analysis.

The results of the analysis of variance **(ANOVA)** reinforced this finding, with a calculated F value of 44.721 at a significance level (Sig. = 0.000), which is well below 0.05, proving that the model has strong statistical significance and is suitable for testing hypotheses with scientific confidence.

Main hypothesis:

H_0: There is no statistically significant effect of information and communication technology on improving human resource performance at the Directorate of Tourism in the province of Medea.

H_1: There is a statistically significant effect of information and communication technology on improving human resource performance at the Directorate of Tourism in the province of Medea.

The **ANOVA** test results indicate that the regression model used to explain the effect of ICT dimensions on human resource performance is highly statistically significant, with an F value of 44.721 at a significance level of Sig = 0.000,

which is well below the accepted level (0.05). The coefficient of determination (R^2) not shown in the table can be inferred from the ratio of the model variance to the total variance, indicating that the dimensions of ICT combined explain a significant proportion of the variations in human resource performance.
Consequently, the main null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, which means that there is a significant impact of information and communication technology on improving human resource performance at the level of the Directorate of Tourism in the province of Medea.

2. First sub-hypothesis:

H1_0: There is no statistically significant effect of hardware and equipment on improving human resource performance at the Directorate of Tourism in the province of Medea.
H1_1: There is a statistically significant effect of hardware and equipment on improving human resource performance at the Directorate of Tourism in the province of Medea.
The unstandardized effect coefficient (B = 0.408) and t-value (t = 4.939) at significance level (Sig = 0.000) are statistically significant at the 0.01 level. Therefore, the first sub-null hypothesis is rejected and the alternative is accepted, indicating that hardware and equipment have a significant and positive effect on human resource performance.

Second sub-hypothesis:

H2_0: There is no statistically significant effect of databases on improving human resource performance at the Directorate of Tourism in the province of Medea.
H2_1: There is a statistically significant effect of databases on improving human resource performance at the Directorate of Tourism in the province of Medea.
The databases recorded a significant effect (B = 0.271) with a t-value = 3.693 and (Sig = 0.000).Therefore, the second null hypothesis is rejected and the alternative hypothesis is accepted, which means that databases contribute to improving job performance.

Third sub-hypothesis:

H3_0: There is no statistically significant effect of software on improving human resource performance at the Directorate of Tourism in the province of Medea.
H3_1: There is a statistically significant effect of software on improving human resource performance at the Directorate of Tourism in the province of Medea.
The software also achieved statistical significance (B = 0.204) and t = 3.058 at (Sig = 0.003). Therefore, the third null hypothesis is rejected and the alternative hypothesis is accepted, indicating that software contributes to the development of human resource performance, albeit to a lesser extent than hardware and databases.

Fourth sub-hypothesis:
H4_0: There is no statistically significant effect of communication networks on improving human resource performance at the Directorate of Tourism in the province of Medea.
H4_1: There is a statistically significant effect of communication networks on improving human resource performance at the Directorate of Tourism in the province of Medea.
The effect coefficient (B = 0.304) reached t = 3.911 and a significance value (Sig = 0.000), indicating a statistically significant effect. Thus, the fourth null hypothesis is rejected and the alternative hypothesis is accepted, confirming that communication networks play an important role in supporting human resource performance.
The results presented above reflect the strength of the statistical model used and confirm that information and communication technology (hardware and equipment, databases, software, and communication networks) has a positive and significant impact on improving the performance of human resources at the Directorate of Tourism in the province of Medea. It also highlights the importance of investing in technological infrastructure and integrating its components as a fundamental prerequisite for increasing human resource efficiency and achieving administrative effectiveness.

4- Conclusion:

In conclusion, this study sought to investigate the impact of information and communication technology on improving human resource performance at the Directorate of Tourism in the province of Medea, by analysing four main dimensions: hardware and equipment, software, databases, and communication networks. The study relied on SPSS software for statistical processing, and the results of the normal distribution analysis confirmed that the data followed a normal distribution to an acceptable degree, which allowed the use of appropriate statistical tests to test hypotheses and analyse relationships between variables with scientific and systematic confidence.
The results showed that information and communication technology, in all its dimensions, had a positive and statistically significant impact on improving human resource performance in the directorate. The analyses also showed that all four dimensions had a positive and significant effect, with variations in the strength of this effect. Hardware and equipment ranked highest in terms of impact, followed by communication networks, databases, and finally software.
These findings point to the importance of investing in the physical and technical infrastructure of the institution, and the need to view information and communication technology as an integrated system that enhances operational efficiency and supports the achievement of strategic objectives.
In terms of the relationship between the dimensions, the results highlighted a relative correlation between hardware, equipment and communication networks, reflecting the integration between these two dimensions in supporting the work

environment and improving performance levels. Meanwhile, the impact of software and databases appeared to be less significant, indicating a need for further development in these areas to increase their effectiveness within the Directorate.

From a practical perspective, the study recommends giving top priority to upgrading hardware and equipment and strengthening communication networks, as well as investing in the development of databases and software to meet the needs of the tourism industry and the requirements of the modern digital environment. It also emphasises the importance of providing specialised training programmes for employees to ensure the optimal use of this technology and maximise its benefits.

From an academic perspective, the study suggests expanding the use of advanced analyses, such as structural modeling or factorial analysis, to study interactions between variables more deeply and accurately, thereby contributing to the construction of theoretical and practical models that enhance the effectiveness of human resource management in the Algerian tourism sector.

The study has thus contributed to enriching the scientific literature on the role of information and communication technology in improving human resource performance, providing practical and applicable insights to support institutional development efforts at the Directorate of Tourism of the province of Medea, and opening the way for future studies to further research in this field.

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