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The Role of Digitizing Human Resources Management in Enhancing the Decision-Making Process

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Abstract:

This paper explores how the digital transformation of human resource management enhances decision-making by ensuring timely and accurate access to essential data. It underscores the significance of digital tools in improving both the efficiency of human resource management and overall administrative performance. The study involved 130 participants from the company's Human Resources Department. The findings reveal that digitization significantly accelerates decision-making, although there are technical and human-related challenges that need to be addressed. Based on these results, the paper suggests improving technological infrastructure and providing training programs to enhance employees' digital capabilities.

key words: Digitization, Human resource management, Decision-making, Sonatrach.

JEL Classification Codes: M12; O33; M15.

Introduction

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The current era is marked by an unparalleled surge in technological innovation, rapid advancements in digital transformation, and an increasing reliance on precision and efficiency in decision-making processes. This digital revolution has propelled traditionally manual processes to new heights, enhancing accuracy and speed in making decisions that impact both performance outcomes and the identification of opportunities, as well as the mitigation of potential risks in the workplace.

Digital transformation has streamlined access to extensive personnel data, including performance records, training needs, and career development plans. This shift not only optimizes decision-making but also fosters a more transparent and efficient work environment. It allows managers to monitor employee performance in real time and provide immediate feedback. The capacity of digitization to improve communication between management and

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staff, and to pinpoint areas requiring improvement, has a profound effect on developing human capital and aligning it with the organization's strategic goals.

Beyond operational efficiency, the digital transformation of human resource management enhances an organization's ability to adapt to dynamic changes and evolving market demands. It provides a framework for anticipating future trends and understanding the human resource needs that align with these trends, positioning organizations to maintain a competitive edge. Moreover, the digitization of HR operations simplifies the management of security and legal information, ensuring compliance with personal data protection regulations, which have become increasingly critical in today's professional landscape.

1. Research Question

Based on the preceding discussion, the central research question can be framed as follows: How can the digitization of administrative activities in the analytical department of Sonatrach's Boumerdes branch enhance the durability and efficacy of decision-making processes?

2. Sub-Questions

Several key sub-questions arise from the primary research question, as follows:

- -To what extent does the digitalization of human resources management improve the speed and quality of decision-making in Sonatrach's analytical department?
- -How does the digitization of HRM impact the quality of decisions related to employee performance evaluation in Sonatrach's analytical services?
- -What strategies can be employed to overcome the challenges associated with implementing digitization in Sonatrach's Human Resources Management?

3. Study Hypothesis:

Each question is aligned with preliminary assumptions that can either be confirmed or refuted. Accordingly, the anticipated hypothesis is as follows: The digitization of human resources management plays a pivotal and effective role in supporting and expediting the decision-making process within the Analytical Department of Sonatrach's Boumerdes State Branch.

4. Importance of the Study:

The digitization of human resources management to enhance decision-making holds significant importance, based on the following considerations:

-The need for rapid and accurate responses to challenges stemming from both internal and external organizational environments, which demand timely decision-making.

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- -The drive toward increased efficiency and effectiveness in human resources functions, where the relationship between efficiency and sound decision-making is clearly positive.
- -The reduction of uncertainty and ambiguity in the decision-making process.
- -The ability of digitization, through the acquisition and utilization of advanced technologies, to expand opportunities and capabilities in human resource management, thereby strengthening the decision-making process.

5. Objectives of the Study:

This study aims to:

- -Analyze the role of digitization in accelerating the decision-making process within human resources management.
- -Evaluate the impact of digitization on the quality of management decisions.
- -Investigate the challenges faced by Sonatrach's Boumerdes State Branch in adopting digitization.

6.Study Curriculum and Tools:

6.1. **Study Curriculum:** The study adopts an analytical descriptive approach, which is well-suited to the nature of the research. This approach involves first describing the phenomenon in detail, followed by a breakdown of its components for easier analysis, ultimately helping to test the validity of hypotheses and address the research problem. 6.2. **Study Tools:** A range of research tools is utilized, including a structured questionnaire and observation. The field study will test the hypotheses' validity by surveying a randomly selected sample.

7.Study Plan:

The study, along with its introduction and conclusion, is divided into two main sections: **7.1**. **Theoretical Aspect:** This section focuses on the analysis and dissection of key concepts relevant to the study's focus.

7.2. Applied Aspect: This part relies on the collection of field data using research tools such as questionnaires and interviews, which will be directed towards human resources personnel and managers at Sonatrach's Analytics Directorate in the Boumerdes State Branch.

Sonatrach Analytics Directorate, Boumerdes State Branch

II.Part One: The Theoretical Framework of the Study

1. The Concept and Significance of Human Resources Management

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1.1. Concept of Human Resources Management:

Gary Dessler defines human resources management (HRM) as a collection of administrative processes involving the recruitment, training, compensation, policy formulation, and oversight of employee relations with the organization (Dessler, Gary, 2021, p. 35). Michael Armstrong offers a broader view, describing it as a strategic approach that emphasizes the optimal deployment of human capital within enterprises to enhance overall performance and achieve market leadership (Armstrong, Michael, 2019, p. 50).

At its core, human resources management encompasses the organizational function responsible for sourcing, recruiting, screening, training, and managing employee benefits programs. The primary goal of HRM is to facilitate effective recruitment, retention, engagement, and overall productivity of employees, which may differ based on organizational needs and specific roles. HRM plays a critical role in enabling organizations to navigate a rapidly changing business environment, meet the increasing demand for skilled talent, cultivate a positive organizational culture, and ensure compliance with labor laws, thus contributing to success in a competitive market (Egan, 2023).

Moreover, HRM is responsible for the formulation, implementation, and oversight of policies governing employee relations and the employer-employee dynamic. The term "human resources" first emerged in the early 20th century and gained widespread use in the 1960s to refer to the collective workforce of an organization. HRM views employees as valuable assets (human capital), with the objective of managing this resource efficiently, minimizing risk, and maximizing return on investment, much like other business assets (Barney, Wesley, & Shaun, 2023).

Within the Analytics Department of Sonatrach's Boumerdes State Branch, HRM operates as an integrated system, consisting of subsystems that handle distinct administrative processes. The outputs of one subsystem serve as the inputs for others, creating a seamless workflow.

1.2. The Importance of Human Resources Management in Organizations:

Human resources management remains a cornerstone of organizational success. Its significance is reflected in several key areas :

-HRM oversees the planning and organizational processes that shape the workforce, a fundamental aspect of any organization. By attracting and securing qualified individuals for diverse roles, HRM contributes to the effective realization of the organization's objectives (Mohammed, Ahmed, 2019, p. 23).

-HRM fosters employee satisfaction and productivity by designing and implementing performance management strategies and professional development programs aimed at

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enhancing employees' skills and competencies. This perspective is echoed by Dr. Saleh Abdullah in his work on the subject.

1. Therefore, the significant capabilities of the latter can be derived from their pivotal role in the overall management process.

2. Digitization of Human Resources Management

2.1. Definition of Human Resources Digitization: Human resources digitization refers to the transformation of traditional human resources management functions and processes into digital formats using advanced technologies. The goal of this process is to enhance the efficiency and simplification of administrative tasks such as recruitment, training, performance assessment, and management of salaries and leave. This is achieved through the use of sophisticated software systems, such as ERP systems, alongside digital tools and AI. (Ahmed, Khaled, 2020, p. 45)

On the other hand, human resources digitization signifies the conversion of traditional HR functions through the integration of digital technologies. This transition improves the efficiency, accessibility, and transparency of HR processes by automating tasks such as recruitment, employee evaluations, talent management, and document handling. By embracing digital solutions, organizations can streamline HR operations, lower administrative costs, enhance compliance, and improve data analysis capabilities. This process offers a more strategic approach to HR management, allowing professionals to focus on staff development and organizational growth rather than routine management tasks. (Centa, 2024)

Additionally, digital human resources management is defined as "the use of computer systems, networking, and interactive electronic media" to perform HR functions. (Vardarlier, 2020) Supporting this view, Ketolainen (2018) characterizes digital transformation as a process, referring to the shift in HR management toward digitalization to become data-driven and automated.

Digital systems simplify recruitment by offering electronic tools for job posting, CV filtering, and interview scheduling. They also facilitate the development of training programs and the ongoing assessment of employee performance through real-time data and precise analysis. (Dessler Gary, 2021, p. 89)

- **2.2.** The Importance of Digitization in Human Resources Management: The digitization of human resources is crucial for promoting effective decision-making, as explained by the following points:
- -Challenges arising from the organization's internal and external environment that demand rapid and accurate decision-making.

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- -The move towards greater efficiency and effectiveness in various HR areas, where the relationship between efficiency and the right decisions is positive.
- -Reducing uncertainty and confusion in the decision-making process.
- -Enabling complex calculations, particularly those related to decision-making, which saves time and cuts completion costs. (Omar & Boubegra, 2023, p. 235)

This is further supported by the Directorate of Analysis of Sonatrach:

- **-Learning Management Systems (LMS)**: These systems enable e-training and continuous skills development for employees. LMS allows organizations to monitor employee progress in training programs and evaluate their acquisition of new skills, thereby boosting professional capabilities and enhancing productivity. (Dessler Gary, 2021, p. 187)
- **-Cloud Computing**: This technology enables organizations to store employee data in the cloud, making it accessible from any location at any time. Cloud computing helps lower IT infrastructure costs and enhances flexibility in HR management. (Armstrong, Michael, 2019, p. 230)

3. Decision-Making in Human Resources Management

3.1. The Concept of the Decision-Making Process: Decision-making is a comprehensive and goal-oriented process in which the best solution is selected from various alternatives to achieve a specific objective. This process involves recognizing the issue or opportunity that needs to be addressed and evaluating the alternatives based on specific criteria such as efficiency, costs, and potential risks. (Mohammed, Ali, 2019, p. 45)

The decision-making process requires logical reasoning and in-depth analysis, considering both internal and external factors. It also entails selecting the best alternative that will achieve the desired outcomes, implementing the decision, and monitoring its results to ensure the objectives are met, with adjustments made if necessary. (Alhassan, Khalid, 2020, p. 75)

From this perspective, decision-making in organizations arises from the existence of a problem or an opportunity. The issue, imbalance, or opportunity must be addressed by making the most timely and effective decision.

- **3.2. Types of Decisions in Human Resources Management**: Most researchers categorize decisions into the following types:
- **-Strategic Decisions**: These decisions are concerned with long-term planning and determining the future direction of human resources management. They include the development of recruitment strategies, competency building, and salary and benefits policies aligned with the

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organization's long-term goals. (Mohammed, Ali, Strategic Human Resource Management, 2019, p. 88)

- **-Operational Decisions**: These decisions deal with daily activities and routine HR practices, such as processing leave requests, managing work schedules, and resolving day-to-day employee issues. These decisions tend to be short-term and maintain flexibility and order in HR tasks. (Al-Hassan, Khalid, 2020, p. 45)
- **-Tactical Decisions**: These decisions focus on medium-term solutions and act as a bridge between strategic and operational decisions. They enhance training programs or adjust performance policies based on the organization's needs.
- **-Emergency Decisions**: These decisions arise in unforeseen situations requiring quick and effective action, such as large-scale layoffs during financial crises. These decisions demand immediate assessment of the situation and prompt intervention. (Dessler Gary, 2021, p. 188)

4. The Role of Human Resources Digitization in Enhancing the Decision-Making Process

4.1. Data Analysis and Decision-Making:

- -Accurate data analysis plays a crucial role in improving decision-making. It involves collecting, processing, and analyzing vast amounts of employee-related data, enabling managers to make well-informed decisions based on correct and error-free data, rather than relying on assumptions or guesses.
- -Moreover, data analysis enhances the recruitment process by accurately identifying the required competencies, thus reducing time and costs.
- -HR professionals can more effectively evaluate employee performance and identify suitable training programs based on an analysis of capacity and performance data.

4.2. Responding to Rapid Changes:

- -One of the major challenges that businesses face in an ever-evolving market environment is the ability to manage human resources effectively. This capability is becoming more crucial as organizations must adapt to new societal, economic, and technological shifts. Through digitization and data analysis, HRM can now anticipate such changes and make proactive decisions to support the organization's competitiveness in relation to its peers.
- -Digitization strengthens organizations' ability to respond to sudden changes by providing integrated systems that enable swift adjustments in recruitment strategies, performance policies, and training programs. It also leverages AI-based technologies to detect emerging trends in the labor market. (Al-Issawi, Mohammed, 2019, p. 88)

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4.3. Improved Communication and Transparency: Enhancing communication and transparency within human resources management is one of the key benefits driven by digitization. It provides employees with continuous access to their career paths, which reduces the risk of ambiguity or perceived inequities. This fosters a work environment built on transparency and fairness. (Jasim, Fatima, 2021, p. 151)

5. Constraints and Challenges in Digitizing Human Resources Management:

- **-High Cost of Modern Technology**: Companies must make substantial investments to develop integrated digital systems that meet the needs of HRM. This includes the costs of acquiring hardware, software, and ongoing maintenance to ensure system efficiency.
- **-Resistance to Change**: Employees who are accustomed to traditional systems may resist transitioning to new digital systems, making the adaptation process challenging. This period of change may lead to interruptions in activities and information flow.
- **-Lack of Digital Skills**: Successful digitization requires employees who are proficient in handling digital transformation. Consequently, comprehensive training programs must be implemented to address the skills gap.
- **-Weak Legal Frameworks**: The absence of robust laws to support digital transformation processes in organizations, particularly concerning the protection of workers' personal data, poses a challenge. Regulations such as the European Union's General Data Protection Regulation (GDPR) mandate that organizations take measures to safeguard and prevent the leakage of personal data.
- **-Employee Resistance to New HRM Techniques**: Staff may struggle to adjust to the new human resources management approaches brought about by digitalization.
- **-Concerns about Data Security and Privacy**: There are concerns regarding the security of employee data and the privacy implications of digital HRM systems.
- **-Changing Social Dynamics**: Digitization reduces face-to-face interactions and disrupts the workforce's distribution, which can impact collaboration and cohesion within the organization.
- **-Lack of Infrastructure**: Many institutions lack the necessary infrastructure to support advanced HRM techniques, which hinders the effective implementation of digital transformation. (Anton Florijan Barišić, Joanna Rybacka, & Ivan, 2021, pp. 368-369)

III. Part Two: Applied Aspect

1. Methodology and Procedures for Field Study

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- 1.1. **Study Curriculum**: The study curriculum outlines the approach to be followed for the systematic and objective execution of research and data analysis. Since this study explores the impact of HRM digitization on decision-making within Sonatrach, an analytical descriptive curriculum is considered the most suitable approach for this research.
- 1.2. **Method of Data Collection**: To address the main research question, a questionnaire was developed, which was structured as follows:
- Axis 01 : Personal Data
- Axis 02: The Use of Digital Systems in Human Resources Management
- Axis 03: The Impact of Digitization on Decision-Making
- Axis 04: Challenges to the Digitization of Human Resources Management
 - 1.3. **Identification of the Study Population and Sample**: This study focuses on the role of human resources management digitization and its impact on decision-making within Sonatrach, specifically the Boumerdes branch. The study population consists of all staff working in human resources management at various levels within Sonatrach.

Questionnaires were distributed to the staff, and a total of 142 responses were collected for analysis. After reviewing the responses, 12 non-analyzable questionnaires were discarded, leaving a final sample of 130 employees.

1.4. Demographic Characteristics of the Study Sample:

1.4.1. **Breakdown of Study Sample by Gender**: Below is a table showing the statistical distribution of the study sample based on the gender variable.

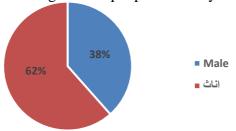
Table 01: Distribution of sample personnel by sex

	1 1	
Category	Repetition	Percentage
Male	50	%61.54
Female	80	%38.46
Total	130	100%

Source: Prepared by the researchers

The results shown in the table can be represented in the following format:

Figure 01: Percentage of sample personnel by sex



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Source: Prepared by the researchers

The results of the study on sex-based sample distribution showed that the majority were female, accounting for **61.54%** of the total sample of **130** workers. In contrast, the male form is 38.46%.

1.1.1. Breakdown of study sample by age: Below is a table showing statistical breakdown of study sample individuals by age variable

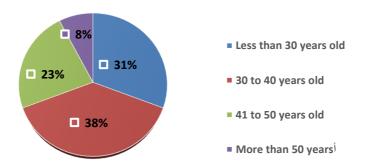
Table 02: Distribution of sample personnel by sex

Category	Repetition	Percentage
Less than 30 years old	40	%30.77
30 to 40 years old	50	%38.46
41 to 50 years old	30	23.08%
More than 50 years	10	%7.69
Total	130	100%

Source: Prepared by the researchers

The results shown in the table can be represented in the following format:

Figure 02: Distribution of sample personnel by age



Source: Prepared by the researchers

The results of the study on the distribution of the sample by age group showed that the largest proportion of employees aged between 30 and 40 years, with 38.46%, followed by workers under 30 years of age with 30.77%. The age group from 41 to 50 is 23.08%, while workers over 50 make up the lowest 7.69%.

1.1.2. Distribution of study sample by scientific qualification: Below is a table showing statistical distribution of study sample individuals by scientific qualification variable:

Table 03: Distribution of sample personnel by scientific qualification

Category	Repetition	Percentage		
Bachelor	30	%23.08		
Bachelor's degree	50	%38.46		
Master	40	%30.77		
Postgraduate	10	%7.69		

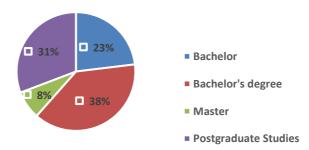
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Studies		
Total	130	100%

Source: Prepared by the researchers

The results shown in the table can be represented in the following format:

Figure 03: Distribution of sample personnel by scientific qualification



Source: Prepared by the researchers

The results of the study on the distribution of the sample by scientific qualification showed that the proportion of employees with a bachelor's degree is the largest, reaching **38.46%** of the total sample. Followed by the master's degree category at **30.77%**, then the baccalaureate certificate at **23.08%**. Graduate staff were **7.69%**.

1.1.3. Breakdown of study sample by number of years of experience: Below is a table showing statistical breakdown of study sample individuals by variable years of experience.

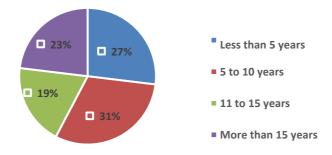
Table 04: Distribution of Sample Personnel by Years of Experience

Category	Repetition	Percentage
Less than 5 years	35	%26.92
5 to 10 years	40	%30.77
11 to 15 years	30	%23.08
More than 15 years	25	%19.23
Total	130	100%

Source: Prepared by the researchers

The results shown in the table can be represented in the following format:

Figure 04: Distribution of sample personnel by years of experience



Source: Prepared by the researchers

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The results of the sample distribution study by years of experience show that the largest proportion of employees fall into the category of 5 to 10 years, with 30.77%, followed by the category of employees with less than 5 years of experience with 26.92%, and then employees with 11 to 15 years of experience with 23.08%. Employees with more than 15 years of experience were 19.23%.

1.2. Sincerity and consistency of study tool:

1.2.1. Stability: Tool stability means that the questionnaire provides reliable results when re-applied, and is necessary to ensure that the obtained results are generalized and replicated at different times and places

Table 05: Alpha Cronbach Questionnaire Coefficient

Number of items	Cronbach's alpha value	Indicative leve		
Less than 5 years	0.85	Significant	at	0.01
	0.63			level

Source: Prepared by the researchers

The results of the Alpha Cronbach coefficient stabilization analysis showed that the total constant value of the tool used in the study was **0.85**, a high value indicating a good level of internal consistency between the questionnaire items. As value exceeds **0.7**, this means that the tool is reliable and capable of delivering consistent and replicable results in similar circumstances.

1.2.2. Honesty Internal consistency: Pearson's correlation coefficient was calculated for each axis of the study to measure the relationship between different paragraphs.

Table 06: Pearson's engagement transactions for questionnaire phrases with interlocutors

			Pearson's	
	D		Correlation	
Axis	Paragraph Number	Paragraph	Coefficient of	
	Number		Statements to	
			the Axis	
Use of digital	01	Are digital systems used in attendance management	0.65	
systems in	02	Are digital systems used in recruitment processes?	0.56	
human	03	Are digital systems used in payroll management?	0.42	
resource	04	Do digital systems contribute to improving	0.68	
management	04	performance evaluation?	0.00	
	01	Does digitization contribute to improving the speed	0.60	
		of decision-making?		
Impact of	02	Does digitization contribute to improving the	0.55	
digitization on	~	accuracy of decisions?	0.00	
decision-	03	Has transparency in decision-making improved	0.45	
making		after digitization?	U•TJ	
	04	Does digitization provide greater opportunities for	0.61	
04		data analysis to make better decisions?	0.01	

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Challenges	01	Does the company face technical challenges in implementing digital systems?	0.55
facing digitization of	02	Is there a shortage of digital skills among employees?	0.60
human resource	03	Does the company face resistance from employees to digital change?	0.50
management	04	Are there legal challenges facing the company in implementing digitalization?	0.40

Source: Prepared by the researchers

The results of the Pearson correlation analysis showed strong and moderate positive correlations between the different paragraphs within each axis of the questionnaire In the axis related to the use of digital systems in human resources management, the relationship between the use of digital systems to improve performance evaluation (paragraph 4) was notably strong, with a correlation coefficient of 0.68. This indicates a positive impact of digitization on enhancing the efficiency of job evaluation. Other areas also exhibited positive correlations, such as the use of digital systems in managing attendance and departure, which showed a correlation coefficient of 0.65.

Regarding the axis on the impact of digitization on decision-making, the paragraph concerning the ability of digitization to analyze data for better decision-making (paragraph 4) emerged as one of the strongest, with a correlation coefficient of 0.61. This suggests that digital systems contribute significantly to improving the accuracy and speed of decision-making within the organization.

In the axis of challenges to digitizing human resources management, the paragraph discussing the lack of digital skills among employees (paragraph 2) demonstrated a relatively strong correlation, with a correlation coefficient of 0.60. This indicates that the shortage of skills is a major challenge the organization faces in its digital transformation process.

2. Statistical analysis of study variables and interpretation of results

2.1. T-student test results

Table 07: T-test results

Axis	Mean Arithmetic	Standard Deviation	T-test Value	Significance Level
Use of digital systems in human resource management	4.25	0.65	8.20	0.001
Impact of digitization on decision-making	4.10	0.70	7.85	0.002
Challenges facing the digitization of human resource management	3.80	0.80	6.95	0.005

Source: Prepared by the researchers

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The results indicated that the use of digital systems in human resources management received strong support from participants, with an arithmetic mean of 4.25. This suggests a high level of satisfaction with the effectiveness of these systems. The standard deviation of 0.65 reflects a consensus among participants regarding the effectiveness of digital systems. Additionally, the T-test value of 8.20, along with a p-value of 0.001, provides strong statistical evidence, reinforcing confidence in the positive impact of digital systems on improving human resources management processes.

The results also highlighted the positive influence of digitization on the decision-making process within the organization, with an arithmetic mean of 4.10. This indicates that participants perceive digitization as enhancing both the accuracy and speed of decision-making. While there was some variation in opinions, as shown by the standard deviation of 0.70, the T-test value of 7.85 and the p-value of 0.002 demonstrate a statistically significant and strong impact of digitization on the quality of administrative decisions.

Despite recognizing the benefits of digitization, the results also pointed to significant challenges in implementing digital systems in human resources. The arithmetic mean of 3.80 suggests that participants are aware of the obstacles the organization may encounter. The standard deviation of 0.80 indicates a wider range of opinions regarding these challenges. However, the T-test value of 6.95 and the p-value of 0.005 suggest that these challenges are indeed substantial and require attention and effective solutions to ensure the successful implementation of digital systems.

2.2. Study of the Impact of Digitization of Human Resources on the Decision-Making Process in the Organization:

	Sum of squares	Degree of freedom	Sum of squares	F value	Significance level	R	\mathbb{R}^2
Regression	14.884	1	14.884	30.066	0.00	0.468	0.219
Error	52.969	107	52.969				
Total	67.853	108					

Table 08: One-way ANOVA test table for the study hypothesis

Source: Prepared by the researchers

The results of the ANOVA test on the main study hypothesis, which states that the digitization of human resources management significantly affects the acceleration of Sonatrach's decision-making process by providing the necessary data immediately and accurately, showed a strong statistical indication.

The calculated value of (F) was 30.066, indicating a clear and significant impact of digitization on accelerating decision-making. Moreover, the significance level (SIG = 0.000) is well below

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the threshold of 0.05, confirming that this effect is statistically significant. The correlation coefficient (R = 0.468) reflects a medium-to-strong correlation between the digitization of human resources management and the speed of decision-making, while the coefficient of determination ($R^2 = 0.219$) shows that digitization accounts for approximately 21.9% of the variance in decision speed.

Based on these results, it can be concluded that digitization has a meaningful and substantial impact on improving the speed of decision-making within the organization by providing accurate and real-time data to management.

IV. Conclusion:

In conclusion, this study emphasizes that the digitization of human resources management plays a crucial role in enhancing institutional performance and improving decision-making efficiency. The findings demonstrate that digital systems significantly contribute to accelerating decision-making by providing accurate, immediate data, enabling management to make informed and timely decisions. Additionally, the analysis reveals that while digitization has positive effects, it is accompanied by certain technical and human challenges that need to be addressed to achieve a comprehensive and successful digital transformation.

Study Recommendations:

Based on the study's results, the following recommendations are made:

- **-Enhancing Technological Infrastructure**: Sonatrach should invest in developing and improving its digital infrastructure to ensure the efficiency of the systems used in human resources management. Advanced technological systems must be in place to guarantee the speed and accuracy of administrative processes.
- **-Digital Skills Training for Employees**: The company should implement ongoing training programs for employees on the use of digital systems, including tools and applications used in human resources management. This will help bridge the digital divide and enable employees to adapt to technological shifts.
- **-Developing Clear Policies to Support Digitization**: The study recommends that the company develop clear policies and procedures to support its digital transformation. These policies should ensure the commitment of all departments to digitization while establishing performance standards related to digitization.
- **-Overcoming Human and Technical Challenges**: Strategies should be developed to address human challenges, such as resistance to change, and technical challenges, such as the integration of legacy systems with modern ones.

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-Ongoing Assessment of Digitization Systems: It is recommended that the company periodically assess the digital systems used in human resources management to ensure their effectiveness and adaptability to changing business requirements, while continually updating them to stay aligned with the latest technological advancements.

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