

Digital Orientation as a Strategic Approach for Improving the Quality of Healthcare Services in Public Hospitals: A Field Study of the Public Hospital Institution ‘Kadri Mohamed’ in Naama

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Summary:

This study examines the impact of digital orientation on the quality of healthcare services, conceptualizing digital orientation as the independent variable and healthcare service quality as the dependent variable. It specifically explores the role of digitalization in enhancing service performance at the “Kadri Mohamed” Public Hospital Institution in Naama Province. The study adopts a descriptive-analytical approach and employs a structured questionnaire as the primary instrument for data collection. The findings indicate a statistically significant effect of digital orientation, across its administrative, technical, human, and financial dimensions, on the quality of healthcare services. These results highlight the importance for healthcare institutions to adopt comprehensive digital strategies to enhance performance and service quality. Furthermore, the study emphasizes the need to establish adequate infrastructural conditions to ensure the effective implementation of digital transformation initiatives.

Keywords: Digital orientation; digitalization; service quality; healthcare institutions; hospital institutions.

Jel Classification Codes : O33 ;M15 ;I11 ;I18

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I- Introduction :

In recent decades, the global landscape has been characterized by accelerated advancements in Information and Communication Technology (ICT), precipitating a paradigm shift across socio-economic sectors. This digital evolution is particularly pronounced within the healthcare industry, where digitalization has emerged as a fundamental driver for optimizing institutional performance and elevating the standard of patient care.

Digital orientation encompasses the strategic migration of data and procedural workflows from traditional, manual formats to integrated digital systems. This transition facilitates superior data storage, processing, and retrieval capabilities. Beyond mere digitization, this process re-engineers administrative and organizational frameworks, ultimately enhancing the efficacy of the patient care experience.

However, despite these demonstrable advantages, the implementation of digital strategies in many healthcare facilities remains impeded by a complex array of technical, structural, and behavioral barriers. Consequently, there is an imperative to critically evaluate the nexus between digital integration and service quality. This study aims to analyze the impact of digital orientation on the quality of healthcare services at the "Kadri Mohamed" Public Hospital Institution in Naama, examining how various digital dimensions influence the delivery of care.

I.1. Problem of the study

While ICT advancements offer transformative potential, the healthcare sector continues to grapple with persistent obstacles that hinder seamless digital integration. A core challenge is that digital orientation is often narrowly conceptualized as a technological acquisition rather than a systemic evolution. In practice, successful digital transformation necessitates a comprehensive restructuring of organizational frameworks and a fundamental shift in the professional culture of both medical and administrative personnel.

The central problem addressed in this research is the discrepancy between the theoretical capabilities of digital tools and their practical efficacy in improving service quality within the specific operational context of the "Kadri Mohamed" Public Hospital.

Synthesizing the theoretical and contextual background, the primary research inquiry is defined as follows:

"To what extent does digital transformation contribute to the enhancement of healthcare service quality at the 'Kadri Mohamed' Public Hospital in Naama?"

To investigate this central question, the following sub-questions have been formulated:

- **Administrative Readiness:** To what degree do the organizational and administrative frameworks within the institution support digital transformation?
- **Technical Infrastructure:** What is the current level of adequacy regarding the technical requirements essential for sustainable digitalization?
- **Human Capital:** What role do human resource readiness and digital literacy play in facilitating the transition to digital healthcare?
- **Financial Capacity:** Are the financial resources allocated to digital initiatives sufficient to sustain long-term transformation within the hospital?

I.2. Study Hypotheses

This study employs a quantitative approach to test the following hypotheses regarding the relationship between digital transformation and healthcare quality:

Main Hypothesis: There is a statistically significant impact at $\alpha \leq 0.05$ of digital transformation, across its multidimensional facets, on the improvement of healthcare service quality within the institution under study.

I.3. Sub-Hypotheses:

- **Sub-Hypothesis:** There is a statistically significant relationship at $\alpha \leq 0.05$ between administrative requirements and the efficacy of digital transformation in enhancing healthcare quality.
- **Sub-Hypothesis 2:** There is a statistically significant relationship $\alpha \leq 0.05$ between technical infrastructure and the success of digital transformation initiatives.
- **Sub-Hypothesis 3:** There is a statistically significant relationship $\alpha \leq 0.05$ between human capital readiness and the advancement of digital healthcare services.
- **Sub-Hypothesis 4:** There is a statistically significant relationship $\alpha \leq 0.05$ between financial resource availability and the sustainability of digital service quality.

I.4. Significance of the Study

The significance of this research lies in the critical role digital transformation plays in modernizing healthcare infrastructure and standardizing public health delivery. By exploring the intersection of technological adoption and institutional performance, this study elucidates how digital orientation serves as a strategic catalyst for operational efficiency.

Furthermore, the research provides a diagnostic analysis of the administrative, technical, and human barriers that frequently obstruct digitalization in the public health sector. Ultimately, this work seeks to bridge the gap between theoretical frameworks and empirical application, offering actionable recommendations and a strategic roadmap for decision-makers at the "Kadri Mohamed" institution and comparable healthcare organizations to optimize service quality through integrated digital solutions.

I.5. Literature Review and Comparative Analysis

The extant literature serves as the theoretical cornerstone of this research, allowing for the identification of knowledge gaps and providing a comparative benchmark. Below is a critical review of selected studies addressing digitalization and healthcare quality.

I.5.1. Arab Studies

- **Salhi (2018):** *"The Impact of Digital Transformation on the Quality of Healthcare Services"*
 - **Focus:** This study investigated the role of digital transformation in enhancing the performance of hospital institutions in Western Algeria. The results indicated a statistically significant positive correlation between technological adoption and patient satisfaction.
 - **Comparative Critique:** While Salhi emphasized technical infrastructure, the current study adopts a more multidimensional perspective, integrating administrative, human, and financial variables within the specific institutional framework of the "Kadri Mohamed" hospital.
- **Azzouz (2019):** *"Quality of Healthcare Services under the Trend toward E-Management"*
 - **Focus:** Focused on the digitalization of appointment systems in Eastern Algeria, identifying infrastructure deficiencies and poor connectivity as primary inhibitors of success.
 - **Comparative Critique:** While both studies examine the public sector, the current research offers a more localized case-study analysis of the DEM-Dz (Dossier Électronique Médical-Algérie) system, providing granular insights into institutional implementation that general studies may overlook.
- **Al-Otaibi (2020):** *"The Impact of Health Information Systems on Patient Safety"*
 - **Focus:** Conducted in Saudi Arabia, this study utilized the SERVQUAL model to demonstrate how digitalization significantly mitigates medical errors.
 - **Comparative Critique:** While we share the application of the five dimensions of quality, our study is culturally and operationally tailored to the Algerian public

healthcare system, specifically evaluating the integration of these dimensions with local administrative protocols.

- **Leila (2021):** *"Challenges of Implementing Digitalization in the Health Sector in Algeria"*
 - **Focus:** Examined the human dimension, concluding that "resistance to change"—stemming from inadequate training and a lack of incentives—serves as a primary hurdle.
 - **Comparative Critique:** This study corroborates our "Human Capital" hypothesis. However, our research expands on this by measuring the interplay between human factors and the technical/financial feasibility of digital transitions.

I.5.2. International Studies

- **Aerts & Davis (2019):** *"A Digital Path to Better Health for All"*
 - **Focus:** This international study analyzed digitalization trajectories in developing nations, concluding that healthcare equity and accessibility are the variables most improved by technology.
 - **Comparative Critique:** Aerts & Davis provide a broad global theoretical framework. In contrast, the present study seeks to contextualize these global trends within the Algerian organizational landscape, accounting for specific local administrative constraints.

II– The Conceptual Framework of Digital Orientation and its Relationship to Digital Transformation in Healthcare

The healthcare sector is currently undergoing a profound digital paradigm shift, catalyzed by the integration of cutting-edge technologies such as Artificial Intelligence (AI), Big Data analytics, and the Internet of Things (IoT). These advancements are leveraged not only to optimize the efficiency and efficacy of clinical workflows but also to facilitate personalized, patient-centric care. Furthermore, these technological drivers are fundamental in accelerating medical research and fostering a culture of continuous innovation within the healthcare landscape.

II.1. The concept of Digital Transformation

Digital transformation is a multifaceted process that adapts according to its specific objectives and field of application. Broadly defined, it involves a strategic reliance on technology to refine organizational performance and strengthen competitive positioning. Within the medical domain, this transformation encompasses the evolution of digital healthcare systems and devices that provide a holistic overview of patient diagnostics, real-time monitoring, and comprehensive case management (Mudathir, 2022).

Digital transformation can be synthesized as the process involving a holistic technological infusion that re-engineers how an institution functions, ensuring a modernized approach to meeting the diverse needs of its stakeholders. Beyond technical implementation, it represents a profound cultural shift that necessitates challenging the status quo, embracing experimentation, and building resilience toward digital-led change (Yahiaoui & Qarapsi, 2019, p 135).

Digital transformation is now pervasive. It's one of the most popular buzzwords in recent years; just Google "digital transformation" and see how many results you get. Everyone, including the C-suite, governments, policymakers, and academia, is talking about digital transformation (Siebel, 2019, p. 38).

From the preceding definitions, it can be concluded that while digitalization refers to the technical conversion and processing of data, transforming analog information, such as printed texts or medical imaging, into computer-readable formats, digital transformation is the broader strategic journey. It is the systemic application of these digital tools to reshape the very nature of healthcare delivery.

II.2. Defining Health Service Quality

The definition of quality in healthcare varies according to the strategic and clinical lens applied:

- **Strategic Perspective:** Kotler and Armstrong define health service quality as a strategic methodology employed by healthcare organizations to differentiate themselves from competitors by cultivating an organizational identity that signals excellence across all operational levels.
- **Procedural Perspective:** According to Goncalves, quality refers to the established protocols and procedures implemented to guarantee the consistent delivery of high-standard care within healthcare organizations (Al-Kafi, 2017).
- **Clinical/Evidence-Based Perspective:** The Joint Commission on Accreditation of Healthcare Organizations (JCA) defines quality as the degree of adherence to contemporary, evidence-based standards. This compliance serves to establish acceptable benchmarks for clinical practice and to predict the efficacy of diagnostic and therapeutic interventions (Saghiro, 2011).

Beyond its technical dimensions, scholars emphasize that quality also reflects stakeholder satisfaction, since it depends on the consistent delivery of efficient and evidence-based services that both meet patient needs and adhere to clinical guidelines. In this sense, healthcare quality has been defined as “consistently delighting the patient by providing efficacious, effective and efficient healthcare services according to the latest clinical guidelines and standards, which meet patient needs and satisfy providers” (Mosadeghrad, 2013, p. 215).

II.3. The Role of Digital Transformation in Enhancing Administrative and Medical Healthcare Services

Digital transformation within the healthcare ecosystem is manifest through several specialized functional domains. These integrated systems serve as the structural backbone for modernizing clinical and administrative operations.

II.3.1. Key Domains of Digital Health Implementation

- Electronic Medical Records (EMRs)

While Electronic Medical Records (EMRs) fulfill the same foundational purpose as traditional paper-based documentation, the longitudinal recording of patient history, they differ fundamentally in their operational architecture and strategic utility. According to the Healthcare Information and Management Systems Society (HIMSS), an EMR is a comprehensive digital repository of patient health information generated by one or more clinical encounters in any care delivery setting. This digital framework aggregates granular personal and administrative data, including diagnostic results, surgical history, vital signs, therapeutic interventions, and formalized clinical authorizations.

Digital medical records offer several systemic advantages over physical filing systems:

- **Concurrent Multi-Point Accessibility:** EMRs enable authorized clinicians and administrators across disparate departments to access a patient's record simultaneously, thereby eliminating the operational bottlenecks inherent in manual systems.
- **Multidimensional Data Visualization:** Digital environments allow for the versatile display of data, such as longitudinal trend graphs for vital signs or integrated diagnostic imaging, providing a more holistic view of the patient's clinical status.
- **Data Integrity and Validation:** The digital format ensures higher levels of reliability through automated control mechanisms and validation protocols that safeguard the accuracy of all processed information (Fatima & Ghouini, 2018).

- Pharmacy Information Systems (PIS)

A Pharmacy Information System (PIS) is a sophisticated suite of computer-based applications engineered to optimize the operational workflows of pharmaceutical departments.

These systems are designed to maximize departmental efficiency, bolster patient safety, and mitigate operational costs through seamless interoperability with the broader Hospital Information System (HIS).

The PIS serves as a critical tool for clinical risk management by eliminating errors associated with illegible handwritten prescriptions, which are a primary source of adverse drug events. Furthermore, the system provides Clinical Decision Support (CDS); it automatically generates alerts regarding potential drug-drug interactions, contraindications, or known patient allergies, thereby ensuring a higher standard of pharmacological safety.

- Nursing Information Systems (NIS)

Nursing Information Systems (NIS) are integrated platforms designed to aggregate and manage clinical data from various points of care within a healthcare facility. By delivering organized, evidence-based data in a timely manner, these systems empower nursing personnel to streamline bedside workflows, reduce administrative burden, and enhance the delivery of patient-centered care (Boulhafa, 2021).

II.3.2. The Impact of Digitalization on the Quality of Healthcare Services

Digitalization has emerged as a transformative focal point within the healthcare sector, fundamentally reconfiguring the delivery mechanisms and qualitative benchmarks of medical services. In this paradigm, quality is defined as the rigorous adherence to established professional standards that optimize clinical outcomes across diagnostic, procedural, and therapeutic interventions. The impact of digital integration is particularly salient in the following domains:

- **Mitigating Geographic and Socio-Digital Disparities:** The strategic deployment of advanced Information and Communication Technologies (ICT) facilitates the universalization of health services. By decoupling service provision from physical and temporal constraints, digitalization upholds the principle of equitable access for both individual citizens and underserved medical institutions.
- **Expediting Information Exchange and Clinical Decision-Support:** Digital infrastructure enables the real-time dissemination of data among stakeholders, a critical factor for timely clinical interventions. The COVID-19 pandemic, for instance, underscored the systemic risks of insufficient digitalization; delays in the processing and communication of RT-PCR results compromised institutional trust and highlighted the imperative for seamless, automated reporting systems.
- **Catalyzing Administrative and Macro-Economic Reform:** Through the integration of e-government frameworks, digitalization fosters a more efficient interface between healthcare facilities and the broader economic ecosystem. This enables small and medium-sized enterprises (SMEs) to engage with health systems through streamlined digital platforms, thereby enhancing sectoral productivity and operational transparency.
- **Strengthening Inter-Institutional Synergy:** Electronic management systems facilitate robust data interoperability between governmental health agencies. This horizontal integration enhances the implementation of national health policies and ensures that strategic objectives are met with greater precision (Brich, 2021).

Furthermore, the influence of digital transformation on the qualitative dimensions of healthcare is reflected in several key advancements:

- **Optimization of Institutional Performance:** The transition to Electronic Health Records (EHR) and integrated health information systems streamlines clinical workflows. These tools mitigate administrative bottlenecks and improve patient outcomes by providing specialists with instantaneous access to longitudinal medical histories.
- **Augmentation of Clinical Capabilities:** Digital health technologies extend the reach of medical expertise through telemedicine modalities. This includes remote surgical assistance,

tele-diagnosis, and virtual consultations, all of which transcend the traditional boundaries of clinical practice.

- **Empowerment of Patient-Centric Health Management:** The proliferation of wearable technologies and IoT-enabled biosensors allows for continuous physiological monitoring and real-time feedback. These innovations support proactive healthcare, ranging from remote obstetric monitoring to the early detection of chronic pathologies.
- **Predictive Analytics and Precision Medicine:** The convergence of Artificial Intelligence (AI), Big Data, and Virtual Reality (VR) enables the synthesis of vast, disparate datasets. This analytical depth enhances diagnostic accuracy and supports data-driven health forecasting, allowing for highly personalized and effective treatment regimens (Wsar, 2022).

It is evident from the aforementioned factors that while digital transformation represents a paradigmatic shift in healthcare, its success is strictly contingent upon mitigating these structural barriers.

When effectively integrated, digitalization acts as a strategic catalyst for clinical excellence. It enhances data precision, significantly reduces the margin for diagnostic and medication errors, and democratizes access to specialized care. Furthermore, digital integration fosters a patient-centric model, encouraging proactive health management and longitudinal engagement. Ultimately, overcoming these challenges yields superior clinical outcomes, operational transparency, and heightened patient satisfaction.

III- Methods and Materials:

This section delineates the research design, including the definition of the target population, sampling techniques, instrumentation for data collection, and the statistical framework employed for hypothesis testing.

III.1. Population and Sampling Procedure

The target population for this study encompasses the entire workforce of the Public Healthcare Institution "Kadri Mohamed" in Naâma. This includes a diverse array of professional strata: administrative personnel, medical practitioners, nursing staff, technical experts, and support staff. To ensure an unbiased representation of this population, a probability-based simple random sampling technique was implemented. This method provides every employee with an equal probability of selection, thereby strengthening the external validity and generalizability of the findings. Following the distribution and rigorous screening of the survey instrument, a final sample of 40 valid responses was retained for empirical analysis.

III.2. Instrumentation and Data Collection

To capture the subjective perceptions and attitudes of the employees, a structured questionnaire served as the primary research instrument. This tool was designed to provide quantitative rigor in the measurement of organizational variables. The integrity of the data was preserved through a rigorous evaluation of content and construct validity, ensuring that survey items accurately operationalized the intended theoretical constructs. Furthermore, reliability assessments were conducted to confirm the internal consistency of responses across the various dimensions of the study.

III.3. Statistical Analysis and Econometric Modeling

Data processing and hypothesis testing were conducted using the Statistical Package for the Social Sciences (SPSS) following a structured analytical framework. Reliability and validity were first assessed using Cronbach's Alpha (α) to evaluate internal consistency. To ensure the suitability of parametric tests, the Shapiro-Wilk test was applied to verify the normal distribution of the data. Descriptive statistics were then used to summarize sample characteristics through measures of central tendency (means) and dispersion (standard deviations). Finally, inferential analysis was performed using the One-Sample t-test to compare sample means with a theoretical reference value and test the study hypotheses.

III.4. Analysis and Discussion of Results

III.4.1. Psychometric Properties: Reliability and Validity of the Research Instrument

The reliability of a research instrument indicates its internal consistency and stability; a reliable tool suggests that its application to a comparable sample within the same population would yield consistent results. In this study, internal consistency was evaluated using the Cronbach's Alpha (α) coefficient. Methodologically, a coefficient of 0.7 or higher is the widely accepted benchmark for establishing adequate reliability in social science and organizational research.

The results showed that the overall reliability coefficient (Table 1) for the study variables was $\alpha = 0.903$, significantly exceeding the minimum threshold of 0.7. This robust finding indicates a high degree of internal consistency across the measurement scales, confirming that the instrument is a reliable tool for assessing the targeted organizational variables and ensuring the credibility of the subsequent statistical inferences.

Table (1): Cronbach's Alpha Coefficients for Study Variable Reliability

Variable	Number of Items	Cronbach's Alpha (α)
Composite Reliability (Overall Scale)	15	0.903

Source: Computed from SPSS output based

III.4.2. Face and Content Validity (Expert Judgment)

To establish the face and content validity of the research instrument, the preliminary questionnaire was subjected to a rigorous evaluation by a panel of academic experts specializing in organizational behavior and methodology. This peer-review process verified the thematic relevance, linguistic clarity, and comprehensiveness of each survey item.

Based on expert feedback, the instrument underwent systematic refinement, including modification, deletion, and addition of items to ensure accurate and comprehensive measurement of the study constructs. This process strengthened the instrument's ability to reflect the multidimensional nature of digital orientation in healthcare.

III.4.3. Normality Assessment: The Shapiro–Wilk Test

To determine the appropriateness of the statistical techniques employed for hypothesis testing, a normality assessment was conducted. Given that the sample size ($N = 40$) is less than 50, the Shapiro–Wilk test was utilized due to its robustness for small samples.

The results (Table 2) indicated that all significance values exceeded 0.05. Therefore, the null hypothesis of normality was not rejected, confirming that the dataset follows a normal distribution. This validates the use of parametric statistical tests in subsequent analyses.

Table (2): Results of the Shapiro–Wilk Normality Distribution Test

Study Dimensions	Shapiro–Wilk Statistic	N	Sig. (P-value)	Distribution Type
Administrative Requirements	0.968	40	0.362	Normally distributed
Technical Requirements	0.951	40	0.125	Normally distributed
Human Requirements	0.972	40	0.481	Normally distributed
Financial Requirements	0.960	40	0.239	Normally distributed
Decision Rule: A significance value (P-value) greater than 0.05 indicates that the null hypothesis (which assumes a normal distribution) cannot be rejected, confirming that the data follows a Gaussian distribution.				

Source: Computed from SPSS output based

III.4.4. Descriptive Statistical Analysis of Study Variables

Following the demographic profile established in the preceding section, this segment provides a granular analysis of participants' responses regarding the core research dimensions. The primary objective is to evaluate the Digital Orientation of the institution by calculating the arithmetic means (μ) and standard deviations (σ) for each item.

This approach facilitates the identification of general trends in respondent perceptions and determines the degree of consensus (or lack thereof) across the four thematic dimensions. To ensure a standardized and objective interpretation of the results, the following mean-score evaluation scale was adopted to categorize the levels of respondent agreement:

- [1.00-1.66]: Low Level
- [1.67-2.33]: Moderate Level
- [2.34-3.00]: High Level

III.4.5. Aggregate Analysis and Dimensional Hierarchy of Digital Orientation

This part synthesizes the individual data points to provide a holistic assessment of the digital orientation within the surveyed institution. By aggregating the mean scores, the various sub-dimensions are ranked in descending order. This hierarchical arrangement serves to highlight areas of relative strategic strength while simultaneously identifying dimensions that necessitate further organizational intervention or development.

The results (Table 3) revealed that the aggregate mean for the Digital Orientation construct within the healthcare institution was 2.64, which corresponds to a high level on the adopted evaluation scale. This finding signifies a robust institutional posture toward digital transformation and reflects a broadly positive consensus among the workforce regarding the current state of technological integration.

A deeper analysis of sub-dimensions provides more nuanced insights:

- **Primary Driver – Technical Infrastructure:** Technical Infrastructure ($M = 2.82 \pm 0.731$) emerged as the strongest dimension, reflecting a solid technological foundation. This suggests that the institution's primary strength lies in its foundational technological architecture and the deployment of digital systems designed to streamline clinical and administrative workflows.
- **Secondary Pillar – Human Capital Readiness:** Human Capital ($M = 2.67 \pm 0.226$) indicates strong readiness and positive attitudes toward digital adoption. This indicates that the medical and administrative staff possess the requisite aptitude and psychological readiness to adopt emerging technologies, serving as a critical catalyst for the digital transition.
- **Institutional Governance – Administrative Support:** Administrative Support ($M = 2.56 \pm 0.222$), while positive, suggests a gap between strategic intent and operational execution. Specifically, there was a recognized necessity to intensify specialized training frameworks to translate administrative readiness into standardized professional practice.
- **Resource Allocation – Financial Sustainability:** Financial Resources ($M = 2.53 \pm 0.270$), though adequate, appear less optimized in terms of allocation priorities. The results suggest that while capital expenditure on hardware is evident, there is a strategic requirement to reallocate or augment financial resources toward capacity building and continuous professional development, elements vital for the long-term sustainability of digital initiatives.

Based on these results, the digital orientation of the public hospital institution in Naâma is characterized by a high degree of systemic readiness, primarily anchored by a strong technical infrastructure and a capable workforce. To transition from high-level orientation to optimized digital maturity, the institution must bridge the identified gap in administrative training and ensure

that financial strategies are balanced between technological acquisition and human capital empowerment.

Table (3): Comparative Ranking of Digital Orientation Dimensions

No.	Dimension	Mean (μ)	Std. Deviation (σ)	Rank	General Trend
02	Technical Requirements	2.82	0.731	1	High
03	Human Requirements	2.67	0.226	2	High
04	Administrative Requirements	2.56	0.222	3	High
08	Financial Requirements	2.53	0.270	4	High
-	Composite Digital Orientation	2.64	0.232		High

Source: Compiled by the researcher via SPSS output

III.5. Hypothesis Testing and Discussion

III.5.1. Analysis of the Primary Hypothesis

To evaluate the perceived presence and significance of digital orientation within the healthcare institution, the following primary hypothesis was formulated: There is a statistically significant positive orientation toward the digital transformation of healthcare services at the significance level ($\alpha = 0.05$).

To test this hypothesis, a One-Sample T-test was performed, comparing the calculated sample mean against a neutral theoretical midpoint (test value = 2). This statistical approach determines whether the observed digital orientation of the institution significantly deviates from a neutral or indifferent stance.

The findings provide strong empirical support for the central hypothesis that digital orientation significantly influences healthcare service quality.

The sample mean (2.645) exceeded the neutral value (2) by +0.645, indicating a clear positive orientation. The calculated t-value (17.575) was highly significant ($p = 0.000$), leading to the rejection of the null hypothesis.

These results confirm a statistically significant and positive perception of digital orientation within the hospital. Beyond statistical significance, this result suggests that digital transformation within the institution is perceived not merely as a technological shift, but as a comprehensive organizational evolution. Consequently, this robust digital orientation serves as a foundational driver for enhancing the overall quality and efficiency of healthcare delivery within the institution.

Table (4): One-Sample t-test Results for the Primary Research Dimension

Analysis Component	Descriptive Analysis of Respondent Data (Total Scale)			Inferential Analysis of Respondent Data (Total Scale)		
	Mean (μ)	Standard Deviation (σ)	Mean Difference	t-test	Sig. (P-value)	Statistical Significance at 0.05
Overall Questionnaire Score	2.645	0.232	0.645	17.575	0.000	Reject H0 and Accept H1

Source: Computed from SPSS output based

III.5.2. Evaluation of Sub-Hypotheses

Sub-Hypothesis 1: This hypothesis posits a statistically significant correlation at the significance level between administrative requirements and the role of digital orientation in enhancing the quality of healthcare services.

The findings (Table 5) indicated that the difference between the sample mean (2.560) and the neutral test value (2) was +0.560. This positive deviation confirms that respondent perceptions significantly transcend neutrality, indicating a high degree of consensus regarding administrative readiness.

The calculated t-value (15.896) was statistically significant ($p = 0.000$). Since the significance level was well below the predefined alpha threshold ($\alpha = 0.05$), the null hypothesis (H_0) was rejected in favor of the alternative hypothesis (H_1).

These results demonstrate that the observed positive orientation toward administrative requirements is statistically significant. Consequently, it can be inferred that employees within the institution perceive a robust level of managerial support for digital transformation. This confirms that a conducive administrative environment, one that prioritizes digital orientation, serves as a critical driver for enhancing the quality of healthcare services. Furthermore, the data suggests that administrative backing is perceived as substantive and operational rather than merely symbolic, providing a cohesive organizational framework for the institutionalization of digital projects.

Table (5): t-Test Analysis: Administrative Requirements Dimension

Analysis Component	Descriptive Analysis of Dimension Items			Inferential Analysis of Dimension Items		
Variable	Arithmetic Mean (μ)	Standard Deviation (σ)	Mean Difference	T-Value	Sig. (P-value)	Statistical Significance at 0.05
Total Score: First Dimension	2.560	0.222	0.560	15.896	0.000	Reject H_0 and Accept H_1

Source: Computed from SPSS output based

Sub-Hypothesis 2: The second sub-hypothesis evaluates the influence of technical requirements on the digital orientation of the institution. This dimension assesses the adequacy and impact of the technological infrastructure currently in place.

The results related to this dimension (Table 6) indicated that the sample mean (2.818) exceeds the neutral reference value (2) by a margin of +0.818. This positive difference suggests a notably favorable trend in respondent perceptions regarding the institution's technical capabilities. Statistically, the one-sample t-test yielded a calculated t-value of 7.078 with a significance level of $P = 0.000$. Since the P-value was significantly lower than the alpha threshold ($\alpha = 0.05$), the null hypothesis (H_0) was rejected in favor of the alternative hypothesis (H_1).

Consequently, it can be concluded that employees at the Public Healthcare Institution "Kadri Mohamed" perceive a high level of availability and performance regarding technical requirements. This indicates that the current technological infrastructure, including network reliability, software integration, and hardware systems, is viewed as robust and sufficient for current operational needs. However, while the existing infrastructure is well-regarded, these findings imply a need for a proactive maintenance and update strategy to ensure alignment with rapid technological advancements in the digital health sector.

Table (6): Results of the t-Test for the Technical Requirements Dimension

Analysis Component	Descriptive Analysis of Dimension Items			Inferential Analysis of Dimension Items		
Variable	Arithmetic Mean (μ)	Standard Deviation (σ)	Mean Difference	T-Value	Sig. (P-value)	Statistical Significance at 0.05
Total Score: First Dimension	2.818	0.731	0.818	7.078	0.000	Reject H_0 and Accept H_1

Source: Developed by the author based on SPSS output

Sub-Hypothesis 3: The analysis of the human requirements dimension, which evaluates the skills, readiness, and psychological aptitude of the workforce toward digital adoption (Table 7), indicated that the sample mean (2.666) exceeded the neutral reference value (2) by a margin of +0.666. This notable positive deviation confirms that respondent perceptions are decisively favorable and significantly removed from a neutral stance. The statistical analysis revealed a calculated t-value of 18.619, representing a substantial high value. Given that the level of statistical significance ($p =$

0.000) was well below the established alpha threshold ($\alpha = 0.05$), the null hypothesis (H_0) was rejected in favor of the alternative hypothesis (H_1).

Consequently, it can be inferred with statistical certainty that employees within the organization acknowledge a high availability of human requirements. These findings suggest that the workforce maintains a high degree of confidence in current professional competencies and exhibits a strong psychological readiness to integrate digital technology. Essentially, while the staff demonstrates the necessary qualifications and receptivity toward technological adoption, the data highlights a perceived gap in structured institutional support—specifically regarding practical, hands-on training and specialized skill development.

Table (7): *t*-Test Results for the Human Requirements Dimension

Analysis Component	Descriptive Analysis of Dimension Items			Inferential Analysis of Dimension Items		
Variable	Arithmetic Mean (μ)	Standard Deviation (σ)	Mean Difference	T-Value	Sig. (P-value)	Statistical Significance at 0.05
Total Score: First Dimension	2.666	0.226	0.666	18.619	0.000	Reject H_0 and Accept H_1

Source: Developed by the author based on SPSS output

Sub-Hypothesis 4: The statistical analysis regarding the financial requirements dimension, which evaluates the adequacy of budgetary allocations and fiscal support for digital initiatives (Table 8) reveals that the sample mean (2.533) was higher than the neutral reference value (2) by a margin of +0.533. This notable positive difference confirms that respondent perceptions are decisively favorable and deviate significantly from a neutral position.

The statistical results yielded a high calculated t-value of 12.490. Given that the statistical significance ($p = 0.000$) was below the established alpha threshold ($\alpha = 0.05$), the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted.

Consequently, it can be concluded that employees within the organization confirm, with statistical significance, the high availability of financial requirements. This suggests that the institution is perceived to be allocating sufficient budgetary resources to facilitate the digital transformation project. Furthermore, these findings imply that the organization's financial strategy may prioritize investments in physical infrastructure and external expertise; however, this focus may potentially overshadow the necessary investment in internal human capital development.

Ultimately, the availability of robust financial support serves as a critical enabler for the success and sustainability of digitalization initiatives, which are fundamentally aimed at enhancing the quality and efficiency of healthcare services.

Table (8): *t*-Test Results for the Financial Requirements Dimension

Analysis Component	Descriptive Analysis of Dimension Items			Inferential Analysis of Dimension Items		
Variable	Arithmetic Mean (μ)	Standard Deviation (σ)	Mean Difference	T-Value	Sig. (P-value)	Statistical Significance at 0.05
Total Score: First Dimension	2.533	0.270	0.533	12.490	0.000	Reject H_0 and Accept H_1

Source: Developed by the author based on SPSS output

IV. Conclusion

This study concludes by synthesizing the key findings and articulating their contributions to the field of healthcare management. Furthermore, it offers evidence-based recommendations designed to enhance the effectiveness of digital orientation within the Public Hospital Institution of Naâma, while proposing prospective avenues for future scholarly inquiry.

IV.1. Research Findings

The study yields results derived from two complementary analytical lenses: a theoretical framework, which identified the fundamental dimensions of digital orientation in healthcare; and an empirical analysis, which evaluated the attitudes of the study sample and validated the research hypotheses. The findings are summarized as follows:

First: Theoretical Implications

- **Strategic Necessity:** Digital transformation has evolved from an elective organizational choice into a strategic imperative for modern healthcare institutions. It is essential for optimizing operational efficiency, mitigating clinical errors, and elevating the standard of patient care.
- **Systemic Requirements:** The success of digital orientation is contingent upon an integrated ecosystem of requirements, including visionary administrative leadership, advanced technological infrastructure, a resilient and qualified workforce, and sustained financial commitment.
- **Contextual Contribution:** While global literature emphasizes the importance of digitalization in healthcare, there remains a critical need for field studies within the Algerian context. This study addresses that gap by providing empirical evidence from a local healthcare institution.

Second: Empirical Findings

- **Overall Orientation:** Hypothesis testing confirmed a high level of digital orientation within the institution. This provides a robust foundation for achieving sustainable improvements in the quality of healthcare services.
- **Administrative Dimension:** The results indicate strong administrative support, evidenced by the adoption of pro-digitalization policies and the establishment of formal oversight structures. This organizational backbone provides the necessary legitimacy to coordinate resources effectively.
- **Technical Dimension:** The findings confirm the availability of a robust and effective technological infrastructure. Employees perceive this as the strongest pillar of the digitalization project within the organization.
- **Human Dimension:** While the workforce demonstrates high competence and psychological readiness to adopt change, the analysis identifies practical training as the relatively weakest component. The human requirement is characterized by high potential but insufficient applied development.
- **Financial Dimension:** There is a high level of financial support, primarily directed toward equipment procurement and technical expertise. However, consistent with the human dimension findings, financial allocation for internal staff training received the lowest evaluation among the sub-dimensions.

IV.2. Suggestions and Recommendations

Based on the aforementioned findings, the following practical recommendations are proposed for the management of the Public Hospital Institution "Kadri Mohamed" in Naâma to consolidate institutional strengths and address identified gaps:

1. Prioritizing Human Capital Investment

Since training was identified as the most significant area for improvement, the institution should:

- Develop and implement an annual continuous training program tailored for medical, nursing, and administrative staff, focusing specifically on the practical, hands-on application of digital systems.
- Rebalance the digitalization budget by allocating specific funds to staff qualification and capacity building, ensuring that human development keeps pace with hardware acquisition.

2. Enhancing Administrative Oversight

- Strengthen monitoring and evaluation mechanisms led by the digitalization committee to ensure uniform implementation across all clinical and administrative departments.
- Establish Key Performance Indicators (KPIs) to quantitatively measure the impact of digitalization on service quality, such as reductions in patient wait times and medical error rates.

3. Continuous Technical Evolution

- Formulate a periodic technical update plan to ensure that systems and software remain aligned with the rapid technological advancements in the global healthcare sector.
- Expand the scope of digital services to include patient-facing innovations, such as online appointment scheduling and integrated electronic health portals to improve the patient experience.

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