

E-Governance and Its Role in Improving the Quality of Health Services: A Field

Study at the Hospital Institution, El Tarf Province

الحكومة الإلكترونية ودورها في تحسين جودة الخدمات الصحية

دراسة ميدانية بالمؤسسة الاستشفائية، ولاية الطارف

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DOI: 10.46315/1714-015-002-048

Received: 12/ 07/ 2025 Accepted: 29/ 12/ 2025 Published : 10/ 06/ 2026

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Abstract:

This study seeks to explore the role of e-governance in enhancing the quality of health services at a hospital institution in El Tarf Province. A survey method, through interviews with 25 health sector employees within the institution under study, was employed as the primary research tool. The findings of the study indicate that e-governance, along with its key components, plays a significant role in improving the quality of health services provided to patients at the institution in question.

Keywords: Technological Development, E-Governance, Quality of Health Services, Hospital Institution.

ملخص باللغة العربية

تهدف هذه الدراسة إلى تحديد دور الحكومة الإلكترونية في تحسين جودة الخدمات الصحية بالمؤسسة الاستشفائية بولاية الطارف، حيث تم الاعتماد على أداة الاستمارة بالمقابلة وزعت على 25 عامل في القطاع الصحي بالمؤسسة مجال الدراسة، وتوصلت الدراسة إلى أن الحكومة الإلكترونية وأبرز مؤشراتنا ساهمت في تحقيق جودة ذات فعالية في تقديم الخدمات الصحية للمرضى بالمؤسسة مجال الدراسة.

كلمات مفتاحية: التطور التكنولوجي، الحكومة الإلكترونية، جودة الخدمات الصحية، المؤسسة الاستشفائية.

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1. Introduction:

Development is widely regarded as one of the foremost goals pursued by nations across the globe, serving as the bedrock for societal progress and as a key indicator of national well-being. Human beings, simultaneously the beneficiaries and drivers of development, consider health to be one of their most fundamental needs, establishing it as a critical facet of human existence. The integration of information and communication technology (ICT) into the organizational frameworks of institutions signifies a substantial transformation, especially in light of the global shift towards a

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knowledge-driven economy. Consequently, service delivery models have undergone a significant transition from traditional methods to more advanced, technology-driven approaches, with e-governance standing out as one of the most prominent applications of this shift.

The concept of health quality has become a cornerstone in the competitive landscape, positioning quality as a key factor in steering future growth. Its significance is amplified by its capacity to fulfill the expectations and demands of clients. More specifically, most health institutions aim to provide exemplary services to their patients. From this perspective, a central question arises: *"How does e-governance contribute to improving the quality of health services at the hospital institution in El Tarf Province?"*

In order to address this question, the following sub-questions have been formulated:

- What is the relationship between e-governance and the quality of health services?
- To what extent do the technological and human dimensions of e-governance influence the quality of health services at the institution under consideration?

1.1 Study Objectives:

The objectives of this study are as follows:

- To explore the concepts of e-governance and the quality of health services.
- To investigate the role of e-governance in enhancing the quality of health services at the hospital institution in El Tarf Province.
- To identify the benefits associated with e-governance.
- To examine the core principles and dimensions that define the quality of health services.

1.2 Previous Studies

- **The first study by Ahmed Salem and Saad Kadiri, titled "The Contribution of Information Technology in Improving Service Quality in the Health Sector" (kadiri, 04.05 February 2020):**

The researchers sought to investigate the extent to which information technology contributes to improving service quality within the healthcare sector. This study was conducted at a hospital institution in El Oued Province, focusing specifically on the role of telemedicine technology. The study aimed to highlight how information and communication technology (ICT) enhances the quality of services provided to patients. A questionnaire was employed as the primary data collection instrument, with the results analyzed using statistical methods. The findings confirmed that various programs, techniques, and equipment have a profound effect on improving service quality. Furthermore, the study emphasized the need for regular updates and advancements in information technology systems to further improve the quality of services provided.

- **The second study by Abu Bakr Salem and Asmaa Wanas, titled "E-Governance and Its Relationship with Health Service Quality":**

This study aimed to explore the relationship between e-governance, in both its technical and human dimensions, and the quality of health services at a public hospital institution in Laghouat. The researchers focused on both the tangible and intangible aspects of service quality. The study also aimed to determine whether a reciprocal relationship exists between e-governance and the quality of health services, the strength of this relationship, and potential strategies to enhance or address it. The study reached several important conclusions:

- _ E-governance, in both of its dimensions, is significantly correlated with the quality of health services.
- _ The human dimension of e-governance is closely associated with the willingness of employees (internal customers) to deliver services. These relationships are characterized by a high level of trust, which in turn fosters a sense of security among patients.
- _ Despite the availability of modern technologies and equipment, the institution under study lacks an intranet network.

1.3 Benefits from Previous Studies

Based on the above, the following benefits were derived from the previous studies:

- The previous studies served as a source of sociological insights for our study and helped us in identifying some scientific sources and defining certain concepts.
- They provided an understanding of the various methodological and empirical approaches used, which helped in constructing our study tool.

2. Theoretical Framework of the Study

2.1 Concept of E-Governance and Its Advantages

2.1.1 Definition of E-Governance

E-governance has been defined in several ways, one of which is provided by Hassina (Volume 5, Issue 2, Pages 138-139): "E-governance is the use of information and communication technology (ICT) in various public administrations, followed by changes in organizational structures and new preparations for individuals. It is a form of governance that employs electronic activities to organize complex relationships between organizational entities, both official and unofficial, in order to support policy implementation and its maintenance mechanisms. The primary aim is to achieve democracy, protect citizens' rights, and increase the efficiency of distributing electronic services to foster sustainable development.

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E-governance is a set of decisions that outlines the framework for developing a knowledge-based society through the application of information and communication technology. E-governance represents a modern management approach that leverages technological tools to improve public services by enhancing transparency and accountability in the interaction between citizens and administrations, thereby fostering an information society and achieving electronic democracy. It is a collection of actions and behaviors involving electronic information for administration, emphasizing transparency and efficiency, and is regarded as the golden rule for serving citizens. In public institutions, e-governance standardizes working methods across all public bodies and provides technological means for administrative reform and reorganization.”

From these definitions, it is evident that e-governance is a modern management method that utilizes technological tools in various institutions, whether cultural, social, health-related, economic, or political. Its primary objective is to engage diverse individuals and reconsider the roles of institutional practices, aiming to achieve transparency, accountability in decision-making, service quality, and the realization of electronic democracy.

2.1.2 Advantages of E-Governance

Building upon the definitions presented, several key advantages of e-governance are identified by Hassina (op. cit., pp. 139-140), which include:

- The creation of innovative models to solve a variety of issues through the use of information networks, particularly the internet.
- The deployment of technological means to facilitate communication and interaction between society and various institutions.
- A shift in responsibility for institutional development to citizens, empowering them as active participants in the evaluation of performance.
- The promotion of transparency by making information accessible regarding all matters related to the quality of health services.
- The provision of new sources of funding for development projects.

From these advantages, the following set of goals emerges:

- **Transparency:** For the success of the e-governance strategy, clarity and precision must be maintained in interactions with each citizen within government entities. The decisions made by these bodies must be disclosed with transparency, and information should be accessible to all societal groups. Additionally, services should be presented in an easily accessible and user-friendly manner.
- **Inclusion and Participation:** Every citizen has the right to contribute to public opinion, ensuring equal opportunities for all to benefit from available information and

services. This can be facilitated through media programs or by enabling individuals to express their opinions using technological platforms.

- **Effectiveness and Efficiency:** Effectiveness pertains to the organization and functioning of government structures that provide various services, aiming to reduce costs and time required to access these services while ensuring service quality that aligns with the needs of citizens.

2.2 Definition of Health Service Quality and Its Key Dimensions

2.2.1 Definition of Health Service Quality

Health service quality is commonly defined as the extent to which health services lead to the desired outcomes within a given economic context, carefully balancing risks with benefits, and ensuring alignment with current professional knowledge. A prevalent definition of health service quality is as follows:

Quality involves applying medical science and techniques to maximize public health benefits while minimizing risks. Therefore, the quality of health services is determined by the optimal balance between risks and benefits.

The World Health Organization (WHO) defines health service quality as the effort to maintain consistency in diagnostic and treatment processes for each patient, ensuring the best possible health outcomes in accordance with modern medical practices, at the lowest possible cost, and with minimal risks, while fostering positive relationships that promote patient satisfaction within the health institution.

Leila Ayad provides another definition, describing health service quality as: "The extent of benefit the beneficiary derives from health services, the level of satisfaction, and the fulfillment achieved by the recipient of these services" (Leila, Issue 27, p. 326).

2.2.2 Dimensions of Health Service Quality

The dimensions of health service quality are seen as a tool to measure perceived quality in the hospital institution, which can be summarized as follows (Habiba, 2019-2020, pp. 63-65):

- **Tangible Aspects:** These include the following variables:
 - _ The attractiveness of buildings and physical facilities.
 - _ The design and internal organization of the buildings.
 - _ The modernity of medical equipment and its alignment with technology.
 - _ The appearance of doctors and staff.
- **Reliability:** This includes the following variables:
 - _ Fulfilling the delivery of health services at the specified times.

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- _ Accuracy and error-free examination, diagnosis, or treatment.
- _ Availability of various specialties.
- _ Trust in doctors, specialists, and nurses.
- _ Care for solving patient problems.
- _ Maintenance of accurate medical records and files.
- **Responsiveness:** This includes the following variables:
 - _ Speed in delivering the required health service.
 - _ Immediate response to patient needs regardless of workload.
 - _ Constant readiness of staff to cooperate with patients.
 - _ Prompt response to inquiries and complaints.
 - _ Informing the patient exactly about the time-of-service delivery and completion.
- **Safety:** This includes:
 - _ A sense of safety in interactions.
 - _ The knowledge and specialized skills of doctors.
 - _ Courtesy and good behavior of staff.
 - _ Continuous follow-up on the patient's condition.
 - _ Confidentiality of patient information.
 - _ Support and endorsement by management for staff to perform their duties effectively.
- **Empathy:** Its key variables include:
 - _ Understanding the patient's needs and providing personal care.
 - _ Prioritizing the patient's interests above all.
 - _ The suitability of working hours and the time allocated for the provided service.
 - _ Appreciation for the patient's circumstances and empathy towards them.

There are also a set of principles through which health service quality in hospital institutions can be judged, which are as follows (Habiba, op. cit., p. 65):

- _ Reducing discrepancies in healthcare practices and minimizing medical errors is an indication of quality.
- _ Shortening waiting times between appointments is an indicator of a quality system.
- _ The impression and opinion of the patient regarding the health system reflect the system's quality.
- _ Providing acceptable healthcare services to all segments of society in a balanced manner, adhering to health and administrative ethics, is another indication of quality in the health system.

- _ The existence of clear standards and systems governing the health system indicates its quality.
- _ Providing effective healthcare services at the right time and place for the patient is an indication of the quality of the health system.

3. Method

3.1 Study Areas:

- **Spatial Area:** Our study was conducted at the public hospital institution in El Tarf Province.
- **Time Area:** The study was conducted from April 1 to May 25, 2025.
- **Human Area:** The study sample consisted of 25 health sector workers at the institution under study.

3.2 Data Collection Tools:

The data collection tools used in our study were as follows:

- **Interview Form:**

Through this tool, a series of questions related to the study topic were posed to the selected sample of 25 health sector workers at the institution under study to understand the role of e-governance in achieving the quality of health services, particularly for patients.

3.3 Study Sample:

Given the study's focus on understanding the role of e-governance, both in its human and technical dimensions, in improving the quality of health services at the hospital institution, a purposive sample of 25 administrative health workers was selected.

3.4 Validity of the Study Tool:

We presented the initial form of the study tool, consisting of 22 questions, to a group of colleagues and professors specialized in the field. They were asked to provide their feedback and evaluate the tool's consistency, clarity of language formulation, and overall appropriateness. As a result, the tool was refined to include 16 questions, divided between the e-governance section and the quality of health services section.

3.5 Test of Reliability for the Study Tool

To measure the reliability of the study tool, the Cronbach's Alpha test was used, where the results showed good coefficients, thus proving the validity and reliability of the study tool.

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Table 01: Test of the Study Tool (Cronbach's Alpha Coefficient)

Axis	Number of Items	Cronbach's Alpha Value
First Axis: E-Governance	10	0.753
Second Axis: Quality of Health Services	06	0.811

Source: Prepared by the researcher, based on SPSS outputs

3.6 Methodology Used in the Study

In our study, we relied on the descriptive-analytical method, as it aims to provide both quantitative and qualitative descriptions of the phenomenon. Additionally, this method is based on scientifically organized analysis and interpretation of data to achieve scientific goals that clarify the objectives of the study.

4. Categorizing, Analyzing, Interpreting, and Discussing the Data

Table 02: Related to the E-Governance Axis

Item No.	Item	Yes	No	Somewhat	Frequency	Percentage
01	The hospital institution has modern technological means to provide health services	12	10	03	48%	40%
02	Modern technological means help you provide the best services for patients	10	05	10	40%	20%
03	The hospital has advanced medical devices and equipment	11	08	06	44%	32%
04	The medical staff has sufficient skills in using modern technological means	13	05	07	52%	20%
05	The medical staff provides services quickly and with quality	14	05	06	56%	20%
06	Cooperation and consultation are held in	15	04	06	60%	16%

	response to health crises, such as the spread of the Coronavirus					
07	Technological means have contributed to reducing differences and conflicts during the delivery of health services	16	04	05	64%	16%
08	Support and endorsement by management for staff to perform their duties with skill and efficiency	14	04	07	56%	16%
09	The modern technological means used in the hospital provide high-quality services	13	05	07	52%	20%
10	The hospital institution is connected to an informational network (Internet)	17	03	05	68%	12%

Source: SPSS outputs

The statistical reading of the data in the table above reveals that:

- In item number (01), 48% of the surveyed group confirmed that the hospital institution has modern technological means to provide health services, while 40% disagreed, and 12% somewhat agreed. The researcher attributes these responses to the fact that technological advancements in various sectors have made the use of modern technological means a necessity in the hospital institution to provide high-quality health services.
- Item number (02) shows that 40% somewhat agreed that modern technological means help in providing the best health services to patients. The researcher attributes this result to the numerous positive advantages of using modern technological means in the hospital institution. However, 20% disagreed, stating that modern technological means did not help them provide the best services. One doctor explained that when a technical failure occurs in one of the medical devices or equipment, it is not repaired immediately

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but remains out of order for an indefinite period, which hinders the provision of high-quality services to patients.

- In item number (03), 44% of respondents agreed that the hospital in the study has modern and advanced medical devices and equipment, while 32% disagreed with this statement, and 24% somewhat agreed. The researcher attributes these responses to the necessity of having the required medical equipment, as many patients undergo various tests and surgical procedures, which makes the availability of medical supplies crucial for providing high-quality health services.

- Item number (04) indicates that 52% of respondents agreed that the medical staff is highly skilled in using modern technological means, while 28% somewhat agreed, and 20% disagreed. The researcher attributes these responses to the fact that the hospital institution provides training programs for staff to enhance their competence in their medical specialties.

- Item number (05) indicates that 56% of the surveyed group confirmed that the medical staff provides services quickly and with high quality to various patients at the hospital institution, while 28% somewhat agreed with this statement, and 20% disagreed. The researcher attributes this result to the confirmation from the medical staff at the institution under study that they make every effort to provide the best health services to all patients at the hospital. They also emphasized their dedication in facing health crises, particularly during the outbreak of the COVID-19 virus, in order to ensure the comfort of citizens and patients and to keep them informed of all the developments surrounding the virus.

- Item number (06) shows that the percentage of respondents agreeing that cooperation and consultation are held in response to health crises, and the principle of consultation is one of the main pillars of e-governance, with 60% agreeing. Meanwhile, 24% somewhat agreed, and 16% disagreed. These responses reflect the medical staff's awareness of their commitment to providing health security for all citizens and patients, raising awareness about the virus, providing advice and guidance, and organizing awareness campaigns on health crises, such as educating about the dangers of COVID-19 and ways to prevent it.

- Item number (07) indicates that 64% of respondents agreed that modern technological means have contributed to reducing differences and conflicts during the delivery of health services. 20% somewhat agreed with this statement, and 16% disagreed. The researcher attributes the responses to the fact that modern technological means have

provided opportunities for all users to participate in decision-making and given them more responsibility in carrying out their assigned tasks to achieve high-quality health services.

- Item number (08) shows that 56% of respondents agreed that the hospital institution supports and endorses staff in performing their duties with skill and efficiency. Meanwhile, 28% somewhat agreed, and 16% disagreed. The researcher attributes these responses to the fact that the administration contributes to providing training programs for the medical staff and all other hospital workers to provide the best health services and the necessary care for patients at the institution under study.

- Item number (09) reveals that 52% of respondents agreed that the modern technological means used at the hospital institution provide high-quality services. 28% somewhat agreed, and 20% disagreed. The researcher attributes this to the technological advancements seen today and the increasing need for various institutions, especially healthcare institutions, to adopt technological means. These technological tools offer numerous benefits when used, and since the goal of the study is to achieve e-governance and ensure the quality of health services, it is essential to use advanced technological means.

- Item number (10) shows that 68% of respondents agreed that the hospital institution is connected to an informational network (the internet), while 20% somewhat agreed, and 12% disagreed. The researcher attributes this result to the importance of the informational network (especially the internet), which provides high-quality remote communication services. It is widely used in many fields, particularly in raising public awareness about the dangers of diseases and epidemics. The internet is also used within the hospital institution for communication and coordination between medical teams across various specialties to confront health crises.

Table 03: Related to the Quality of Health Services Axis

Item No.	Item	Yes	No	Somewhat	Frequency	Percentage
01	The working hours and the time allocated for the service are appropriate	15	05	05	60%	20%
02	Commitment to providing health services	11	03	11	44%	12%

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	at the scheduled times					
03	No mistakes occur during the examination and treatment, and quick responses to patient complaints and inquiries	12	0 3	10	48%	12%
04	Mutual trust between medical staff and patients during task performance	15	0 4	06	60%	16%
05	Continuity of patient care and proper attention	14	0 4	07	56%	16%
06	Explaining the patient's condition and cases and empathizing with them in a good manner	17	0 3	05	68%	12%

Source: SPSS outputs

The statistical reading of the data in the table above shows the following:

- Item number (01) reveals that 60% of the respondents confirmed that the working hours and the time allocated for services are appropriate for providing the best and highest quality services. There was an equal percentage of 20% between those who somewhat agreed and those who disagreed. The researcher attributes these responses to the fact that service quality in healthcare is closely linked to proper scheduling of working hours and the time allocated for each service.
- Item number (02) indicates that 52% of the respondents agreed that there is a commitment to providing health services at the scheduled times. The strongly agreeing group accounted for 40%, while 8% disagreed, stating that the institution does not allocate enough time to provide the necessary health services.
- Item number (03) shows that 48% of respondents agreed that no mistakes occur during examination and treatment, and that complaints and inquiries from patients are responded to quickly. 40% somewhat agreed, while 12% disagreed. The researcher attributes these responses to the role and skills of the medical staff in providing healthcare services, ensuring patient comfort, and responding to all of their health problems. The medical staff's role is not only limited to providing treatment and responding to patient

inquiries, but it is also crucial for them to feel the patient's condition and ensure all necessary health supplies are provided.

- Item number (04) indicates that 60% of the surveyed group emphasized the necessity of mutual trust between the medical staff and patients during their tasks, while 24% somewhat agreed that mutual trust exists between the medical staff and patients. The remaining 16% disagreed, stating that mutual trust does not exist between the medical staff and patients during their tasks.

- Item number (05) shows a strongly agreeing percentage of 48% regarding the necessity of continuous patient care and good attention. Meanwhile, 32% somewhat agreed, and 20% disagreed. The researcher attributes these responses to the fact that to ensure quality in health services, it is crucial to continuously monitor the patient's condition, focus on improving their health, and provide the best health advice.

- Item number (06) shows that 68% of respondents agreed that the medical staff should explain the patient's conditions and cases and empathize with them, while 20% somewhat agreed, and 12% disagreed. This indicates that the medical staff at the institution under study strives to provide detailed explanations of the patient's condition while ensuring respect and empathy in their treatment, which in turn ensures quality health services in hospital institutions.

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5. Results

5.1 Discussion of the First Axis Results

- The study confirmed that a significant percentage of 48% of respondents indicated that the hospital institution under study is equipped with modern technological means to provide high-quality health services.
- 40% of respondents agreed that modern technological means contribute to providing the best health services to patients.
- 44% of the respondents confirmed that the hospital institution under study has modern and advanced medical devices that align with the latest requirements in the field.
- 52% of the respondents affirmed that the medical staff is highly skilled in using technological means.
- The respondents confirmed that the medical staff is characterized by the ability to deliver services quickly and with high quality to various patients at the hospital institution under study.

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- 24% of respondents agreed that the application of technological means at the hospital institution has led to greater cooperation and consultation during health crises.
- 64% of the respondents indicated that the use of modern technological means helped reduce differences and conflicts during the delivery of health services.
- 56% of respondents confirmed that the hospital institution under study supports and endorses the staff to perform their duties with skill and effectiveness.
- 52% of respondents indicated that the modern technological means used at the hospital provide high-quality services.
- 68% of respondents confirmed that the hospital institution is connected to an information network (internet), which is used to achieve communication, independence, and responsibility in task performance, as well as to provide the best health services.

5.2 Discussion of the Second Axis Results

- 60% of respondents confirmed that working hours are suitable for delivering the highest quality health services at the hospital institution under study.
- 52% of respondents affirmed that commitment to providing health services at the scheduled times is a key indicator of service quality.
- 48% of respondents confirmed that no errors occur during examination and treatment, and that the medical staff responds quickly to patient complaints and inquiries.
- 48% of respondents agreed that there should be continuous monitoring of the patient's health, providing good care, and working on improving their conditions by offering the best health advice.
- 68% of respondents affirmed that the medical staff at the institution under study strives to provide detailed explanations of the patient's condition, along with ensuring respect, empathy, and good treatment.

5.3 Discussion of the Results in Light of Previous Studies

By comparing our results with two previous studies, we observe the following:

- The study by Ahmed Salem and Saad Qudairi, titled "The Contribution of Information Technology in Improving Service Quality in the Industrial Sector," aligns somewhat with our findings, particularly in the role of modern technological means in enhancing the quality of health services.
- Our study is more closely aligned with the study by Abu Bakr Salem and Asmaa Wanas, titled "E-Governance and Its Relationship with Health Service Quality," where our results confirmed the contribution of e-governance, both in its human and technical dimensions, in achieving high-quality health services at the hospital institution under study.

6. Conclusion

In conclusion, the findings underscore the necessity of integrating modern technological tools into the operational frameworks of institutions across various sectors, particularly in healthcare, to achieve the highest possible quality of services. This integration marks a pivotal shift, especially as economies transition toward knowledge-based models. Reflecting the principle of transformation and continuous improvement, traditional service models have evolved, embracing technological and informational dimensions, with e-governance serving as a central component in delivering optimal health services. Based on the results of this study, the following recommendations are proposed:

- Greater attention should be devoted to keeping pace with technological advancements, especially within healthcare institutions, which are currently among the sectors most focused on improving service quality, particularly in light of the challenges posed by the COVID-19 pandemic. These institutions must adopt the latest technologies to enhance service delivery.
- The use of information networks should be expanded to facilitate the exchange, regulation, and flow of information among various medical teams, thereby fostering collaboration and improving service efficiency.
- Efforts should be made to incentivize and encourage medical staff, along with other hospital personnel, to deliver the highest standard of health services to patients, recognizing their contributions and ensuring sustained motivation.

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