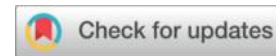




Digital Governance in Algerian Public Administration: From Assumptions of Improvement to Implementation Challenges – A Field Study



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Abstract

This study, titled Digital Governance in Algerian Public Administration: From Assumptions of Improvement to Implementation Challenges – A Field Study in the Municipality of Skikda, explores the role of digital governance as a modern mechanism aimed at enhancing public service performance. The research methodology involved a field study at the biometric services department of the Municipality of Skikda. A descriptive research design was used, as it was deemed most appropriate for this type of study, and data were collected through interviews and questionnaires administered to a sample of employees and citizens. The data were analyzed using SPSS software.

The study concluded with several findings, most notably that the implementation of digital governance principles—particularly the simplification of procedures, promotion of transparency, and the use of modern communication channels—has significantly contributed to improving the efficiency of public services, reducing response times, and strengthening citizens' trust in local administration. The study also highlights the need for the broader adoption of digital governance tools and the development of infrastructure to support digital transformation at the local government level.

Keywords: Governance; Digitization; Digital Public Service.

Introduction

The global technological revolution, along with the spread of information openness and rapid advances in communication technologies, information systems, and internet networks, has brought about a profound transformation. This shift has changed many traditional concepts and methods of interaction at the levels of states, organizations, and individuals, making the transition from the physical world to the digital realm an inevitable necessity. As a result, technological progress and the ensuing digital revolution have significantly affected various aspects of daily life, including commerce, economics, healthcare, education, and more.

Public administrations in Algeria, which are highly sensitive sectors with a substantial impact on people's lives, have not been immune to these changes. Given the many obstacles and challenges faced by the traditional administrative system—challenges that directly affected citizens—efforts by officials to improve administrative services while reducing the burden on citizens have led to the adoption of a strategic approach known as digital governance. This strategy involves using modern technologies to provide services to citizens and carry out tasks more efficiently, in less time and with less effort, while ensuring better quality, transparency, accountability, and effectiveness in what is now recognized as electronic governance.

Building on the above, this article aims to highlight the critical importance of administrative institutions adopting digital governance. This adoption seeks to develop, streamline, and shift all administrative activities, procedures, and transactions from traditional manual methods to modern digital systems. The transition is supported by governance principles based on transparency, accountability, equity, responsibility, efficiency, innovation, and the effective use of technology, communication networks, electronic integration, and the internet. The primary goal is to achieve excellence and improve the efficiency of administrative work while raising the quality of public service delivery by executing transactions electronically—thus saving time, effort, and financial resources. These improvements relieve citizens and institutions from the burdens of physical travel between various public offices, long wait times, and bureaucratic obstacles.

To examine the impact of digital governance on improving public services, this article is divided into two parts: a theoretical-conceptual section, which addresses the research problem, key concepts, hypotheses, and a review of previous studies; and a field section, which covers the study's scope and objectives, data collection tools, sample, and the analysis of data and findings.

1. The Theoretical and Conceptual Framework of the Study

In scientific research—particularly within the social and human sciences—the theoretical and conceptual framework is considered the foundational pillar that allows the researcher to clearly define the research perspective. This is done by addressing key elements such as the research problem, main concepts, hypotheses, and previous studies.

1.1 Study Problem

The adoption of digital governance in public administration has emerged in response to advances in information and communication technologies and the advent of the internet, which have significantly impacted how work is carried out and managed. It has become necessary to focus efforts on utilizing these advanced technologies and

networks to simplify administrative procedures, reduce paper usage, and minimize the effort required to perform various administrative tasks. This new reality has introduced challenges that differ in both form and substance from those of earlier periods. These challenges are more pronounced in developing countries due to their relative lag in information and communication technology and in the mechanisms needed to benefit from such innovations.

Given the ongoing advancements in modern information and communication technologies and their growing application across various aspects of individual and societal life—as well as the proven effectiveness and benefits they offer—it has become essential for government authorities to adopt modern administrative approaches and sound governance. These approaches are part of rational public management strategies that seeks to improve service delivery by incorporating modern technological tools into administrative work and adjusting traditional practices to align with contemporary technological developments. This integration enables the delivery of high-quality public services through what is now known as digital governance, which is considered a defining feature of modern states and one of their central priorities. The goal is to establish a relationship between citizens and the administration based on transparency, credibility, responsibility, trust, and communication, while reducing any factors that might create divisions or hinder their closeness.

Like many countries around the world, Algeria is striving to build a civil society based on information and communication technologies. This effort involves digitizing public sectors across various fields and gradually shifting from traditional to electronic operations. This transition aligns with the implementation of sound and effective state policies that incorporate information technology into public administration, requiring continuous updates and adaptation to surrounding conditions to ensure sustainability and continuity. It also aims to address the challenges of achieving modern state governance through digital governance, which can offer transparency, credibility, faster task completion, and equitable service delivery to citizens based on universal access.

In this regard, the Ministry of Interior and Local Authorities—particularly the municipalities across the country—has been priority by the authorities to move toward digital governance. The purpose is to strengthen administrative management and improve employee performance. This, in turn, is expected to enhance public services by increasing transparency, credibility and quality, while also improving speed and reducing costs.

Accordingly, this article, titled Digital Governance in Public Administration: From Improvement Assumptions to Implementation Challenges – A Field Study in the Municipality of Skikda, seeks to examine the role of digital governance in enhancing public services. The investigation is guided by a central research question:

What is the impact of implementing digital governance on the improvement of public service in the Municipality of Skikda?

This question gives rise to three subsidiary inquiries:

- What is the relationship between the implementation of digital governance and achieving transparency and credibility in the biometric department of the Municipality of Skikda?
- What is the relationship between implementing digital governance and accelerating task completion in the biometric department of the Municipality of Skikda?

- What is the relationship between implementing digital governance and accountability in the biometric department of the Municipality of Skikda?

1.2 Theoretical Foundation of Concepts

Defining the study's concepts is a necessary foundational step in scientific research, as it helps the researcher identify the dimensions and indicators used in constructing data collection tools. This article begins by defining the concept of digital governance.

1.3 Concept of Digital Governance

Digital governance is defined as "the use of the internet by government to deliver services to citizens, businesses, and other stakeholders [1, p. 37]." It is also described as "the application of digital means in interactions between government and citizens, government and companies, as well as in internal government operations to improve democracy, governance, and various other functions [2, p. 2]."

UNESCO defines digital governance as "the use of information and communication technologies by public sectors to enhance the delivery of information and services, encourage citizen participation in decision-making processes, and improve government effectiveness in terms of accountability and transparency."

Digital governance includes new models for discussing public issues, resolving policies and investments, new methods of accessing education, listening to citizens' complaints and suggestions, and innovative ways of organizing and delivering services and information. It also has broader and more comprehensive implications than digital government, as it transforms the nature of the relationship between citizens and governments, as well as among citizens themselves.

Digital governance can be associated with four key concepts: accountability, participation, authorization, and empowerment [3, p. 7].

The Arab Administrative Development Organization defines digital governance as a network of organizations that includes government, non-profit organizations, and private sector entities. A common practical model of digital governance, such as firstgov.gov, enables citizens to access a wide range of information and services. The term "digital governance," rather than "digital government," reflects the idea of transforming institutional relationships and involving partners from civil society and the business sector in digital administration. In contrast, "digital government" is a narrower term that refers specifically to local or regional governmental processes [4, p. 287].

1.4 Concept of Digital Administration

Digital administration is defined as the exchange of business and transactions between parties through digital means, rather than relying on traditional methods such as direct communication. It is also described as an administrative process that uses the unique capabilities of the internet and business networks to plan, direct, and control an organization's core resources and competencies in order to achieve its objectives.

Additionally, it represents a modern approach that involves conducting all transactions and interactions between two or more individuals or institutions using various technological tools, including email, electronic funds transfer, electronic data interchange, fax, electronic bulletins, and other digital means.

1.5 Definition of Digital Public Service

Digital public service refers to the use of the latest digital tools and technologies to manage public facilities within the state, with the aim of improving efficiency and performance in government administrations in a way that is dignified, fast, and user-

friendly—within a framework of transparency and clarity that fosters confidence in the service provided by the public facility, government, or administrative body involved.

The essence of digital public service lies in leveraging information and communication technology, particularly the internet, to deliver services by transforming traditional ones into digital formats.

Accordingly, digital public service can be understood as an automated, self-service process between the service requester and provider that ensures speed and efficiency, thereby generating satisfaction for both parties.

1.6 Study Hypotheses

This research paper formulated one general hypothesis and three specific hypotheses, as detailed below:

Main Hypothesis: There is no statistically significant relationship between digital governance and the improvement of public service in the biometric department of the Municipality of Skikda.

From this main hypothesis, three specific hypotheses are derived:

- First Specific Hypothesis: There is no statistically significant relationship between the implementation of digital governance and the achievement of transparency and credibility in the biometric department of the Municipality of Skikda.
- Second Specific Hypothesis: There is no statistically significant relationship between the implementation of digital governance and the speed of task completion in the biometric department of the Municipality of Skikda.
- Third Specific Hypothesis: There is no statistically significant relationship between digital governance and accountability in the biometric department of the Municipality of Skikda.

1.7 Literary Review:

This article reviews several previous studies on digital governance. Research in this area remains limited, with most contributions appearing in academic journals. The following studies are particularly noteworthy:

- First Study: An article titled “Digital Governance in Public Administration” by Naama Allah Mahmah aims to define digital governance and examine Algerian policy on the development and management of digitalization in public institutions. It also highlights modern mechanisms and technologies adopted by Algeria to implement digital governance, emphasizing the distribution of roles and responsibilities. The article poses a central research question: How is digital governance applied within Algerian public administration, and what mechanisms have been used to achieve this transformation? To answer this question, the study uses a descriptive-analytical method and conducts applied analysis to assess digital performance across sectors including the Ministry of Interior and Local Authorities, the Ministry of Justice, Higher Education and Scientific Research, and the Ministry of Health. The study concludes that Algeria is making steady progress toward adopting digital governance as a core element of its sustainable digital transformation strategy. It shows that digital governance has helped improve service quality, increase transparency, and ensure compliance with national legislation. However, it also identifies several challenges, including underdeveloped digital infrastructure, limited human resource capabilities, and a lack of digital culture [5, p. 51].

- Second Study: An article titled “The Role of Digital Governance in Achieving Sustainable Development Goals: A Case Study of the Kingdom of Saudi Arabia (2020–2024)” investigates how digital governance contributes to advancing sustainable development goals, using Saudi Arabia as a case study. The study asks: Can digital governance accelerate the achievement of sustainable development goals in Saudi Arabia? It proposes that digital governance can foster technological thinking and raise awareness among individuals and institutions about using electronic services and applications. It also suggests that Saudi Arabia’s e-governance system has improved stakeholder performance, particularly during the COVID-19 pandemic. The study uses a descriptive methodology, analyzing a sample of digital platforms across various sectors. It concludes that Saudi Arabia has reached an advanced stage in adopting digital governance, supported by strong digital infrastructure [6, p. 81].

Compared to the two studies reviewed, the current article shares the focus on digital governance as an independent variable and employs a descriptive methodology. However, it differs fundamentally by using a field study and collecting data through a questionnaire—an approach not used in the previous studies. It also differs in sample scope, timeframe, and analytical approach. Notably, this study complements qualitative analysis with quantitative methods using SPSS for data coding and interpretation, whereas the earlier studies relied solely on qualitative analysis.

2. The Empirical Aspect of the Study

Following the presentation of the study’s theoretical and conceptual framework—including the problem, hypotheses, key concepts, and relevant prior research—this section addresses the empirical fieldwork. It outlines the methodology used for data collection, analysis, and interpretation, leading to findings that confirm or reject the research hypotheses.

2.1 Study Methodology

As this article investigates the relationship between digital governance and the improvement of public services, the descriptive method was adopted as the most suitable research approach.

2.2 Data Collection Instruments

To conduct the field study, a questionnaire was used as the primary tool for data collection. It was administered within the biometric department of the Municipality of Skikda.

2.3 Research Population and Sample

The study population includes department heads and other employees in the biometric department of the central Municipality of Skikda, totaling 60 individuals across various ranks. Fifty questionnaires were distributed, and after five days, 38 were returned, while 12 remained unaccounted for. After screening, one questionnaire was excluded due to invalidity, resulting in 37 valid responses—a 74% response rate, which is methodologically acceptable.

2.4 Statistical Methods Employed

Data were processed using the Statistical Package for the Social Sciences (SPSS), version 21. After coding and entering the data, SPSS was used to perform descriptive analysis and apply statistical techniques for hypothesis testing and deriving results efficiently, with fewer errors than manual processing.

The following statistical methods were applied to meet the study's objectives and process the data:

- Percentages and Frequencies: These were used to present how the categories of each variable are distributed and to provide a clear description of the research sample.
- Arithmetic Mean: Used to assess the degree of variation in respondents' answers to each statement related to the study variables and to rank the statements based on their mean scores.
- Standard Deviation: Used to measure how much responses varied from the mean. A value closer to zero indicates more agreement among respondents. It also helps rank statements when mean values are equal, favoring those with less variability.

2.5 Presentation, Analysis, and Interpretation of Data

Table 01: illustrates the variable of gender

Gender	Frequency	Percentage (%)
Male	5	13.9
Female	31	86.1
Total	36	100

Source: Compiled by the authors utilizing SPSS software, version 21.

Table 1 presents the gender variable. Males constitute 13.9% of the sample, while females make up a significantly higher proportion at 86.1%. This disparity is attributed to employment programs for degree holders, such as DAIP, which saw higher female participation, leading to their eventual integration into these positions. In contrast, males tend to prefer work in the economic or commercial sectors.

Table 02: presents the age variable

Age Group	Frequency	Percentage (%)
Under 25	2	5.6
25 to 35	13	36.1
36 to 45	18	50
Over 45	3	8.3
Total	36	100

Source: Compiled by the authors utilizing SPSS software, version 21.

Analysis of Table 2 shows that the first age group constitutes a small portion at 6.5%. The second group, aged 25 to 35 years, accounts for 36.1%, while the third group, aged 36 to 45 years, makes up the largest portion at 50.0%. The fourth group, over 45 years of age, comprises 8.3%. Therefore, the majority of the sample falls within the 36 to 45-year age range. This result may be related to employment conditions set by the Directorate of Public Service, which emphasize experience and seniority.

Table 03: presents the educational qualification variable

Educational Qualification	Frequency	Percentage (%)
Below Secondary	1	2.8
Secondary	8	22.2
Higher Technician	2	5.6
Bachelor's Degree	16	44.4
Postgraduate Studies	9	25

Total	36	100
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Source: Prepared by the researchers based on SPSS software, version 21.

Table 3 presents the educational qualification variable. The first category, representing individuals without any formal qualification, accounts for only 2.8%. The second category, corresponding to secondary education, makes up 22.2%. The percentage drops again in the third category—those with a Higher Technician Certificate—at 5.6%. The fourth category, representing those with a bachelor's degree, is the largest group at 44.4%, while the fifth category, comprising postgraduate degree holders, accounts for 25.0%. Thus, it is evident that most of the sample hold a bachelor's degree.

Table 04: illustrates the occupational variable

Job Title	Frequency	Percentage (%)
Head of Department	0	0
Office Manager	4	11.1
Engineer	3	8.3
Administrative Officer	8	22.2
Administrative Assistant	7	19.4
Administrative Clerk	5	13.9
Office Clerk	0	0
Other Positions	9	25
Total	36	100

Source: Prepared by the researchers based on SPSS software, version 21.

Table 4 shows the distribution of job positions. The first category, office chiefs, represents 11.1% of the sample. The second category, engineers, accounts for 8.3%. The proportion increases for the third category, administrative controllers, reaching 22.2%, followed by administrative assistants at 19.4%. The fifth category, administrative agents, accounts for 13.9%. The largest proportion falls under the sixth category, labeled "other positions," which constitutes 25.0%. Thus, most of the sample occupy roles not specified in the previous categories.

Table 05: presents the variable of task assignment

Task	Frequency	Percentage (%)
Responsible for Receiving Files	9	25
Responsible for Data Reservation	3	8.3
Responsible for Authentication	5	13.9
Responsible for Collecting Biometric Data	2	5.6
Responsible for Delivering Biometric Documents	3	8.3
Responsible for Other Tasks	14	38.9
Total	36	100

Source: Compiled by the authors utilizing SPSS software, version 21.

Table 5, which covers the task variable, shows that the first category—those responsible for receiving files—accounted for 25.0%. The second category, responsible for data entry, represented 8.3%. The third category, assigned to authentication, accounted for 13.9%. The fourth category, responsible for collecting biometric data, constituted 5.6%, while the fifth category, responsible for delivering biometric

documents, accounted for 8.3%. The highest proportion was in the category of individuals assigned to other tasks, comprising 38.9%, including, for example, those responsible for visiting the homes of ill or immobile citizens.

Table 06: Experience Variable

Experience	Frequency	Percentage (%)
Less than 3 years	4	11.1
From 3 to 10 years	13	36.1
From 10 to 15 years	12	33.3
More than 15 years	7	19.4
Total	36	100

Source: Compiled by the authors utilizing SPSS software, version 21.

Table 6, related to the experience variable, shows that the first category—less than three years of experience—accounted for 11.1%. The second category, with three to ten years of experience, comprised 36.1%. The third category, covering ten to fifteen years, represented the largest group at 33.3%. The fourth category, with more than fifteen years of experience, accounted for 19.4%. These results indicate that most of the sample falls within the three to ten-year experience range.

Through the sub-questions that were raised in the study problem, the respondents' answers came through the questionnaire that was distributed to them as follows:

Q1: Have you participated in training courses?

The question related to the training variable, shows that the first category—those who have not participated in any training course—represents the largest proportion at 75.0%. The second category, consisting of individuals who attended one training course, accounts for 22.2%, while the third category, those who attended more than one, is estimated at 2.8%. These findings suggest that the institution does not regularly provide training for its employees.

Q2: Do you prefer to institutionalize digital governance in the delivery of public services to citizens?

Through this question, which measures the level of preference for adopting digital governance in public service delivery. The results show that 41.7% of respondents strongly agree, followed by 44.4% who agree, making up the majority. The neutral category accounts for 2.8%, while both disagree and strongly disagree categories are equally represented at 5.6%. The arithmetic mean is 4.11, with a (S.D) of 1.090. This indicates that most of the sample expressed agreement, which may be due to factors such as the rapid completion of electronic transactions, time savings, improved accuracy, simplified procedures, and increased administrative transparency [7, pp. 49–51].

Q3: details the municipality's possession of material and human resources necessary for the success of electronic governance

Through this question, which illustrates the municipality's availability of material and human resources necessary for the successful implementation of e-governance. The largest group was those who disagreed, constituting 44.4%, followed by those who agreed at 38.9%. Both the strongly agree and strongly disagree categories were equal at 8.3%. The mean score was 2.94, with a (S.D) of 1.241. These results indicate a divided

view on whether the municipality possesses the required capabilities. Establishing a governance system initially requires significant investment in equipment, software development, and staff training; however, the ongoing cost of providing services electronically is much lower than that of traditional methods [7, pp. 49–51].

Q4: Are the technical conditions necessary for the practical implementation of digital governance provided?

Through this question, which outlines the technical prerequisites for implementing digital governance. The largest group was those who disagreed, at 38.9%, followed by those who agreed at 36.1%. The strongly disagree and neutral groups were equal at 8.3%, while the strongly agree group accounted for 5.6%. The mean score was 2.91, with a (S.D) of 1.173. These results suggest that although the state has made efforts to provide the material, technical, and scientific resources needed to support the implementation of digital governance, challenges remain in fully meeting the technical requirements. This is essential to ensure the delivery of modern, high-quality local services.

Q5: What are the problems and obstacles hindering the implementation of digital governance?

Through this question, which presents the problems and challenges hindering the implementation of digital governance. The group that agreed made up the largest proportion at 41.7%, followed by those who strongly agreed at 27.8%. Those who disagreed accounted for 13.9%, the neutral group 11.1%, and those who strongly disagreed 5.6%. The mean was 3.72, with a (S.D) of 1.186.

Key obstacles to implementing digital governance include limited internet coverage in Algeria, inadequate legislative frameworks—such as the absence of appropriate laws—the persistence of traditional practices like negative bureaucracy and the difficulty of overcoming them, and a lack of coordination between government bodies involved in e-government efforts [8].

Q6: Does the municipality have a mechanism for data recovery in the event of data corruption or computer system failure?

Through this question, which illustrates the mechanisms for data recovery in case of data corruption or computer system failure. Responses were as follows: 2.8% strongly agreed, 41.7% agreed (the majority), 5.6% were neutral, 11.1% strongly disagreed, and 38.9% disagreed. The mean response was 2.86, with a (S.D) of 1.175.

Among the key technologies used in digital governance are digital archiving systems, which employ high-speed scanners to convert paper documents into digital formats that can be stored and shared via local networks or the internet. Examples include Laserfiche, Arabdox, and ProjectWise—systems designed to store and index documents for easy retrieval [9].

Q7: How much expertise within the municipality for data security to prevent unauthorized information breaches?

Through this question, which indicates the municipality's provision of expertise for data security and prevention of unauthorized access. Strong agreement was recorded at 5.6%, while agreement made up the largest group at 44%. The neutral and strongly disagree categories each accounted for 5.6%, and 38.9% disagreed. The mean score was 3.06, with a (S.D) of 1.145. These results show that most respondents fell within the agreement categories, which recorded the highest percentages.

Q8: How satisfied are citizens with the services provided by the municipality?

Through this question, which illustrates the level of citizen satisfaction with the services provided by the municipality. Responses were as follows: 8.3% strongly agreed, 36.1% agreed, 2.8% were neutral, 8.3% strongly disagreed, and the largest group—44.4%—disagreed. The arithmetic mean was 2.92, with a (S.D) of 1.228. These results indicate that most respondents expressed dissatisfaction with municipal services, particularly during the initial phase of implementing electronic governance. This dissatisfaction is attributed to citizens' reluctance to accept recent changes in civil status services, especially concerning modifications to names and identity card numbers.

Q9: Is there transparency and credibility in the public services provided?

Through this question, which depicts perceptions of transparency in public service delivery at the central municipality of Skikda. Responses ranged from agreement to disagreement: 8.3% strongly agreed, 55.6% agreed—the largest proportion—8.3% were neutral, 2.8% strongly disagreed, and 25.0% disagreed. The mean score was 3.42, with a (S.D) of 1.052. The majority agreement (55.6%) reflects support for transparency and credibility in public services. This is attributed to the electronic processing of transactions, which eliminates direct interaction between the applicant and the employee, thereby reducing opportunities for bribery, manipulation, or mistreatment [7, pp. 49–51].

Q10: Is there equality among service seekers that enables them to access the same administrative procedures?

Through this question, which examines equality among service applicants and their ability to access the same administrative procedures at the Skikda Central Municipality. The responses were distributed as follows: 8.3% strongly agreed, 36.1% agreed, 11.1% were neutral, 5.6% strongly disagreed, and the largest proportion—38.9%—disagreed. The mean score was 3.03, with a (S.D) of 1.158. These results indicate that most respondents disagreed with the claim that equality and equal access to procedures have been fully achieved by the municipality in its efforts to improve public service. This finding contrasts with one of the key advantages of digital governance, which is based on ensuring equal treatment and access to services for all users.

Q11: Is the required speed and accuracy of information achieved?

Through this question, which presents varied responses regarding the municipality's performance in achieving the necessary speed and accuracy of information at Skikda Central. Strong agreement was expressed by 19.4% of the sample, while 47.2% agreed—the majority. Neutral responses accounted for 5.6%, 2.8% strongly disagreed, and 25.0% disagreed. The mean score was 3.56, with a (S.D) of 1.157. These results suggest that most respondents agree the municipality is working to enhance public service by improving the speed and accuracy of information, which contributes to saving time and effort, informing citizens, increasing participation, promoting transparency, and reducing bureaucracy.

Q12: Are the waiting lines being reduced?

Through this question, which illustrates the reduction of waiting lines at the municipality. 13.9% of respondents strongly agreed, followed by 44.4% who agreed. 8.3% were neutral, 2.8% strongly disagreed, and 30.6% disagreed. The mean was 3.36, with a (S.D) of 1.150. These results indicate that most respondents agreed that the municipality has improved public service by reducing waiting times compared to traditional paper-based procedures for issuing documents.

Q13: Are procedures and working methods simplified?

Through this question, which shows the municipality's efforts to enhance public service by simplifying procedures and work methods. 13.9% strongly agreed, and the highest percentage, 55.6%, agreed. 2.8% were neutral, and 27.8% disagreed. The mean score was 3.56, with a (S.D) of 1.054. These findings indicate that most respondents agreed the municipality is working to improve public service by simplifying procedures and workflows, unlike the traditional approach in which employees spent significant time searching through records, dates, and municipal documents.

Q14: Is data on the issuance of official documents displayed in a timely manner?

Through this question, which illustrates the municipality's efforts to improve public service by issuing official documents within a reasonable timeframe. Responses varied: 11.1% of participants strongly agreed, 13.9% agreed, 58.3% were neutral, and 16.7% disagreed. The mean response was 3.19, with a (S.D) of 0.856. Notably, the majority were neutral, indicating reservations about the municipality's efforts to issue official documents promptly. This corresponds with previously discussed advantages of electronic governance.

Q15: Are bribery practices rejected because citizens interact directly with computers?

Through this question explored whether digital governmance in the Municipality of Skikda improves service quality by reducing opportunities for bribery through direct interaction with computerized systems. The responses showed that 22.2% strongly agreed, 38.9% agreed, 11.1% were neutral, 5.6% strongly disagreed, and 22.2% disagreed. The mean score was 3.50, with a (S.D = 1.231). These findings suggest that many respondents believe digital governance enhances service delivery by minimizing direct contact between citizens and employees, which in turn limits the chances for bribery or misconduct.

Q16: Does digital governance help employees apply the principle of control over their work?

Through this question, which illustrates the contribution of digital governance in helping employees apply oversight to their work. Respondents who strongly agreed made up 13.9%, while those who agreed represented the highest proportion at 66.7%. This was followed by 8.3% who were neutral, 8.3% who disagreed, and 2.8% who strongly disagreed. These results indicate that most participants agreed digital governance supports employees in effectively supervising their tasks. The mean response was 3.81, with a (S.D) of 0.889.

Q17: Does digital governance contribute to negating the concept of administrative mediation between employees and citizens?

Through this question, which examines the role of digital governance in eliminating administrative mediation between employees and citizens in the central Municipality of Skikda. 8.3% strongly agreed, 27.3% agreed, 8.3% were neutral, 5.6% strongly disagreed, and 50.0% disagreed. The mean was 2.83, with a (S.D) of 1.159. These findings show that most respondents disagreed that digital governance has helped eliminate administrative mediation, possibly indicating that electronic procedures have not fully replaced direct interaction between employees and citizens.

Q18: Does digital governance contribute to providing continuous services to citizens?

Through this question, which illustrates the contribution of digital governance to the continuous provision of services to citizens. Respondents who strongly agreed accounted for 25.0%, while those who agreed formed the largest group at 52.8%. The neutral group made up 8.3%, those who disagreed accounted for 11.1%, and 2.8% strongly disagreed. The mean score was 3.86, with a (S.D) of 1.018. These results indicate that most participants agreed digital governance has supported the continuous delivery of services without wasting effort, time, or resources, thus reducing the burden on stakeholders.

Q19: What is the relationship between providing digital services in the Skikda municipality and simplifying procedures and workflow?

Through this question, which reveals that delivering digital services in Skikda municipality simplifies procedures and workflows. 16.7% strongly agreed, 52.8% agreed, 11.1% were neutral, 2.8% strongly disagreed, and 16.7% disagreed. The mean score was 3.64, with a (S.D) of 1.046. These results suggest that most respondents agree digital service delivery in Skikda simplifies administrative procedures and workflows, reducing both effort and time compared to traditional methods.

Q20: Does digital governance contribute to digitizing civil status records and facilitating civil procedures?

Through this question, which demonstrates that digital governance has contributed to digitizing civil status records and streamlining civil procedures. Respondents who strongly agreed accounted for 27.8%, followed by 50.0% who agreed. The neutral group made up 8.3%, 11.1% disagreed, and 2.8% strongly disagreed. The mean score was 3.89, with a (S.D) of 1.036. These findings indicate that most respondents agreed digital governance has supported the digitization of civil status records and the simplification of related procedures, eliminating the need to search through old records, archives, or locate the responsible employee for each case.

3. General Findings of the Study

The general findings summarize the key conclusions drawn from this research and are presented as follows:

- The implementation of digital governance requires restructuring public administrations to align with the shift toward sector digitalization.
- The research highlights an urgent need to provide adequate training for employees on digital governance practices. The results show that a significant number of employees have never participated in any relevant training programs, which may hinder the proper implementation of digital systems and procedures.
- It is essential to conduct studies on the obstacles to implementing digital governance in both developed and developing countries.
- A lack of awareness among some citizens and employees about the concept and importance of digital governance hinders its adoption.
- A foundational step for successful digital governance is establishing the principles of traditional governance in public administration, along with continuous monitoring and evaluation of implementation mechanisms.
- Emphasis should be placed on e-training to keep pace with digital advancements and address its challenges, given its many benefits for individuals and administrative bodies.

- Digital governance requires coordination among public administrations at different levels of authority, as well as cooperation with various actors in the economic and political environment.
- Organizing academic seminars and conferences on mechanisms for implementing digital governance principles within government organizations is recommended.

4. Conclusion

In conclusion, this article examined digital governance as a national mechanism and strategy aimed at improving public service, supported by a field study in the biometric department of the Municipality of Skikda. Despite the significant resources the state has allocated to achieving digital transformation in the public sector—particularly in infrastructure—these efforts remain insufficient. Implementing principles of digital governance – such as transparency, integrity, accountability and innovation- requires a workforce that is mentally prepared to adapt to change. As the shift toward cognitive transformation involves behavioral adjustments, employees must first be trained and equipped to confidently use various digital tools and technologies in order to achieve effective results. This workforce must then be trained and equipped to effectively use various digital technologies to achieve genuine sector digitization aligned with the state’s goals, especially improving service quality while reducing effort, time, and bureaucracy.

4.1 Study Recommendations

Accordingly, the following recommendations are proposed:

- Develop and maintain advanced infrastructure that supports digital transformation in the public service sector, especially digital platforms for issuing personal documents, tracking files, and related services.
- Provide ongoing training for employees on the digital technologies used in administrative services.
- Promote a culture of digital use within public administration and among citizens.
- Establish binding legal and regulatory frameworks to enforce digital governance at the local level.
- Involve citizens in regular evaluations of digital services.
- Simplify digital procedures and ensure transparency to build public trust.
- Launch awareness campaigns to encourage citizens to adopt digital services.

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