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# Digitalization of the Algerian Tax Administration: A Multidimensional Approach to Challenges, Opportunities and Success Factors

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**Abstract:**

This study examines the digital transformation of the Algerian tax administration, analyzing the opportunities, challenges, and success factors. Using a mixed methodology, the study combines qualitative and quantitative analysis. The results reveal that the perception and understanding of digitalization, while limited to the identification of obstacles, are crucial to the effectiveness of implementation strategies. The study underlines the importance of a multi-dimensional strategic approach, recommending a progressive digitization strategy, enhanced training, investment in infrastructure, and the establishment of robust security protocols.

**Keywords:** E-management; digitalization; tax; strategy.

**JEL Classification: M15; O33; H20; L2**

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**Introduction**

In a constantly changing world, where digital technologies are redefining the contours of our society, public administrations are at the heart of a profound transformation. Algeria, a country with strong modernization ambitions, is no exception to this groundswell of change, which is overturning the way the State manages and interacts with its citizens. Within this dynamic, tax administration occupies a key position, being both the guarantor of the State's resources and the reflection of its ability to adapt to the demands of the 21st century.

The digitalization of the Algerian tax administration is part of a wider context of reforms aimed at optimizing public governance and stimulating the country's economic development. This digital transition, which holds great promise in terms of efficiency, transparency, and tax fairness, nonetheless raises crucial questions about its implementation and impact on the country's socio-economic fabric. Between hopes and challenges, this digital transformation crystallizes the issues at stake for a State in search of modernity, confronted with the realities of a changing society.

A critical analysis of the strategies used to implement this digitalization is crucial to understanding the dynamics at work and anticipating future developments in the Algerian tax system. By exploring the multiple dimensions of this process - technological, organizational, legal, and socio-cultural - it becomes possible to outline the contours of a modern tax administration, adapted to the specificities of the Algerian context and capable of meeting the expectations of citizens as well as the country's economic imperatives.

**Research problematic**

The digital transformation of the Algerian tax administration raises complex questions about its implementation and effectiveness. Our main question is formulated as follows: *" What is the relationship between stakeholder perception and digital transformation success in Algerian taxation?"*

Secondary Research Questions :

- How does the level of understanding of digital transformation by tax administration staff impact their ability to identify operational digitalization challenges?
- What are the links between senior management's perception of digital transformation and the relevance of adopted digitalization strategies?
- To what extent do the digital competencies and organizational culture of the Algerian tax administration condition the success of digital transformation initiatives?

- How does the alignment between understanding digital challenges and implemented strategies influence the performance of digital transformation?
- What are the key success factors in the relationship between the perception of digital transformation and its effective implementation within the Algerian tax administration?

**Research hypotheses**

**H1**: The level of perception and understanding of digital transformation in the Algerian tax administration positively affects the ability to identify and assess the challenges and obstacles facing the digital transformation process.

**H2**: The level of perception and understanding of digital transformation in the Algerian tax administration is directly linked to the effectiveness of the digital transformation strategies applied.

**Significance of the Study**

The importance of this research is justified by several factors. Firstly, the efficiency of tax administration is crucial to economic stability and the financing of public policies in Algeria. Secondly, digitalization offers unprecedented opportunities to combat tax evasion and the informal economy, two major issues facing the country. Finally, the success of this digital transition could serve as a model for other sectors of public administration, contributing to a broader modernization of the state apparatus.

**Research objectives**

The main objective of this study is to critically analyze digitalization implementation strategies in the Algerian tax administration. More specifically, we aim to:

- Assess the current state of digitalization in Algerian tax administration.
- Identify the key success factors and major obstacles in this transformation process.
- Propose recommendations for optimizing digitalization strategies, considering the specificities of the Algerian context.

## I- Literature Review

### 1- E-management conceptual framework

E-management, a concept born of the recent digital revolution, marks a radical transformation in management practices. This new paradigm reflects the shift from traditional methods to approaches based on digital technologies.

**1-1 E-management concept**

In academic literature, there are many conceptualizations of electronic management, commonly referred to as e-management. One of the most comprehensive and applicable definitions is worth highlighting:

The concept of e-management revolves around the strategic integration of technological innovations in the field of information and communication into management practices. This innovative approach aims to optimize, enrich, and evolve the multiple facets of management processes inherent in the functioning of organizational entities. (Malika & Hamza, 2021)

E-management is an innovative approach that strategically exploits advanced digital technologies to achieve organizational goals. This method aims to optimize costs, accelerate processes, and maximize the use of resources. It radically transforms the way organizations operate, improving their efficiency, agility, and ability to adapt in a dynamic environment. E-management not only modernizes existing practices but fundamentally redefines the way entities operate and interact with their ecosystem, strengthening their resilience in the face of contemporary challenges. (Fidaa, 2015)

In short, e-management represents a holistic approach to the digital transformation of administrative and management processes. It aims to fundamentally redefine interactions between government, citizens, and businesses, using digital technologies to improve the efficiency, equity, and resilience of management systems. This ambitious vision is part of a process of continuous modernization, adapted to the challenges and opportunities of a world in constant technological and societal evolution.

**1-2- Requirements for implementing the digitalization project**

The success of the digitalization project relies on the simultaneous development of a robust technological infrastructure, the implementation of advanced security measures, The adaptation of the legislative framework, in-depth staff training, and the strengthening of international cooperation, to create a modern, efficient tax system that complies with international standards. (Malika & Hamza, 2021)

**Table (1): Requirements and challenges faced by administrations in the context of digitalization projects:**

| Domain | Requirements and challenges | Description |
|---|---|---|
| *Infrastructure* | • Robust communication network<br>• Computer equipment<br>• Adapted software and systems | Setting up a technological infrastructure capable of supporting digital tax operations |
| *Security* | • Robust safety programs | Implementation of advanced security measures to protect |

| | | |
|---|---|---|
| | • Protection against cyber attacks<br>• Data confidentiality | systems and sensitive tax information |
| *Legislation* | • Tax law updates.<br>• Legal framework for digital processes | Adapting the legal framework to take account of digitalization and e-commerce activities |
| *Training and Qualification* | - Staff training<br>- Mastery of electronic tools | Developing the skills of tax administration staff in the use of new systems |
| *International Cooperation* | - Knowledge exchange<br>- Coordination with other countries | partnerships and exchanges of experience with other tax authorities |

**source**: **(Mohamed, 2009)**

## 2- Digitalizing tax administration

The overhaul of the tax system is fundamentally based on the modernization of tax administration. This evolution, although essentially focused on organizational restructuring, also incorporates a crucial digital dimension.

The Algerian tax authorities are modernizing their services through a digital transformation. The aim is to make the administration more efficient and accessible to taxpayers.

### 2-1- Creation of a website for the tax authorities:

A dedicated website has been created for the general tax department "http://www.mfdgi.gov.dz". The site aims to provide tax information to all interested parties and to respond to taxpayers' concerns and expectations.

- **Access to tax forms and publications**: The electronic portal provides a library of tax forms, guides, and publications. Citizens can access and download these resources online.
- **Online assistance services**: Taxpayers can submit assistance requests, track their status, and receive responses via the electronic portal.
- **Tax Identification Number NIF**

A special website has been set up to obtain the tax identification number, enabling taxpayers to apply for their tax identification number electronically without having to visit the tax office, by accessing the site, entering their data, and following the necessary steps. (Kamilia, 2023)

Under this procedure, as soon as a taxpayer has submitted his or her tax file to the tax authorities (Tax Center (CDI), Local Tax Center (CPI), or inspection), he or she can request the allocation of his or her NIF electronically via the following address: https://nifenligne.mfdgi.gov.dz/. The request is processed and the NIF is allocated within 72 hours.

- **Implementation of a tax authentication window:**

This is the national guide to taxpayers, enabling all entities and institutions to verify the tax identification number provided by economic operators, thus ensuring transparency and credibility of transactions and combating tax evasion and fraud.

**2-2- Remote declaration / remote payment services:**

The Algerian tax authorities have embarked on a digital modernization program, to provide users with paperless services.

❖ **The JIBAYATIC portal**

JIBAYATIC, whose name fuses Arabic and technological terms, reflects its ambition to combine tax tradition and digital innovation. This integrated information system, launched in April 2017, aspires to automate all tax processes via a unified digital interface: https://jibayatic.mfdgi.gov.dz/

Access to JIBAYATIC is offered to relevant taxpayers in modern tax administration structures (Directorate of Large companies (DGE), CDI, CPI). (Mohammed, 2022) It is being rolled out progressively, currently covering the DGE, 43 CDIs, and 11 CPIs.

The objectives of this platform are twofold:

- Internally, it aims to optimize administrative efficiency by automating tax functions, providing real-time access to relevant data, and standardizing practices.
- For users, it aims to facilitate remote procedures, by offering services such as online declarations and online consultation of payments.

To register, taxpayers must download a file from https://jibayatic.mfdgi.gov.dz, including a registration form, terms and conditions, bank details (RIB), and a power of attorney if required. The application can be submitted online or in person.

JIBAYATIC embodies the Algerian tax authorities' ambition to create a complete digital ecosystem, enabling taxpayers to manage their entire tax file remotely, from declaration to follow-up of any disputes. (DGI, 2024)

❖ **The "MOUSSAHAMA'TIC" portal**

Launched on July 22, 2021, this initiative aims to bridge the technological gap in regions lacking the JIBAYATIC system (CDI) and Centers (CPI) is lacking. The platform currently covers 28 wilayas, reaching a significant part of the national territory.

The essence of this portal lies in its ability to facilitate monthly declarations, notably G50 forms, as well as specific declarations such as the bank domiciliation tax and the single flat-rate tax (G12 and G12 Bis). Its accessibility via a variety of technological media, including smartphones, testifies to its adaptability to the modern needs of taxpayers. (Hocine & Lokmane, 2022)

There are two ways to register for MOUSSAHAMA'TIC: either remotely via the official website https://moussahamatic.mfdgi.gov.dz/ or in person at the relevant tax office. In both cases, secure authentication is ensured by the allocation of a unique password. (DGI, 2024)

## II- Research methodology

This case study examines digitization implementation strategies in the Algerian tax administration. Using a multidimensional approach, we analyze the challenges, opportunities, and success factors associated with this digital transformation.

### 1- Research design and data collection

This study employs a mixed-methods approach, combining quantitative and qualitative data to provide a comprehensive understanding of the digitization process in Algerian tax administration.

Two main data collection instruments were used:

- An online questionnaire administered to 101 employees of the Algerian tax authorities distributed across different regions: 65% from the Northern wilayas, 20% from the Eastern wilayas, 10% from the Western wilayas, and 5% from the Southern wilayas, during the period from May to August 2024.
- Semi-structured interviews with 10 tax officials and tax experts.

**Statistical methods used**

Data were analyzed using:

- ***SPSS software***: to analyze the results of the online questionnaire, based on the five-point Likert scale.

**Table (2): Five-point Likert scale**

| Option<br>Note | Totally disagree (Tdis)<br>1 | Disagree (Dis)<br>2 | Neutral (N)<br>3 | I agree. (A)<br>4 | I totally agree (TA)<br>5 |
|---|---|---|---|---|---|
| Average | (1-1,79) | (1,80-2,59) | (2,60-3,39) | (3,40-4,19) | (4,20-5) |

**Source: (Fattah, 2008)**

Descriptive analyses were carried out to characterize the sample and responses to the questions.

- **Frequencies and percentages:** These analyses were used to describe the main characteristics of the sample studied (e.g. age, gender, level of education) and to determine individuals' responses to the various questionnaire questions.
- **Average**: The average was calculated for each item to determine the average level of response from individuals. This made it possible to identify

the most important items and determine the level of consensus among respondents.

- **Standard deviation**: The standard deviation was calculated to measure the dispersion of responses around the mean. A high standard deviation indicates high variability in responses, while a low standard deviation indicates high homogeneity.

The internal consistency of the measurement scale was assessed using the:

- **Pearson correlation coefficient**: This coefficient was calculated for each item about the total score for each factor, to assess the internal consistency of the measurement scale.
- **Cronbach's alpha coefficient**: This coefficient was used to measure the overall reliability of the measurement scale.

➢ ***SWOT method:*** Qualitative data from open-ended questions and interviews were subjected to thematic analysis. The SWOT (Strengths, Weaknesses, Opportunities, Threats) framework was used to organize and interpret the results.

***2-*** **Descriptive analyses (questionnaire)**

**2-1- Reliability and validity of the measuring instrument**

Before distribution, the questionnaire was evaluated by a panel of experts. After distribution, its reliability was tested by calculating Cronbach's alpha coefficient. The results obtained are presented in the following table:

**Table (3): Alpha Cronbach coefficient**

| | Section 1 | Section 2 | Section 3 | Complete study |
|---|---|---|---|---|
| N of paragraphs | 8 | 8 | 8 | 24 |
| Alpha cronbach | 0,92 | 0,76 | 0,77 | 0,85 |

**Source**: **Prepared by the researchers based on SPSS results**

The table above shows that Cronbach's alpha for the questionnaire as a whole is high (0.85) and above the statistically acceptable value of 0.70, indicating that the questionnaire has a high degree of reliability and can therefore be studied and analyzed.

❖ **Internal consistency**

Is based on the degree of correlation between each statement and the total axis score. Pearson's correlation coefficient was calculated and tested for statistical significance as follows:

**Table (4): Internal consistency test**

| Section 1 | | Section 2 | | Section 3 | |
|---|---|---|---|---|---|
| N | Coefficient "r | N | Coefficient "r | N | Coefficient "r |
| 1 | 0,768** | 9 | 0,632** | 17 | 0,594** |
| 2 | 0,784** | 10 | 0,616** | 18 | 0,578** |
| 3 | 0,868** | 11 | 0,570** | 19 | 0,631** |
| 4 | 0,796** | 12 | 0,593** | 20 | 0,572** |
| 5 | 0,869** | 13 | 0,580** | 21 | 0,746** |

| | | | | | |
|---|---|---|---|---|---|
| 6 | 0,812** | 14 | 0,750** | 22 | 0,668** |
| 7 | 0,824** | 15 | 0,685** | 23 | 0,589** |
| 8 | 0,820** | 16 | 0,682** | 24 | 0,630** |

******: significant correlation at 0.01 level (two-tailed)

**Source**: **Prepared by the researchers based on SPSS results**

The results obtained from Pearson's correlation coefficient suggest the existence of strong positive relationships between the different pairs of variables within each section. These correlations are generally high, indicating a close association between the variables under consideration.

**2-2- Analyze the characteristics of the sample studied (questionnaire)**

The following tables and graphs present the demographic characteristics of the study sample in terms of gender, age, level of education, years of experience, and grade.

**Table (5): Demographic characteristics**

| Demographic variables | | No. | (%) |
|---|---|---|---|
| Gender | Men | 71 | 70,3 |
| | Woman | 30 | 29,7 |
| Age | 18-25 | 2 | 2 |
| | 26-35 | 18 | 17,8 |
| | 36-45 | 47 | 46,5 |
| | 46-55 | 23 | 22,9 |
| | +56 | 11 | 10,8 |
| Study level | Bin | 21 | 20,8 |
| | License | 22 | 21,8 |
| | Master | 43 | 42,6 |
| | Doctoral student | 15 | 14,8 |
| Years of experience | 0-5 | 17 | 16,8 |
| | 6-10 | 14 | 13,9 |
| | 11-15 | 29 | 28,7 |
| | 16-20 | 14 | 13,9 |
| | +21 | 27 | 26,7 |
| Grade | Inspector | 10 | 9,9 |
| | Senior Inspector | 17 | 16,8 |
| | Central inspector | 33 | 32,7 |
| | Divisional Inspector | 27 | 26,7 |
| | Chief Inspector | 14 | 13,9 |

**Source: Prepared by the researchers based on SPSS results**

Analysis of the table reveals a majority of men (70.3%) in the survey population, as well as a predominance of employees aged between 36 and 45 (46.5%), indicating a career phase where experience and responsibilities are fully established. The most common level of qualification is a master's degree (42.6%), while a notable proportion (14.8%) of respondents hold a Doctorate or are in the process of obtaining one, reflecting the importance attached to

advanced academic skills. In terms of experience, 28.7% of employees have between 11- and 15-years' seniority, closely followed by those with over 21 years' experience (26.7%), illustrating an experienced workforce. The most common positions are central inspector (32.7%) and divisional inspector (26.7%), reflecting a concentration on management and supervisory functions.

**Results and discussion**

***a*- Analysis of section 1**

**Table (6): Descriptive statistics for the perception and understanding of digitalization in tax administration.**

| N | | T. A | A | N | D I S | T D I | Mean | Standard deviation | Results | % Acco-rd | T-Test |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Nbr | 81 | 18 | 1 | 0 | 1 | 4,76 | 0,568 | T. A | | |
| | % | 80,2 | 17,8 | 1 | 0 | 1 | | | | 95,20 | 31,166 |
| 2 | Nbr | 66 | 28 | 6 | 0 | 1 | 4,56 | 0,699 | T. A | | |
| | % | 65,3 | 27,7 | 5,9 | 0 | 1 | | | | 91,20 | 22,498 |
| 3 | Nbr | 75 | 19 | 3 | 3 | 1 | 4,62 | 0,773 | T. A | | |
| | % | 74,3 | 18,7 | 3 | 3 | 1 | | | | 92,40 | 21,120 |
| 4 | Nbr | 69 | 20 | 6 | 5 | 1 | 4,5 | 0,890 | T. A | | |
| | % | 68,3 | 19,7 | 5,9 | 5 | 1 | | | | 90,00 | 16,878 |
| 5 | Nbr | 56 | 33 | 6 | 3 | 3 | 4,35 | 0,943 | T. A | 87,00 | |
| | % | 55,4 | 32,6 | 5,9 | 3 | 3 | | | | | 14,355 |
| 6 | Nbr | 65 | 23 | 9 | 3 | 1 | 4,47 | 0,855 | T. A | 89,40 | 17,221 |
| | % | 64,4 | 22,8 | 8,9 | 3 | 1 | | | | | |
| 7 | Nbr | 63 | 30 | 4 | 2 | 2 | 4,49 | 0,832 | T. A | | 17,939 |
| | % | 62,4 | 29,6 | 4 | 2 | 2 | | | | 89,80 | |
| 8 | Nbr | 67 | 28 | 4 | 1 | 1 | 4,57 | 0,712 | T. A | 91,40 | 22,221 |
| | % | 66,3 | 27,7 | 4 | 1 | 1 | | | | | |
| **Section 1** | | | | | | | **4,54** | **0,639** | **T. A** | **90,79** | **24,211** |

**Source: Prepared by researchers based on spss results**

Analysis of the data reveals a marked trend toward approval of the proposed statements, as evidenced by the indicators obtained. Central values ranged from 4.35 to 4.76 on the 5-point Likert scale, reflecting a pronounced endorsement by participants. The dispersion of responses, measured by standard deviations ranging from 0.568 to 0.943, remains contained, underlining a certain homogeneity of opinions expressed.

The distribution of responses shows a predominance of the "Totally agree" option for all items, corroborating the high averages observed. This phenomenon attests to a robust consensus within the sample studied.

Examination of the T-tests reinforces this interpretation. The values obtained, ranging from 14.355 to 31.166, highlight a significant deviation

from a neutral distribution, confirming respondents' strong inclination towards agreement, or even total agreement.

In summary, the study reveals a remarkable convergence of opinion among the participants. The combination of high averages, low variability, and convincing statistical tests suggests widespread acceptance of the proposals submitted for evaluation.

**b- Analysis of section 2:**

**Table (7)**: **Descriptive statistic for the challenges and obstacles to digitalizing tax administration**

| N | | | | | | | Mea | St devia | Result | % A | T-test |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | T. A | A | N | DIS | Td | | | | | |
| 9 | Nbr | 57 | 34 | 4 | 3 | 3 | 4,38 | 0,926 | T. A | 87,60 | |
| | % | 56,4 | 33,6 | 4 | 3 | 3 | | | | | 14,940 |
| 10 | Nbr | 44 | 36 | 10 | 9 | 2 | 4,10 | 1,034 | A | 82,00 | |
| | % | 43,6 | 35,6 | 9,9 | 8,9 | 2 | | | | | 10,677 |
| 11 | Nbr | 65 | 22 | 5 | 8 | 1 | 4,41 | 0,971 | T. A | 88,20 | |
| | % | 64,3 | 21,8 | 5 | 7,9 | 1 | | | | | 14,546 |
| 12 | Nbr | 50 | 38 | 6 | 6 | 1 | 4,29 | 0,898 | T. A | | |
| | % | 49,6 | 37,6 | 5,9 | 5,9 | 1 | | | | 85,80 | 14,402 |
| 13 | Nbr | 36 | 37 | 12 | 10 | 6 | 3,86 | 1,183 | A | | |
| | % | 35,7 | 36,6 | 11,9 | 9,9 | 5,9 | | | | 77,20 | 7,315 |
| 14 | Nbr | 22 | 37 | 11 | 24 | 7 | 3,43 | 1,260 | A | 68,60 | 3,396 |
| | % | 21,8 | 36,6 | 10,9 | 23,8 | 6,9 | | | | | |
| 15 | Nbr | 27 | 41 | 17 | 15 | 1 | 3,77 | 1,038 | A | 75,40 | 7,477 |
| | % | 26,7 | 40,6 | 16,8 | 14,9 | 1 | | | | | |
| 16 | Nbr | 24 | 36 | 24 | 15 | 2 | 3,64 | 1,064 | A | 72,80 | 6,080 |
| | % | 23,7 | 35,6 | 23,8 | 14,9 | 2 | | | | | |
| **Section 2** | | | | | | | **3,98** | **0,656** | **A** | **79,68** | **15,081** |

**Source**: **Prepared by researchers based on spss results**

Examination of the data collected reveals a general trend toward approval of the proposed statements, albeit with notable nuances. Central values ranged from 3.43 to 4.41 on the Likert pentapartite scale, indicating variable but generally positive support for the proposals.

The dispersion of responses, quantified by standard deviations, ranges from 0.898 to 1.260, highlighting a significant heterogeneity of opinion. Some articles elicit a more marked consensus, while others generate more contrasting opinions. This variability suggests a range of experiences and perceptions within the sample studied.

Inferential statistical analysis, using T-tests, corroborates these observations. High T-values (14.940, 14.546, 14.402) for certain statements attest to a significant deviation from a neutral position, thus consolidating the

robustness of the adherence respected. On the other hand, other statements, such as the one associated with a T value of 3,396, reveal a less pronounced polarization of opinions.

The section's aggregate mean score of 3.984, with a standard deviation of 0.656, paints a picture of moderate approval, tinged with a certain divergence of opinion. This configuration differs from the previous section, where consensus seemed more pronounced.

**c- Analysis of results in section 3:**

**Table (8): Descriptive statistic for strategies and success factors for digitalizing tax administration**

| N | | | | | | | Mea | St Devia | Result | % A | T-test |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TA | A | N | Di | TD | | | | | |
| 17 | Nbre | 63 | 32 | 3 | 3 | 0 | 4,53 | 0,701 | T. A | | |
| | % | 62,3 | 31,7 | 3 | 3 | 0 | | | | 90,60 | 22,004 |
| 18 | Nbre | 70 | 28 | 2 | 0 | 1 | 4,64 | 0,626 | T. A | | |
| | % | 69,3 | 27,7 | 2 | 0 | 1 | | | | 92,80 | 26,392 |
| 19 | Nbre | 74 | 21 | 5 | 1 | 0 | 4,86 | 0,621 | T. A | | |
| | % | 73,2 | 20,8 | 5 | 1 | 0 | | | | 97,20 | 26,922 |
| 20 | Nbre | 77 | 23 | 0 | 1 | 0 | 4,74 | 0,503 | T. A | | |
| | % | 76,2 | 22,8 | 0 | 1 | 0 | | | | 94,80 | 34,812 |
| 21 | Nbr | 61 | 28 | 7 | 2 | 3 | 4,41 | 0,929 | T. A | | |
| | % | 60,4 | 27,7 | 6,9 | 2 | 3 | | | | 88,20 | 15,205 |
| 22 | Nbr | 48 | 33 | 15 | 4 | 1 | 4,22 | 0,912 | T. A | 84,40 | 13,417 |
| | % | 47,4 | 32,7 | 14,9 | 4 | 1 | | | | | |
| 23 | Nbr | 57 | 36 | 6 | 2 | 0 | 4,47 | 0,701 | T. A | 89,40 | |
| | % | 56,5 | 35,6 | 5,9 | 2 | 0 | | | | | 21,010 |
| 24 | Nbr | 57 | 32 | 8 | 4 | 0 | 4,41 | 0,802 | T. A | 88,20 | 17,613 |
| | % | 56,4 | 31,7 | 7,9 | 4 | 0 | | | | | |
| **Section 3** | | | | | | | **4,51** | **0,45** | **T. A** | **90,20** | **33,573** |

**Source**: **Prepared by researchers based on spss results**

Analysis of the data collected in this section reveals a marked trend toward approval of the proposed statements. Statistical indicators show a notable convergence of opinions expressed by participants.

The central values recorded range from 4.22 to 4.86 on the 5-point Likert scale. This distribution, clearly oriented towards the upper pole of the scale, reflects pronounced support for the proposals submitted for evaluation. The dispersion of responses, measured by standard deviations ranging from 0.503 to 0.929, remains relatively contained, corroborating the homogeneity of perceptions within the sample studied.

Aggregation of the data at section level reveals a mean score of 4.51, with a standard deviation of 0.45. These parameters reinforce the impression of a robust consensus among respondents. The overall approval rating, at

90.20%, supports this interpretation, presenting a broadly favorable reception of the themes addressed.

**Hypothesis testing**

**a- Testing the first hypothesis**

**H1**: The level of perception and understanding of digital transformation in the Algerian tax administration positively affects the ability to identify and assess the challenges and obstacles facing the digital transformation process.

**Table (9): Results of testing the first hypothesis.**

| | **Perception and understanding of digital transformation in the Algerian Tax Administration** | | |
|---|---|---|---|
| **Challenges and obstacles** | Pearson correlation | Sig | N |
| | 0,120 | 0,230 | 101 |

**Source**: **Prepared by researchers based on spss results**

**Interpreting the results**:

- **Correlation coefficient (r)**: The Pearson correlation coefficient obtained is 0.120. This result indicates a very weak positive correlation between the two variables studied. In practice, this suggests that there is a slightly positive, but almost negligible, trend between perceived challenges and obstacles and perception/understanding of digital transformation.
- **Statistical significance (Sig)**: The significance value (p-value) is 0.230, well above the conventional statistical significance threshold of 0.05 (5%). This implies that the observed correlation is not statistically significant.

**Implications:**

**No significant relationship**: The results show that there is no significant relationship between the perception of challenges and obstacles and the understanding of digital transformation in the context of Algerian tax administration. This could indicate that these two aspects are relatively independent of each other in the study population. In conclusion, hypothesis H1, which states that perception and understanding of digital transformation positively affect the ability to identify challenges, **is not significantly confirmed**.

**b- Testing the second hypothesis:**

**H2**: The level of perception and understanding of digital transformation in the Algerian tax administration is directly linked to the effectiveness of the digital transformation strategies applied.

**Table (10): Results of testing the second hypothesis.**

| **Strategies for digital transformation** | **Perception and understanding of digital transformation in the Algerian Tax Administration** | | |
|---|---|---|---|
| | Pearson correlation | Sig | N |
| | 0,488 | 0,000 | 101 |

**Source**: **Prepared by researchers based on spss results**

**Interpreting the results:**

- **Correlation coefficient (r):** The Pearson correlation coefficient obtained is 0.488. This result indicates a moderate positive correlation between the two variables studied. The correlation of **0.488** is moderate, which means that other factors influence the effectiveness of digital transformation strategies, in addition to the perception and understanding of these processes.
- **Statistical significance (Sig):** The significance value (p-value) is 0.000. This value is well below the conventional statistical significance threshold of 0.05 (5%) and even 0.01 (1%). This implies that the correlation is highly statistically significant.

**Implications**:

This analysis supports the hypothesis of a significant and positive relationship between digital transformation strategies and the Algerian tax administration's perception/understanding of digital transformation. These results underline the potential importance of digital transformation strategies in the organization's overall digital transformation process.

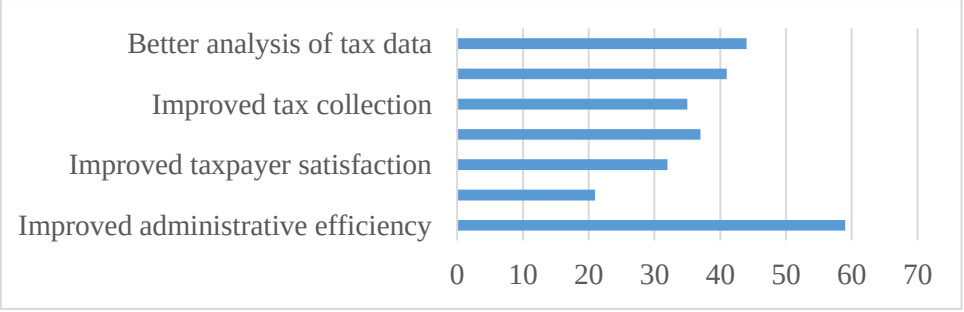
**3- Mixed analysis: Benefits, challenges, and strategy of tax digitalization in Algeria**

**3-1- Benefits of tax digitalization in Algeria**

**A. Quantitative analyses:**

The survey carried out among tax administration players identified the major benefits attributed to the digital transition, reflecting the expectations and perceptions of industry professionals.

**Figure (1): the main benefits of digitalization**




**Source: Prepared by the researchers based on responses to the questionnaire**

This prioritization of perceived benefits reveals a pragmatic vision of digitization within the tax authority. The focus on improving internal processes and making the most of data suggests an approach geared towards operational efficiency and informed decision-making. This perspective suggests the potential for a profound transformation of administrative

practices, with significant implications for the quality of services rendered and the overall management of the tax system.

**B. Qualitative analysis**

Qualitative analysis of the interviews reveals a convergence of results along four main lines:

- **Productivity gains:** Participants report a streamlining of tasks and a reduction in processing times.
- **Enhanced regulatory compliance:** The measures put in place seem to guarantee better compliance with tax obligations.
- **Improved data reliability:** Respondents point to greater transparency in information management and fewer errors.
- **Risk reduction:** Our systems help prevent fraud and malfunctions.

**C. Comparative analysis**

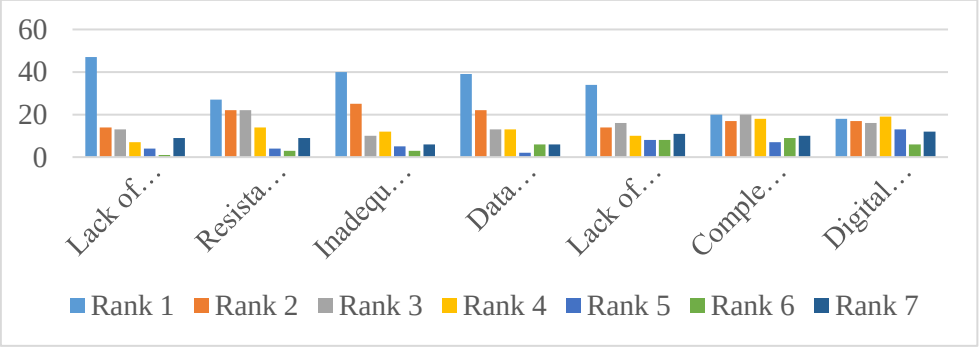
There is a high degree of concordance between the quantitative and qualitative results concerning the improvement of administrative efficiency and data analysis. However, the interviews placed greater emphasis on fraud reduction, a lesser priority in the questionnaire responses.

**3-2- Challenges of digitalization**

**A. Quantitative analysis**

A quantitative analysis of the challenges perceived in the digitalization of Algerian tax administration reveals a significant hierarchy of concerns.

**Figure (2): Ranking of digitalization challenges for Algerian tax authorities from 1 to 7.**




**Source: Prepared by the researchers based on responses to the questionnaire**

The study highlights a triptych of predominant challenges, reflecting the major concerns of industry players.

On the front line is the issue of training, identified as the main obstacle by a substantial fraction of respondents, implying a critical need to strengthen digital skills among administrative staff.

The second major challenge concerns infrastructural shortcomings, pointing to potential gaps in the technological base required for this transformation.

Rounding off this trio, data security appears as the third crucial issue. This concern reflects an acute awareness of the risks inherent in the digitization of tax processes and underlines the importance attached to protecting sensitive information.

This configuration of perceived challenges offers valuable insight into the priorities to be addressed in the digitalization strategy. It highlights the need for a multi-dimensional approach, simultaneously integrating the development of human skills, the strengthening of infrastructures, and the implementation of robust security protocols. This perception of the issues by players in the field provides an essential basis for guiding future initiatives and optimizing the allocation of resources in the process of modernizing the Algerian tax administration.

**B. Qualitative analysis:**

An in-depth exploration of the interviews revealed a set of recurring challenges in the process of digitizing tax administration. The obstacles identified by the participants reflect a constellation of interconnected concerns. These include apprehension about organizational change, worries about the adequacy of technological infrastructures, perceived gaps in staff skills and training, and concerns about securing digital data.

**C. Comparative analysis:**

Juxtaposing the results of quantitative and qualitative methods reveals significant points of convergence, while also highlighting some interesting nuances.

There is marked agreement on two major challenges: the perceived inadequacy of staff training and infrastructure shortcomings. These elements emerge as central concerns, whatever the methodological prism adopted.

However, a subtle but significant discrepancy emerges in the perception of resistance to change. While the qualitative interviews position this aspect as a key issue, the quantitative analysis attributes relatively less importance to it.

**3-3- Implementation strategy: success factors for digitalization**

**A. Quantitative analysis**

Analysis of the questionnaire responses reveals a clear hierarchy of the factors highlighted as most important for the digitalization of tax administration.

**Table (11): Importance of success factors for digitalizing tax administration**

| Factor | Ranking 1 | Ranking 2 | Ranking 3 | Ranking 4 | Ranking 5 |
|---|---|---|---|---|---|
| Staff training | 73 | 7 | 4 | 5 | 12 |
| Management support | 43 | 21 | 8 | 10 | 19 |
| Technology infrastructure | 53 | 20 | 6 | 7 | 15 |
| Organizational culture change | 40 | 24 | 12 | 13 | 12 |
| Data security | 53 | 17 | 6 | 7 | 18 |

**Source: Prepared by the researchers based on responses to the questionnaire**

From table (11) we can conclude that:

- Staff training is seen as the most crucial element in the successful digitalization of tax administration.
- This is followed by technological infrastructure and data security in second place, reflecting the importance attached to establishing a solid technological base to support the digitalization process, as well as concerns about protecting sensitive information in a digital environment.
- Concerning management support: (in third place) considered very important by a significant number of respondents. This underlines the key role of leadership in the success of digital transformation.
- As for changing organizational culture: 40 responses although it is the factor least often ranked in first place.

**B. Qualitative analysis:**

An in-depth examination of the interviews reveals several strategic axes for a successful digital transformation of tax administration:

- The development of human capital is emerging as a fundamental pillar, involving the acquisition of technical skills and the adaptation of mentalities.
- The implementation of a progressive strategic roadmap is crucial to ensure a smooth and controlled transition.
- The evolution of the technological infrastructure is the material foundation of this transformation, designed to meet new data processing and security requirements.
- Streamlining tax procedures is a major efficiency lever, aimed at optimizing internal processes and taxpayers' experience.
- Strengthening inter-departmental synergies and international cooperation are emerging as factors amplifying the impact of digitization.

**C. Comparative analyses**:

The convergence of quantitative and qualitative analyses underlines the paramount importance of skills development, technological modernization, and data security. Qualitative aspects enrich this perspective by highlighting the human and collaborative dimensions of digital transformation.

An in-depth investigation of the digital transformation process within the Algerian tax administration reveals a complex, multidimensional dynamic. Observations highlight an interesting paradox: although the perception and apprehension of this technological mutation exert only a moderate influence on the identification of obstacles, they nonetheless prove decisive in the effectiveness of implementation strategies. This finding underlines the crucial importance of a holistic approach, aimed at enriching the understanding of stakeholders while optimizing implementation methods, without neglecting the exploration of other influential variables.

An analysis of the context highlights the strategic nature of this digital transition for the modernization of Algerian tax services. This evolution aims to catalyze operational efficiency, reinforce transparency, and optimize the management of tax resources. However, as with any large-scale transformation, this process harbors both promising opportunities and substantial challenges that need to be anticipated and overcome with discernment.

To fully grasp the challenges inherent in this transition, a SWOT analysis proved indispensable, revealing a nuanced picture:

- **Strengths**: Strong recognition of the importance of digitization and high expectations in terms of improving efficiency and taxpayer satisfaction.
- **Weaknesses**: Insufficient technological infrastructure, lack of adequate training, and resistance to change among employees.
- **Opportunities**: Improved data analysis enhanced inter-departmental information exchange, and potential reduction in corruption.
- **Threats**: Data security concerns, financial resource limitations, and a lack of digital skills among taxpayers.

**Conclusion**

The success of the digital transformation of the Algerian tax administration depends on a synergy between a thorough understanding of the issues by all stakeholders and the implementation of adaptive strategies. This approach will not only overcome identified obstacles but also capitalize on emerging opportunities, paving the way for a more efficient, transparent tax administration at the service of the country's economic development.

This transformation, though complex, represents a crucial investment in the future, whose potential benefits in terms of administrative efficiency, tax compliance, and economic growth fully justify the efforts and resources required to bring it about.

We recommend the following actions:

- Develop a detailed, adaptable digital roadmap, with precise objectives and regular evaluations.
- Strengthen staff training on digital transformation, improving their understanding of processes and their ability to identify challenges. Also, consider the impact of infrastructure and line support.
- Improve technological infrastructure to ensure uniform national coverage and reliable systems.
- Implement an in-depth training program to develop staff digital skills.
- Establish strict data security protocols and openly address ethical issues.
- Implement a change management strategy to reduce resistance and foster a sustainable digital culture.
- Collaborate with international partners to benefit from best practices, adapting them to the Algerian context.

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