RESEARCH ARTICLE 

Digital Governance and Anti-Corruption Transformation in Algeria: Evaluating the Role of Fiscal Digitization and E-Procurement Systems in Enhancing Administrative Transparency and Public Sector Integrity

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Abstract


The accelerating digital transformation of public administration has emerged as a central governance strategy for strengthening institutional efficiency, transparency, and accountability in developing economies. Within this context, Algeria has increasingly adopted digital governance reforms as part of a broader national effort to combat financial and administrative corruption, particularly in strategically sensitive sectors such as taxation and public procurement. This study critically examines the extent to which the digitization of tax administration and electronic public procurement systems contributes to reducing corruption risks, improving procedural transparency, and enhancing administrative performance in Algeria. Employing a qualitative legal-analytical and institutional approach, the study analyzes legislative frameworks, regulatory reforms, digital administrative mechanisms, and electronic governance tools introduced by the Algerian state. Particular emphasis is placed on fiscal digitization instruments, including electronic tax declaration systems, digital taxpayer identification mechanisms, and online fiscal administration platforms, alongside the electronic procurement portal governing public contracts and concession procedures. The findings indicate that digitization has significantly contributed to strengthening oversight mechanisms, limiting discretionary administrative practices, reducing bureaucratic inefficiencies, and improving traceability within public financial management systems. The study further demonstrates that digital governance frameworks enhance procedural equality, facilitate public access to administrative information, and reinforce institutional accountability. However, persistent structural limitations—including incomplete digital integration, cybersecurity vulnerabilities, uneven administrative capacity, and gaps in regulatory implementation—continue to constrain the full anti-corruption potential of digital transformation initiatives. The study concludes that while digitization represents a strategic instrument for administrative modernization and corruption prevention, its effectiveness depends on comprehensive legal harmonization, mandatory digital implementation, institutional interoperability, and sustained human capacity development. The article contributes to the growing literature on digital governance and public sector reform by providing a context-specific analysis of Algeria's evolving anti-corruption architecture within the framework of e-government transformation and administrative modernization.

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INTRODUCTION

The digital transformation of public administration has become one of the defining institutional developments of the twenty-first century, fundamentally reshaping the relationship between governments, public institutions, and citizens. Across both developed and developing economies, governments increasingly rely on digital governance systems to enhance administrative efficiency, improve transparency, strengthen accountability mechanisms, and reduce opportunities for corruption within public sector operations. In this evolving governance landscape, digitization is no longer viewed merely as a technological modernization strategy but rather as a multidimensional institutional reform process capable of restructuring administrative practices, public financial management, and state-citizen interactions.

Within developing countries, the urgency of administrative digitization is particularly pronounced due to the persistence of bureaucratic inefficiencies, procedural opacity, weak institutional oversight, and the widespread prevalence of financial and administrative corruption. Corruption remains among the most significant structural obstacles to sustainable development, institutional legitimacy, and effective public service delivery. Its adverse effects extend beyond economic losses to include declining public trust, weakened governance capacity, distortion of public expenditure priorities, and the erosion of social and administrative justice. These challenges become especially severe within sectors involving extensive financial transactions and public resource allocation, most notably tax administration and public procurement systems.

In Algeria, administrative reform and anti-corruption governance have emerged as central policy priorities within the broader national modernization agenda. The Algerian state has increasingly recognized that traditional administrative models—characterized by excessive procedural complexity, bureaucratic centralization, and limited institutional transparency—are incompatible with the demands of contemporary governance and sustainable economic development. Consequently, Algeria has progressively adopted digital governance mechanisms aimed at modernizing public administration, improving service delivery, and strengthening institutional control over financial and administrative processes.

The transition toward digitized governance in Algeria is closely linked to the broader expansion of e-government systems and the integration of information and communication technologies into administrative management structures. Within this framework, fiscal administration and public procurement have received particular strategic attention due to their direct relationship with public finance management and corruption prevention. The digitization of tax systems through electronic declarations, online taxpayer identification systems, and digital fiscal platforms seeks to enhance tax compliance, reduce discretionary administrative intervention, and strengthen financial transparency. Similarly, the implementation of electronic procurement systems aims to ensure procedural fairness, broaden access to public tenders, improve competitive transparency, and reduce opportunities for favoritism, bribery, and financial manipulation in public contracting processes.

Despite these reform efforts, important institutional and structural challenges remain. The effectiveness of digital governance initiatives continues to be constrained by uneven implementation, incomplete digital integration across public institutions, cybersecurity concerns, insufficient human resource training, and gaps within the regulatory and legal framework governing electronic transactions. Moreover, the coexistence of traditional administrative procedures alongside digital mechanisms limits the transformative capacity of digitization and weakens its potential contribution to anti-corruption governance.

Against this backdrop, the present study seeks to critically examine the role of public administration digitization as a mechanism for combating financial and administrative corruption in Algeria, with specific focus on the tax administration sector and electronic public procurement systems. The study investigates the legal, institutional, and procedural dimensions of digital governance reforms and evaluates their effectiveness in strengthening administrative transparency, accountability, and public sector integrity.

The significance of this study lies in its contribution to the expanding interdisciplinary literature on digital governance, anti-corruption policy, and public administration reform within developing and transitional economies. While existing scholarship has extensively examined e-government initiatives in developed contexts, relatively limited attention has been devoted to the Algerian experience, particularly regarding the intersection between digitization and corruption prevention in strategic public sectors. By analyzing Algeria's evolving digital governance architecture, this study provides a context-specific understanding of how technological modernization can function simultaneously as an administrative reform strategy and as an institutional mechanism for reducing corruption vulnerabilities.

Accordingly, the central research question guiding this study is formulated as follows:

To what extent has the digitization of tax administration and electronic public procurement systems contributed to reducing financial and administrative corruption in Algeria?

To address this question, the study is organized around two principal analytical dimensions:

1. The digitization of the tax administration and its role in strengthening transparency and combating corruption;
2. Electronic public procurement systems as mechanisms for enhancing accountability, procedural integrity, and anti-corruption governance.

LITERATURE REVIEW

1. Digital Governance and the Transformation of Public Administration

The rapid expansion of digital technologies has fundamentally transformed contemporary public administration, reshaping institutional governance structures, administrative procedures, and state-citizen interactions. Within this context, digital governance has emerged as a strategic framework through which governments seek to modernize administrative systems, enhance transparency, improve public service delivery, and strengthen institutional accountability. E-government is no longer conceptualized merely as the technological digitization of administrative procedures; rather, it is increasingly understood as a multidimensional governance model integrating organizational reform, institutional modernization, and data-driven decision-making processes (Fang, 2002; Heeks, 2001).

Early scholarship on e-government emphasized the role of information and communication technologies (ICTs) in improving administrative efficiency and reducing bureaucratic complexity. West (2004) argues that digital governance systems significantly enhance accessibility, responsiveness, and citizen trust by simplifying public service procedures and reducing administrative transaction costs. Similarly, Gil-Garcia and Pardo (2005) conceptualize e-government as an institutional transformation process requiring organizational adaptation, technological integration, and administrative interoperability.

Subsequent studies extended this perspective by examining the broader governance implications of digitization. Dawes (2008) contends that digital governance contributes to institutional restructuring by enabling transparency, inter-agency coordination, and data integration within public administrations. Likewise, Luna-Reyes et al. (2012) emphasize that successful digital governance systems require multidimensional institutional frameworks capable of integrating technological, legal, organizational, and political dimensions simultaneously.

Despite these potential advantages, the literature also highlights substantial implementation challenges, particularly in developing and transitional economies. Ndou (2004) argues that e-government initiatives in developing countries frequently encounter infrastructural limitations, institutional resistance, limited administrative capacity, and digital inequality. Heeks (2003) similarly notes that many digital governance projects fail because governments prioritize technological acquisition without adequately addressing institutional readiness, regulatory adaptation, and human resource development.

Within the Arab and North African context, digital governance reforms have increasingly become central to administrative modernization strategies. Ghalib (2005) highlights that Arab governments have adopted e-government initiatives to improve public administration efficiency and align domestic governance structures with global technological transformations. Al-Harraq (2015) further demonstrates that digital public procurement systems in Morocco significantly improved procedural transparency and administrative oversight, suggesting broader implications for anti-corruption governance in the region.

2. Corruption, Administrative Governance, and Institutional Transparency

Corruption remains one of the most persistent structural obstacles confronting public administration systems globally, particularly in developing economies characterized by weak institutional oversight, bureaucratic complexity, and limited transparency mechanisms. The literature conceptualizes corruption not only as an economic problem but also as a governance failure that undermines institutional legitimacy, weakens public trust, distorts public expenditure priorities, and impedes sustainable development (Rose-Ackerman, 1999).

Kaufmann (2005) argues that corruption thrives in administrative environments characterized by excessive discretion, weak accountability systems, procedural opacity, and inadequate institutional control mechanisms. Administrative corruption, in particular, is closely associated with bureaucratic inefficiency, unequal access to public services, and discretionary decision-making processes that facilitate bribery, favoritism, and abuse of public office.

Within this framework, transparency has emerged as a foundational principle of contemporary governance reform. Transparency International (2023) identifies administrative transparency, digital accountability systems, and public access to governmental information as essential mechanisms for limiting corruption opportunities and strengthening institutional integrity. OECD (2016) similarly emphasizes that corruption risks are particularly pronounced within sectors involving extensive public expenditure and financial transactions, especially taxation and public procurement systems.

Public procurement has historically been recognized as one of the sectors most vulnerable to corruption due to the large volume of financial transactions, discretionary evaluation procedures, and asymmetries of information between public authorities and private contractors. According to OECD (2016), digital procurement systems significantly reduce corruption risks by increasing procedural transparency, standardizing contracting processes, and facilitating auditability and public oversight.

Likewise, tax administration constitutes another strategic sector vulnerable to corruption and financial manipulation. Belazzouz and Wchan (2017) argue that traditional tax administration systems often suffer from bureaucratic inefficiencies, procedural complexity, and weak monitoring systems, thereby creating opportunities for tax evasion, bribery, and administrative misconduct. In response, governments increasingly rely on fiscal digitization to improve tax compliance, strengthen revenue collection, and reduce opportunities for discretionary administrative practices.

3. E-Government as an Anti-Corruption Mechanism

An expanding body of literature identifies digital governance as a strategic anti-corruption instrument capable of transforming administrative systems and strengthening institutional accountability. Andersen (2009) empirically demonstrates that e-government initiatives contribute significantly to corruption reduction by limiting direct interaction between citizens and public officials, thereby reducing opportunities for bribery and administrative manipulation.

Similarly, Shim and Eom (2008), through comparative international analysis, conclude that digital governance systems improve administrative integrity by enhancing transparency, automating procedures, and facilitating institutional monitoring mechanisms. Bertot et al. (2010) further argue that ICT-based governance systems promote what they describe as a “culture of transparency” by increasing public access to governmental information and enabling broader civic participation in oversight processes.

The anti-corruption potential of digital governance is particularly evident in sectors involving public financial management. Bhatnagar (2003) notes that electronic administrative systems reduce corruption opportunities by standardizing procedures, minimizing discretionary authority, and increasing transaction traceability. In tax administration, digitized systems improve revenue monitoring and reduce informal interactions between taxpayers and officials, thereby limiting opportunities for bribery and tax fraud (Ramadan, 2020).

In the field of public procurement, electronic contracting systems have emerged as important governance tools for ensuring procedural integrity and protecting public funds. Ben Jarrad (2021) emphasizes that electronic procurement systems enhance equal access to tenders, reduce bureaucratic manipulation, and facilitate real-time oversight of contracting procedures. Massoudi (2021) similarly highlights that electronic procurement platforms improve procedural transparency and strengthen legal compliance within public contracting systems.

However, the literature also cautions against technological determinism. While digitization may reduce certain forms of corruption, digital governance systems themselves remain vulnerable to cybersecurity threats, institutional manipulation, and regulatory deficiencies. Al-Abboudi (2010) argues that digital transactions require sophisticated legal and technological safeguards to ensure evidentiary validity, information security, and institutional reliability. Likewise, Yildiz (2007) notes that digital governance reforms often face institutional resistance and implementation fragmentation, particularly in public administrations characterized by limited technological readiness.

4. Fiscal Digitization and Tax Administration Reform

The digitization of tax administration has become one of the most significant dimensions of contemporary public sector reform. Governments increasingly utilize digital fiscal systems to improve tax compliance, expand tax bases, enhance revenue collection efficiency, and strengthen oversight over financial transactions.

Chen et al. (2006) argue that integrated digital tax systems improve administrative efficiency by facilitating information exchange, automating tax procedures, and enabling real-time monitoring of financial activities. World Bank (2016) similarly identifies digital fiscal systems as critical instruments for reducing informal economic practices and improving state fiscal capacity.

Within the Algerian context, fiscal digitization has progressively emerged as a central component of administrative modernization strategies. Boudali and Boucheneb (2016) argue that the digitization of Algerian tax administration contributed to improving procedural efficiency and reducing administrative delays through the introduction of electronic declarations and digital fiscal services. Hanish (2020) further demonstrates that e-government implementation positively influenced the operational performance of Algerian tax administration by facilitating taxpayer communication and improving administrative responsiveness.

Rach (2021) emphasizes that fiscal modernization in Algeria represents not merely a technical reform but a broader institutional transformation aimed at strengthening financial governance and administrative transparency. The introduction of electronic taxpayer identification systems, online declarations, and digital fiscal monitoring mechanisms reflects Algeria’s attempt to align domestic tax administration with international digital governance standards.

5. E-Procurement Systems and Digital Public Contracting

Electronic procurement systems represent one of the most advanced forms of digital governance within public financial management. E-procurement platforms facilitate the electronic publication of tenders, digital submission of bids, automated evaluation procedures, and transparent contract award mechanisms.

OECD (2021) identifies digital procurement systems as essential instruments for strengthening public sector integrity and ensuring procedural accountability. Similarly, the European Commission (2020) highlights that e-procurement systems improve competitiveness, reduce administrative costs, and increase procedural transparency across public contracting processes.

Within developing economies, digital procurement reforms are increasingly viewed as mechanisms for combating corruption and improving public expenditure efficiency. Al-Harraq (2015) demonstrates that electronic procurement systems in Morocco significantly enhanced transparency and reduced opportunities for favoritism and procedural manipulation. In Algeria, Presidential Decree No. 15-247 and subsequent legislative reforms institutionalized electronic procurement mechanisms aimed at improving transparency and facilitating electronic exchange of information between contracting authorities and economic operators.

Nevertheless, existing scholarship suggests that effective implementation of e-procurement systems depends on institutional interoperability, legal harmonization, cybersecurity protections, and mandatory digital integration. Without these elements, electronic procurement systems risk reproducing the inefficiencies and vulnerabilities of traditional administrative structures within digital environments.

6. Research Gap and Contribution of the Study

The existing literature confirms that digital governance systems possess significant potential for improving administrative efficiency, strengthening transparency, and reducing corruption risks within public administration. However, despite the growing body of international scholarship on e-government and anti-corruption governance, relatively limited research has examined the Algerian experience from an integrated institutional and legal perspective.

Most existing studies on Algeria focus either on tax administration reform or public procurement regulation independently, while limited attention has been devoted to the interconnected relationship between fiscal digitization, electronic procurement systems, and anti-corruption governance mechanisms. Furthermore, many studies remain descriptive in nature and do not adequately explore the broader institutional implications of digital transformation within the Algerian administrative context.

Accordingly, the present study contributes to the literature by providing a comprehensive and context-specific analysis of how digitization functions as a governance mechanism for combating financial and administrative corruption in Algeria. By integrating legal analysis, institutional governance perspectives, and digital transformation frameworks, the study advances scholarly understanding of the evolving relationship between e-government modernization and anti-corruption reform in developing administrative systems.

METHODOLOGY

This study adopts a qualitative legal-institutional research design to examine the role of fiscal digitization and electronic governance mechanisms in combating financial and administrative corruption within the Algerian public administration system. The methodological approach is grounded in an interdisciplinary analytical framework integrating perspectives from public administration, digital governance, anti-corruption studies, fiscal governance, and administrative law. The selection of this approach is justified by the complex and multidimensional nature of the research problem, which requires simultaneous examination of legal frameworks, institutional reforms, administrative procedures, and digital governance mechanisms.

The study primarily relies on the descriptive-analytical method to identify, describe, and critically evaluate the legislative and institutional reforms governing fiscal digitization and electronic public administration in Algeria. This method enables the systematic analysis of legal texts, regulatory instruments, administrative procedures, and electronic governance mechanisms associated with the modernization of tax administration and anti-corruption governance systems. Through this analytical approach, the study investigates the relationship between digitization, administrative transparency, procedural accountability, and corruption prevention within the Algerian public sector.

In addition, the study employs the legal doctrinal method to examine the legislative and regulatory framework governing fiscal digitization in Algeria. Particular attention is devoted to analyzing Finance Laws, executive decrees, ministerial orders, fiscal regulations, and anti-corruption legislation relating to electronic governance and digital public administration. The legal analysis specifically focuses on:

- the Finance Law for the Year 2006 establishing the Fiscal Identification Number (NIF);
- the Finance Law for 2018 and the Finance Law for 2019 concerning electronic declaration and payment systems;
- Executive Decree No. 13-84 establishing the National Register of Fraudsters;
- Presidential Decree No. 15-247 regulating public procurement and public service concessions;
- and various ministerial instructions and circulars governing digital administrative procedures.

The research also incorporates an institutional governance analysis aimed at evaluating how digital governance mechanisms contribute to strengthening administrative transparency, improving procedural integrity, and reducing opportunities for corruption. Within this framework, the study examines several institutional instruments introduced by the Algerian administration, including:

- the DGI-Djaybatic electronic tax portal;
- the electronic fiscal declaration and payment system;
- the magnetic fiscal identification card;
- the National Electronic Register of Fraudsters;
- and electronic information exchange systems between tax authorities, customs services, and banking institutions.

To support the analytical framework, the study utilizes extensive secondary data sources drawn from both international and national literature. These sources include:

- peer-reviewed journal articles indexed in Scopus and Web of Science;
- books and academic monographs on digital governance and anti-corruption;
- reports issued by international organizations such as the OECD, World Bank, United Nations, and Transparency International;
- doctoral dissertations and specialized legal studies;
- and official Algerian legislative and regulatory documents published in the Official Gazette of the People's Democratic Republic of Algeria.

The study further adopts a comparative interpretive perspective by situating the Algerian experience within broader international debates concerning digital governance and anti-corruption reform. While the primary focus remains on Algeria, selected international experiences and theoretical governance frameworks are incorporated to contextualize the analysis and evaluate Algeria's digital transformation efforts relative to global governance trends.

From a methodological standpoint, the research does not rely on quantitative statistical modeling or empirical survey data. Instead, the study prioritizes in-depth institutional and legal analysis of governance reforms and administrative transformation processes. This approach is particularly appropriate given that the principal objective of the study is to evaluate the effectiveness of legal and institutional digitization mechanisms in reducing corruption risks and strengthening administrative accountability rather than measuring individual behavioral variables statistically.

The analytical process proceeded through several stages. First, relevant legislative and regulatory texts governing fiscal digitization and electronic public administration were identified and systematically reviewed. Second, institutional mechanisms and digital administrative procedures implemented by Algerian authorities were examined and categorized according to their governance functions. Third, the study analyzed the implications of these reforms for administrative transparency, procedural efficiency, anti-corruption governance, and public financial management. Finally, the findings were interpreted within the broader theoretical frameworks of digital governance, institutional modernization, and public sector reform.

Although the study seeks to provide a comprehensive examination of fiscal digitization and anti-corruption governance in Algeria, certain limitations should be acknowledged. The research relies primarily on documentary and legal sources and therefore does not include field interviews with public officials or taxpayers. Additionally, the rapidly evolving nature of digital governance reforms means that some institutional developments may continue to change after completion of the study. Nevertheless, the methodological framework adopted provides a robust analytical basis for understanding the institutional and legal dimensions of fiscal digitization and its role in combating financial and administrative corruption in Algeria.

FINDINGS AND DISCUSSION

The findings of this study demonstrate that fiscal digitization and electronic governance reforms in Algeria have generated significant institutional transformations within public administration, particularly in the domains of tax administration and public procurement governance. The analysis indicates that the transition from traditional bureaucratic procedures toward integrated electronic governance systems has contributed positively to enhancing administrative transparency, improving procedural efficiency, strengthening institutional accountability, and reducing several structural opportunities associated with financial and administrative corruption.

One of the principal findings concerns the growing effectiveness of fiscal digitization mechanisms in modernizing tax administration and reducing discretionary administrative practices. The implementation of electronic tax declaration systems, digital taxpayer identification mechanisms, online fiscal services, and the DGI-Djaybatic platform has substantially improved procedural accessibility and administrative responsiveness. These reforms reduced reliance on paper-based procedures and minimized direct physical interaction between taxpayers and tax officials, thereby limiting opportunities for bribery, informal negotiation, and procedural manipulation. Such findings are consistent with the arguments advanced by Andersen (2009) and Shim and Eom (2008), who conclude that electronic governance systems contribute significantly to corruption reduction through procedural automation and reduced administrative discretion.

The study further reveals that the digitization of fiscal administration strengthened institutional transparency by facilitating taxpayer access to fiscal information, electronic declarations, payment monitoring systems, and digital communication channels. The availability of real-time fiscal information and secure electronic taxpayer accounts enhanced procedural clarity and improved the ability of taxpayers to fulfill fiscal obligations efficiently. This finding supports the theoretical perspective proposed by Bertot et al. (2010), who argue that digital governance systems foster a "culture of transparency" through expanded public access to governmental information and increased institutional openness.

Another important finding relates to the role of centralized digital databases in strengthening anti-corruption governance. Mechanisms such as the Fiscal Identification Number (NIF), the magnetic fiscal identification card, and the National Electronic Register of Fraudsters significantly enhanced institutional monitoring capacity by facilitating the integration and exchange of fiscal,

customs, banking, and commercial information among public authorities. The study indicates that these integrated digital systems improved traceability of financial transactions and strengthened the ability of public institutions to detect tax evasion, fraudulent declarations, and irregular economic activities. This finding aligns with OECD (2021) and World Bank (2021), which emphasize that integrated digital governance systems improve public financial oversight and institutional accountability.

The findings also demonstrate that electronic procurement systems have become important governance instruments for enhancing transparency and combating corruption within Algerian public contracting procedures. The electronic procurement portal established under Presidential Decree No. 15-247 significantly improved public accessibility to procurement information, facilitated electronic publication of tenders, and strengthened equal access to public contracts. Through electronic publication and digital registration systems, procurement procedures became more transparent, reducing informational asymmetries and limiting opportunities for favoritism and hidden negotiations.

In addition, the study reveals that electronic contracting systems substantially reduced bureaucratic complexity and administrative routine within procurement governance. By digitizing procurement procedures and enabling electronic exchange of information between contracting authorities and economic operators, the Algerian administration reduced excessive human intervention in procurement processes. This finding supports OECD (2016), which identifies e-procurement systems as among the most effective anti-corruption mechanisms within public financial management due to their capacity to standardize procedures and reduce discretionary administrative practices.

The findings further indicate that electronic procurement systems strengthened oversight mechanisms and improved protection of public funds through enhanced procedural traceability and digital auditing capabilities. Electronic procurement platforms generated digital records documenting each stage of procurement procedures, thereby facilitating institutional monitoring and post-contract auditing processes. This institutional traceability reduced opportunities for procedural manipulation and financial irregularities while reinforcing accountability within public procurement governance.

Nevertheless, despite the significant progress achieved through fiscal digitization and electronic governance reforms, the findings also reveal the persistence of several structural and institutional limitations that continue to constrain the effectiveness of anti-corruption governance in Algeria. One of the most important challenges identified is the incomplete integration of digital governance systems across public institutions. Although substantial progress has been made in tax administration and procurement digitization, many administrative structures continue to operate through hybrid systems combining traditional bureaucratic procedures with electronic mechanisms. This institutional fragmentation reduces interoperability and weakens the transformative capacity of digital governance reforms.

The study also identifies cybersecurity vulnerabilities and insufficient technological infrastructure as important obstacles affecting the sustainability and reliability of electronic governance systems. The increasing dependence on centralized digital databases and electronic administrative procedures exposes public institutions to cybersecurity risks, data breaches, and technological disruptions. This finding corresponds with Al-Abboudi (2010), who emphasizes that the effectiveness of digital governance systems depends on robust legal protections, cybersecurity safeguards, and secure electronic authentication mechanisms.

Furthermore, the findings reveal that administrative resistance and uneven digital competencies continue to affect the implementation of electronic governance reforms. In some institutional contexts, limited technical expertise, insufficient staff training, and organizational resistance to procedural transformation constrain the operational efficiency of digitized administrative systems. Heeks (2003) similarly argues that many e-government reforms fail when technological modernization is not accompanied by institutional adaptation and human capacity development.

Another important finding concerns the persistence of legal and regulatory gaps within the Algerian digital governance framework. Although Algeria has enacted numerous legislative and regulatory reforms governing fiscal digitization and electronic procurement, the study indicates that certain areas remain insufficiently harmonized, particularly regarding electronic evidence systems, data protection standards, inter-agency interoperability, and cybersecurity governance. Consequently, while the legal framework has significantly evolved, continuous legislative adaptation remains necessary to address emerging technological and governance challenges.

The findings also suggest that digital governance reforms have broader implications extending beyond corruption prevention alone. Fiscal digitization and electronic procurement systems contributed to improving administrative efficiency, accelerating service delivery, reducing operational costs, and strengthening institutional legitimacy. By improving transparency and reducing procedural complexity, digital governance systems enhanced citizen trust in public institutions and encouraged greater voluntary compliance within fiscal administration.

From a theoretical perspective, the findings reinforce contemporary governance theories emphasizing the interconnected relationship between digital transformation, institutional modernization, and anti-corruption governance. The Algerian experience demonstrates that digital governance systems can function simultaneously as administrative modernization mechanisms and as strategic instruments for strengthening institutional integrity and public sector accountability. However, the findings equally demonstrate that digitization alone cannot eliminate corruption in the absence of broader institutional reform, legal enforcement, organizational adaptation, and political commitment to governance transparency.

Overall, the study concludes that fiscal digitization and electronic contracting systems have generated measurable improvements in administrative transparency, procedural accountability, and anti-corruption governance within Algeria. Nevertheless, the long-

term effectiveness of these reforms depends on strengthening institutional interoperability, expanding digital infrastructure, enhancing cybersecurity protections, improving administrative capacity, and ensuring comprehensive legal harmonization capable of supporting sustainable digital governance transformation.

2. Digitization of the Tax System and Its Role in Combating Administrative Corruption

The transformation of tax administration through digital governance mechanisms represents one of the most significant dimensions of contemporary public sector reform. Across both developed and developing economies, governments increasingly rely on fiscal digitization as a strategic instrument for strengthening administrative transparency, improving revenue collection efficiency, reducing bureaucratic complexity, and combating financial and administrative corruption. Within this framework, the Algerian tax administration has progressively initiated substantial institutional reforms aimed at transitioning from traditional bureaucratic management toward integrated electronic governance systems capable of modernizing fiscal administration and enhancing public financial oversight.

This transformation reflects broader global trends associated with the emergence of digital governance and data-driven public administration. International institutions such as the World Bank (2021), OECD (2021), and the United Nations (2022) increasingly identify fiscal digitization as a critical pillar of administrative modernization and anti-corruption governance. The digitization of tax systems reduces excessive administrative discretion, strengthens procedural standardization, facilitates institutional monitoring, and minimizes opportunities for bribery and informal negotiation between taxpayers and tax officials (Andersen, 2009; Shim & Eom, 2008).

In Algeria, fiscal digitization has emerged within the broader context of administrative reform and anti-corruption policy. The traditional tax administration model was historically characterized by procedural rigidity, bureaucratic complexity, weak institutional interoperability, and excessive dependence on manual administrative processes. Such conditions frequently generated opportunities for administrative misconduct, tax evasion, discretionary abuse of authority, and financial irregularities. Consequently, the Algerian state increasingly recognized that digital transformation constitutes not merely a technological necessity but a structural governance reform aimed at strengthening institutional integrity and improving the efficiency of public financial management systems.

2.1. Functions, Advantages, and Institutional Dimensions of Fiscal Digitization

Fiscal digitization represents a multidimensional transformation in the concept and operational structure of tax administration. Beyond improving administrative efficiency, digital tax systems reposition taxpayers as active participants within governance processes and strengthen communication between public institutions and citizens. In this sense, digitization contributes to the emergence of participatory administrative governance grounded in transparency, procedural accessibility, and institutional responsiveness.

The literature consistently emphasizes that digital tax systems strengthen public sector integrity through several interconnected mechanisms. First, fiscal digitization enhances transparency by facilitating real-time access to tax information and improving institutional traceability. Second, digital tax systems reduce face-to-face interactions between taxpayers and tax officials, thereby minimizing opportunities for bribery and discretionary administrative practices. Third, electronic fiscal platforms improve monitoring capacity through integrated databases and automated auditing procedures capable of detecting irregularities and suspicious financial activities (Bhatnagar, 2003; Bertot et al., 2010).

Within the Algerian context, the digitization of tax administration also performs a normative and ethical governance function. It reinforces compliance with principles of administrative neutrality, institutional accountability, and public service ethics as established under Algerian anti-corruption legislation, particularly Law No. 06-03 on the Prevention and Combating of Corruption. By automating tax procedures and standardizing administrative operations, digitization limits arbitrary administrative behavior and reduces opportunities for abuse of authority.

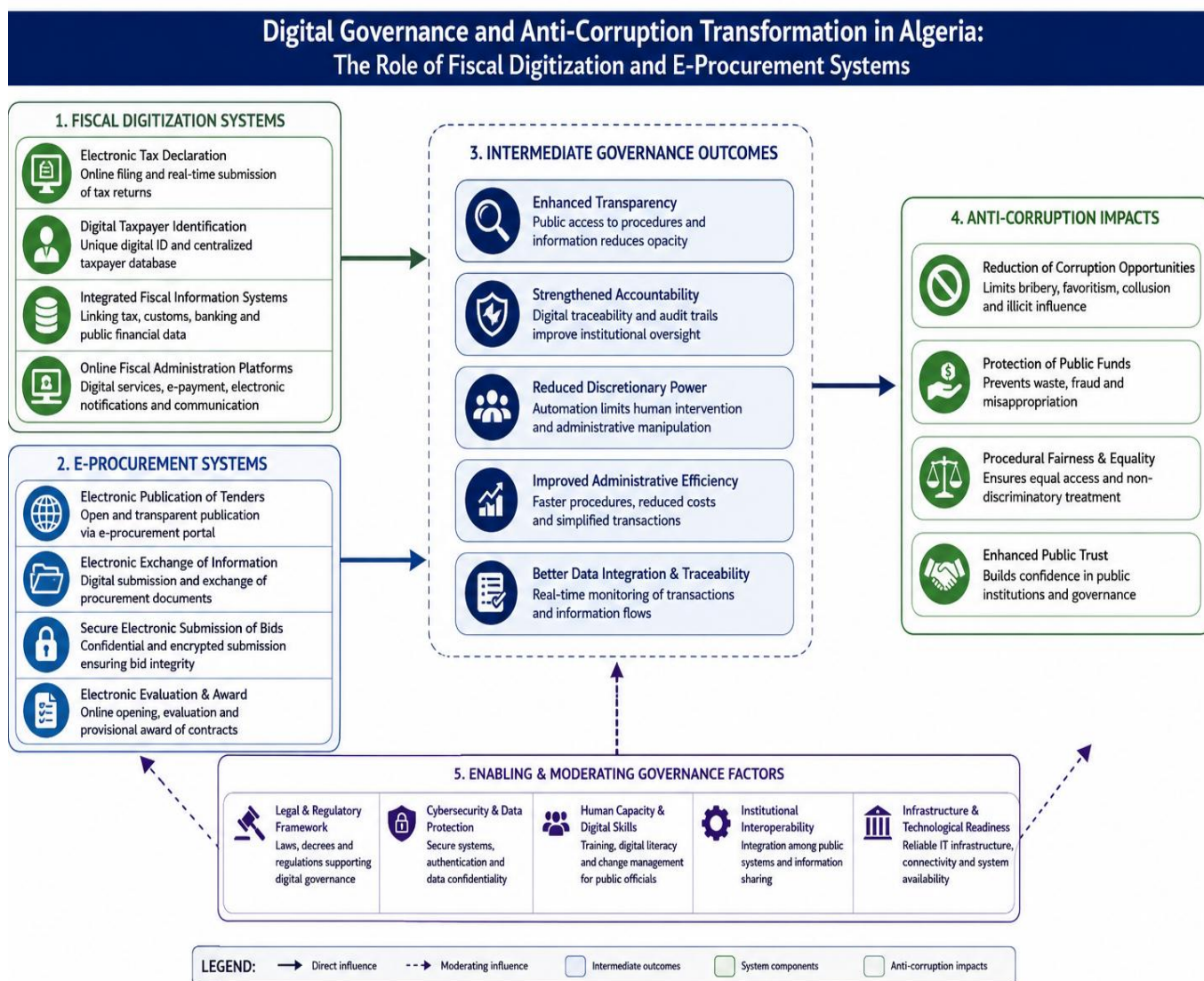
The practical advantages of fiscal digitization are equally substantial. Digital tax systems contribute significantly to expanding the tax base, improving tax collection efficiency, and combating tax evasion and financial fraud. Through electronic declarations, digital taxpayer identification systems, and automated fiscal monitoring tools, tax administrations can collect and process financial information with greater speed, precision, and institutional coordination. Such systems enable governments to develop comprehensive and real-time fiscal databases concerning income, corporate profits, commercial transactions, and the movement of goods and services.

From an anti-corruption perspective, these mechanisms significantly reduce opportunities for hidden financial manipulation and informal negotiations between taxpayers and public officials. Andersen (2009) argues that electronic governance systems weaken corruption incentives by reducing discretionary authority and limiting informal administrative interactions. Similarly, Shim and Eom (2008) conclude that procedural automation strengthens institutional accountability and reduces corruption risks through enhanced administrative transparency and traceability.

Fiscal digitization also strengthens transparency in taxpayer relations by facilitating direct electronic access to fiscal information, tax obligations, declarations, deductions, and legal incentives. Through electronic taxpayer accounts and online fiscal portals, taxpayers gain continuous access to procedural information and administrative services without excessive bureaucratic mediation.

This transparency improves taxpayer trust, encourages voluntary compliance, and reduces opportunities for administrative extortion or bribery.

Figure 1. Conceptual Structural Equation Modeling (SEM) Framework of Digital Governance, Fiscal Digitization, and E-Procurement Systems in Combating Administrative and Financial Corruption in Algeria



Source: Developed by the authors based on Digital Governance Theory, E-Government Governance Models, and Anti-Corruption Institutional Frameworks adapted from Andersen (2009), Bertot et al. (2010), Gil-Garcia and Pardo (2005), OECD (2016, 2021), World Bank (2021), United Nations (2022), Al-Harraq (2015), and Ben Jarrad (2021).

Moreover, digital transformation fundamentally reshapes the internal operational structure of tax administration itself. Electronic communication systems, automated data processing, risk analysis mechanisms, and digital auditing tools improve administrative responsiveness and enable tax authorities to focus enforcement efforts on high-risk taxpayer categories while reducing compliance burdens on compliant taxpayers. Such systems also reduce procedural delays and limit opportunities for bureaucratic procrastination, which frequently constitute structural gateways for administrative corruption.

Chen et al. (2006) similarly argue that integrated electronic governance systems enhance administrative coordination and improve institutional decision-making through centralized information management. World Bank (2016) further emphasizes that digital fiscal systems contribute to the formalization of economic activities and strengthen public financial governance through enhanced data integration and institutional oversight mechanisms.

An additional advantage of fiscal digitization lies in its capacity to regulate administrative performance and reduce excessive human intervention within tax assessment and collection procedures. Traditional fiscal administration systems often depend heavily on discretionary administrative interpretation, thereby creating opportunities for unequal treatment, arbitrary decisions, and informal financial arrangements. Digital systems reduce such risks by standardizing procedures, automating calculations, and enforcing uniform regulatory frameworks across administrative operations.

Within this framework, fiscal digitization contributes not only to revenue collection efficiency but also to broader institutional legitimacy and governance integrity. OECD (2021) identifies digital government systems as essential instruments for building citizen trust in public institutions by strengthening transparency, fairness, and procedural consistency. Similarly, Transparency International (2023) emphasizes that digital accountability mechanisms reduce corruption vulnerabilities by increasing public visibility over administrative processes and financial transactions.

In Algeria, legislative reforms supporting fiscal digitization reflect the state's attempt to align public financial management systems with international digital governance standards. Laws concerning fiscal modernization, taxpayer identification systems, electronic declarations, and digital administrative procedures collectively illustrate a broader institutional commitment toward modernizing tax administration and strengthening anti-corruption governance mechanisms.

Nevertheless, despite these advancements, important structural and institutional challenges continue to affect the effectiveness of fiscal digitization initiatives. These include uneven digital infrastructure, cybersecurity vulnerabilities, incomplete interoperability between public institutions, limited administrative training, and varying levels of digital literacy among taxpayers. Furthermore, the coexistence of traditional administrative procedures alongside digital systems continues to constrain the full transformative capacity of fiscal digitization within the Algerian administrative context.

Consequently, while fiscal digitization represents a powerful governance mechanism for improving administrative transparency and combating corruption, its long-term effectiveness depends on comprehensive institutional reform, mandatory digital integration, cybersecurity protection, legal harmonization, and continuous investment in administrative capacity building and technological modernization.

2.1.2. Legal Reforms Governing Fiscal Digitization

The effectiveness of fiscal digitization depends fundamentally on the existence of a coherent legislative and regulatory framework capable of governing digital administrative procedures, protecting electronic transactions, ensuring data integrity, and institutionalizing transparency within public financial management systems. In contemporary governance systems, digital transformation cannot function effectively in the absence of legal infrastructures that regulate electronic administration, define institutional responsibilities, and establish enforceable procedural standards for digital public service delivery (Gil-Garcia & Pardo, 2005; Dawes, 2008).

Within the broader framework of digital governance, legislative reform constitutes a foundational prerequisite for successful fiscal modernization. Governments adopting digital tax administration systems are increasingly compelled to redesign legal and institutional structures to accommodate electronic declarations, digital taxpayer identification, online financial transactions, electronic evidence systems, and integrated public databases (OECD, 2021; United Nations, 2022). Consequently, the Algerian state progressively introduced a series of legislative and regulatory reforms aimed at institutionalizing fiscal digitization and strengthening anti-corruption governance mechanisms within tax administration systems.

The legislative transformation of Algerian fiscal administration reflects a broader shift from traditional bureaucratic governance toward integrated electronic governance systems characterized by procedural automation, centralized fiscal databases, and digital monitoring mechanisms. These reforms seek not only to modernize administrative performance but also to combat administrative corruption by reducing discretionary authority, limiting informal interactions between taxpayers and officials, and improving institutional traceability of financial transactions (Andersen, 2009; Shim & Eom, 2008).

A. Legislative Foundations of Fiscal Digitization

One of the most significant legal reforms supporting fiscal digitization in Algeria was introduced through the Finance Law for the Year 2006, which established the mandatory use of the Fiscal Identification Number (NIF) under Article 41. The NIF system created a centralized and permanent taxpayer identification framework designed to facilitate taxpayer verification, monitor financial activities, track property ownership, and improve oversight of financial flows entering and leaving Algeria.

From a governance perspective, taxpayer identification systems constitute one of the core institutional pillars of digital fiscal administration. According to the World Bank (2016), integrated taxpayer identification mechanisms improve fiscal transparency, reduce opportunities for tax evasion, and strengthen the state's capacity to monitor financial activities within both formal and informal economic sectors. Similarly, OECD (2021) emphasizes that centralized digital identification systems enhance interoperability between public institutions and facilitate data-driven governance mechanisms.

The Algerian legislature further reinforced fiscal modernization through subsequent Finance Laws aimed at expanding electronic administrative procedures. The Finance Law for 2016 institutionalized the Fiscal Identity Card, thereby strengthening the digital identification infrastructure governing taxpayer registration and financial monitoring systems. Moreover, the Finance Law for 2018 represented a major turning point in Algerian fiscal digitization policy by mandating the transition from traditional declaration and payment systems toward electronic declaration and electronic payment mechanisms. Under Article 58 and Article 169 bis 2 of the Code of Fiscal Procedures, electronic tax declarations became mandatory for taxpayers under the jurisdiction of the Directorate of Large Enterprises, with progressive extension planned for other fiscal sectors.

These reforms align closely with international digital governance trends emphasizing automation and procedural standardization within tax administration systems. Chen et al. (2006) argue that electronic declaration systems improve administrative efficiency by reducing procedural delays, increasing data accuracy, and facilitating integrated financial monitoring. Similarly, Bhatnagar

(2003) notes that electronic tax compliance systems significantly reduce opportunities for corruption by limiting direct interactions between taxpayers and public officials.

The Finance Law for 2018 also introduced taxation mechanisms targeting transactions conducted through digital platforms and online networks. This legislative development reflects the Algerian state's attempt to adapt fiscal governance frameworks to the expanding digital economy and the increasing prevalence of electronic commercial activities. Such reforms were further consolidated through Law No. 18-18 comprising the Finance Law for the Year 2019.

The integration of digital economy taxation mechanisms into national fiscal legislation reflects broader international concerns regarding the regulation of digital economic activities and the protection of state fiscal sovereignty. Ramadan (2020) argues that taxation within digital economies constitutes one of the most important contemporary challenges confronting fiscal governance systems due to the transnational and technologically fluid nature of digital financial transactions. OECD frameworks similarly emphasize that effective taxation of digital economic activities requires integrated digital monitoring systems, institutional interoperability, and electronic transaction traceability mechanisms.

B. Regulatory Frameworks and Administrative Mechanisms

In addition to legislative reforms, Algeria introduced a series of regulatory instruments aimed at operationalizing fiscal digitization and strengthening institutional monitoring systems. Among the most significant of these measures was Executive Decree No. 13-84 establishing the National Register of Fraudsters and perpetrators of serious violations relating to fiscal, commercial, customs, banking, and financial legislation. This register constitutes a centralized electronic database designed to facilitate institutional monitoring, strengthen inter-agency information exchange, and improve the detection of financial irregularities and fraudulent practices.

Centralized digital databases represent critical governance tools within contemporary anti-corruption frameworks. Bertot et al. (2010) emphasize that integrated information systems improve institutional accountability by enhancing traceability, increasing transparency, and facilitating real-time monitoring of administrative activities. Similarly, Transparency International (2023) identifies digital information systems as essential mechanisms for reducing corruption vulnerabilities within public financial management structures.

Further regulatory reforms were introduced through administrative instructions and ministerial circulars designed to operationalize digital fiscal procedures. Instruction No. 3 issued on March 20, 2019 mandated implementation of the taxation mechanisms applicable to transactions conducted through digital platforms and electronic commercial networks.

Moreover, Circular No. 596 dated June 6, 2016 introduced remote fiscal registration procedures enabling taxpayers to electronically request and obtain their Fiscal Identification Number (NIF) through digital communication systems. This reform represented an important step toward dematerializing administrative procedures and reducing physical bureaucratic interaction between taxpayers and fiscal authorities.

The dematerialization of administrative services constitutes a central principle of digital governance reform. West (2004) argues that electronic service delivery systems improve administrative accessibility while simultaneously reducing procedural complexity and opportunities for bureaucratic corruption. Likewise, Luna-Reyes et al. (2012) contend that integrated digital service systems strengthen institutional responsiveness and improve citizen trust in public administration.

Nevertheless, despite the expansion of Algeria's legislative and regulatory framework governing fiscal digitization, several institutional challenges remain. The coexistence of traditional administrative procedures alongside electronic systems continues to create procedural fragmentation and limits the full effectiveness of digital governance reforms. Additionally, cybersecurity risks, institutional resistance, uneven technological infrastructure, and limited digital literacy among certain taxpayer groups continue to affect implementation efficiency (Heeks, 2003; Ndou, 2004).

Consequently, while Algeria has made substantial progress in constructing the legal foundations of fiscal digitization, the long-term effectiveness of these reforms depends on continuous legislative adaptation, institutional interoperability, technological modernization, cybersecurity protection, and comprehensive administrative capacity development. In this regard, legal reform should not be viewed merely as a technical regulatory process but rather as an integral component of broader governance transformation aimed at strengthening institutional transparency, administrative accountability, and anti-corruption governance within the Algerian public sector.

2.2. The Remote Fiscal Documentation and Declaration System (DGI-Djaybatic)

The transition toward electronic tax administration in Algeria reached a significant institutional milestone with the introduction of the DGI-Djaybatic information system in December 2016. This platform represents one of the most advanced dimensions of fiscal digitization within the Algerian administrative system and reflects the state's broader strategy of transitioning from traditional bureaucratic governance toward integrated electronic governance frameworks.

Globally, digital fiscal platforms have become central instruments of administrative modernization and anti-corruption governance. Governments increasingly rely on integrated electronic tax systems to improve procedural transparency, reduce administrative delays, strengthen tax compliance, and limit opportunities for corruption arising from discretionary interactions between taxpayers and public officials (Andersen, 2009; OECD, 2021; World Bank, 2021). Within this context, the DGI-

Djaybatic platform constitutes not merely a technical administrative reform but rather an institutional mechanism designed to restructure fiscal governance according to principles of transparency, efficiency, traceability, and accountability.

The Djaybatic electronic portal was integrated into the SAP information system and designed as a secure digital environment enabling taxpayers to perform a wide range of fiscal procedures remotely. Among its principal functions are online tax declaration filing, electronic transmission of fiscal information, consultation and printing of fiscal payment notices, access to the annual fiscal obligations calendar, and consultation of taxpayers' fiscal accounts, including debt balances, outstanding payments, and personal administrative information.

The implementation of integrated digital fiscal platforms reflects broader theoretical approaches within digital governance literature emphasizing procedural dematerialization and administrative automation. According to Gil-Garcia and Pardo (2005), integrated electronic governance systems improve administrative efficiency by facilitating information exchange, reducing procedural fragmentation, and enhancing institutional coordination. Similarly, Chen et al. (2006) argue that electronic tax systems contribute significantly to improving governance performance through automated processing, centralized information management, and enhanced institutional oversight.

From an anti-corruption perspective, the Djaybatic system performs several strategic governance functions. First, the platform minimizes direct physical interaction between taxpayers and tax officials, thereby reducing opportunities for bribery, informal negotiation, and discretionary administrative practices. Second, it increases procedural transparency by allowing taxpayers direct electronic access to fiscal information and administrative procedures. Third, it strengthens institutional traceability through digital recording of declarations, payments, and fiscal transactions. These functions collectively contribute to improving public sector integrity and limiting corruption vulnerabilities within fiscal administration systems (Bhatnagar, 2003; Bertot et al., 2010; Shim & Eom, 2008).

A. Services Provided by the Djaybatic Platform

The Djaybatic portal provides taxpayers with access to a secure private digital space through which numerous administrative and fiscal services are delivered electronically. Upon completion of a relatively simple subscription process, taxpayers gain access to identity information, guided electronic declaration systems, payment monitoring tools, and various informational resources relating to Algerian tax legislation and procedures.

One of the platform's most important features is the guided electronic declaration system, which assists taxpayers in completing fiscal declarations through automated calculations, dropdown menu systems, and procedural guidance tools. Such systems significantly reduce administrative complexity and minimize procedural errors frequently associated with traditional paper-based tax administration. According to West (2004), electronic public service platforms improve citizen satisfaction and institutional trust by simplifying administrative procedures and increasing service accessibility.

The platform also enables taxpayers to modify declarations before submission, monitor payment status continuously throughout the fiscal year, and access comprehensive fiscal documentation online. These functions enhance procedural flexibility while improving communication between taxpayers and fiscal authorities. In governance terms, such systems contribute to administrative responsiveness and strengthen institutional transparency by facilitating continuous electronic interaction between citizens and public institutions (Dawes, 2008; United Nations, 2022).

Additionally, the availability of digital fiscal documentation contributes to reducing informational asymmetries between taxpayers and the tax administration. Bertot et al. (2010) emphasize that digital access to governmental information constitutes a critical mechanism for promoting transparency and combating corruption. By ensuring that taxpayers possess direct and equal access to fiscal information, digital platforms reduce opportunities for administrative manipulation and unequal treatment.

B. Legal and Regulatory Framework Governing the Platform

The Algerian legislature accompanied the introduction of the Djaybatic platform with a series of legal and regulatory reforms aimed at institutionalizing electronic tax administration procedures and ensuring the legal validity of digital transactions. Relevant provisions include Article 23 of Decree No. 08-02, Articles 34, 67, and 77 of Law No. 16-14, as well as various supplementary laws and executive decrees enacted to support the broader transition toward digital governance systems.

The establishment of legal frameworks governing electronic administration is considered essential for ensuring the legitimacy, enforceability, and institutional reliability of digital governance systems. Al-Abboudi (2010) argues that electronic administrative systems require comprehensive legal infrastructures capable of regulating electronic evidence, digital authentication, cybersecurity protections, and procedural accountability. Similarly, OECD (2021) emphasizes that legal certainty represents a foundational prerequisite for effective digital governance implementation.

The Algerian legal framework governing Djaybatic demonstrates the state's attempt to integrate electronic administration into broader institutional modernization strategies. By codifying electronic procedures and establishing formal digital administrative mechanisms, the legislature sought to strengthen procedural consistency and institutional legitimacy within fiscal governance systems.

C. Subscription Mechanisms and Digital Administrative Integration

Access to Djaybatic services requires taxpayers to subscribe formally to the platform, thereby establishing a contractual relationship between the taxpayer and the General Directorate of Taxes. This subscription process is renewable annually by tacit agreement unless terminated by one of the contracting parties.

The subscription mechanism reflects broader governance principles associated with digital administrative integration and electronic citizen identification systems. According to World Bank (2021), secure digital identification systems and authenticated user accounts are essential for ensuring the integrity, confidentiality, and traceability of digital public services.

Once taxpayers complete the registration process and submit the required documentation to the relevant fiscal authority, they receive access credentials enabling entry into a secure private electronic area within the Djaybatic platform. Through this digital environment, subscribers may submit declarations, correct pending returns, monitor payments, review fiscal data, and manage subscription information electronically.

This model of digital administrative interaction significantly contributes to reducing bureaucratic complexity and administrative congestion traditionally associated with tax administration. Luna-Reyes et al. (2012) argue that integrated digital service systems improve institutional coordination and increase procedural efficiency by centralizing administrative operations within unified electronic platforms.

Furthermore, the secure electronic architecture of Djaybatic strengthens institutional accountability by ensuring that all fiscal procedures are digitally recorded and traceable. Such traceability constitutes one of the core anti-corruption advantages of digital governance systems, as it limits opportunities for procedural manipulation and facilitates institutional auditing processes (Andersen, 2009; OECD, 2016).

2.3. Digital Procedures Directed Toward Taxpayers

The Algerian fiscal digitization strategy extends beyond internal administrative modernization to include digital mechanisms specifically directed toward taxpayers themselves. These measures aim to strengthen taxpayer identification systems, improve monitoring of economic activities, reduce tax evasion, and facilitate integrated oversight of financial transactions. The most important mechanisms in this regard include the Magnetic Fiscal Identification Card and the National Electronic Register of Fraudsters.

2.3.1. The Magnetic Fiscal Identification Card

The fiscal identification card represents one of the most important technological instruments introduced within Algeria's digital tax governance framework. Established under Article 41 of the Finance Law for 2016, the card replaced the traditional Fiscal Identification Number (NIF) system and was initially implemented for taxpayers under the jurisdiction of the Directorate of Large Enterprises before being progressively extended to broader taxpayer categories.

The magnetic fiscal identification card functions as a centralized digital identity mechanism integrating tax, customs, banking, and administrative information within a unified electronic system. This integration significantly improves the capacity of public authorities to monitor financial transactions, detect irregularities, and combat tax evasion and fraudulent declarations.

Integrated taxpayer identification systems are increasingly recognized within governance literature as essential instruments for improving institutional transparency and reducing corruption risks. OECD (2021) emphasizes that centralized digital identity systems facilitate inter-agency coordination and strengthen financial oversight mechanisms. Similarly, World Bank (2016) argues that integrated digital fiscal identities improve tax compliance and reduce opportunities for informal economic activities.

The Algerian fiscal identification card also contributes to procedural simplification by consolidating multiple administrative documents within a unified digital identity framework. Such integration reduces administrative burdens previously associated with fragmented bureaucratic systems and enhances the efficiency of customs, fiscal, and banking procedures.

Moreover, the card strengthens institutional transparency by enabling tax authorities to monitor taxpayers' fiscal positions and debt obligations more accurately through integrated electronic networks connected to customs authorities and banking institutions. Daily information exchange between these institutions allows tax authorities to identify inconsistencies, suspicious transactions, and potential tax evasion practices with greater precision.

From an anti-corruption perspective, such integrated digital monitoring systems significantly reduce opportunities for financial concealment and administrative manipulation. Bertot et al. (2010) argue that centralized digital databases improve institutional accountability and strengthen oversight over public financial activities through enhanced information accessibility and traceability.

2.3.2. The National Electronic Register of Fraudsters

The National Electronic Register of Fraudsters represents another important institutional mechanism within Algeria's anti-corruption and fiscal governance framework. The establishment of this register emerged in response to the expansion of informal economic practices, tax evasion, fraudulent invoicing, and undeclared commercial activities that generated substantial financial losses for the public treasury.

The register constitutes a centralized electronic database containing information concerning individuals and entities responsible for serious violations of fiscal, commercial, customs, banking, and financial legislation. Its legal foundations evolved progressively

through several legislative reforms, culminating in Executive Decree No. 13-84, which currently governs its operation and institutional framework.

According to Article 2 of Executive Decree No. 13-84, the register includes information relating to serious fiscal and financial violations, including tax evasion, fraudulent declarations, unlawful banking operations, violations of commercial regulations, and failure to comply with corporate reporting obligations.

The creation of centralized fraud databases reflects broader international trends emphasizing data-driven anti-corruption governance systems. Transparency International (2023) and OECD (2016) identify integrated digital monitoring mechanisms as essential tools for combating financial crime and improving institutional accountability. Similarly, Andersen (2009) argues that digital governance systems reduce corruption vulnerabilities by improving institutional traceability and facilitating information sharing between public authorities.

Importantly, the National Register of Fraudsters also performs a preventive governance function. Beyond identifying offenders, the existence of a centralized monitoring system creates deterrent effects by increasing the probability of detection and strengthening institutional oversight over economic activities.

Nevertheless, despite the significant advantages associated with these digital governance mechanisms, challenges relating to cybersecurity, institutional interoperability, confidentiality protections, and implementation effectiveness remain important concerns within the Algerian administrative context. Consequently, the long-term effectiveness of Algeria's digital fiscal governance architecture depends not only on technological modernization but also on continuous institutional reform, legal adaptation, and sustained investment in administrative capacity building and digital infrastructure development.

Table 1. Conceptual Structural Equation Modeling (SEM) Framework of Fiscal Digitization and Anti-Corruption Governance in Algeria

Latent Construct	Observed Indicators	Theoretical Foundation	Expected Relationship	Governance Implication
Fiscal Digitization (FD)	Electronic tax declaration systems; Digital taxpayer identification (NIF); Online fiscal services; DGI-Djaybatic platform; Automated tax processing	Digital Governance Theory; E-Government Framework	Positive effect on transparency and administrative efficiency	Reduces procedural complexity and bureaucratic discretion
Administrative Transparency (AT)	Accessibility of fiscal information; Online taxpayer access; Real-time data availability; Digital monitoring systems; Electronic audit trails	Transparency and Accountability Theory	Positive mediator between digitization and corruption reduction	Enhances institutional openness and citizen trust
Institutional Accountability (IA)	Electronic oversight mechanisms; Traceability of transactions; Centralized databases; Monitoring systems; Fraud detection systems	Institutional Governance Theory	Positive relationship with anti-corruption effectiveness	Strengthens regulatory enforcement and institutional integrity
Tax Administration Efficiency (TAE)	Reduced processing time; Automated calculations; Digital payment systems; Reduced administrative delays; Service responsiveness	Public Administration Modernization Theory	Positive effect on governance performance	Improves service delivery and fiscal management capacity
E-Procurement Governance (EPG)	Electronic tender systems; Digital contracting procedures; Online procurement portals; Electronic bid submission; Procurement traceability	Public Procurement Governance Theory	Positive effect on transparency and corruption prevention	Limits favoritism and procurement manipulation

Anti-Corruption Governance (ACG)	Reduction in bribery opportunities; Reduced discretionary authority; Improved procedural compliance; Enhanced institutional control; Fraud prevention mechanisms	Anti-Corruption Governance Framework	Dependent/endogenous construct	Strengthens public sector integrity and financial oversight
Institutional Interoperability (II)	Data sharing between tax, customs, and banking institutions; Integrated information systems; Centralized digital databases	Integrated Governance Systems Theory	Moderating effect on digital governance efficiency	Enhances coordination and monitoring capacity
Cybersecurity and Legal Protection (CLP)	Data confidentiality; Digital authentication; Legal validity of electronic transactions; Cybersecurity safeguards	Digital Legal Governance Theory	Moderating effect on public trust and system reliability	Ensures legitimacy and sustainability of digital governance systems
Public Trust and Voluntary Compliance (PTVC)	Taxpayer satisfaction; Voluntary tax compliance; Reduced informal practices; Increased confidence in institutions	Governance Legitimacy Theory	Positive outcome of digitization and transparency	Reinforces institutional legitimacy and sustainable fiscal governance

Source: Developed by the authors based on Digital Governance Theory, Anti-Corruption Governance Frameworks, and Fiscal Administration Modernization Models (Andersen, 2009; Bertot et al., 2010; Gil-Garcia & Pardo, 2005; OECD, 2021; World Bank, 2021; United Nations, 2022).

3. The Electronic Contracting System in Public Procurement as a Mechanism for Combating Corruption

Public procurement constitutes one of the most financially sensitive and corruption-prone sectors within contemporary public administration systems. Due to the substantial volume of public expenditures, discretionary administrative authority, and complex contracting procedures involved, procurement systems frequently become vulnerable to bribery, favoritism, collusion, bid manipulation, and misuse of public funds (OECD, 2016; Transparency International, 2023). Consequently, governments increasingly rely on electronic procurement systems as strategic governance instruments for strengthening procedural transparency, improving institutional accountability, and combating corruption within public contracting processes.

Within this broader governance framework, the Algerian legislature has emphasized that public procurement procedures must adhere to the foundational principles of free access to public contracts, equal treatment of candidates, and procedural transparency. These principles constitute essential safeguards for protecting public funds, ensuring fair competition, and limiting suspicious transactions associated with administrative corruption in public procurement.

The transition toward electronic contracting in Algeria reflects a broader institutional transformation associated with digital governance and administrative modernization. Electronic procurement systems are no longer viewed merely as technological innovations but rather as integrated governance mechanisms designed to improve transparency, reduce bureaucratic complexity, strengthen financial oversight, and enhance institutional integrity (Bertot et al., 2010; OECD, 2021; United Nations, 2022). Through the digitization of procurement procedures, public administrations seek to reduce excessive human intervention, standardize contracting processes, and increase the traceability of administrative decisions.

International scholarship consistently identifies e-procurement systems as among the most effective anti-corruption tools within public financial management. OECD (2016) argues that electronic procurement systems reduce corruption risks by increasing procedural transparency, broadening market access, and enabling real-time monitoring of procurement activities. Similarly, Andersen (2009) emphasizes that digital governance systems weaken opportunities for corruption by limiting discretionary administrative interactions and strengthening procedural accountability.

3.1. Functions of the Electronic Portal and the Governance Impact of Electronic Contracting

The Algerian legislature established the electronic public procurement portal to facilitate the electronic exchange of information between contracting authorities and economic operators. The portal operates under the joint management of the Ministry of Finance and the Ministry of Information and Communication Technologies pursuant to Article 204 of Presidential Decree No. 15-247 regulating public procurement and public service concessions.

The institutionalization of centralized electronic procurement portals reflects broader global trends toward integrated digital governance systems within public administration. According to the World Bank (2021), centralized e-procurement platforms improve governance efficiency by consolidating procurement information, facilitating oversight mechanisms, and reducing

opportunities for hidden administrative manipulation. Likewise, the European Commission (2020) identifies centralized procurement systems as essential instruments for improving procedural accessibility, competitiveness, and financial transparency.

3.1.1. Functions of the Electronic Procurement Portal

The legal and institutional framework governing the Algerian electronic procurement portal defines several important governance functions intended to improve transparency and strengthen oversight within public contracting systems. Article 3 of the Ministerial Order of November 17, 2013 specifies that the portal must contain legislative and regulatory texts relating to public procurement, lists of excluded economic operators, public project programs, information concerning awarded contracts, withdrawn classification certificates, and reference price indices.

From a governance perspective, the availability of centralized procurement information constitutes a critical transparency mechanism capable of reducing information asymmetries and improving public oversight over state contracting activities. Bertot et al. (2010) argue that digital access to governmental information strengthens institutional accountability and promotes what they describe as a “culture of transparency.” Similarly, Pina et al. (2010) emphasize that public access to administrative data enhances trust in public institutions and reduces opportunities for procedural opacity.

A. *Electronic Publication and Administrative Transparency*

One of the principal functions of the electronic procurement portal is electronic publication, which involves the digital storage, dissemination, transmission, and display of procurement-related information through electronic communication networks. The Ministerial Order of November 17, 2013 explicitly provides that the electronic portal aims to facilitate both the publication and exchange of procurement documents and the conclusion of public contracts through electronic means.

Electronic publication significantly improves procedural transparency by ensuring broad and equal access to procurement information for all interested economic operators. Through digital publication systems, procurement opportunities become publicly visible and accessible in real time, thereby reducing informational monopolies and opportunities for favoritism or hidden negotiations.

According to OECD (2016), electronic publication systems increase market competitiveness and reduce corruption risks by improving equal access to procurement opportunities and limiting non-transparent procurement practices. Similarly, Al-Harraq (2015) demonstrates that digital publication systems within Moroccan procurement governance substantially improved procedural openness and reduced opportunities for administrative manipulation.

B. *Registration and Digital Authentication Mechanisms*

The electronic procurement portal also requires formal registration by both contracting authorities and economic operators in order to facilitate electronic transactions and institutional authentication processes. Article 10 of the Ministerial Order governing portal management establishes that registration occurs through completion and electronic submission of official registration forms, after which registered entities receive electronic accounts and secure passwords granting access to portal services.

Digital registration systems constitute essential components of secure electronic governance architectures. According to Al-Abboudi (2010), authenticated electronic identity systems ensure the integrity, confidentiality, and legal validity of digital administrative procedures. Likewise, World Bank (2021) emphasizes that secure digital authentication mechanisms strengthen institutional reliability and reduce risks associated with unauthorized access and procedural manipulation.

Importantly, the Algerian procurement portal places full responsibility upon registered entities regarding the accuracy and legality of the information and documentation submitted electronically. Such provisions strengthen accountability and reinforce the legal enforceability of digital procurement procedures.

C. *Search Functions and Equal Access to Information*

The search functionality integrated within the procurement portal enables economic operators to access procurement publications and associated information rapidly and efficiently through designated search terms and electronic database systems.

The availability of advanced electronic search systems contributes significantly to reducing informational barriers and improving procedural accessibility within procurement governance. According to West (2004), electronic governance systems improve public service accessibility and reduce bureaucratic exclusion by facilitating equal and immediate access to administrative information. In the procurement context, such accessibility broadens competitive participation and limits opportunities for preferential treatment and informal contracting arrangements.

3.1.2. Governance Impact of Electronic Contracting in Public Procurement

The transition toward electronic contracting within public procurement systems generates substantial institutional, financial, and governance-related impacts that contribute directly to combating corruption and improving public administration performance.

A. *Reduction of Bureaucracy and Administrative Discretion*

One of the most important governance advantages of electronic contracting lies in its capacity to reduce bureaucratic complexity and administrative routine through the automation and digitization of procurement procedures. Electronic information exchange

significantly limits direct human intervention in procurement administration, thereby reducing opportunities for bribery, favoritism, and procedural manipulation.

Andersen (2009) argues that reducing face-to-face administrative interactions constitutes one of the most effective mechanisms for limiting corruption within public administration systems. Similarly, Shim and Eom (2008) demonstrate empirically that procedural automation and electronic governance significantly improve institutional integrity by reducing discretionary authority and enhancing procedural consistency.

B. Procedural Simplification and Institutional Transparency

Electronic contracting systems also simplify procurement procedures by improving procedural speed, flexibility, and accessibility. Digital procurement platforms enable economic operators—both domestic and international—to access procurement information and participate in contracting processes without excessive bureaucratic barriers.

Such procedural simplification contributes directly to institutional transparency by reducing procedural opacity and ensuring broader public visibility over procurement activities. OECD (2021) notes that digital procurement systems improve public confidence in procurement governance by enhancing procedural fairness and ensuring equal treatment among competitors.

C. Strengthening Oversight and Protecting Public Funds

Electronic contracting systems further strengthen oversight mechanisms by facilitating real-time monitoring of procurement procedures and ensuring compliance with the fundamental principles governing public contracts, namely equal access, procedural transparency, and protection of public funds.

Integrated electronic procurement systems generate digital audit trails documenting every stage of the procurement process, thereby facilitating institutional oversight and post-contract auditing procedures. Bertot et al. (2010) emphasize that digital traceability significantly improves accountability and limits opportunities for hidden administrative transactions.

Moreover, digital procurement governance contributes to safeguarding public funds by reducing opportunities for collusion, fraudulent invoicing, and unauthorized financial transactions. Transparency International (2023) identifies digital procurement systems as among the most effective mechanisms for limiting financial corruption within public administration.

D. Financial Efficiency and Administrative Cost Reduction

The digitization of procurement procedures also produces significant economic and administrative efficiencies through reductions in paper-based documentation, manual administrative labor, and procedural delays. Electronic processing systems improve accuracy and reduce material errors through automated verification mechanisms capable of detecting inconsistencies and preventing repetitive administrative mistakes.

According to the World Bank (2021), digital procurement systems substantially reduce administrative transaction costs while simultaneously improving procurement efficiency and institutional responsiveness. Such efficiencies contribute not only to fiscal savings but also to broader administrative modernization and governance reform objectives.

Nevertheless, despite these advantages, electronic procurement systems continue to face important implementation challenges in developing administrative environments. These include cybersecurity vulnerabilities, unequal technological infrastructure, institutional resistance to reform, and incomplete interoperability between administrative institutions (Heeks, 2003; Ndou, 2004). Consequently, the effectiveness of electronic contracting systems depends not only on technological modernization but also on broader institutional reforms aimed at strengthening governance capacity, regulatory enforcement, and administrative professionalism within the public sector.

3.2. Stages and Procedures for Concluding Public Contracts Through the Electronic Procurement Portal

The transition from conventional paper-based procurement procedures toward electronic public contracting systems represents a fundamental dimension of contemporary administrative modernization and digital governance reform. Within modern governance frameworks, electronic procurement systems are increasingly recognized as strategic institutional mechanisms for strengthening procedural transparency, improving accountability, enhancing efficiency, and reducing corruption risks within public contracting processes. Electronic procurement systems improve procedural transparency and strengthen institutional accountability within public contracting processes (Al-Harraq, 2015).

In Algeria, the legal framework governing electronic public procurement forms part of the broader national strategy aimed at digitizing public administration and reinforcing anti-corruption governance mechanisms. Algerian public procurement governance is regulated under Law No. 23-12 governing public procurement procedures (Law No. 23-12, 2023). The electronic procurement portal operates pursuant to Article 204 of Presidential Decree No. 15-247 regulating public procurement and public service concessions (Presidential Decree No. 15-247, 2015). In addition, electronic publication and exchange of procurement information are regulated by the Ministerial Order of November 17, 2013 (Ministerial Order, 2014).

The Algerian electronic procurement system establishes a structured sequence of digital procedures designed to ensure secure, transparent, and efficient conclusion of public contracts through the electronic portal. These procedures include electronic communication, electronic exchange of procurement information, electronic submission and opening of bids, electronic evaluation processes, and provisional electronic contract award mechanisms. Collectively, these procedural stages contribute to

strengthening institutional transparency, reducing administrative discretion, and limiting opportunities for corruption and procedural manipulation within public procurement governance.

A. Electronic Communication and Digital Procurement Accessibility

Electronic communication constitutes the foundational stage of digital public procurement governance. Through this mechanism, both contracting authorities and economic operators transition from traditional bureaucratic interaction toward secure electronic communication systems. Access to procurement procedures requires prior registration within the electronic procurement portal, thereby establishing the institutional basis for electronic interaction and digital exchange of procurement information.

Under the Algerian procurement framework, contracting authorities are required to publish procurement announcements electronically through the public procurement portal while simultaneously respecting publication requirements in newspapers and official procurement bulletins. Article 45 of Law No. 23-12 further reinforces the mandatory use of electronic publication mechanisms for procurement procedures.

The digitalization of procurement communication systems substantially improves transparency and equal access to public contracts by enabling economic operators to access procurement information simultaneously and without discriminatory restrictions. Comparative legal analysis demonstrates that electronic procurement systems contribute significantly to reducing corruption opportunities and strengthening oversight mechanisms (Ben Jarrad, 2021). By eliminating informational asymmetries and reducing opportunities for hidden administrative negotiations, electronic publication systems strengthen procedural fairness and institutional legitimacy.

B. Electronic Exchange of Procurement Information and Documentation

The second stage concerns the electronic exchange of procurement-related information and documentation between contracting authorities and economic operators. Article 204 of Presidential Decree No. 15-247 explicitly regulates the electronic exchange of procurement documents and information through the electronic procurement portal.

For contracting authorities, the electronic exchange system facilitates transmission of procurement specifications, subscription declarations, commitment letters, integrity declarations, invitations to tender, consultation letters, and supplementary procurement documentation. The Decree further confirms that all procurement procedures traditionally conducted through paper-based mechanisms may be adapted and executed electronically.

For economic operators, electronic exchange systems enable remote preparation and submission of bids within legally prescribed deadlines. Through secure electronic access, bidders may obtain procurement specifications, complete required declarations, and electronically transmit procurement documentation.

An essential governance dimension of this process concerns the confidentiality and security of procurement submissions. The Algerian electronic procurement framework requires bids to remain confidential until the official opening stage through the use of encrypted passwords and secure access codes assigned to each bidder. Such mechanisms strengthen procedural equality among competitors and reduce opportunities for corruption, bribery, and administrative manipulation.

Digital authentication and electronic evidence systems require comprehensive legal safeguards to ensure procedural reliability and cybersecurity protection (Al-Abboudi, 2010). In this regard, secure digital authentication systems constitute a fundamental prerequisite for maintaining institutional trust and ensuring the legal validity of electronic procurement procedures.

The Algerian system also permits bidders to submit alternative copies of bids in physical or electronic form in cases involving technical failures, cybersecurity incidents, or inability to access electronic submissions. This procedural flexibility reflects institutional awareness of operational risks associated with digital procurement systems and contributes to maintaining procedural continuity and fairness.

C. Electronic Opening and Evaluation of Procurement Bids

Following electronic submission, procurement bids undergo examination and evaluation through the “Envelope Opening and Bid Evaluation Committee,” which opens and reviews electronic bids using modern digital technologies. Contracting parties may remotely observe the opening procedures through the electronic procurement portal without physical attendance before the committee.

The remote accessibility of procurement procedures represents a significant advancement in transparency and participatory governance. Through digital traceability and centralized procurement databases, electronic evaluation systems strengthen institutional accountability and reduce opportunities for hidden procedural manipulation. Furthermore, procurement documents exchanged through the electronic portal form integrated digital databases capable of supporting future oversight, auditing, and monitoring functions.

The Algerian procurement framework also simplifies administrative procedures by providing that documents accessible electronically by the contracting authority shall not be requested directly from bidders but instead attached automatically through the electronic system itself. This procedural simplification contributes to reducing bureaucratic complexity, accelerating procurement procedures, and improving administrative efficiency.

D. Provisional Electronic Award of Public Contracts

The final procedural stage concerns the provisional electronic award of public contracts following bid evaluation and selection procedures. Award decisions are transmitted electronically through the procurement portal or electronic communication systems, and legal challenges against procurement decisions may likewise be submitted electronically by interested parties within legally prescribed deadlines.

The publication of provisional award decisions through the same electronic platform used for procurement announcements significantly strengthens procedural transparency and public accessibility to procurement outcomes. Such publication mechanisms facilitate public scrutiny of procurement decisions and reinforce accountability within public contracting governance.

Comparative legal analysis demonstrates that electronic procurement systems contribute significantly to reducing corruption opportunities and strengthening oversight mechanisms (Ben Jarrad, 2021). By ensuring transparency throughout all stages of procurement procedures—from electronic communication to final contract award—digital procurement systems substantially reduce risks associated with favoritism, bribery, collusion, and misuse of public funds.

Nevertheless, despite the substantial governance advantages associated with electronic procurement systems, the Algerian framework does not yet impose fully binding electronic contracting obligations upon all economic operators. While contracting authorities remain legally obligated to publish procurement information electronically pursuant to Law No. 23-12, participation in electronic transactions remains partially optional in certain contexts.

This limitation illustrates one of the broader institutional challenges confronting digital governance reforms in developing administrative systems: the coexistence of traditional bureaucratic procedures alongside emerging electronic governance mechanisms. Consequently, although Algeria has made important progress toward digitized procurement governance, the long-term effectiveness of electronic contracting systems depends on strengthening mandatory digital integration, enhancing cybersecurity protections, improving institutional interoperability, and continuously modernizing legal and administrative governance frameworks.

Conclusion

The accelerating transition toward digital governance has fundamentally reshaped contemporary public administration systems and transformed the mechanisms through which states manage public services, regulate financial activities, and combat corruption. Within this broader context, the Algerian experience demonstrates that fiscal digitization and electronic public procurement systems constitute strategic instruments for administrative modernization, institutional transparency, and anti-corruption governance. The adoption of digital governance mechanisms by the Algerian legislature reflects not only a response to internal administrative inefficiencies and corruption vulnerabilities but also an institutional adaptation to global technological and economic transformations requiring more transparent, accountable, and efficient public governance systems.

The findings of this study confirm that digitization has contributed substantially to strengthening anti-corruption governance within both the tax administration sector and public procurement systems. In the fiscal domain, electronic declaration systems, digital taxpayer identification mechanisms, centralized fiscal databases, and the DGI-Djaybatic platform have significantly improved administrative efficiency, enhanced procedural transparency, and facilitated institutional monitoring of financial transactions. These digital mechanisms simplified administrative procedures, reduced bureaucratic complexity, strengthened tax collection efficiency, and contributed to combating tax evasion and fraudulent financial practices.

From a governance perspective, the digitization of fiscal administration represents a qualitative transformation in the relationship between taxpayers and public institutions. By reducing direct physical interaction between taxpayers and public officials, electronic governance systems minimized opportunities for bribery, discretionary administrative practices, and informal financial negotiations. Furthermore, the integration of tax, customs, banking, and administrative information through centralized digital systems strengthened institutional traceability and facilitated real-time monitoring of financial activities, thereby enhancing the state's capacity to detect suspicious transactions and financial irregularities. These findings correspond closely with international scholarship emphasizing that digital governance systems improve transparency, accountability, and institutional integrity through procedural automation and integrated oversight mechanisms (Andersen, 2009; Bertot et al., 2010; OECD, 2021).

The study also demonstrates that the electronic procurement portal and digital contracting procedures introduced under the Algerian public procurement framework contributed significantly to strengthening transparency and reducing corruption opportunities within public contracting processes. Through electronic publication of tenders, digital exchange of procurement information, secure submission of bids, and electronic evaluation systems, procurement procedures became more accessible, traceable, and procedurally transparent. These mechanisms improved equal access to public contracts, reduced informational asymmetries, and strengthened institutional oversight over public expenditure management.

Importantly, electronic procurement systems contributed to combating favoritism, nepotism, bribery, and hidden administrative arrangements traditionally associated with public contracting procedures. By generating digital audit trails and enabling real-time monitoring of procurement activities, the electronic procurement portal strengthened accountability mechanisms and improved the protection of public funds. Comparative legal analysis similarly confirms that electronic procurement systems constitute effective anti-corruption instruments capable of reducing procedural manipulation and strengthening institutional oversight (Ben Jarrad, 2021; Al-Harraq, 2015).

Nevertheless, despite the substantial progress achieved through digital governance reforms, the study also identifies several structural and institutional limitations that continue to constrain the effectiveness of digitization as a comprehensive anti-corruption mechanism in Algeria. One of the most significant challenges concerns the incomplete generalization of digital procedures across all tax and procurement activities. Although important digital services have been introduced, traditional paper-based procedures continue to coexist alongside electronic systems in many administrative contexts, thereby limiting the scope and effectiveness of digital oversight mechanisms.

Another critical challenge concerns cybersecurity vulnerabilities and risks associated with electronic governance systems. Digital platforms remain exposed to hacking attempts, cyberattacks, and technological disruptions that may compromise information confidentiality and institutional reliability. Because confidentiality and data integrity constitute foundational elements of digital governance systems, cybersecurity protection becomes essential for maintaining public trust and ensuring the effectiveness of electronic anti-corruption mechanisms. Digital authentication and electronic evidence systems therefore require comprehensive legal safeguards and advanced cybersecurity protections to ensure procedural reliability and institutional legitimacy (Al-Abboudi, 2010).

The study further reveals that legislative and regulatory shortcomings continue to affect the implementation of digital governance reforms. Although Algeria has enacted important legal reforms relating to fiscal digitization and electronic procurement governance, gaps remain concerning implementing regulations, cybersecurity governance, interoperability standards, and digital administrative procedures. These legal gaps may generate institutional ambiguities and create opportunities for procedural exploitation and corruption.

Moreover, while digitization substantially reduces excessive human intervention in administrative procedures, it does not eliminate the need for human oversight over programming, technological maintenance, system management, and digital monitoring processes. Consequently, residual risks associated with human misconduct and institutional manipulation continue to exist within digital governance environments. This finding reinforces the argument advanced by Heeks (2003) and Yildiz (2007), who emphasize that technological modernization alone cannot eradicate corruption without broader institutional reform, organizational adaptation, and sustained governance accountability.

An additional obstacle identified by the study concerns the insufficient preparedness of human resources within public administration to adapt effectively to digital transformation processes. Limited technical expertise, inadequate training, and resistance to organizational change continue to affect the operational efficiency of digital governance systems in certain administrative contexts. Effective digital governance therefore requires continuous investment in administrative capacity building, technological literacy, and professional training programs capable of preparing public officials for evolving digital administrative environments.

Overall, the Algerian experience demonstrates that digitization constitutes a powerful governance mechanism capable of improving administrative efficiency, strengthening institutional transparency, enhancing accountability, and reducing corruption vulnerabilities within public administration systems. However, the long-term success of digital governance reforms depends on comprehensive institutional modernization extending beyond technological implementation alone.

Accordingly, the study concludes that strengthening anti-corruption governance through digitization in Algeria requires several strategic reforms. First, the state should progressively generalize mandatory digital procedures across all tax administration and public procurement transactions in order to eliminate procedural fragmentation and strengthen digital oversight capacity. Second, legislative and regulatory frameworks governing electronic administration should be continuously updated to address emerging technological developments, cybersecurity risks, and digital governance challenges. Third, public institutions must invest substantially in cybersecurity infrastructure and secure digital authentication systems to protect the confidentiality and integrity of electronic transactions. Fourth, comprehensive training programs should be implemented to strengthen the digital competencies of public officials and improve institutional adaptability to technological transformation. Finally, public administration reforms should actively promote professional ethics, institutional accountability, and awareness regarding the importance of transparency and integrity within digital governance environments.

In conclusion, while Algeria has achieved significant progress in the digitization of public administration and anti-corruption governance, the sustainability and effectiveness of these reforms ultimately depend on the existence of genuine institutional reform, comprehensive legal modernization, secure digital infrastructure, and a long-term governance strategy capable of integrating technological innovation with transparency, accountability, and institutional integrity.

Declarations

Author Contributions. Dr. Lalaoua Souleyman contributed to the conceptualization of the study, legal and institutional analysis, literature review development, interpretation of legislative frameworks, and drafting of the manuscript. Dr. Ouasli Mohamed contributed to the methodological design, governance analysis, interpretation of findings, review and editing of the manuscript, and supervision of the analytical framework. Both authors reviewed and approved the final version of the manuscript.

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Data Availability Statement. No primary datasets were generated or analyzed during the current study. All information utilized in this research was obtained from publicly accessible legislative texts, official governmental publications, academic literature, and institutional reports cited in the reference list.

Ethical Approval

This study does not involve human participants, human data, animal subjects, clinical experimentation, or personal identifiable information. Therefore, formal ethical approval was not required according to institutional and international research ethics guidelines.

Informed Consent Statement

Not applicable.

Institutional Review Statement. Not applicable, as the study is based exclusively on legal, institutional, and documentary analysis.

Artificial Intelligence (AI) Disclosure

The authors declare that artificial intelligence-assisted tools were used solely for linguistic refinement, grammatical editing, and formatting support during manuscript preparation. All conceptual development, legal interpretation, analytical arguments, findings, and final academic content remain the sole intellectual responsibility of the authors.

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Consent for Publication

The authors consent to the publication of this manuscript in accordance with the journal's editorial and publication policies.

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