Digitalization of the Tax System and Its Legal Requirements: A Comparative Study of Iran and the European Union

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Abstract

The digitalization of tax administration has transformed the mechanisms through which tax authorities identify taxpayers, collect information, assess liabilities, monitor compliance, and resolve disputes. Electronic registration, digital invoicing, integrated databases, automated reporting, algorithmic risk assessment, and artificial intelligence have increased administrative efficiency and enhanced the capacity of governments to combat tax evasion. At the same time, these developments have generated important legal concerns relating to legality, transparency, data protection, cybersecurity, procedural fairness, accountability, and effective taxpayer remedies. This study examines the legal requirements of tax-system digitalization through a comparative analysis of Iran and the European Union. Using a descriptive-analytical and comparative legal method, the study evaluates the legal foundations of digital tax administration, the Iranian framework governing electronic tax procedures and taxpayer information, and the European approach to digital taxation, administrative cooperation, data governance, and taxpayer rights. The findings indicate that Iran has made significant progress in developing digital tax infrastructure, particularly through electronic taxpayer systems, sales terminals, remote tax services, and increasingly integrated information mechanisms. However, the legal regulation accompanying this technological transformation remains comparatively fragmented, particularly in relation to personal-data protection, automated decision-making, algorithmic transparency, cybersecurity obligations, inter-agency data sharing, and procedural safeguards. The European framework demonstrates a more integrated approach in which tax digitalization operates alongside broader principles of proportionality, purpose limitation, transparency, good administration, human oversight, and effective judicial protection. The study concludes that Iran should move from a predominantly technology-centered model toward a rights-based model of digital tax governance. Such reform requires clearer statutory rules governing taxpayer data, automated decisions, electronic evidence, cybersecurity, notification procedures, administrative accountability, and meaningful human review, while ensuring that technological efficiency does not undermine tax justice or taxpayer rights.

Keywords: Tax Digitalization; Tax Administration; Taxpayer Rights; Data Protection; Automated Decision-Making; Iran; European Union; Digital Governance

Received: 08 April 2026
Revised: 27 August 2026
Accepted: 02 September 2026
Initial Publication: 03 September 2026
Final Publication: 01 March 2027

Citation: Pashaei Moghaddam, A., Rostami, V., & Mirzadeh Kohshahi, N. (2027). Digitalization of the Tax System and Its Legal Requirements: A Comparative Study of Iran and the European Union. *Legal Studies in Digital Age,* 6(2), 1-16.

1. Introduction

The digital transformation of public administration has fundamentally altered the relationship between governments, economic actors, and citizens, and taxation has become one of the areas in which this transformation is most visible. Tax administrations increasingly rely on electronic registration systems, online filing, automated information exchange, electronic invoicing, digital payment platforms, interconnected financial databases, algorithmic risk assessment, and artificial intelligence-assisted compliance mechanisms. These developments have changed taxation from a largely document-based and retrospective process into an increasingly continuous, data-intensive, and technology-mediated form of public administration. Digitalization is therefore not merely a technical reform designed to replace paper files with electronic records. It alters the institutional architecture through which tax obligations are identified, assessed, enforced, challenged, and reviewed. Lang and Risse emphasize that the relationship between tax law and technological development is becoming increasingly inseparable because contemporary tax administration depends on technological tools that can affect both substantive and procedural aspects of taxation (Lang & Risse, 2022). The legal importance of this transformation becomes even clearer where digital platforms, virtual assets, transnational economic activities, and technologically mediated commercial relations challenge conventional tax concepts that were developed for territorially bounded and physically observable transactions (Harpaz, 2021). Digitalization therefore creates opportunities for greater administrative efficiency while simultaneously generating new questions concerning legality, accountability, procedural justice, data protection, cybersecurity, transparency, and taxpayers' fundamental rights.

The expansion of the digital economy has intensified these challenges because economic value can increasingly be created, transferred, and commercialized without the physical presence that traditionally supported tax jurisdiction. Harpaz argues that twentieth-century tax systems face substantial conceptual difficulties when applied to twenty-first-century digital economic activities because traditional tax rules frequently rely on physical presence, territorial connection, and conventional forms of business organization (Harpaz, 2021). Similar concerns appear in comparative analyses of contemporary digital taxation, which demonstrate that governments must adapt their tax systems not only to new technologies of administration but also to new forms of taxable economic activity (Olamide et al., 2024). The digital sector creates problems involving tax residence, permanent establishment, allocation of taxing rights, identification of taxable transactions, and the treatment of virtual assets. De la Vega and Jarrin regard digital-sector taxation as both a challenge and an opportunity for tax and economic law because technological innovation expands the potential tax base while also exposing the limitations of traditional regulatory approaches (de la Vega & Jarrin, 2025). The rise of e-residency, remote work, and digital nomadism similarly complicates established doctrines of fiscal residence by weakening the connection between physical location and economic participation (Vitiuk, 2024). These developments demonstrate that the legal implications of tax digitalization cannot be confined to administrative modernization; they concern the broader capacity of tax law to govern economic activity in digitally interconnected societies.

At the administrative level, digitalization offers governments substantial advantages. Electronic tax systems can improve the accuracy and speed of tax assessment, reduce administrative costs, facilitate taxpayer registration, simplify communication with tax authorities, and improve the traceability of transactions. Digital technologies may also reduce opportunities for informal discretion by replacing certain face-to-face administrative procedures with standardized electronic processes. In emerging economies, the relationship between taxpayers and tax authorities is increasingly shaped by the accessibility, reliability, and perceived fairness of digital systems (Belahouaoui & Attak, 2024). The effectiveness of digital taxation therefore depends not only on technological capacity but also on whether taxpayers regard electronic systems as legitimate, understandable, predictable, and procedurally fair. Research on the Iranian taxpayer system similarly indicates that the implementation of electronic sales terminals and non-presence tax services can affect taxpayer satisfaction, demonstrating that administrative digitalization has direct consequences for the quality of the relationship between taxpayers and the fiscal authority (Pourhassan et al., 2024). Accordingly, technological efficiency and taxpayer trust should be understood as interconnected dimensions of modern tax governance rather than as separate policy objectives.

The growing use of artificial intelligence further deepens the transformation of tax administration. Artificial intelligence can assist tax authorities in identifying high-risk taxpayers, detecting unusual transaction patterns, predicting non-compliance, selecting cases for audit, and processing very large volumes of financial information. Saragih and colleagues describe artificial intelligence as having significant potential for the modernization of tax administration, particularly where tax authorities seek to improve risk analysis and administrative efficiency through more sophisticated data processing (Saragih et al., 2023). Comparative work on AI-driven and blockchain-based tax administration likewise suggests that digital technologies can improve traceability, automate compliance processes, and strengthen the capacity of governments to detect irregularities (Adelekan et al., 2024). Yet automated taxation raises significant legal questions. A tax assessment generated or substantially influenced by algorithmic analysis may be difficult for taxpayers to understand or challenge. The use of opaque decision-making systems can also create uncertainty regarding the basis of administrative action, the allocation of responsibility for errors, and the availability of meaningful human review. Tax digitalization therefore requires a legal framework capable of reconciling administrative innovation with established principles of due process and legal certainty.

The problem becomes particularly important because taxation involves the exercise of coercive public power. Tax authorities possess extensive powers to obtain information, calculate liabilities, impose penalties, seize assets, and initiate enforcement procedures. The principle of legality accordingly requires that the exercise of such powers have a clear legal basis and remain subject to defined procedural limitations. Iranian scholarship on the interpretation of tax laws has emphasized the importance of interpretative principles in ensuring that tax obligations are imposed within legally defined boundaries rather than through uncontrolled administrative discretion (Paknejad et al., 2023). The digitalization of tax administration cannot displace these requirements. Electronic procedures, automated assessments, and database-based investigations remain exercises of governmental authority and must therefore be governed by the same fundamental principles that apply to conventional tax administration. Indeed, digitalization may require stronger safeguards because automated systems can process information and produce administrative consequences at a scale and speed that substantially exceed traditional administrative practices.

The Iranian tax system has undergone significant institutional transformation as part of broader efforts to improve tax collection, increase transparency, reduce tax evasion, and decrease dependence on traditional forms of tax administration. The development of electronic taxpayer systems, integrated databases, sales terminals, electronic filing, and remote tax services has considerably increased the technological capacity of the Iranian tax administration. These reforms have also been connected to broader concerns regarding economic governance and national security, as the efficiency and transparency of tax administration influence public revenue, fiscal sustainability, and the capacity of government institutions to respond to economic pressures (Mohammadi et al., 2023). The implementation of the Law on Sales Terminals and the Taxpayer System represents an important component of this transformation because it seeks to improve transaction traceability and establish a more systematic relationship between commercial activities and tax reporting (Pourhassan et al., 2024). Nevertheless, technological modernization does not automatically guarantee legal modernization. The rapid expansion of digital tax infrastructures can reveal deficiencies in areas such as privacy protection, information security, administrative transparency, electronic evidence, taxpayer access to data, and remedies against technological or automated errors.

Justice is another important dimension of tax digitalization. A tax system is not legitimate merely because it is efficient in collecting revenue. It must also distribute fiscal burdens fairly, treat similarly situated taxpayers consistently, provide mechanisms for contesting administrative decisions, and avoid discriminatory or arbitrary enforcement. Studies of justice-oriented indicators in Iranian tax law demonstrate that fairness continues to be a central concern in both direct taxation and value-added taxation (Ghasemi Bonabari et al., 2024). Related research also identifies justice as a critical criterion for evaluating the operation of tax legislation and administration (Goudarzi et al., 2024). Digital systems can contribute to distributive and procedural justice by reducing selective enforcement, improving data accuracy, and standardizing administrative decision-making. At the same time, they can reproduce or amplify inequality when taxpayers differ substantially in digital literacy, technological access, financial resources, or capacity to challenge algorithmic decisions. Thus, digitalization should be evaluated according to whether it improves the fairness of taxation rather than merely whether it increases administrative efficiency.

The European Union provides a useful comparative framework because it has developed an extensive body of legal principles concerning digital administration, data processing, cross-border information exchange, value-added taxation,

administrative cooperation, and individual rights. The EU experience is particularly relevant because it illustrates how tax digitalization operates within a broader legal ecosystem that includes data protection, proportionality, transparency, good administration, and judicial protection. Legal regulation of digital assets and cryptocurrency transactions within the European context demonstrates the increasing effort to adapt taxation to new forms of economic activity (Kateryna & Kobylnik, 2024). The regulation of value-added tax in relation to cryptocurrency speculation further illustrates how technological transformation creates new challenges concerning classification, taxable events, and administrative oversight (Allahyari Fard & Parvin, 2024). The EU is therefore not simply a model of technological sophistication; it represents a legal environment in which digital fiscal administration is increasingly connected to a wider framework of rights-based administrative governance.

The comparison between Iran and the European Union is not intended to assume that European rules can be transferred mechanically into Iranian law. Differences in institutional structure, constitutional arrangements, administrative traditions, economic conditions, technological infrastructure, and legal culture make direct transplantation inappropriate. The comparative purpose of this article is instead functional. It seeks to identify the principal legal problems created by tax-system digitalization and examine how different legal systems address them. Particular attention is given to the legality of electronic tax procedures, protection of taxpayer data, administrative transparency, automated decision-making, cybersecurity, procedural guarantees, electronic evidence, taxpayer remedies, and institutional accountability. The comparative analysis is intended to distinguish technological modernization from legal modernization and to determine whether the expansion of digital tax administration has been accompanied by sufficient legal safeguards.

The central objective of this study is to examine the legal requirements arising from the digitalization of tax administration and to assess the extent to which the Iranian legal framework addresses those requirements in comparison with the European Union. The article seeks to clarify the legal foundations of digital tax governance, identify existing strengths and weaknesses in the Iranian system, analyze relevant European approaches, and formulate reform-oriented conclusions appropriate to the Iranian legal environment. The main research question asks what legal requirements must accompany a digitalized tax system and whether the Iranian framework sufficiently guarantees legality, transparency, data protection, cybersecurity, accountability, procedural fairness, and effective taxpayer remedies. The study employs a descriptive-analytical and comparative legal method. It examines legislation, regulatory approaches, doctrinal principles, and relevant scholarship concerning digital taxation, administrative law, tax justice, and emerging technologies. The analysis proceeds from the premise that digital taxation should be evaluated not only according to revenue outcomes or administrative efficiency but also according to the quality of legal protection that surrounds the exercise of digitally mediated fiscal authority.

2. Conceptual and Legal Foundations of Tax-System Digitalization

Digitalization of the tax system should first be distinguished from the more limited concept of digitization. Digitization generally refers to the conversion of information or documents from physical into electronic form, whereas digitalization concerns the integration of digital technologies into administrative processes, organizational structures, communication channels, and decision-making mechanisms. Digital transformation goes further by restructuring the institutional logic of tax administration around data, automation, interoperability, and continuous information processing. Lang and Risse explain that the relationship between tax technology and legal technology increasingly affects how tax rules are interpreted, implemented, monitored, and enforced (Lang & Risse, 2022). In a genuinely digitalized tax administration, the taxpayer's obligations are not merely submitted electronically; they may be generated, verified, compared, and assessed through interconnected databases and automated analytical tools. This shift changes the legal character of tax administration because the processing of digital information becomes an integral component of the exercise of public authority.

The evolution of taxation toward digital administration reflects broader changes in economic organization. Traditional tax systems developed around observable physical transactions, geographically identifiable businesses, formal employment relations, paper accounting records, and territorially defined commercial establishments. The digital economy has destabilized many of these assumptions. Economic actors may provide services across borders without maintaining a conventional physical presence, income may be generated through digital platforms, and assets may exist in virtual or decentralized forms. Harpaz identifies the taxation of the digital economy as a major challenge to traditional international tax structures because established rules often struggle to allocate taxing rights where value creation is detached from physical presence (Harpaz, 2021). Olamide

and colleagues similarly describe digital-economy taxation as a problem requiring adaptation across jurisdictions because governments must respond to new business models and increasingly mobile forms of economic activity (Olamide et al., 2024). These transformations require tax administrations to become more technologically sophisticated, but they also require legal systems to reconsider concepts such as residence, source, taxable presence, and transactional evidence.

Digital tax administration typically includes several interconnected functions. Taxpayer registration can be conducted through digital identification systems; tax returns may be submitted electronically; tax payments can be processed through online banking and government portals; invoices can be generated and reported electronically; and transactional information can be transferred automatically from businesses, financial institutions, and third parties to tax authorities. These technologies allow tax administrations to create comprehensive taxpayer profiles and compare reported income with other financial information. The resulting system is markedly different from traditional self-reporting models in which tax authorities relied heavily on periodic declarations and selective audits. Contemporary digital systems can facilitate real-time or near-real-time supervision of economic transactions. Adelekan and colleagues note that technologies such as artificial intelligence and blockchain can significantly reshape compliance monitoring by improving automation, traceability, and data verification (Adelekan et al., 2024). Consequently, the legal framework must regulate not merely the submission of tax information but the entire life cycle of digital fiscal data, including collection, storage, processing, sharing, use, correction, and deletion.

Administrative efficiency constitutes one of the strongest justifications for tax digitalization. Electronic systems can reduce paperwork, accelerate assessment, facilitate communication, improve audit selection, and lower the cost of compliance for both tax authorities and taxpayers. Digital platforms can also reduce the need for physical interaction with tax officials, potentially decreasing opportunities for inconsistent treatment or informal administrative practices. Evidence concerning the implementation of the taxpayer system in Iran indicates that non-presence services can influence taxpayer satisfaction by making tax administration more accessible and efficient (Pourhassan et al., 2024). Belahouaoui and Attak further show that the relationship between taxpayers and tax authorities in the digital era is strongly connected to perceptions of administrative interaction and compliance behavior (Belahouaoui & Attak, 2024). This suggests that digital systems should be designed not only to maximize state information but also to improve the quality, predictability, and convenience of taxpayer interactions.

Despite these advantages, the principle of legality remains the foundation of legitimate tax digitalization. Tax authorities cannot obtain, process, or use taxpayer information merely because technology makes such activities possible. The collection of financial information must be based on legislation that clearly determines the powers of administrative authorities and the obligations of taxpayers and third parties. The same requirement applies to automated decision-making. If an algorithm materially influences the identification of tax liability, selection for audit, imposition of penalties, or initiation of enforcement, the legal system should define the permissible scope of such use. The principle of legality is especially important in taxation because tax obligations directly interfere with property rights and may lead to compulsory enforcement. Iranian scholarship concerning principles of tax-law interpretation highlights the need for clear interpretative boundaries and legally defined fiscal obligations (Paknejad et al., 2023). Digitalization must therefore strengthen rather than weaken the requirement that taxation be grounded in law.

Legal certainty constitutes a related requirement. Taxpayers should be able to determine their obligations, understand the consequences of non-compliance, and foresee how electronic systems will process their information. Digital tax administration can undermine legal certainty when automated processes operate according to undisclosed rules or when technological platforms change faster than legislative standards. A taxpayer who receives an electronically generated assessment must be able to understand the legal and factual basis of that assessment. The use of artificial intelligence intensifies this concern because machine-learning systems can identify patterns that are difficult to translate into conventional legal reasoning. Saragih and colleagues highlight the potential of AI for tax-system modernization while also illustrating the significance of institutional readiness and governance in its implementation (Saragih et al., 2023). A legally sustainable use of artificial intelligence therefore requires mechanisms that translate technologically generated outputs into intelligible administrative reasons.

Transparency is consequently another essential legal requirement. Transparency requires that taxpayers know what information tax authorities possess, how that information is used, and what legal consequences may follow from digital processing. It also requires sufficient openness concerning the logic of automated administrative decisions. Complete disclosure of technical source code may not always be necessary or feasible, but taxpayers should receive enough information to

understand why a decision was made and how it can be challenged. This requirement becomes particularly important when algorithms classify taxpayers according to risk, identify suspected irregularities, or prioritize investigations. Without transparency, digital tax administration can produce a significant imbalance between the informational power of the state and the ability of taxpayers to defend themselves.

Protection of personal and financial data represents another core component of lawful digital taxation. Tax administrations possess exceptionally sensitive information concerning income, property, banking activity, business transactions, family circumstances, and financial relationships. Digitalization increases both the amount of information available to government and the ease with which that information can be combined across institutional databases. The legal issue is therefore not limited to confidentiality in the traditional sense. It includes the principles governing collection, purpose limitation, proportionality, data minimization, accuracy, retention, inter-agency sharing, and taxpayer access. The growth of digital economic activities further expands these concerns because tax authorities may seek information from platforms, payment intermediaries, cryptocurrency service providers, and foreign institutions. Legal regulation of digital assets in Europe illustrates the broader trend toward adapting fiscal oversight to technologically generated forms of wealth and exchange (Kobylnik & Kateryna, 2024). The use of such information should nevertheless remain connected to legitimate tax purposes and should not become a basis for unrestricted administrative surveillance.

Cybersecurity is inseparable from data protection. A digital tax system that collects large volumes of financial information becomes an attractive target for unauthorized access, fraud, identity theft, and cyberattack. The state therefore assumes a heightened responsibility to protect taxpayer information once it mandates electronic participation. Technological security should be understood as a legal obligation rather than merely an administrative preference. Where taxpayers are required to provide information electronically, public authorities should be responsible for maintaining secure infrastructure, controlling access, preserving data integrity, and responding effectively to breaches. Digital systems also require reliable mechanisms for authentication because unauthorized access or identity manipulation can produce incorrect assessments, fraudulent transactions, or exposure of confidential data. The expansion of digital taxation thus increases the importance of security-by-design approaches in which legal and technological safeguards are incorporated into the architecture of tax systems from the beginning.

Procedural fairness is equally important. The digitalization of administrative processes should not diminish the taxpayer's right to receive notice, access relevant evidence, present objections, correct inaccurate information, and obtain review of adverse decisions. Hajipour Kandaroud and colleagues, in their analysis of Iran's tax adjudication system with reference to European standards of good administration, demonstrate the importance of procedural principles in ensuring fair tax dispute resolution (Hajipour Kandaroud et al., 2024). These principles acquire new significance in a digital context because administrative decisions may increasingly depend on data that taxpayers have never seen or on automated comparisons across databases. A taxpayer should be able to contest the accuracy, relevance, or interpretation of such information. Effective procedural protection therefore requires mechanisms for digital access to case files, correction of inaccurate data, explanation of automated findings, and meaningful human reconsideration.

The concept of tax justice provides a broader normative framework for evaluating these requirements. Justice-oriented approaches to taxation emphasize equality, fairness, proportionality, consistency, and protection against arbitrary burdens (Goudarzi et al., 2024). Similar analysis of direct tax and value-added tax legislation in Iran demonstrates that justice is not confined to the distribution of tax burdens but also concerns the institutional operation of the tax system (Ghasemi Bonabari et al., 2024). Digitalization can promote justice when it reduces discretionary treatment, identifies previously hidden taxable activity, and ensures more consistent application of tax rules. However, it can undermine justice if technologically sophisticated taxpayers obtain advantages over those with limited digital literacy, if automated systems reproduce biases in underlying data, or if taxpayers cannot effectively understand and challenge electronic assessments. Digital equality should therefore be treated as an element of tax justice.

The relationship between tax authority and taxpayer is ultimately transformed by digitalization from episodic interaction into continuous information exchange. In traditional systems, the state often depended on taxpayers to initiate communication by submitting periodic declarations. In digitalized systems, tax authorities may receive continuous streams of third-party information and may construct tax liabilities without direct taxpayer participation. This can strengthen enforcement but also increase the imbalance of informational power. Belahouaoui and Attak's analysis of taxpayer-authority relations in the digital

era reinforces the importance of trust and perceived administrative legitimacy in shaping compliance (Belahouaoui & Attak, 2024). A sustainable digital tax system should therefore combine effective monitoring with institutional trust. Compliance achieved solely through surveillance and technological control may be less stable than compliance supported by transparency, procedural justice, accessible services, and confidence in administrative fairness.

For these reasons, the legal foundations of tax-system digitalization can be summarized through a set of interconnected principles: legality, legal certainty, transparency, privacy, proportionality, cybersecurity, procedural fairness, accountability, explainability, human oversight, equal access, and effective remedies. These principles should not be regarded as external constraints that obstruct technological innovation. They are conditions for the legitimate exercise of digital fiscal authority. The central legal challenge is therefore to ensure that technological capacity remains subordinate to legally defined public purposes. Digital tax administration should increase the state's capacity to administer taxes while simultaneously preserving the taxpayer as a rights-bearing participant rather than reducing the individual to a data profile within an automated administrative system.

3. Legal Framework of Tax-System Digitalization in Iran

The digitalization of the Iranian tax system has developed within a broader effort to modernize fiscal administration, improve revenue collection, reduce tax evasion, and increase the transparency of economic transactions. Historically, the Iranian tax system relied considerably on physical documents, direct interaction between taxpayers and tax officials, periodic declarations, and administrative audits based on limited or fragmented information. The expansion of electronic government and the growing importance of tax revenue have encouraged a transition toward integrated digital systems. Mohammadi and colleagues describe transformation of the tax system as having broader implications for national governance and national security, particularly because the state's fiscal capacity affects economic stability and the ability of public institutions to perform their functions (Mohammadi et al., 2023). In this context, digitalization has become a central instrument for improving administrative capacity rather than a peripheral technological initiative.

One of the most important dimensions of this transformation has been the development of electronic taxpayer identification and registration. Digital registration enables the tax administration to create standardized taxpayer profiles and connect tax records with other forms of financial and commercial information. Such integration can reduce duplicate records, improve identification of taxable persons, and facilitate the comparison of declared income with external data. The administrative advantages are significant because fragmented information has historically limited the ability of tax authorities to identify hidden economic activities. Digital systems can therefore expand the tax base by improving the visibility of transactions that would otherwise remain outside traditional audit mechanisms. However, this expansion of informational capacity simultaneously raises legal questions about the sources of taxpayer data, the authority for combining different databases, the purposes for which information may be used, and the rights available to taxpayers when stored information is inaccurate.

The Law on Sales Terminals and the Taxpayer System represents a major development in the institutional architecture of Iranian tax digitalization. The system aims to improve the registration and reporting of transactions by connecting commercial activity more directly to tax administration. Electronic sales records and taxpayer terminals can reduce dependence on retrospective declarations and provide the administration with more timely information about economic transactions. Pourhassan and colleagues examine the implementation of this law in relation to taxpayer satisfaction and emphasize the mediating importance of non-presence tax services (Pourhassan et al., 2024). This finding is significant from a legal-policy perspective because it suggests that the success of digital tax reform depends partly on whether taxpayers experience electronic procedures as accessible and functional. An electronic system that increases reporting obligations without providing reliable services may generate resistance rather than voluntary compliance.

Electronic invoicing is particularly important because invoices serve both fiscal and evidentiary functions. A properly designed electronic invoicing system can create reliable transactional records, facilitate value-added tax administration, and reduce opportunities for fictitious documentation. It can also allow tax authorities to compare the activities of sellers and purchasers and identify inconsistencies more quickly. Yet electronic invoicing changes the legal significance of commercial records. When tax liabilities depend on automatically transmitted invoice data, questions arise concerning the authenticity of electronic records, correction of technical errors, responsibility for inaccurate entries, and the evidentiary weight of system-

generated information. The legal framework must distinguish intentional non-compliance from technical mistakes and ensure that taxpayers are not penalized automatically for errors outside their reasonable control.

The expansion of digital tax administration also affects tax assessment and auditing. Traditional audits often depended on physical inspection of accounting records and direct interaction with taxpayers. Digital systems enable more data-driven methods in which tax authorities compare information from multiple sources and identify patterns of potential non-compliance. Artificial intelligence could further enhance this capacity by allowing tax administrations to classify risks, detect anomalies, and prioritize cases. The potential identified in comparative studies of AI-based tax administration is directly relevant to Iran because similar technologies can improve administrative efficiency if supported by appropriate governance structures (Saragih et al., 2023). AI-driven tax administration may reduce the cost of reviewing large populations of taxpayers, while technologies such as blockchain could improve traceability and verification of certain transactions (Adelekan et al., 2024). Nevertheless, the use of automated risk analysis requires explicit legal safeguards because being classified as high risk may expose a taxpayer to intensified scrutiny, delayed refunds, additional documentation requirements, or investigation.

The principle of legality requires that digital audit powers remain grounded in tax legislation. Technology should not become an independent source of administrative authority. Iranian principles concerning the interpretation of tax laws support a restrictive approach to the creation of fiscal obligations outside clearly defined legal rules (Paknejad et al., 2023). This is particularly important where digital information is used to infer undeclared income or reconstruct taxable transactions. Administrative inference may be necessary in cases of incomplete records, but taxpayers must be able to understand the methodology used and challenge factual or legal assumptions. A digital assessment should therefore remain a legally reasoned administrative act rather than being treated as self-validating simply because it was produced through an electronic system.

Electronic notification represents another important area of transformation. Tax procedures depend on legally effective notice because assessment deadlines, objection periods, appeal rights, and enforcement measures are frequently calculated from the date on which the taxpayer is deemed informed. Digital notification can significantly reduce administrative cost and delay. It can also provide a traceable record of communication. Yet legal problems arise when electronic systems presume receipt even though the taxpayer did not actually access the notification, experienced a technical failure, lost access credentials, or lacked adequate digital literacy. The legal validity of digital service should therefore be accompanied by safeguards ensuring that taxpayers have a realistic opportunity to become aware of decisions affecting their rights. Otherwise, procedural efficiency may undermine the right of defense.

Taxpayer data protection constitutes one of the most significant legal challenges in the Iranian digitalization process. A comprehensive digital tax system requires access to extensive information concerning income, bank accounts, property, business activities, transactions, employment, and commercial relationships. The broader the information network becomes, the greater the need for clear rules concerning confidentiality and permissible use. Iranian tax law recognizes confidentiality obligations, but the contemporary digital environment demands a more comprehensive approach than traditional rules against unauthorized disclosure. Digital data can be replicated, combined, transferred, analyzed, and retained indefinitely. Legal regulation must therefore address who may access taxpayer data, for what purposes, under what conditions, for how long, and with what mechanisms of oversight.

The issue is particularly acute where tax information is exchanged between public institutions. Inter-agency information sharing can substantially improve tax enforcement because banks, customs authorities, registries, licensing agencies, and other governmental bodies possess information relevant to taxable capacity. Yet unrestricted data exchange can transform the tax system into a broader system of financial surveillance. The legal framework should therefore apply principles of necessity and proportionality. Tax authorities should obtain information that is reasonably connected to legitimate fiscal purposes rather than collecting all potentially available information merely because digital infrastructure permits it. The absence of detailed limitations may create uncertainty regarding the boundary between effective administration and excessive intrusion into private economic affairs.

Cybersecurity also requires greater legal attention. As tax administration becomes dependent on interconnected databases, system vulnerabilities can affect millions of taxpayers simultaneously. Unauthorized access to tax records can reveal sensitive personal and commercial information, while manipulation of digital records may produce incorrect liabilities or fraudulent refunds. The state therefore bears a substantial responsibility to ensure the integrity and resilience of tax information systems.

This responsibility should include technical standards, access controls, encryption, incident-response mechanisms, internal auditing, and clear allocation of responsibility where breaches occur. A taxpayer compelled by law to transmit information electronically should not bear disproportionate consequences when administrative infrastructure fails.

Taxpayer rights in the digital environment extend beyond privacy. Procedural rights remain essential because digital information can contain errors. Incorrect bank information, duplicated transactions, mistaken identity, incomplete records, or inconsistent third-party reporting can produce false conclusions about taxable income. Taxpayers must therefore have accessible mechanisms to view relevant data and request correction. The right to challenge evidence becomes especially important when administrative assessments are generated from information received from external databases. Without access to the underlying information, a taxpayer cannot effectively contest the tax authority's conclusions. The quality of tax adjudication is consequently central to the legitimacy of digital administration. Hajipour Kandaroud and colleagues' comparison of Iranian tax adjudication with European principles of good administrative behaviour highlights the importance of procedural standards in strengthening fairness and accountability (Hajipour Kandaroud et al., 2024).

Tax justice also provides an important benchmark for evaluating Iran's digital reforms. Ghasemi Bonabari and colleagues identify justice-oriented indicators as central to the evaluation of direct tax and value-added tax laws (Ghasemi Bonabari et al., 2024). Goudarzi and colleagues similarly emphasize justice-related criteria in the operation of the tax system (Goudarzi et al., 2024). Digitalization can promote horizontal equity by identifying taxpayers who previously escaped assessment and by reducing differences caused by inconsistent administrative treatment. It may also improve vertical equity by providing more accurate information about taxpayers' economic capacity. Yet these benefits depend on the quality of the data and the fairness of the technological system. If data errors disproportionately affect particular groups, or if only technologically sophisticated taxpayers can effectively navigate digital objection processes, digitalization may reproduce inequality rather than eliminate it.

Tax crimes and enforcement also acquire a new dimension in the digital environment. Digital records can improve detection of fraudulent transactions, concealment of income, fictitious invoicing, and other forms of tax misconduct. Sharifi's analysis of factors contributing to tax crimes in Iranian and Afghan law underscores the broader importance of legal and institutional conditions in shaping tax non-compliance (Sharifi, 2023). Digital enforcement may reduce opportunities for certain forms of evasion by increasing traceability. At the same time, new technologies create new forms of avoidance and concealment through virtual assets, cross-border digital services, and technologically mediated transactions. The regulatory treatment of cryptocurrencies in other jurisdictions demonstrates that traditional tax categories must be adapted to assets that do not fit easily within conventional legal classifications (Kobylnik & Kateryna, 2024). Iran therefore faces a dual challenge: digitalize conventional tax enforcement while simultaneously developing rules capable of addressing new digital economic activities.

The treatment of virtual assets is particularly significant because digital assets complicate valuation, ownership, transaction tracing, and jurisdiction. European legal analysis has shown that taxation of digital and virtual assets requires clear rules for characterizing transactions and determining their tax consequences (Kateryna & Kobylnik, 2024). Questions concerning value-added tax and cryptocurrency speculation illustrate how fiscal rules must respond to technological innovations that blur traditional distinctions between currency, property, financial instruments, and investment assets (Elahiyari Fard & Parvin, 2024). Although the institutional and economic context of Iran differs from that of the European Union, the underlying legal problem is comparable: a tax system cannot rely exclusively on legal categories designed for conventional assets when significant economic activity increasingly occurs through digital instruments.

Another major challenge is digital exclusion. Mandatory digital tax procedures may disadvantage elderly taxpayers, individuals with disabilities, taxpayers in areas with weak internet access, small businesses lacking technical expertise, and persons with limited digital literacy. A legally fair system should recognize that equal formal access to an online platform does not necessarily produce equal practical access. Administrative digitalization should therefore include assistance mechanisms, accessible interfaces, alternative procedures in justified cases, and safeguards preventing taxpayers from losing substantive rights because of technological barriers. This issue is particularly important in tax law because failure to comply with procedural requirements can lead directly to penalties, loss of appeal rights, or enforcement measures.

The Iranian system has therefore achieved meaningful technological progress, particularly through electronic taxpayer services, integrated information mechanisms, digital transaction reporting, and reduced dependence on physical administrative

procedures. Yet the legal architecture surrounding these technologies remains more fragmented than the technological infrastructure itself. The principal challenge is not whether Iran should continue tax digitalization but how that digitalization should be legally governed. Future reform should establish clearer rules on taxpayer data, automated decision-making, electronic evidence, inter-agency information exchange, cybersecurity, procedural rights, administrative explanations, and liability for technological failures. Digital modernization will be sustainable only when technological efficiency is accompanied by a coherent framework of legal accountability.

4. European Union Framework and Comparative Analysis with Iran

The European Union offers a distinctive framework for examining tax digitalization because taxation remains divided between national competence and supranational legal coordination. Member States retain significant authority over direct taxation, yet EU law strongly influences tax administration through rules concerning value-added tax, administrative cooperation, data protection, fundamental rights, the internal market, and increasingly digital economic regulation. This multilevel structure means that European tax digitalization is not governed by a single comprehensive tax code but by interacting national and EU legal instruments. The result is a regulatory environment in which technological modernization is embedded within broader principles of legality, proportionality, data protection, administrative cooperation, and judicial protection. The relevance of the European experience for Iran lies less in institutional replication than in the manner in which technological tax administration is connected to a wider architecture of legal safeguards.

The taxation of the digital economy has been one of the central pressures driving European reform. Digital business models challenge conventional approaches to territorial taxation because companies can generate significant revenues in a jurisdiction without maintaining the physical presence traditionally associated with taxable nexus. Harpaz's analysis of digital-economy taxation demonstrates that established international tax principles were developed for economic structures that differ significantly from contemporary digital markets (Harpaz, 2021). De la Vega and Jarrin similarly argue that taxation in the digital sector creates both legal challenges and opportunities because digital economic activity forces states to reconsider fiscal rules while also creating new possibilities for more effective revenue collection (de la Vega & Jarrin, 2025). The European response has therefore developed along two interconnected tracks: adapting substantive taxation to new economic models and digitalizing administrative mechanisms for reporting, verification, and enforcement.

Value-added tax provides one of the clearest examples of this evolution. VAT administration depends heavily on transactional records, invoices, and cross-border information. Digital invoicing and reporting systems can significantly improve the capacity of tax authorities to verify transactions and identify inconsistencies. The taxation of cryptocurrency-related activities demonstrates the difficulty of applying existing VAT concepts to technologically novel economic instruments. Allahyari Fard and Parvin examine the regulation of value-added tax and cryptocurrency speculation in the European Union, highlighting the need for legal classification and regulatory adaptation (Allahyari Fard & Parvin, 2024). Related analysis of digital asset taxation in the EU emphasizes the importance of clear legal approaches to transactions involving virtual assets (Kateryna & Kobylnik, 2024). These developments illustrate a broader principle: effective tax digitalization requires substantive tax rules and administrative technologies to evolve together.

European administrative cooperation has also become increasingly important because digital economic activity is inherently transnational. Information exchange allows tax authorities to identify income, assets, and transactions that would be difficult to detect within purely domestic administrative systems. The digitalization of information exchange improves speed and standardization but also increases the volume and sensitivity of data moving between institutions and jurisdictions. This creates a fundamental tension between fiscal transparency and individual privacy. The European approach generally attempts to manage this tension through principles governing lawfulness, proportionality, data minimization, purpose limitation, accuracy, and security. Such principles are particularly relevant to taxation because fiscal administrations have legitimate reasons to obtain detailed information, but those powers cannot be unlimited.

Data protection is one of the areas in which the difference between the European and Iranian approaches is most significant. European administrative institutions operate within a comparatively developed legal framework for personal-data processing. Although tax enforcement may justify substantial information collection, the existence of data-protection principles creates legal standards against which administrative practices can be evaluated. In practical terms, tax authorities should identify a

lawful basis for processing, collect information for specified purposes, avoid excessive retention, maintain data accuracy, and protect information against unauthorized access. These requirements are not merely technical rules. They shape the legitimacy of digital fiscal governance by recognizing that taxpayers retain legal interests in their personal information even when disclosure is required for taxation.

The issue becomes particularly important where data are repurposed. Information collected for one administrative function may be attractive for use in another. Interoperable databases can improve government efficiency, but they can also weaken institutional boundaries. A European-style purpose-limitation approach seeks to ensure that data collected for a defined purpose are not freely used for unrelated governmental objectives without an appropriate legal basis. Iran's expanding inter-agency tax information systems would benefit from a similarly explicit principle. The Iranian framework has legitimate reasons to connect tax records with financial, commercial, banking, and property information, yet the scope and purpose of such exchanges should be clearly defined by law. The comparative difference is therefore not necessarily whether information exchange exists but whether legal safeguards surrounding exchange are sufficiently detailed and enforceable.

Artificial intelligence is another major area of comparison. European regulatory developments increasingly treat algorithmic decision-making as a legal governance issue rather than only a question of administrative modernization. Tax authorities may use automated systems to identify suspicious transactions, calculate risk, and prioritize audits. Saragih and colleagues demonstrate that AI applications can significantly contribute to tax administration modernization by improving analytical capacity and administrative targeting (Saragih et al., 2023). Adelekan and colleagues similarly identify the potential of AI-driven systems and blockchain technology to improve tax compliance through automation and enhanced traceability (Adelekan et al., 2024). However, when algorithms influence decisions that affect taxpayer rights, several legal safeguards become necessary: transparency concerning the use of automated systems, mechanisms for detecting error, meaningful human supervision, and access to review.

The concept of explainability is especially important in tax administration. Taxpayers should not be required to accept a tax liability simply because a computer system identified a discrepancy. The administration must translate technological outputs into legally intelligible reasons. This requirement derives from the broader principle that administrative decisions affecting rights should be reasoned and contestable. Where an algorithm identifies a taxpayer as high risk, the legal significance of that classification should depend on evidence and legally relevant criteria rather than on opaque statistical correlation alone. The European model of good administration provides a useful comparative framework because it places emphasis on reason-giving, fairness, and procedural accountability. Hajipour Kandaroud and colleagues' analysis of Iranian tax adjudication through reference to the European Code of Good Administrative Behaviour illustrates the relevance of these principles to Iranian reform (Hajipour Kandaroud et al., 2024).

Procedural rights are therefore central to the comparison. A digital tax system should preserve the taxpayer's right to know that an adverse decision has been made, understand its basis, access relevant information, present objections, and seek independent review. Electronic procedures can improve these rights by providing faster access to records and reducing geographical barriers. Yet they can also weaken rights when systems are difficult to use or when electronic notifications trigger deadlines without ensuring meaningful awareness. European administrative-law principles generally emphasize effective access to remedies rather than merely formal availability. This distinction is important for Iran. A digital appeal mechanism cannot be considered sufficient if taxpayers cannot access the underlying evidence, understand the assessment methodology, or obtain human reconsideration.

The principle of proportionality offers another useful basis for comparison. Tax authorities require strong information-gathering powers because tax compliance depends on accurate knowledge of economic activity. Yet the extent of administrative intervention should remain proportionate to the legitimate objective pursued. In a digital context, proportionality can regulate the amount of information collected, the duration of retention, the intensity of monitoring, and the use of automated profiling. Digital technology makes comprehensive surveillance technically possible, but legal systems should distinguish what is possible from what is necessary. This distinction is less clearly institutionalized within Iran's tax digitalization framework and should become an important component of future reform.

Legal certainty also differs in important ways. European taxpayers generally operate within an environment in which digital administrative measures are embedded in broader systems of judicial review and rights protection. This does not eliminate

uncertainty, especially in rapidly developing fields such as virtual assets, digital platforms, and cross-border digital services. Kobylnik and Kateryna's analysis of taxation of digital assets demonstrates that legal systems continue to face difficult classification issues (Kobylnik & Kateryna, 2024). Vitiuk's analysis of tax residence in the context of e-residency and digital nomads similarly shows that technological mobility challenges traditional legal categories (Vitiuk, 2024). Nevertheless, these debates take place within a framework in which legal certainty itself is treated as a central objective. Iran should similarly approach digital tax reform through clear statutory definitions rather than relying heavily on administrative practice to resolve technologically novel issues.

The taxation of digital assets also reveals differences in regulatory maturity. European legal scholarship has devoted increasing attention to how cryptocurrencies and virtual assets should be categorized for tax purposes, including questions of VAT treatment, taxable gains, reporting obligations, and regulatory oversight (Elahiyari Fard & Parvin, 2024). Iran faces comparable economic phenomena but does not yet possess an equally integrated framework connecting digital-asset regulation with general principles of tax administration. This creates uncertainty both for taxpayers and for enforcement authorities. Comparative borrowing should therefore focus on regulatory method: defining categories, identifying taxable events, establishing reporting duties, and providing interpretative guidance.

Taxpayer-authority relations provide another important comparative dimension. Belahouaoui and Attak show that digitalization changes compliance behaviour partly through its effect on the relationship between taxpayers and tax administrations (Belahouaoui & Attak, 2024). A system perceived as transparent, accessible, and fair is more likely to support voluntary compliance than one perceived as opaque or excessively coercive. Iranian evidence regarding taxpayer satisfaction with non-presence services points in a similar direction (Pourhassan et al., 2024). This suggests that the difference between Iran and the EU should not be framed simply as technologically advanced versus technologically developing. Both systems must address the same governance problem: how to use digital tools while preserving taxpayer trust. The European framework provides more developed legal instruments for rights protection, whereas Iran's reforms have concentrated more heavily on technological infrastructure and administrative enforcement.

Tax justice further reinforces this point. Iranian scholarship emphasizes justice-oriented indicators in direct taxation and value-added taxation (Goudarzi et al., 2024). These concerns are fully compatible with European principles of proportionality, equality, and good administration. Digitalization should therefore be evaluated according to whether it improves equal treatment. Automated systems may reduce individual discretion, but they may also produce hidden forms of unequal treatment if risk models rely on problematic data or proxies. Algorithmic fairness should therefore become part of tax justice. Iran can draw from European experience by requiring periodic assessment of automated systems for accuracy, consistency, and discriminatory effects.

Cybersecurity is another area in which legal governance must become more explicit. Both Iran and EU Member States rely increasingly on centralized or interconnected tax databases. The risks associated with cyberattack, unauthorized access, data leakage, and system disruption therefore increase as digitalization advances. The European regulatory environment generally treats data security as an institutional obligation connected to accountability. Iran should similarly develop detailed legal duties concerning security standards, breach notification, incident investigation, and remedies. Technical security should not depend only on internal administrative policies because taxpayers have a legitimate interest in knowing what obligations the state assumes when collecting compulsory financial information.

The comparison also highlights the importance of institutional responsibility. When a traditional tax official makes an unlawful decision, responsibility can usually be traced through established administrative structures. Automated systems complicate this relationship because decisions may depend on software developed by private contractors, datasets obtained from third parties, or models designed by technical specialists. A legal framework must nevertheless preserve the principle that the tax administration remains accountable for decisions made through its technological systems. Administrative responsibility cannot be displaced onto software. This principle should become explicit in Iranian tax law as automated decision-making expands.

Another transferable lesson concerns the right to human intervention. Fully automated fiscal decisions may create serious problems when they significantly affect taxpayers. Even when automation is efficient, individuals should have access to a competent human decision-maker capable of reviewing the factual and legal basis of an adverse determination. This is

particularly important where the decision involves disputed data, unusual circumstances, or significant penalties. Human review should be substantive rather than symbolic. The reviewing official should possess authority to reconsider the automated result and should not merely repeat the system's conclusion.

The European experience also suggests the value of regulatory coordination. Tax digitalization intersects with data protection, cybersecurity, electronic commerce, company law, financial regulation, administrative law, and increasingly artificial intelligence governance. Fragmented regulation can create conflicting obligations and gaps in accountability. Iran's future reforms would therefore benefit from a coherent legislative framework linking tax digitalization to general principles of digital governance. The objective should not necessarily be a single comprehensive statute but a coordinated system in which the responsibilities of tax authorities, financial institutions, digital platforms, and taxpayers are clearly defined.

In comparative terms, Iran has made considerable progress in building the technological infrastructure necessary for digital tax administration. Electronic taxpayer systems, sales terminals, integrated records, and remote services have significantly changed the operational capacity of the Iranian Tax Administration. The principal gap lies in the legal governance surrounding these systems. The European framework provides stronger conceptual tools for regulating data use, ensuring proportionality, protecting procedural rights, and maintaining accountability in automated administration. Iran should therefore move from a predominantly technology-centered model of digitalization toward a rights-based model of digital tax governance.

This reform should include clear statutory authorization for automated tax procedures, explicit limitations on data collection and sharing, enforceable taxpayer rights to access and correct information, stronger cybersecurity obligations, transparent standards for electronic notifications, and effective remedies against system-generated errors. Artificial intelligence used in tax administration should be subject to human oversight, auditability, and explainability. Taxpayer data should be processed according to clearly defined purposes and should not be retained or reused without legal justification. Digital services should remain accessible to persons with limited technological capacity. Administrative decisions should continue to provide legally intelligible reasons even when technological tools contribute substantially to their production.

The European approach should not be understood as a model to be copied mechanically. Some European rules reflect institutional arrangements and legal traditions that do not directly correspond to Iran. The more appropriate comparative strategy is to extract general principles that can be adapted to Iranian law. These include legality, proportionality, purpose limitation, transparency, accountability, procedural fairness, human review, data accuracy, cybersecurity, and effective judicial protection. Such principles are compatible with the fundamental requirements of lawful taxation and can strengthen the legitimacy of Iran's ongoing digital transformation.

5. Conclusion

The digitalization of tax administration represents one of the most significant transformations in contemporary public finance. It changes not only the technical tools used by tax authorities but also the structure of the relationship between the state and the taxpayer. Electronic registration, digital filing, automated information exchange, electronic invoicing, interconnected databases, algorithmic risk analysis, and artificial intelligence allow tax administrations to obtain and process information with unprecedented speed and scale. These capabilities can substantially improve revenue collection, reduce administrative costs, increase transaction traceability, identify previously hidden economic activities, and facilitate more consistent enforcement. At the same time, the same technologies can enlarge the informational power of the state, reduce transparency, create new cybersecurity risks, and make administrative decisions more difficult for taxpayers to understand and challenge. The central legal question is therefore not whether tax systems should become digital, but under what legal conditions digital tax administration can be considered legitimate.

The analysis demonstrates that lawful tax digitalization requires a multidimensional legal framework. The principle of legality remains fundamental because technological capacity does not itself authorize administrative action. Tax authorities must have a clear statutory basis for collecting information, linking databases, imposing electronic reporting obligations, and using automated systems in assessment and enforcement. Legal certainty requires that taxpayers be able to understand both their substantive obligations and the procedural consequences of participation in digital systems. Transparency requires that administrative decisions, including those influenced by algorithms, remain sufficiently intelligible to be challenged. Data protection requires rules governing collection, use, accuracy, retention, sharing, and confidentiality. Cybersecurity requires the

state to protect compulsory financial information against unauthorized access and manipulation. Procedural fairness requires notice, access to evidence, correction mechanisms, opportunities for objection, and meaningful review. Accountability requires that public authorities remain legally responsible for decisions generated through the technologies they choose to use.

The Iranian tax system has made significant progress in digital modernization. Electronic taxpayer registration, non-presence tax services, the taxpayer system, electronic transaction reporting, and the increasing integration of administrative databases have strengthened the operational capacity of the tax administration. These developments are particularly important for an economy in which the expansion of the tax base, reduction of tax evasion, and improvement of fiscal transparency are major policy priorities. Digitalization can reduce dependence on discretionary face-to-face administration and make tax enforcement more systematic. It can also contribute to tax justice by bringing previously concealed economic activities within the formal tax system and by improving consistency in the treatment of taxpayers.

The principal weakness of the Iranian approach lies in the imbalance between technological development and legal institutionalization. The digital infrastructure of taxation has developed more rapidly than the legal framework governing the use of that infrastructure. Traditional concepts of confidentiality and administrative procedure are not sufficient for an environment characterized by large-scale data integration, continuous information exchange, automated profiling, and potentially artificial intelligence-assisted decision-making. A modern legal framework must address not merely whether taxpayer information may be collected, but how much may be collected, for what purpose, for how long it may be retained, with whom it may be shared, how its accuracy can be challenged, and what remedies exist when its use produces an unlawful consequence.

The comparison with the European Union demonstrates the value of integrating tax digitalization with broader principles of digital and administrative governance. The most important lesson is not the adoption of specific European institutional arrangements but the recognition that technological modernization should be accompanied by a parallel modernization of legal safeguards. Data protection, proportionality, good administration, transparency, reason-giving, human review, and effective judicial protection should form part of the architecture of a digital tax system. These principles transform digitalization from a purely administrative project into a legally accountable form of public governance.

A particularly important area for reform concerns automated decision-making. The use of artificial intelligence and algorithmic systems in tax administration is likely to expand because these technologies can process large amounts of data more efficiently than traditional audit methods. However, no taxpayer should be subject to a materially adverse fiscal decision solely on the basis of an opaque technological process that cannot be meaningfully explained or challenged. Automated tools should assist lawful administrative decision-making rather than replace legal reasoning. The tax authority should remain responsible for the final decision, and taxpayers should have access to meaningful human review whenever an automated process significantly affects their tax liability, audit status, penalties, or enforcement position.

Iran would also benefit from clearer statutory regulation of taxpayer data. The legal framework should define the categories of information that tax authorities may obtain, specify legitimate purposes of processing, regulate inter-agency exchange, establish retention limits, and create enforceable rights of access and correction. The principle of data minimization should be incorporated into tax administration so that the government collects information reasonably necessary for legitimate fiscal purposes rather than accumulating data without defined limits. A clear distinction should also be maintained between tax administration and broader governmental surveillance. Interconnected databases can improve enforcement, but institutional efficiency should not eliminate legal boundaries between different governmental functions.

Cybersecurity should be treated as a legal obligation of tax administration rather than merely a technical matter. When taxpayers are legally required to disclose sensitive financial information through digital systems, the government assumes a corresponding duty to protect that information. Security standards should therefore be defined and regularly reviewed. Administrative procedures should establish mechanisms for responding to breaches, correcting corrupted data, notifying affected persons where necessary, and determining responsibility for harm caused by system failures. Liability rules should prevent taxpayers from bearing the consequences of errors attributable to public digital infrastructure.

Electronic notification and digital procedural deadlines also require careful reform. Digital communication can accelerate tax administration, but procedural efficiency should not undermine effective participation. Legal rules should distinguish between the technical transmission of a notice and the realistic opportunity of the taxpayer to become aware of its contents. Mechanisms should exist for addressing system outages, authentication problems, loss of access, and other exceptional

circumstances. The principle governing these procedures should be that technological convenience for the administration must not eliminate the taxpayer's substantive right to defend against an adverse fiscal decision.

Digital inclusion should likewise become an explicit element of tax policy. A system may be formally accessible online while remaining practically inaccessible to persons with limited digital literacy, inadequate internet access, disabilities, or insufficient technical resources. Small businesses may also experience disproportionate compliance costs when new digital reporting obligations require specialized software or expertise. The legal system should therefore provide assistance, reasonable transition periods, accessible platform design, and alternative arrangements where necessary. Equal treatment in digital taxation requires sensitivity to unequal technological capacity.

The future of tax administration will almost certainly involve deeper integration of artificial intelligence, automated reporting, digital identity, interconnected financial information, and real-time transaction monitoring. The regulatory question is therefore urgent. Legal safeguards should be established before automated systems become so deeply embedded that accountability becomes difficult to reconstruct. A rights-based model of tax digitalization should be developed in which technological innovation is assessed against predetermined legal principles rather than legal protections being added only after problems emerge.

The comparative analysis ultimately shows that Iran does not need to choose between efficient tax administration and taxpayer rights. These objectives can reinforce one another. Clear rules improve administrative predictability, stronger data protection increases trust, transparent decision-making facilitates voluntary compliance, effective remedies reduce resistance, and accurate digital systems contribute to both revenue efficiency and tax justice. The European experience demonstrates that technological sophistication is most sustainable when embedded in a broader legal structure of accountability. Iran can adapt these principles within its own legal and institutional framework without reproducing European law in identical form.

The development of a comprehensive legal framework for digital taxation should therefore become an integral component of Iran's continuing tax reform. Such a framework should establish explicit rules for digital data processing, automated administrative decisions, electronic evidence, cybersecurity, information sharing, taxpayer access to records, correction of inaccuracies, digital notification, human review, administrative liability, and judicial protection. These reforms would strengthen both the effectiveness and legitimacy of the tax system.

Digitalization should ultimately be understood as a transformation in the exercise of fiscal public power. It changes how the state observes economic activity, how tax obligations are identified, how decisions are produced, and how taxpayers interact with administrative institutions. For this reason, the success of tax digitalization cannot be measured solely through higher revenues, lower administrative costs, or increased technological capacity. Its success must also be measured through legality, fairness, transparency, security, accountability, and the protection of taxpayer rights. A modern digital tax system is legitimate only when technological efficiency and legal protection develop together.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

Acknowledgments

Authors thank all who helped us through this study.

Conflict of Interest

The authors report no conflict of interest.

Funding/Financial Support

According to the authors, this article has no financial support.

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