



IMPROVING TAX ADMINISTRATION MANAGEMENT THROUGH ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN THE CONTEXT OF DIGITAL TRANSFORMATION

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Abstract

This article examines how artificial intelligence can improve management in tax authorities under conditions of digital transformation. Recent international evidence shows that tax administrations are moving beyond basic e-services toward data-driven compliance management, digital identities, advanced analytics, and AI-supported taxpayer services. OECD materials report that 29 of 38 OECD members in the 2024 Inventory of Tax Technology Initiatives reported using AI in tax administration, with the main areas of application being the detection of tax evasion and fraud, decision-making assistance, and the improvement of tax services.

IMF and World Bank publications likewise present AI as a strategic instrument for tax and revenue administrations, while emphasizing that its effectiveness depends on governance, skills, legality, and institutional readiness. On that basis, the article argues that AI can strengthen management mechanisms in tax authorities most effectively when it is integrated into a broader digital-transformation architecture built on interoperable data, accountable decision-making, taxpayer-rights protection, and continuous monitoring.

Keywords: artificial intelligence, tax administration, tax authorities, digital transformation, public management, compliance risk management, taxpayer services, public governance, digital government.

Introduction

Digital transformation has become a central feature of modern tax administration because taxation is increasingly delivered through online interactions, digital identities, interoperable data systems, and analytics-based processes. The OECD explains that digital transformation in tax administration is aimed at making taxation easier and less costly for taxpayers, while its 2025 report shows that tax authorities are adopting wider digitalisation and transformation initiatives across their operating models. In this environment, management in tax authorities can no longer rely only on traditional hierarchical routines and manual control mechanisms; it increasingly depends on digital tools that support faster, more accurate, and more integrated decision-making.

Artificial intelligence has emerged as one of the most important technologies in this process. The OECD's dedicated chapter on AI in tax administration states that tax administrations have used AI for many years to support activities across their operating model and that the latest survey shows the principal application areas are tax-evasion and fraud detection, decision-making



assistance, and service improvement. The IMF's 2024 technical note similarly treats AI in tax and customs administration as a matter of current strategic importance for planning and management, and the World Bank's 2025 framework proposes a structured model for integrating AI into revenue administrations.

The purpose of this article is to analyze how artificial intelligence can improve management mechanisms in tax authorities under digital transformation. The article focuses on three tasks: first, reviewing major scholarly and institutional contributions; second, identifying the main management functions in which AI creates value; and third, proposing development directions for more effective, transparent, and accountable tax administration. [1], [2], [3], [4].

Literature Review

The academic and institutional literature on AI in tax administration has developed along three main lines: managerial efficiency and compliance improvement, taxpayer-rights and legality concerns, and broader institutional design for responsible AI deployment. OECD and IMF publications focus mainly on strategic transformation and practical use cases, while legal and applied research examines explainability, rule-of-law demands, and the legitimacy of algorithmic administration in taxation. [1], [2], [4], [5], [6], [8].

A key scholarly contribution is the work of Faúndez-Ugalde (2020), which examines taxpayers' rights to access algorithms and formulas used by tax administrations in Latin America, especially in taxpayer-risk characterization and the robotization of tax-audit actions. This study is important because it shows that AI in taxation is not merely an efficiency tool; it also raises questions about transparency, legal access, and the right of defense. [5].

A complementary public-law perspective is offered by Daly (2024), who analyzes AI in taxation through the lens of the rule of law. Daly argues that the tax-administration context is especially useful for evaluating legality, accountability, certainty, and finality, and concludes that opacity around AI-assisted risk-management systems is problematic unless taxpayers are given enough information to challenge decisions. [6].

A more operational perspective appears in Koivula (2024), who explored whether deep learning algorithms, neural networks, and self-organizing maps could add value in the Finnish Tax Administration in handling income-tax-related claims by limited liability companies. Górski (2025) adds the explainability dimension by examining whether current explainable-AI techniques can address taxpayer concerns and satisfy legal requirements to explain tax-related decisions. Together, these studies show that operational gains and legal legitimacy must be treated jointly rather than separately. [7], [8].

International institutions reinforce these academic findings. The World Bank's 2025 paper presents a strategic AI integration model for revenue administrations and emphasizes human-AI collaboration, phased capacity building, governance structures, and public trust. OECD materials similarly stress that AI offers large opportunities in tax administration but also amplifies risks related to sensitive data, security, fairness, and trustworthy use. [3], [4].

Analysis and Results

1. AI as a tool for improving core management mechanisms



Under digital transformation, the management mechanisms of tax authorities are changing from reactive, paperwork-based administration toward proactive, data-led governance. In this environment, AI contributes first to compliance risk management. OECD evidence shows that tax authorities use AI most commonly for detecting tax evasion and fraud and for decision support, which allows management to move from broad, resource-intensive control toward more targeted intervention, better case prioritization, and more efficient allocation of audit capacity.

A second major contribution is in taxpayer service management. OECD materials identify service improvement as a main field of AI deployment, including the use of virtual assistants and other AI-supported service tools. From a management perspective, this allows tax authorities to redesign front-office functions, reduce repetitive workloads for staff, deliver faster answers to taxpayers, and create more personalized service channels.

A third contribution lies in internal process management and organizational intelligence. The World Bank's strategic AI integration model proposes a three-phase implementation path—inception, consolidation, and optimization—to build capacity, establish governance structures, and optimize AI systems over time. This suggests that AI can improve management not only at the operational level but also at the institutional-design level by making administrative processes more structured, staged, and learning-oriented. [3].

Table 1.

Main management mechanisms improved by AI in tax authorities

Management mechanism	AI-supported function	Expected managerial effect
Compliance management	Risk scoring, fraud detection, anomaly recognition	Better targeting of audits and enforcement actions
Taxpayer service management	Virtual assistants, automated guidance, service personalization	Faster service delivery and lower administrative burdens
Internal workflow management	Document triage, claims handling, prioritization	Greater efficiency and more consistent internal operations
Strategic planning	Forecasting, pattern analysis, managerial dashboards	Better resource allocation and planning quality
Knowledge management	Data mining, decision support, case clustering	Stronger institutional learning and decision support

Source: author's synthesis based on [1], [2], [3], [4], [7].

2. Legal and governance conditions for management improvement

The literature makes clear that AI improves management only when it is embedded in strong governance arrangements. The IMF technical note stresses legal and ethical concerns, the need for responsible use, and a structured approach to evaluating and introducing AI use cases. OECD's 2025 materials similarly emphasize privacy, security, and the trustworthy application of AI because tax administrations handle sensitive data and exercise significant coercive public powers. [2], [4].



This point is especially important because management decisions in tax authorities can directly affect audits, risk flags, and service outcomes. Faúndez-Ugalde emphasizes taxpayer access and defense rights, while Daly argues that opacity over AI-assisted risk-management systems is problematic from a rule-of-law perspective unless adequate information is available to challenge tax authority decisions. Górski further shows that explainable AI may help but that current XAI techniques do not automatically solve the legal-explanation problem in taxation. [5], [6], [8].

As a result, AI-based management improvement in tax authorities must be accompanied by data governance, transparency, explainability, human oversight, and accountability mechanisms. The World Bank model is helpful here because it treats governance and ethical frameworks, data governance, capacity building, and human-AI collaboration as integral parts of AI integration rather than as afterthoughts. [3].

3. Institutional readiness and capability development

Institutional readiness is another critical factor. The OECD's digitalisation report is based on data from the 2024 Global Survey on Digitalisation and reflects broad administrative transformation among OECD Forum on Tax Administration members. The IMF note is explicitly written for senior officials and presents AI as a management and planning issue rather than a narrow technical matter. Together, these sources imply that leadership understanding, staff capability, and institutional coordination are essential preconditions for effective AI-based management in tax authorities. [1], [2].

This means successful AI deployment is not simply a software-purchasing exercise. It requires new organizational competencies, cross-functional cooperation, and management capable of integrating technology with administrative law, tax procedure, and public-service goals. The World Bank's phased model supports precisely this view by emphasizing gradual capacity building and governance development over time. [3].

Table 2.

Key preconditions for effective AI-based management in tax authorities

Precondition	Why it matters	Management implication
High-quality data	AI outcomes depend on accurate, complete, and current data	Requires strong data cleaning, validation, and updating processes
Legal safeguards	Taxpayers must be able to understand and challenge administrative action	Requires transparent procedures and documented decision paths
Skilled workforce	AI deployment changes skill needs in tax authorities	Requires training, recruitment, and change management
Institutional governance	AI affects multiple departments and processes	Requires cross-functional coordination and clear accountability
Human oversight	Fully opaque automation can undermine legality and trust	Requires managerial review and override capacity

Source: author's synthesis based on [2], [3], [5], [6], [8].



4. Development prospects

The future development of AI-based management in tax authorities is likely to move in four main directions. The first is deeper integration into digital tax ecosystems, where AI is embedded in taxpayer portals, digital identity systems, and risk-management infrastructures. The second is more advanced compliance analytics, enabling increasingly preventive and targeted intervention. The third is greater emphasis on explainability and trust, driven by legal and ethical concerns. The fourth is a more systemic management approach, where AI is treated not as a separate innovation but as part of the operating model of the tax authority. [1], [2], [3], [4], [8].

In practical terms, the strongest future path is likely to be one that combines compliance gains with taxpayer-service improvement and robust procedural safeguards. That conclusion is consistent with both the institutional literature and the legal scholarship: AI should improve managerial capacity, but it must do so in ways that preserve public trust, reviewability, and the legal integrity of the tax system. [3], [4], [5], [6], [8].

Conclusion

The analysis shows that artificial intelligence can significantly improve management mechanisms in tax authorities under digital transformation. Its strongest contributions appear in compliance risk management, taxpayer service delivery, internal workflow management, and strategic planning. OECD, IMF, and World Bank materials all indicate that AI is becoming a strategic component of modern revenue administration rather than a marginal technical experiment.

At the same time, the literature also shows that AI does not improve management automatically. The long-term success of AI in tax authorities depends on data quality, legal safeguards, organizational capability, transparency, explainability, and taxpayer trust. In this sense, the most promising path is not uncontrolled automation, but a balanced model in which AI is integrated into tax administration as a lawful, reviewable, and strategically governed instrument of public management.

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