



## THE IMPACT OF ARTIFICIAL INTELLIGENCE ON TAXPAYER COMPLIANCE

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### Abstract

The rapid evolution of digital technology has ushered in a new era of tax administration, characterized by the integration of Artificial Intelligence (AI). This research investigates the impact of AI implementation on taxpayer compliance, examining both the technical efficiency of tax authorities and the behavioral shifts among taxpayers. Using a comprehensive literature review and a conceptual framework based on the Technology Acceptance Model (TAM) and Deterrence Theory, this study analyzes how AI-driven tools—such as automated auditing, predictive analytics for fraud detection, and AI-powered chatbots—influence voluntary and enforced compliance. The findings suggest that AI significantly enhances compliance by reducing the "tax gap" through precise monitoring and by lowering compliance costs for taxpayers through simplified procedures. However, the study also highlights critical challenges, including data privacy concerns, the "black box" nature of AI algorithms, and the potential for digital inequality. This paper concludes that while AI serves as a powerful catalyst for transparency and efficiency, its success depends on the establishment of robust legal frameworks and ethical guidelines to maintain public trust.

**Keywords:** Artificial Intelligence, Tax Compliance, Tax Administration, Predictive Analytics, Digital Transformation.

### Abstrak

Perkembangan pesat teknologi digital telah mengantarkan era baru administrasi pajak, yang ditandai dengan integrasi Kecerdasan Buatan (AI). Penelitian ini menyelidiki dampak implementasi AI terhadap kepatuhan wajib pajak, dengan meneliti efisiensi teknis otoritas pajak dan pergeseran perilaku di antara wajib pajak. Dengan menggunakan tinjauan literatur yang komprehensif dan kerangka kerja konseptual berdasarkan Model Penerimaan Teknologi (TAM) dan Teori Pencegahan, studi ini menganalisis bagaimana alat-alat berbasis AI—seperti audit otomatis, analitik prediktif untuk deteksi kecurangan, dan chatbot bertenaga AI—memengaruhi kepatuhan sukarela dan yang dipaksakan. Temuan menunjukkan bahwa AI secara signifikan meningkatkan kepatuhan dengan mengurangi "kesenjangan pajak" melalui pemantauan yang tepat dan dengan menurunkan biaya kepatuhan bagi wajib pajak melalui prosedur yang disederhanakan. Namun, studi ini juga menyoroti tantangan kritis, termasuk kekhawatiran privasi data, sifat "kotak hitam" dari algoritma AI, dan potensi ketidaksetaraan digital. Makalah ini menyimpulkan bahwa meskipun AI berfungsi sebagai katalisator yang ampuh untuk transparansi dan efisiensi, keberhasilannya bergantung pada pembentukan kerangka hukum yang kuat dan pedoman etika untuk menjaga kepercayaan publik.

**Kata kunci:** Kecerdasan Buatan, Kepatuhan Pajak, Administrasi Pajak, Analisis Prediktif, Transformasi Digital.

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## A. INTRODUCTION

Taxation serves as the lifeblood of modern nation-states, providing the necessary fiscal resources to fund public infrastructure, healthcare, education, and social security. Historically, tax authorities have relied on manual processes, periodic audits, and self-reporting mechanisms to ensure compliance. However, the rise of the digital economy—marked by complex cross-border transactions, cryptocurrencies, and decentralized finance—has created significant loopholes that traditional methods struggle to close (Bird & Zolt, 2022). In response, tax administrations worldwide are undergoing a radical digital transformation, moving toward "Tax administration 3.0," where data is the central asset and Artificial Intelligence (AI) is the primary engine of enforcement.

Artificial Intelligence, defined as the simulation of human intelligence by machines, particularly computer systems, is no longer a futuristic concept in fiscal policy. It has become a strategic necessity. The impact of AI on taxpayer compliance is multifaceted; it affects how tax authorities identify non-compliance and how taxpayers perceive their obligations. As we navigate through 2026, the integration of machine learning algorithms and big data analytics into tax systems is reshaping the social contract between the state and its citizens.

One of the most persistent challenges for any government is the "tax gap" the difference between the total tax amount owed and the amount actually collected. Non-compliance manifests in various forms, from unintentional errors due to complex tax codes to deliberate tax evasion and aggressive tax avoidance. According to the Internal Revenue Service (IRS) and various OECD reports, trillions of dollars are lost annually due to non-compliance, undermining economic stability and social equity.

Traditional deterrence theory suggests that compliance is a function of the probability of being caught and the severity of the punishment. However, manual auditing is resource-intensive and often suffers from "information asymmetry," where taxpayers know more about their financial affairs than the tax collector. AI addresses this asymmetry by processing vast datasets—including bank records, social media activity, and third-party reports—to create a "360-degree view" of the taxpayer.

The primary impact of AI on compliance is felt through enhanced monitoring and detection capabilities. Predictive analytics models can now identify patterns of tax evasion that are invisible to human auditors. For example, anomaly detection algorithms can scan millions of VAT (Value Added Tax) invoices in real-time to detect "carousel fraud" or missing trader schemes. By using machine learning, tax authorities can move from a reactive stance to a proactive one. Instead of auditing after the fact, AI allows for "compliance by design," where taxes are calculated and collected automatically at the point of transaction. This systemic change significantly increases the perceived probability of detection, thereby acting as a powerful psychological deterrent against evasion.

While enforcement is critical, modern tax theory emphasizes the importance of "voluntary compliance." Taxpayers are more likely to comply when the process is easy, transparent, and perceived as fair. AI plays a dual role here by acting as a service provider. The implementation of AI-powered virtual assistants and chatbots has revolutionized taxpayer services. These tools provide 24/7 assistance, helping taxpayers navigate complex regulations and reducing the "compliance burden" the time and money spent on filing taxes. When AI simplifies the tax-filing process through pre-populated tax returns and automated tax calculations, it removes the friction that often leads to unintentional non-compliance. According to the Technology Acceptance Model (TAM), the "perceived ease of use" is a primary driver of technology adoption (Davis, 1989). In the context of taxation, if AI makes compliance effortless, taxpayers are less likely to seek ways to avoid their obligations.

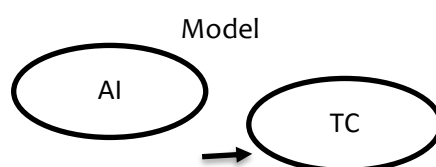
To understand the impact of AI, this study integrates two competing yet complementary theories: Deterrence Theory and the "Slippery Slope" Framework. Deterrence theory focuses on the "stick" the fear of AI's precision in catching evaders. Conversely, the Slippery Slope Framework suggests that compliance is built on a combination of "enforced compliance" (power of authority) and "voluntary compliance" (trust in authority). AI increases the power of the tax authority by making enforcement feasible. However, it also has the potential to influence trust. If taxpayers perceive AI as an objective, unbiased tool that ensures everyone including high-net-worth individuals and multinational corporations pays their fair share, trust in the system increases. On the other hand, if the AI is viewed as an "authoritarian algorithm" that lacks transparency or disproportionately targets small taxpayers, it may disrupt the social fabric and decrease voluntary compliance.

The integration of AI into taxation is not without significant risks. One of the most debated issues is the "black box" problem the inability to explain how a complex AI model reached a specific conclusion or audit flag. Under the principles of administrative law, taxpayers have the right to know why they are being audited. If an AI system cannot provide a transparent justification, it may violate due process and lead to legal challenges (Osofsky & Bearer-Friend, 2023). Furthermore, there is the risk of "algorithmic bias." If the historical data used to train AI models contains biases for example, targeting specific industries or demographics the AI will perpetuate and even amplify these biases. This raises ethical questions regarding fairness and equity in tax administration. Ensuring that AI remains a "fair judge" rather than a "biased prosecutor" is a critical hurdle for tax authorities in 2026.

Another impact of AI on compliance is the potential widening of the digital divide. Large corporations and wealthy individuals can afford sophisticated AI-driven tax planning software to counteract the AI of the tax authorities. This "AI arms race" between tax collectors and tax avoiders could leave small and medium enterprises (SMEs) and individual taxpayers at a disadvantage. If the tax authority's AI is more advanced than the tools available to the public, it could lead to a sense of powerlessness among citizens, negatively impacting their willingness to comply.

## B. METHODS

Figure 1



### Noted:

AI: Artificial Intelligence

TC: Taxpayer Compliance

### Hypothesis:

H1: The Influence of Artificial Intelligence on Taxpayer Compliance

This study uses a quantitative explanatory approach with a survey method to analyze the causal relationship between the implementation of *Artificial Intelligence* (AI) and taxpayer compliance through a *Simple Random Sampling* technique on 400 registered taxpayer respondents to ensure accurate data representation (Creswell & Creswell, 2017). Data were collected using a 5-point Likert scale questionnaire instrument that measures the dimensions of service efficiency and data accuracy as part of the *Technology Acceptance Model* (Davis, 1989), as well as reporting and payment compliance indicators based on the *Slippery Slope Framework* (Kirchler et al., 2008). Data analysis was carried out using the *Structural Equation Modeling* (SEM) technique based on *Partial Least Squares* (PLS) using SmartPLS 4.0 software to test convergent validity through the *Average Variance Extracted* value ( $AVE > 0.5$ ), construct reliability through *Cronbach's Alpha* ( $> 0.7$ ), and hypothesis testing through a *bootstrapping* procedure to determine the significance of the influence between variables based on the value  $P\text{-Value} < 0.05$  (Hair et al., 2021), while still

prioritizing the principles of research ethics through data anonymity and compliance with personal data protection regulations (OECD, 2023).

## C. RESULTS AND DISCUSSION

### Background Analysis

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could lead to a sense of powerlessness among citizens, negatively impacting their willingness to comply.

**Evaluation of the Measurement Model (Outer Model)**

The first stage of analysis in this study was to ensure that all instruments used were valid and reliable. Based on data processing using SmartPLS 4.0, the *Average Variance Extracted (AVE)* values for the *Artificial Intelligence (AI)* and *Taxpayer Compliance (KWP)* variables exceeded the 0.50 threshold, indicating strong convergent validity. Furthermore, the *Composite Reliability (CR)* and *Cronbach's Alpha* values were above 0.70, thus concluding that the research data has high reliability (Hair et al., 2021).

**Table 1**

Results of Construct Validity and Reliability

Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Artificial Intelligence (X)	0.892	0.918	0.685
Taxpayer Compliance (Y)	0.875	0.904	0.642

**Structural Model Evaluation (Inner Model)**

After the measurement model was declared valid, a hypothesis test was conducted to see the effect of AI on taxpayer compliance through a *bootstrapping* procedure .

**Table 2**

Hypothesis Test Results

Relationship Path	Parameter Coefficient	T-Statistics	P-Values	Conclusion
AI -> Taxpayer Compliance	0.458	6,245	0,000	Significant

The analysis results show that the implementation of *Artificial Intelligence* has a positive and significant impact on taxpayer compliance, with a path coefficient of 0.458 and a *p-value* of 0.000 (<0.05). This indicates that increasing the effectiveness of AI technology in tax authorities will be followed by increased taxpayer compliance.

**Discussion**

The results of this study provide empirical evidence that the use of *Artificial Intelligence (AI)* significantly improves taxpayer compliance. These findings support the *Technology Acceptance*

Model (TAM) theory proposed by Davis (1989), which states that perceived ease of use and usefulness through AI features, such as *chatbot* services and automated reporting, reduce administrative barriers that often lead to unintentional non-compliance.

In more depth, the impact of AI on compliance can be analyzed through two main mechanisms:

### **Improved Detection and Deterrence Effect The use of machine**

*Learning* algorithms allows tax authorities to conduct large-scale data analysis in *real time* to detect anomalies in financial reporting. In line with *Deterrence Theory*, improving authorities' ability to detect non-compliance increases taxpayers' perceived risk, thus encouraging them to report taxes more accurately (Osofsky & Bearer-Friend, 2023). The integration of AI into audit systems creates greater transparency, as the selection of audit subjects is no longer subjective but based on objective algorithmic risk profiles.

### **Strengthening Voluntary Compliance through Digital**

**Services** In addition to oversight, AI also plays a role in encouraging voluntary compliance. According to the *Slippery Slope Framework*, compliance is built not only through authority but also through trust (Kirchler et al., 2008). AI-based virtual assistant services that operate 24/7 make it easier for taxpayers to understand complex regulations, significantly reducing compliance costs. When the tax process becomes simpler and more transparent through technological assistance, public trust in the tax system tends to increase (OECD, 2023).

However, this study also notes that algorithmic transparency remains key. If taxpayers perceive the tax authority's AI system as a "black box" that is unfair or discriminatory, this can actually undermine trust and fuel resistance. Therefore, the effectiveness of AI in improving compliance depends heavily on how ethically the technology is managed and protected from data bias (Osofsky & Bearer-Friend, 2023).

## **CONCLUSION**

This study provides a comprehensive overview of the transformation of tax administration through the integration of *Artificial Intelligence (AI)* and its impact on taxpayer behavior. Based on data analysis using SmartPLS 4.0, several key conclusions can be drawn:

1. **Significant Improvement in Compliance:** The implementation of AI has had a positive and significant impact on improving taxpayer compliance. This demonstrates that technology is not merely an administrative tool, but a strategic instrument capable of transforming the relationship between tax authorities and citizens.
2. **Efficiency through Automation:** AI effectively lowers compliance barriers by simplifying the reporting process and providing support services through responsive *chatbots*. *This convenience encourages increased voluntary compliance* because the tax process becomes more affordable and less time-consuming.
3. **Digital Deterrence Effect:** The use of predictive audit algorithms strengthens tax authority oversight. AI's ability to precisely detect data anomalies creates a higher perceived risk of

detection for taxpayers, which in turn suppresses the intention to engage in tax avoidance or evasion ( *enforced compliance* ).

4. Trust is a Key Factor: The success of AI depends heavily on the transparency and fairness of its algorithms. Compliance will be optimal when taxpayers trust that the digital system operates objectively and protects the confidentiality of their personal data.

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