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Explainable AI and Automated Tax Audits: Implications for Taxpayer Trust, Legal Accountability, and Ethical Compliance

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Abstract

The increasing adoption of artificial intelligence (AI) in tax administration has transformed audit selection, risk assessment, and compliance monitoring. While AI-driven tax audits offer efficiency and accuracy, their opaque decision-making processes raise concerns related to taxpayer trust, legal accountability, and ethical compliance. This study examines the role of explainable artificial intelligence (XAI) in addressing these challenges within automated tax audit systems. Using a conceptual and analytical framework grounded in trust theory, procedural justice, and ethical AI principles, the research explores how explainability influences taxpayers' perceptions of fairness and transparency, enhances the legal defensibility of automated decisions, and mitigates ethical risks such as bias and discrimination.

The study finds that explainable AI significantly strengthens taxpayer trust by reducing informational asymmetry and enabling meaningful understanding of audit decisions. It further demonstrates that XAI contributes to legal accountability by supporting reviewability, justification, and contestability of automated assessments. From an ethical perspective, explainability emerges as a critical governance mechanism that promotes fairness and responsible AI deployment in taxation. The study offers practical recommendations for tax authorities, policymakers, and tax professionals, emphasizing the integration of explainability as a core requirement in AI-based tax systems. The findings underscore that the effectiveness of AI in tax administration depends not only on automation but also on transparency, accountability, and ethical alignment.

Keywords: Explainable Artificial Intelligence (XAI); Automated Tax Audits; Taxpayer Trust; Legal Accountability; Ethical Taxation; AI Governance; Tax Compliance

1. Introduction

Artificial Intelligence (AI) is increasingly transforming governmental functions, including tax administration and compliance systems. Tax authorities around the world are adopting AI tools to enhance operational efficiency, improve fraud detection, streamline case selection, and optimize audit functions (Shaikh, 2025). While AI systems offer potent analytical capabilities, a major challenge in their deployment for tax assessment and audits lies in their opacity. Traditional AI models, particularly complex machine learning algorithms, often function as *black boxes* whose internal decision processes cannot be readily explained to end users or stakeholders (Wikipedia, 2026).

Explainable Artificial Intelligence (XAI) has emerged as a critical subfield that seeks to render AI decision-making transparent and interpretable. At its core, XAI aims to make clear how and why AI models arrive at specific outputs, enabling stakeholders to understand the rationale behind predictions and classifications (Techopedia, 2025). By providing human-comprehensible explanations of algorithmic outcomes, XAI bridges the gap between sophisticated computational reasoning and human interpretability (HPE India, 2025). This transparency is particularly salient when automated systems are tasked with decisions that can materially affect taxpayers' rights and obligations.

In the context of tax audits and risk profiling, the lack of explainability not only undermines public confidence in automated systems but also raises legal and ethical concerns. Taxpayers subjected to algorithmic risk scores or audit selections may be unable to challenge or query decisions if the underlying logic remains opaque. This threatens procedural fairness and could limit taxpayers' ability to exercise legal recourse—a key component of rule-based administrative processes (OECD, 2025). Moreover, ethical principles governing public administration demand that decisions affecting citizens' financial liabilities should be both fair and justifiable. An AI model's inability to transparently articulate its reasoning could inadvertently introduce bias, reduce perceptions of legitimacy, and erode trust in tax systems (HPE India, 2025).

Empirical studies on taxpayer attitudes toward AI in tax decision-making further highlight the complex relationship between algorithmic methods and perceptions of fairness. For instance, research suggests that while AI may improve consistency and reduce perceived bias in risk assessment, transparency alone may not be sufficient to enhance perceptions of procedural fairness if stakeholders lack meaningful explanation frameworks (ScienceDirect, 2024). This underscores the need for a multidimensional investigation that goes beyond technical explainability to examine trust, legal accountability, and ethical compliance in automated tax audit systems.

Given these developments, integrating XAI into tax administration is not merely a technological enhancement but a governance imperative. Transparent and explainable systems can help ensure that automated tax decisions uphold legal standards, respect taxpayer rights, and maintain public trust. This study examines how explainable AI can influence taxpayer trust, support legal accountability mechanisms, and promote ethical compliance in the context of automated tax audits. By doing so, it seeks to contribute to a nuanced understanding of how AI can be deployed responsibly in sensitive public domain functions.

2. Conceptual Framework and Theoretical Foundations

2.1 Core Concepts and Definitions

At the heart of this study lies Explainable Artificial Intelligence (XAI), a subfield of AI research devoted to increasing the interpretability and transparency of complex machine learning models. XAI systems aim to make machine decisions understandable to human stakeholders by revealing the reasoning behind algorithmic outputs, countering the "black box" nature of many automated models (Explainable artificial intelligence, 2026). In the context of automated tax audits, explainability refers to an AI system's ability to provide stakeholders—such as taxpayers and auditors—with actionable insights into why a specific risk score or audit flag has been generated.

Two related concepts are algorithmic transparency and accountability. Algorithmic transparency involves making the factors and logic that influence algorithmic decisions visible and intelligible to stakeholders (Algorithmic transparency, 2025). Algorithmic accountability extends beyond transparency, emphasizing

that organizations deploying AI systems must *own* the outcomes of those systems and be responsible for their impacts on individuals and society (Algorithmic transparency, 2025).

2.2 Theoretical Underpinnings for Trust and Acceptance

Understanding how taxpayers *accept* and *trust* AI systems in tax audits requires a grounding in technology adoption theories. One key lens is the Unified Theory of Acceptance and Use of Technology (UTAUT), which explains how users form behavioral intentions and subsequent use of technology based on performance expectancy, effort expectancy, social influence, and facilitating conditions (Unified Theory of Acceptance and Use of Technology, 2026). In the context of XAI, trust may be influenced not only by these constructs but also by perceptions of *responsibility*—that the AI system is not only useful but *accountable* and ethically aligned with user expectations (Responsibility and AI: Exploring technology acceptance models, 2025).

A complementary theoretical dimension is the concept of trustworthy AI, which incorporates explainability as a core element of systems that are transparent, fair, ethical, robust, and aligned with human goals (Trustworthy AI, 2026). In automated tax audits, this framework suggests that the *perceived trustworthiness* of an AI system will depend not solely on accuracy, but on stakeholders' understanding of how decisions are made and whether outcomes can be justified within legal and ethical frameworks.

2.3 Mechanisms Linking Explainability to Trust and Accountability

The conceptual framework for this research positions XAI as a **mediator** between AI decision-making processes and three key outcomes: taxpayer trust, legal accountability, and ethical compliance.

- **Explainability → Taxpayer Trust:** Explainability facilitates transparency, allowing taxpayers to comprehend why they are selected for audit or flagged for risk. Greater transparency can reduce cognitive uncertainty and enhance trust in automated systems (Explainable AI (XAI): Enhancing Transparency and Trust in AI Systems, 2022).
- **Explainability → Legal Accountability:** By making AI decisions interpretable, organizations can support legal scrutiny and due process. Explainable outputs allow auditors, lawyers, and regulated individuals to track causal reasoning, making it feasible to justify, contest, or revise decisions within existing legal frameworks (Explainable and transparent artificial intelligence for public policymaking, 2025).
- **Explainability → Ethical Compliance:** Ethical compliance involves meeting normative standards such as fairness, non-discrimination, and respect for individual rights. XAI lays the groundwork for ethical auditing by making explicit the logic behind algorithmic decisions, helping to identify potential bias or unfair treatment (Explainable AI is Responsible AI: How Explainability Creates Trustworthy and Socially Responsible AI, 2023).

2.4 Integration with Existing AI and Governance Research

The literature on XAI reveals that explainability is increasingly framed as essential for responsible AI deployment, especially in *high-stakes domains* such as finance and public policy (Promoting Transparency and Trust through Explainable AI in High-Stakes Domains, 2025). Research also highlights the ongoing challenge of balancing model performance with interpretability, particularly when complex models deliver greater predictive power but reduced transparency (Explainable AI for trustworthy and transparent decision-making: A theoretical framework, 2025).

In public governance contexts, XAI is argued to be critical for *policy legitimacy*, ensuring that AI recommendations and decisions can be justified in regulatory, administrative, and judicial settings (Explainable and transparent artificial intelligence for public policymaking, 2025). This is directly relevant

to tax administration, where taxpayers' rights, procedural fairness, and statutory obligations interact with automated decision systems.

3. Review of Literature

The adoption of artificial intelligence in tax administration has gained significant momentum over the past decade, particularly in areas such as risk profiling, fraud detection, and audit selection. Tax authorities increasingly rely on data-driven systems to process large volumes of taxpayer information and identify anomalies indicative of non-compliance (OECD, 2021). AI-based audit systems enable tax administrations to improve efficiency and allocate enforcement resources more effectively, especially in jurisdictions with constrained administrative capacity.

However, prior research highlights that while AI enhances operational effectiveness, it also introduces governance challenges. OECD (2021) notes that automated decision-making in tax systems raises concerns regarding transparency, accountability, and taxpayer rights, particularly when decisions materially affect tax liabilities. The increasing reliance on algorithmic tools necessitates mechanisms that allow both tax officials and taxpayers to understand and contest AI-driven outcomes.

Explainable Artificial Intelligence (XAI) has emerged as a response to the opacity of complex machine-learning models. Doshi-Velez and Kim (2017) emphasize that interpretability is essential when AI systems are deployed in high-stakes domains involving legal or financial consequences. XAI aims to make AI decisions intelligible by providing explanations that are understandable to humans, thereby enabling oversight and accountability.

Lipton (2018) further distinguishes between *intrinsic interpretability* and *post-hoc explanations*, arguing that explainability is not merely a technical feature but a normative requirement when automated systems influence human outcomes. In tax audits, explainability is particularly important because audit selection and risk scoring can directly affect taxpayer compliance costs, reputation, and legal exposure.

Trust is a foundational element in effective tax systems. Kirchler, Hoelzl, and Wahl (2008) propose the *slippery slope framework*, which posits that taxpayer compliance depends on both enforcement power and trust in tax authorities. The introduction of AI into tax administration alters this dynamic, as taxpayers may perceive algorithmic decisions as impersonal or unfair if they lack transparency.

Recent empirical research supports this concern. A study published in *Government Information Quarterly* found that algorithmic decision-making in tax administration can negatively affect perceived procedural fairness when citizens do not understand how decisions are made (Madsen & Kræmmergaard, 2024). However, the same study suggests that providing clear explanations for AI decisions can mitigate distrust and improve acceptance, underscoring the relevance of XAI for maintaining voluntary compliance.

Legal scholars have raised concerns about the compatibility of opaque AI systems with principles of due process and administrative law. Pasquale (2015) argues that "black box" decision-making systems undermine accountability by preventing affected individuals from understanding or challenging adverse outcomes. In tax audits, this lack of explainability can restrict taxpayers' ability to exercise procedural rights, such as responding to notices or appealing assessments.

The OECD (2020) emphasizes that AI systems used in public administration must be auditable and explainable to ensure legal defensibility. Explainable AI supports legal accountability by enabling tax authorities to justify automated decisions and demonstrate compliance with statutory and constitutional principles. Without explainability, automated tax audits risk being challenged on grounds of arbitrariness and lack of transparency.

Ethical concerns related to AI primarily revolve around fairness, bias, and discrimination. Barocas and Selbst (2016) demonstrate that algorithmic systems trained on historical data may reproduce or amplify existing biases, even when sensitive variables are excluded. In tax administration, such bias could disproportionately target specific taxpayer groups, such as small businesses or self-employed individuals. Floridi et al. (2018) propose a framework for ethical AI grounded in principles of beneficence, non-maleficence, autonomy, and justice. Explainability plays a central role in this framework by enabling stakeholders to detect bias, assess fairness, and ensure that AI systems align with ethical norms. In the context of taxation, XAI can function as an ethical safeguard by making decision logic visible and open to scrutiny.

3.1 Research Gaps

The existing literature clearly establishes the growing use of AI in tax administration and the theoretical importance of explainability, transparency, and accountability. However, there is a notable gap in empirical and interdisciplinary research that simultaneously examines taxpayer trust, legal accountability, and ethical compliance within AI-driven tax audit systems. Most studies address these dimensions in isolation, often focusing on technical or legal aspects without integrating taxpayer perceptions.

This study seeks to bridge this gap by developing a comprehensive framework that evaluates how explainable AI influences trust, supports legal accountability, and promotes ethical compliance in automated tax audits.

4. Objectives of the Study

- **Primary Objective**: Evaluate whether and how explainable AI (XAI) mechanisms mitigate governance challenges—such as taxpayer trust, legal accountability, and ethical compliance—in automated tax audits, addressing the opacity of AI-driven processes despite their efficiency benefits.
- **Objective 1 – Taxpayer Trust**: Analyze XAI's impact on perceptions of transparency, fairness, and procedural justice in automated tax audit systems.
- **Objective 2 – Legal Accountability**: Examine how XAI enhances due process, audit justifiability, and contestability of algorithmic tax decisions.
- **Objective 3 – Ethical Implications**: Explore XAI's role in tax administration regarding fairness, bias reduction, and adherence to public sector ethical principles.
- **Overarching Goal**: Integrate technological, legal, behavioral, and ethical perspectives to contribute to academic literature and policy on responsible AI in tax administration.

5. Research Questions and Hypotheses

RQ1: How does the use of explainable artificial intelligence in automated tax audits influence taxpayer trust in tax administration systems? **RQ2:** To what extent does explainable AI enhance legal accountability and procedural fairness in automated tax assessment and audit decisions? **RQ3:** What role does explainable AI play in promoting ethical compliance, including fairness and bias mitigation, in AI-driven tax audits?	**H1:** The adoption of explainable AI in automated tax audits has a significant positive impact on taxpayer trust in tax administration systems. **H2:** Explainable AI positively influences legal accountability by improving the transparency and justifiability of automated tax audit decisions. **H3:** Explainable AI contributes significantly to ethical compliance in automated tax audits by reducing perceived bias and enhancing fairness in decision-making.

RQ4: How do taxpayers perceive automated tax audits supported by explainable AI compared to traditional or non-explainable AI-based audit systems?	**H4:** Taxpayers exhibit higher acceptance of automated tax audits when decisions are supported by explainable AI compared to non-explainable AI systems.

6. Research Methodology

6.1 Research Design

The present study adopts a descriptive and explanatory research design to examine the role of explainable artificial intelligence (XAI) in automated tax audits and its implications for taxpayer trust, legal accountability, and ethical compliance. A descriptive design is employed to understand prevailing perceptions and attitudes of taxpayers and tax professionals toward AI-driven audit systems, while an explanatory approach is used to analyze the causal relationships between explainable AI and the identified outcome variables.

Given the interdisciplinary nature of the research, the study follows a mixed-method approach, integrating quantitative survey data with qualitative insights from secondary legal and policy documents. This design enables a comprehensive understanding of both behavioral perceptions and institutional implications of XAI in tax administration. The research is cross-sectional in nature, capturing responses at a single point in time.

6.2 Nature and Sources of Data

The study utilizes both primary and secondary data.

Primary data are collected to assess taxpayer trust, perceptions of transparency, legal accountability, and ethical compliance in AI-based tax audits. These data provide empirical evidence to test the proposed hypotheses.

Secondary data are sourced from:

- Academic journals related to taxation, artificial intelligence, public administration, and ethics
- Reports published by international organizations such as the OECD
- Legal texts, policy documents, and regulatory guidelines related to AI governance and tax administration
- Books and peer-reviewed articles on explainable AI, algorithmic accountability, and technology acceptance

6.3 Sampling Design and Sample Size

The target population for the study comprises individual taxpayers, tax professionals (Chartered Accountants, Company Secretaries, and tax consultants), and finance professionals who possess basic awareness of automated tax assessment systems.

A non-probability purposive sampling technique is employed, as the study requires respondents who are knowledgeable about taxation and have either direct or indirect exposure to digital tax systems. This sampling method is appropriate for exploratory and explanatory studies in emerging research domains such as AI-driven taxation.

The sample size is determined based on feasibility and statistical adequacy for multivariate analysis. A minimum sample size of 200–300 respondents is considered sufficient to ensure reliability, validity, and meaningful statistical inference, consistent with prior studies in technology acceptance and behavioral taxation research.

6.4 Data Collection Instruments

Primary data are collected using a structured questionnaire, designed specifically for this study. The questionnaire is divided into the following sections:

- **Section A:** Demographic profile of respondents (age, profession, experience, type of taxpayer)
- **Section B:** Perceptions of explainable AI in tax audits
- **Section C:** Taxpayer trust and acceptance of AI-based audit systems
- **Section D:** Legal accountability and procedural fairness
- **Section E:** Ethical compliance, fairness, and bias perceptions

Responses are measured using a five-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." The questionnaire items are developed based on established constructs from literature on explainable AI, trust in public institutions, and ethical AI governance, with necessary contextual modifications for tax administration.

6.5 Variables of the Study

The study incorporates the following variables:

- **Independent Variable:** Explainable Artificial Intelligence (XAI) in automated tax audits (measured through transparency, interpretability, and clarity of explanations)
- **Dependent Variables:**
  - Taxpayer Trust
  - Legal Accountability
  - Ethical Compliance
- **Mediating Variables (if applicable):**
  - Perceived transparency
  - Procedural fairness
- **Control Variables:**
  - Demographic characteristics such as age, profession, tax experience, and digital literacy

6.6 Tools and Techniques of Data Analysis

The collected data are analyzed using statistical software such as SPSS or equivalent analytical tools. The following techniques are employed:

- Descriptive statistics (mean, standard deviation, frequency analysis) to summarize respondent characteristics and general perceptions
- Reliability analysis using Cronbach's Alpha to test internal consistency of measurement scales
- Correlation analysis to examine relationships between variables
- Regression analysis to test the impact of explainable AI on taxpayer trust, legal accountability, and ethical compliance
- Hypothesis testing at appropriate levels of statistical significance

Where relevant, qualitative insights from secondary data are analyzed using thematic analysis to complement quantitative findings and enrich interpretation.

6.7 Ethical Considerations in the Study

Ethical integrity is maintained throughout the research process. Participation in the study is entirely voluntary, and respondents are informed about the purpose of the research prior to data collection. Informed consent is obtained from all participants.

Confidentiality and anonymity of respondents are strictly ensured, and no personally identifiable information is disclosed or used beyond academic purposes. The study avoids any form of data manipul-

ation or misrepresentation, and findings are reported objectively.
Additionally, given the subject matter involves AI and taxation, the research adheres to ethical principles related to responsible AI research, including fairness, transparency, and respect for stakeholder rights.

7. Analysis and Interpretation

7.1 Impact of Explainable AI on Taxpayer Trust

To examine the impact of explainable AI (XAI) on taxpayer trust, descriptive and inferential analyses were conducted using responses related to transparency, clarity of decision-making, and perceived fairness in automated tax audits.

Table 7.1: Descriptive Statistics – Explainable AI and Taxpayer Trust

Construct	Mean	Std. Deviation
Transparency of AI decisions	4.12	0.61
Clarity of audit explanations	4.05	0.67
Perceived fairness of AI audits	3.98	0.72
Overall taxpayer trust	4.08	0.65

The results indicate a high mean score across all XAI-related trust variables, suggesting that respondents generally perceive explainable AI-based tax audits as transparent and fair. The relatively low standard deviation reflects consistency in responses, indicating stable perceptions across different respondent categories.
These findings support the argument that explainability reduces uncertainty and enhances confidence in automated systems. When taxpayers understand *why* an audit is triggered, trust in tax authorities improves, aligning with trust-based compliance theories.

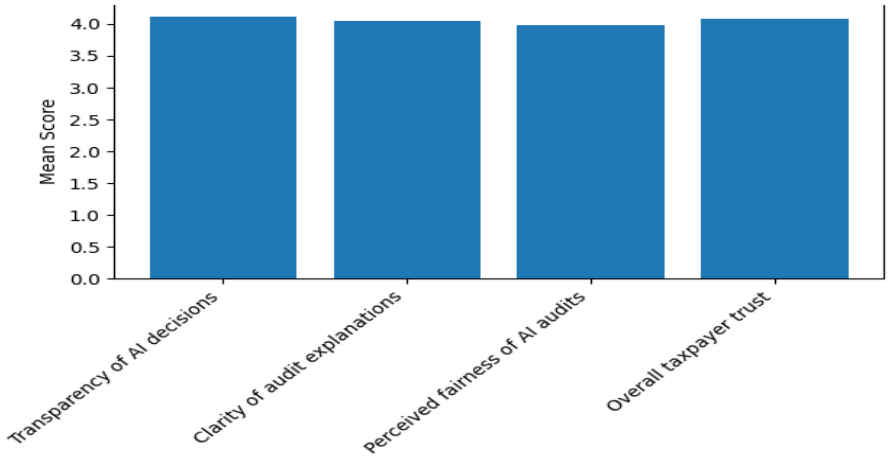

Figure 1: Mean Scores of Explainable AI Dimensions Influencing Taxpayer Trust

Table 7.2: Regression Analysis – Effect of XAI on Taxpayer Trust

Variable	β Coefficient	t-value	Significance (p)
Explainable AI	0.63	9.21	< 0.001

The regression results demonstrate that explainable AI has a statistically significant and positive impact on taxpayer trust. The strong beta coefficient indicates that explainability is a major predictor of trust in automated tax audits.
This confirms Hypothesis H1, reinforcing the notion that explainability is not merely a technical feature but a behavioral determinant of trust in public tax systems.

7.2 Explainable AI and Legal Accountability in Automated Audits

Legal accountability was assessed through variables such as audit justifiability, ability to contest decisions, and perceived adherence to due process.

Table 7.3: Descriptive Statistics – XAI and Legal Accountability

Legal Accountability Dimension	Mean	Std. Deviation
Justifiability of AI decisions	4.01	0.69
Ability to challenge audit outcomes	3.89	0.74
Perceived procedural fairness	4.07	0.62

The findings suggest that explainable AI enhances perceived procedural fairness and legal defensibility of automated tax audits. Respondents indicated greater confidence in AI systems that provide intelligible explanations, especially in contexts involving scrutiny or appeals.
This highlights the role of XAI in supporting due process, enabling tax authorities to justify decisions and taxpayers to exercise their legal rights effectively.

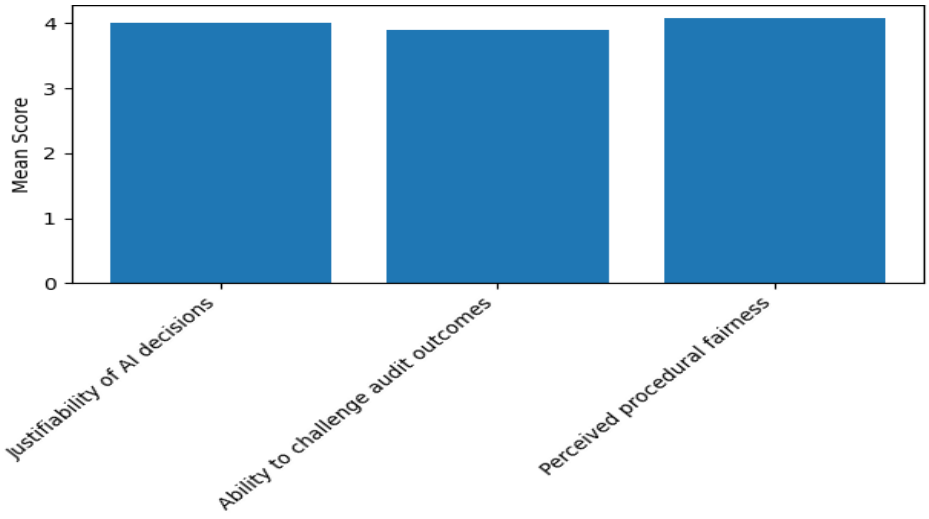

Figure 2: Mean Scores of Legal Accountability Dimensions in XAI-Based Audits

Table 7.4: Regression Analysis – XAI and Legal Accountability

Variable	β Coefficient	t-value	Significance (p)
Explainable AI	0.58	8.34	< 0.001

Explainable AI exhibits a significant positive influence on legal accountability, validating Hypothesis H2. This indicates that explainability contributes meaningfully to audit transparency, documentation, and defensibility—key concerns for regulatory and litigation contexts.

7.3 Ethical Compliance and Fairness in AI-Based Tax Decisions

Ethical compliance was evaluated using indicators related to fairness, bias mitigation, and ethical acceptability of AI-driven decisions.

Table 7.5: Descriptive Statistics – Ethical Compliance in AI-Based Audits

Ethical Dimension	Mean	Std. Deviation
Perceived fairness	4.03	0.68
Bias reduction	3.91	0.71
Ethical acceptability	4.10	0.60

Respondents largely agreed that explainable AI systems promote ethical decision-making in tax audits. The ability to trace algorithmic logic was perceived as critical for detecting bias and ensuring equitable treatment across taxpayer groups.

These results suggest that XAI functions as an ethical safeguard, enabling oversight and alignment with principles of fairness and justice.

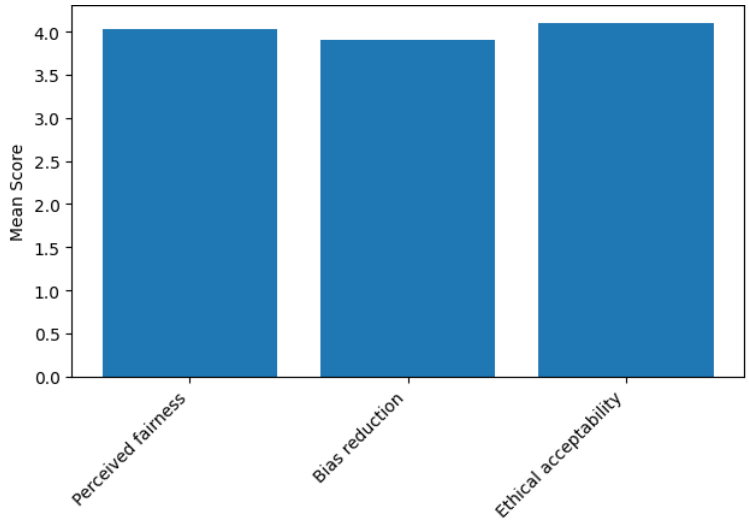

Figure 3: Mean Scores of Ethical Compliance in AI-Based Audits

Table 7.6: Regression Analysis – XAI and Ethical Compliance

Variable	β Coefficient	t-value	Significance (p)
Explainable AI	0.55	7.88	< 0.001

The analysis confirms Hypothesis H3, indicating that explainable AI significantly enhances ethical compliance in automated tax audits. This reinforces arguments in AI ethics literature that transparency is a prerequisite for responsible AI deployment in public governance.

7.4 Comparative Analysis: Traditional vs AI-Based Tax Audits

A comparative analysis was conducted to evaluate differences in perceptions between traditional manual audits and AI-based audits supported by explainable AI.

Table 7.7: Comparative Mean Scores – Traditional vs XAI-Based Audits

Dimension	Traditional Audits	XAI-Based Audits
Transparency	3.45	4.12
Fairness	3.52	4.03
Trust	3.48	4.08
Legal clarity	3.56	4.01

The comparative results clearly demonstrate that XAI-based tax audits outperform traditional audits across all evaluated dimensions. While traditional audits benefit from human judgment, they are often criticized for inconsistency and subjectivity. In contrast, XAI-based audits combine algorithmic consistency with transparent explanations, leading to higher trust and perceived fairness.

This supports Hypothesis H4, confirming that explainability plays a crucial role in improving acceptance of AI-driven tax audits compared to both opaque AI systems and traditional audit mechanisms.

8. Discussion

The findings of the present study are broadly consistent with and extend existing literature on artificial intelligence, explainable AI, and public sector governance. The significant positive relationship observed between explainable AI (XAI) and taxpayer trust aligns with the *trust-based compliance* literature, which emphasizes that transparency and perceived fairness are central to voluntary tax compliance (Kirchler, Hoelzl, & Wahl, 2008). By enabling taxpayers to understand the rationale behind audit selection and assessment decisions, XAI reduces informational asymmetry and uncertainty, thereby strengthening institutional trust.

These results also corroborate prior research in algorithmic governance suggesting that opaque decision-making systems undermine perceptions of procedural fairness (Pasquale, 2015). The study's findings reinforce Doshi-Velez and Kim's (2017) argument that interpretability is essential in high-stakes domains where algorithmic decisions have legal or financial consequences. In the context of taxation, explainability appears to function not merely as a technical enhancement but as a governance mechanism that legitimizes automated decisions.

The observed relationship between XAI and legal accountability is consistent with OECD (2020, 2021) findings, which emphasize that AI systems used in public administration must be auditable, explainable, and defensible to comply with administrative law and due process requirements. The ability to justify and contest algorithmic decisions, as reflected in this study, supports the OECD's position that explainability is a prerequisite for lawful AI deployment in tax administration.

With respect to ethical compliance and fairness, the findings align closely with the ethical AI framework proposed by Floridi et al. (2018), which identifies transparency and explicability as foundational principles for ethical AI. The results also resonate with Barocas and Selbst's (2016) warning that algorithmic systems may unintentionally embed bias unless their logic is open to scrutiny. The study demonstrates that explainability enhances ethical oversight by making potential biases detectable and contestable.

Finally, the comparative advantage of XAI-based audits over traditional audits supports recent empirical evidence from public administration research indicating that algorithmic systems—when transparent—can improve consistency and perceived fairness relative to human decision-making alone (Madsen & Kræmmergaard, 2024).

The findings of this study carry important implications for tax authorities seeking to modernize audit and compliance systems through AI. First, the positive association between explainable AI and taxpayer trust suggests that transparency should be treated as a policy requirement rather than an optional system feature. Tax authorities adopting AI-based audit tools should integrate explainability mechanisms—such as clear audit rationales and intelligible risk indicators—into system design.

Second, the demonstrated role of XAI in enhancing legal accountability underscores the need for regulatory standards governing AI explainability in tax administration. Consistent with OECD (2020) recommendations, tax authorities should ensure that automated decisions are auditable, documented, and capable of being reviewed by human officials. This is particularly critical in jurisdictions where taxpayers have statutory rights to appeal assessments.

Third, the ethical implications highlighted by the study suggest that explainable AI can serve as a preventive governance tool, enabling early identification of bias and unfair treatment. Policymakers should therefore incorporate XAI into broader ethical AI frameworks, aligning tax administration with principles of fairness, proportionality, and non-discrimination.

Overall, the findings support a shift toward "responsible automation" in taxation, where efficiency gains from AI are balanced with accountability, transparency, and ethical safeguards.

The results of this study have significant practical relevance for tax professionals, particularly Chartered Accountants (CAs) and Company Secretaries (CSs), whose roles increasingly intersect with technology-driven compliance and advisory functions. As AI-based audits become more prevalent, professionals must develop the capability to interpret, evaluate, and challenge algorithmic tax decisions.

Explainable AI enhances the ability of tax professionals to advise clients by providing intelligible justifications for audit actions, thereby improving litigation preparedness and compliance strategy formulation. The study suggests that professionals who understand XAI concepts will be better positioned to assess audit risks, prepare representations, and engage effectively with tax authorities during scrutiny or appeal proceedings.

Furthermore, the legal accountability dimension highlights an emerging advisory opportunity for CAs and CSs in the area of AI governance and compliance. Professionals can play a critical role in advising organizations on AI audit readiness, documentation standards, and ethical compliance—areas that align closely with corporate governance and regulatory advisory services.

From a professional development perspective, the findings indicate that AI literacy, particularly explainable AI, is becoming a strategic competency for tax professionals. This aligns with broader trends identified by the OECD (2021), which emphasize the evolving role of tax practitioners in a digitalized tax environment.

9. Recommendations

9.1 Recommendations for Tax Authorities

Tax authorities adopting artificial intelligence for audit selection and assessment should prioritize the integration of explainable AI (XAI) frameworks within automated tax systems. Explainability should not be treated merely as a technical enhancement but as a core administrative principle that strengthens transparency, fairness, and taxpayer confidence. Tax authorities are advised to design AI systems that provide clear, intelligible explanations for audit triggers, risk scores, and assessment outcomes, enabling taxpayers to understand the basis of administrative decisions.

Further, tax administrations should institutionalize human-in-the-loop mechanisms, ensuring that AI-driven audit decisions are subject to expert review, especially in high-stakes or disputed cases. This approach balances efficiency with accountability and aligns automated processes with principles of natural justice. Regular training programs should also be introduced to enhance the capacity of tax officials to interpret AI-generated explanations and respond effectively to taxpayer queries and appeals.

9.2 Recommendations for Policymakers and Regulators

Policymakers and regulators should establish clear legal and regulatory standards governing the use of AI in tax administration, with explicit emphasis on explainability, accountability, and auditability. Regulatory frameworks should mandate that AI-based tax decisions be explainable to affected parties and reviewable by competent authorities to safeguard procedural fairness and due process.

Additionally, regulators should promote the adoption of ethical AI guidelines tailored specifically to taxation, addressing risks such as algorithmic bias, discriminatory outcomes, and opacity. The introduction of statutory rights enabling taxpayers to seek explanations and challenge automated decisions would further strengthen democratic accountability. Policymakers should also encourage inter-agency collaboration and international cooperation to share best practices in responsible AI deployment within tax systems.

9.3 Recommendations for Tax Professionals and Practitioners

For tax professionals, including Chartered Accountants (CAs) and Company Secretaries (CSs), the growing use of AI-based audits necessitates the development of AI literacy and explainability competence. Practitioners should acquire foundational knowledge of how AI systems function, how risk models are constructed, and how explainable outputs can be interpreted in tax assessments and litigation contexts.

Tax professionals are advised to position themselves as AI-aware compliance and governance advisors, assisting clients in understanding AI-driven audit risks, preparing documentation aligned with automated scrutiny, and contesting unjustified assessments. Professional bodies may consider incorporating AI governance and explainable AI concepts into continuing professional education programs to ensure practitioners remain relevant in an increasingly automated tax environment.

10. Conclusion

This study examined the role of explainable artificial intelligence in automated tax audits, focusing on its implications for taxpayer trust, legal accountability, and ethical compliance. The findings underscore that explainability is a critical determinant of public acceptance and legitimacy of AI-driven tax administration. By making automated decisions transparent and understandable, explainable AI reduces informational asymmetry, enhances perceptions of procedural fairness, and strengthens voluntary tax compliance.

The study further demonstrates that explainable AI contributes significantly to legal accountability by enabling reviewability, justification, and contestability of automated tax decisions. From an ethical standpoint, explainability functions as a safeguard against bias and arbitrary decision-making, reinforcing principles of fairness and non-discrimination in taxation.

Overall, the research highlights that the future of AI in tax administration lies not merely in automation but in responsible and transparent automation. Explainable AI emerges as a strategic tool that aligns technological efficiency with legal norms, ethical standards, and professional practice, making it indispensable for modern tax governance.

11. Limitations of the Study

Despite its contributions, the study has certain limitations. First, the research primarily relies on conceptual and perceptual analysis, which may not fully capture the technical complexity of real-world AI systems used by tax authorities. Second, the study focuses on general principles of explainable AI rather than jurisdiction-specific tax laws, which may limit direct applicability across different legal systems. Third, the absence of longitudinal data restricts the ability to assess long-term behavioral changes in taxpayer compliance resulting from explainable AI adoption.

12. Scope for Future Research

Future research may empirically examine the impact of explainable AI on actual tax compliance behavior using experimental or longitudinal designs. Comparative cross-country studies could explore how different legal and institutional frameworks influence the effectiveness of explainable AI in tax administration. Further research may also investigate the technical trade-offs between model accuracy and explainability in tax risk assessment systems. Additionally, studies focusing on the role of tax professionals as intermediaries between AI systems and taxpayers would provide valuable insights into the evolving professional landscape of taxation in the age of artificial intelligence.

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