THE ROLE OF ARTIFICIAL INTELLIGENCE IN REDUCING TAX EVASION: AN IMPLEMENTATION STRATEGY

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Abstract

This research investigates the impact of artificial intelligence (AI) technologies on reducing tax evasion within the Palestinian Income and Sales Tax Department. Using a structured questionnaire distributed to 92 employees through stratified random sampling, the study captured responses from various job positions and experience levels. The findings indicate that the implementation of AI-driven predictive analytics and automated auditing tools significantly enhances tax compliance and detection accuracy. These results align with previous research emphasizing the importance of trust in fostering tax compliance in Palestine (Alasfour, 2019) and the emerging role of AI within governance and legal frameworks (Albalawee & Fahoum, 2024). Despite these benefits, challenges such as data privacy concerns, technological unfamiliarity, ongoing system updates, and high implementation costs were identified. To maximize AI deployment, tax authorities should invest in comprehensive training programs and supportive technologies. The proposed implementation strategy focuses on developing AI-specific tools while ensuring data security and fostering employee technological adoption. Future research should assess the long-term effectiveness of AI systems in combating tax evasion and strengthening tax compliance in Palestine.

Keywords: Artificial Intelligence, Tax Evasion, Predictive Analytics, Automated Auditing, Palestine

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1. INTRODUCTION

In the modern era, technology has become an integral part of human and organizational life, with artificial intelligence (AI) playing a particularly transformative role. AI refers to algorithms and technological tools capable of mimicking human tasks, processing data, and predicting outcomes (Korteling et al., 2021). Its applications extend across multiple sectors — including healthcare, education, and taxation — making it a cornerstone of innovation and efficiency.

Tax evasion, defined as the illegal concealment of taxable income or provision of insufficient information (Rostam Beigi & Aynehband, 2023), remains a pressing challenge for tax administrations worldwide. While previous studies demonstrate that

AI can effectively detect anomalies, irregularities, and fraudulent activities in tax systems (Moghri Gardroudbari, 2023), research in low- and middle-income countries remains limited. In particular, countries such as Palestine face significant barriers, including weak infrastructure, institutional resistance, and limited training (AlQudah et al., 2024). This gap highlights the need for contextualized studies exploring AI's role in resource-constrained tax administrations.

Against this backdrop, the present study aims to investigate the potential of AI — specifically predictive analytics and automated auditing tools — in reducing tax evasion within the Palestinian Income and Sales Tax Department. The research seeks to address the following key question:

RQ: How do employees of the Palestinian tax administration perceive the role of AI in detecting and preventing tax evasion, and what opportunities and challenges shape its adoption?

To answer this question, the study employs the technology organization environment (TOE) framework (Tornatzky et al., 1990), which provides a comprehensive lens to examine the technological, organizational, and environmental factors influencing AI adoption in developing contexts. A descriptive-analytical methodology is applied to collect and analyze quantitative data from employees in the tax administration. In addition, the study acknowledges the potential value of alternative methods — such as qualitative case studies, semi-structured interviews, or mixed-method approaches — that could further enrich understanding of organizational behavior and adoption challenges.

This study is significant for both theory and practice. Theoretically, it contributes to the limited body of literature on AI adoption for tax compliance in resource-limited settings. Practically, it provides empirical evidence and actionable recommendations for policymakers and practitioners seeking to strengthen tax systems through digital transformation. The findings reveal the opportunities AI offers in detecting tax evasion while also identifying contextual barriers that must be addressed to ensure successful implementation.

Following the introduction, Section 2 presents a review of the relevant literature and develops the research hypotheses. Section 3 explains the research design, sample selection, and data collection methods. Section 4 is devoted to the results. Section 5 discusses the data analysis and findings. Finally, Section 6 provides the conclusions, implications, and recommendations for practice and policy.

2. LITERATURE REVIEW

2.1. Tax evasion

Tax evasion is a major concern for governments worldwide, undermining economic stability and public sector development (Bethencourt & Kunze, 2019; Alm, 2021). It involves illegal actions to avoid, reduce, or postpone taxes (Xavier et al., 2022; Carrazza, 2022) and is influenced not only by the risk of being caught (Allingham & Sandmo, 1972) but also by trust, fairness, and social norms (Slemrod, 2007; Banerjee et al., 2023). In developing countries like Palestine, weak enforcement, limited technological capabilities, and a large informal economy exacerbate tax evasion, causing estimated annual losses of JOD 1.5 billion and hindering economic growth (Alm, 2021; Cobham & Janský, 2018; Hani & Warad, 2023). Recent studies further emphasize that regulatory and policy contexts shape taxpayer behavior in developing countries, making institutional frameworks crucial in addressing tax evasion (Gjoni et al., 2024). Although traditional auditing struggles with sophisticated evasion, AI-based tools — particularly predictive analytics and automated auditing — offer more effective detection and compliance. However, their success depends on human, organizational, and political factors, as public trust remains a critical determinant of tax compliance in Palestine (Slemrod, 2007; Banerjee et al., 2023; Alshira'h & Abdul-Jabbar, 2019; Alasfour, 2019).

2.2. Tax evasion in Palestine

The informal economy in Palestine, along with broken tax control, leads to serious problems. Even though it is reported that JOD 1.5 billion is lost each year to tax evasion (Hani & Warad, 2023), repeating this number often without explanation becomes redundant. It should be noted that this large figure results from poor institutional control, incomplete transparency, and underused automation in handling tax data (Malkawi & Haloush, 2008). Even though the previous reform efforts were approved by law, they have mostly failed because there are not enough tools or qualified individuals to assist with auditing. Alshira'h and Abdul-Jabbar (2019) argue that tax compliance can only be achieved if tax administrators can work properly, and this is still a challenge due to using old systems and a lack of proper training. Near-legal economic practices combined with widespread governmental institution skepticism drive citizens and businesses to misreport their financial activities (Alasfour, 2019). This weakness reflects broader findings in governance literature, which highlight that effective taxation systems depend on strong rule of law, accountability, and institutional control (El Merhebi & El Tanbour, 2025).

2.3. Artificial intelligence and tax evasion

Artificial intelligence offers transformative opportunities for combating tax evasion in developing nations such as Palestine (Albalawee & Fahoum, 2024). Through machine learning and predictive analytics, AI enables the analysis of large-scale financial data and the detection of irregularities across tax documents, bank statements, and property registries (Anifa et al., 2022; Hamza et al., 2023). However, prior research often overlooks challenges faced by resource-constrained institutions. For instance, Nuryani et al. (2024) emphasized AI's benefits without considering organizational capacity or employee impacts. Addressing these gaps, our study highlights how weak governance systems influence both AI adoption and tax compliance behaviors, which are shaped by perceptions of criminality (Ifere et al., 2023). Lessons from regional experiences — such as collaboration barriers in Kuwait (Al Wael et al., 2023)

and the importance of training and regulations in Jordan (Abu-Silake et al., 2024) — are critical for contextualizing Palestine's digital initiatives. Despite obstacles including limited skills, resistance, and insufficient state support (Borges, 2024), AI presents significant potential to enhance tax compliance and strengthen detection systems in Palestine (Zaqeeba, 2024).

3. RESEARCH METHODOLOGY

This section outlines the methodological approach adopted in the study, explaining the procedures used to achieve the research objectives. It presents the development of hypotheses, study design, sampling process, and the techniques applied for data collection and analysis.

3.1. Hypotheses development

3.1.1. Artificial intelligence-driven analytics enhance tax evasion detection efficiency in Palestine

Artificial intelligence plays a critical role in enhancing the efficiency of tax authorities in preventing tax evasion. Several studies conclude that AI reduces taxes. Nuryani et al. (2024) reviewed the role of AI in reducing tax evasion using a systematic review and document analysis. The results revealed that the incorporation of AI, as well as big data, can considerably enhance the detection of tax evasion in a complicated corporate structure. Accordingly, they state that AI offered beneficial instruments for tax authorities to better foster tax compliance.

Xavier et al. (2022) point out that intelligent systems enable tax auditors to determine tax evaders. Based on the TOE framework, the level to which organizations adopt new technologies is linked to both their preparedness for technology and their expectations of benefits. AI-driven technologies like predictive analytics and automated auditing represent advancements in technology that have the potential to boost the work efficiency of tax authorities. Available evidence from prior research indicates that the use of these tools leads to better anomaly detection and provides support for evidence-based enforcement (Nuryani et al., 2024). Therefore, the following hypothesis is suggested:

H1: The use of AI-driven predictive analytics and automated auditing enhances the efficiency of tax authorities in identifying and preventing tax evasion in Palestine.

3.1.2. Artificial intelligence tools pose challenges for tax authority employees in Palestine

The combination of AI predictive analytics with automated taxation auditing systems creates both positive and negative impacts on tax inspection processes in Palestine (Falah Alroud et al., 2025). Technology systems that enhance fraud detection accuracy and efficiency usually cause disruptions to existing workflows because they need employees to adapt their work methods (Dragomirescu et al., 2025). Auditors working in firms that lack proper technological resources or training often find these innovations difficult to operate (Vitali & Giuliani, 2024). Universal acceptance of technology depends heavily on users' sense of case when using new tools as defined by the technology acceptance model (TAM) (Liu et al., 2022). Employees in Palestine's traditional auditing sector demonstrate both hesitation towards AI-based tools and worry about job replacement risks because of the unfamiliarity with new systems (Alshira'h & Abdul-Jabbar, 2019).

AI tools create substantial learning barriers for workers because they need new competence sets that contrast with their basic training curriculum (Bukartaite & Hooper, 2023). Organizations face additional difficulty because their scarcity of structured training initiatives combines with insufficient organizational support systems for digital transformation adoption (Trenerry et al., 2021). Staff members struggle to efficiently adjust when institutions apply normative pressures through professional expectations and industry standards, according to institutional theory reports Scott (2005). A mismatch between AI technology progress and employee preparedness creates organizational problems, which result in declining employee job satisfaction, together with worse organizational outcomes and skepticism about AI anti-tax-evasion capability (Ezeife et al., 2021). In developing economies, factors like insufficient digital literacy, reluctance to adopt new practices, and unpredictable regulatory landscapes often block the implementation of AI in the public sector. The synergy of these theories validates the second hypothesis.

H2: The use of AI-driven predictive analytics and automated auditing to identify and prevent tax evasion constitutes a challenge for employees in Palestine.

3.2. Study design

A quantitative approach was used to assess how AI mitigates tax evasion by collecting and analyzing digital data. Hamilton and Stekelberg (2017) define quantitative research as a methodical approach that uses numerical data and statistical methods to explore and understand phenomena. The selection of the quantitative mode of research design is crucial because it makes it possible to measure variables and discover their connections, from which it is possible to generalize the study findings of the auditing companies in Palestine. The application of a structured questionnaire makes it possible to gather and compare quantitative data from respondents. This study uses a mixed-theory lens and interviews with a representative array of public tax workers to inform contemporary scholarship and influence tax reform at a local level. The inclusion of Palestine in wider contexts regarding digital governance and public sector innovation enables the study to highlight both national issues and ongoing international agendas for better transparency and efficiency in tax administration.

3.3. Sample of the study

This population consists of 120 employees from the field of the Income and Tax Department in Joann. The researchers used stratified random sampling to include enough people for each job position, years of experience, and department. A total of 92 responses were included in the data.

The overall response rate was 76.6%. Therefore, the participation was randomized through a stratified random sampling technique to ensure that every segment of the industry was represented comprehensively. Stratification was created taking into consideration key factors such as auditors' positions and the years of their experience to ensure both the diversity and reliability of the research findings.

3.4. Characteristics of the participants

The subjects of the research consisted of 92 employees from the Income and Tax Department in Palestine; this department had a diverse background and demographic information of employees. This diversity is the main instrument in the use of AI to reduce tax evasion from different perspectives. Participants are diverse in terms of age, gender, and educational qualification, from undergraduates to post-graduates, which is highly related to the subjects discussed. Their years of experience range from recent graduates to experienced experts. Auditing encompasses a range of skills, from low-level beginners who have less than a year of experience in auditing to experts with more than a 20-year track record, which provides an oversight that is wide enough to examine the impact of technology at different stages of a career. Participants who hold positions like junior auditors, senior auditors, audit managers, and partners will bring insights into the respective levels of organizational hierarchy.

3.5. Instruments of the study

The main data collection instrument for this research was a self-administered survey that was used to capture the opinions and experiences of employees in the Income and Tax Department in Palestine on the use of AI in reducing tax evasion. Using a 5-point Likert scale that ranges from highly disagree to highly agree will allow us to extract the perceptions of auditors.

The first part of the questionnaire deals with the collection of demographic and professional data. In this part, the researcher presents a number of questions regarding gender, age group, educational qualification, work experience, position held by the interviewee within their organization, and the degree of familiarity with technological tools designed for tax evasion detection and prevention. These questions serve the purpose of developing a complete picture of the study population by providing the researcher with an opportunity to recognize the sociocultural background of the respondents as well as the possible influence of these backgrounds on the study outcomes.

The second part of the questionnaire consists of 10 items: 5 items addressed the effectiveness of AI in reducing tax evasion, while the second part contained 5 items that addressed the challenges of using AI in reducing tax evasion that were adopted from (Alm, 2021; Ibrahim & Ali, 2025; Lootah, 2024; Nuryani et al., 2024) studies. Participants were asked to express their level of agreement with a series of statements regarding the effectiveness and challenges of using AI in reducing tax evasion. To mitigate common method bias, things like keeping the participants anonymous, hiding the questions so they didn't appear in the same order, and using simple questions were done. Harman's single-factor test was also performed and showed there wasn't much common bias in the results, since less than 40% of the answers came from this method. Harman's single-factor test was also done and showed no serious common method bias, since the first factor explained less than 40% of the results. The aim is to evaluate the perception of technology's role in reducing tax, emphasizing the importance of technological proficiency in mitigating tax evasion.

3.6. Validity and reliability of the instrument

The validity and reliability of the questionnaire used in this study are strongly supported by its foundation in existing literature and empirical research, particularly the studies by Alm (2021), Ibrahim and Ali (2025), Lootah (2024) and Nuryani et al. (2024). The adaptation of questionnaire items from these well-regarded studies not only lends credibility to the instrument but also ensures that the questions are grounded in relevant theoretical frameworks and have been previously tested for their effectiveness in eliciting meaningful responses about the impact of AI on tax evasion reduction. Furthermore, the instrument underwent a thorough review and approval process by a panel of experts. This jury of doctors, specializing in auditing, accounting, and information technology (IT), meticulously evaluated the questionnaire for its comprehensiveness, relevance, and clarity, ensuring that each item accurately captures the constructs of interest related to the use of technology in the auditing sector.

To ensure reliability, the questionnaire was pilot tested with a small subset of the target population. Namely, 10 people were chosen from the same population according to their positions at work to achieve a balanced sample. Participants suggested ways to improve the clarity of the questions by simplifying wording and replacing complex terms with more understandable alternatives.

This preliminary testing allowed for adjustments in wording and format to improve question clarity and response consistency. Feedback from the pilot test was incorporated into the final version of the questionnaire, thereby increasing its reliability by ensuring that questions are interpreted consistently by different respondents. The use of a 5-point Likert scale for responses further contributes to the instrument's reliability, allowing for a nuanced assessment of the employees' perceptions and experiences while maintaining a standardized approach to measurement. Overall, the rigorous development process, combined with the adoption of established research items and expert validation, strongly supports the validity and reliability of the questionnaire as a key instrument in this study.

3.7. Data collection and data analysis

Data for the research were collected based on a structured, self-administered questionnaire, which was distributed among employees who worked in the Income and Tax Department in Palestine. A questionnaire, which was the main means of data

collection, was carefully designed to obtain meaningful information about the employees' views and experiences of the AI role in reducing tax evasion, along with its detection. However, the use of the process sought to guarantee that legal permissions were acquired from the Income and Tax Department to allow the engagement of their workers, too. After that, stratified random sampling was conducted to recruit the participants. This was done to ensure that the sample accurately represented the diversity of the target population in terms of designations of the employees and also years of experience.

Frequent reminders were sent out by email to increase participation rates. Participants were given informed consent forms at the beginning to explain the aims, rules of participation, and privacy of the study.

The author excluded from the study all incomplete responses (n = 6) by listwise deletion. Only a small handful of data were missing (less than 5%), and these had no impact on the analyses.

All the data were coded and studied using the Statistical Package for the Social Sciences (SPSS) version 28 and the sample was profiled using descriptive statistics. As Likert-scale responses are not numeric, the study used non-parametric tests (Mann-Whitney U and Kruskal-Wallis) instead of t-tests to avoid this earlier methodological issue.

To understand how AI perception is influenced by demographic and organizational factors, a multiple regression analysis was executed. The analysis looked at age, position, and experience with AI as independent variables. The regression analysis looked at how overall AI adoption perception was related to different factors. A test was carried out to ensure that multicollinearity and homoscedasticity did not cause any problems.

The questionnaire was distributed electronically using Google Forms, and it was collected from email and social networks to ensure a comprehensive distribution and easy participation. Moreover, the study respected the confidentiality of participants' data by maintaining their anonymity. The participant was given an information sheet that outlined the study's aims, the voluntary nature of involvement, and the confidentiality measures meant to safeguard the data. To make sure there was no misunderstanding and the information was accurate, clear guidelines for the questionnaire were given so that it was easy to complete.

The subjects were required to complete and submit the questionnaire within a limited timeframe, while reinforcing messages were made at regular intervals to increase the response rate. Afterwards, the collected data were subjected to stringent statistical analysis, which was needed to isolate the important insights and patterns related to the study objectives. The use of a systematic sampling method, where the forms were electronically distributed, resulted in high-quality scientific data that greatly contributed to the understanding of AI's effectiveness and challenges in reducing tax evasion within the Income and Tax Department in Palestine.

3.8. Data analysis

Upon the completion of the data collection stage, the data obtained were comprehensively and meticulously analyzed in order to understand the patterns and relationships that were pertinent to the objectives of the study. This examination was conducted using a framework of quantitative methods, which involved the application of various statistical software packages in the quest for a robust analysis of the data. Initially, the data from the structured questionnaires were coded and entered into a statistical software package to allow the execution of preliminary data cleaning tasks that included the identification of inconsistencies and missing data, as well as the correction of these aberrations of dataset integrity.

The study used multivariate regression to examine how factors like age, experience, and job title affected participants' perceptions of AI. Researchers could employ logistic regression or path analysis to obtain a more detailed understanding of the underlying structure. The study is limited by a small sample size (n = 92) and the fact that the data comes from self-reports, which could introduce bias. Additional challenges are posed by the situation in Palestine, where political instability and low technological capacity may hinder the implementation of innovative research.

After data preparation, descriptive statistics were used to briefly describe the features of the study sample, including both demographic and professional characteristics. This was an opening step that provided the profile of participants and provided the basis for the interpretation of the results in the context of the Income and Tax Department in Palestine. In addition to this, the analysis of the associations between the AI use in auditing and its effectiveness and challenges in reducing tax evasion was performed by applying the correlation and regression tests. Through such analyses, the researcher has been able to identify significant patterns and trends, providing empirical evidence that is rooted in the hypotheses of the given research.

The analytical stage was meticulously performed by detailing all the steps from coding data to the performance of statistical tests. This rigorous approach guarantees that the findings are genuine and accurate, which consequently enables the study to significantly contribute to resolving the issues of AI's impact on reducing tax evasion in the Income and Tax Department in Palestine. The research achieved its goal by using a systematic and methodological analysis of data, making it possible to uncover the subtle dynamics at play that formed the basis of the recommendations and strategies to be developed for reducing tax evasion in the auditing sector in Palestine.

4. RESULTS

This section presents the results of the study and provides an answer to the research questions proposed in this study. As indicated earlier, the study adapted a questionnaire from the literature that was distributed to 92 employees from the Income and Tax Department in Palestine.

The results of the questionnaire and the hypotheses testing are elaborated in the following sub-sections:

4.1. Demographic information

The sample of the research consisted of 92 employees from the Income and Tax Department in Palestine; this department had a diverse background and demographic information of employees. The following table shows the demographic information of respondents regarding gender, age group, educational qualification, work experience, position held by the interviewee within their organization, and the degree of familiarity with technological tools designed for tax evasion detection and prevention.

Table 1. Demographic information

Demographic information	*Categories*	*N (%)*
Gender	Male	53 (57.6%)
	Female	39 (42.4%)
Age group	18–25 years old	6 (6.5%)
	26–35 years old	25 (27.2%)
	36–45 years old	39 (42.4%)
	46–55 years old	21 (22.8%)
	56 years old and above	1 (1.1%)
Educational qualification	High school diploma	7 (8%)
	Bachelor's degree	69 (75%)
	Master's degree	11 (12%)
	Doctorate (Ph.D.)	2 (2%)
	Other	3 (3%)
Work experience (years)	Less than 1 year	3 (3.3%)
	1–3 years	9 (9.8%)
	4–7 years	18 (19.6%)
	8–10 years	35 (38%)
	More than 10 years	27 (29.3%)
Position held in the organization	Tax officer	35 (38%)
	Tax auditor	18 (19.6%)
	IT specialist in tax administration	20 (21.8%)
	Financial analyst	13 (14.1%)
	Senior manager/Executive	2 (2.2%)
	Other	4 (4.3%)
Degree of familiarity with AI-based tax evasion detection tools	Not familiar at all	12 (13%)
	Slightly familiar	37 (40.2%)
	Moderately familiar	32 (34.8%)
	Very familiar	8 (8.7%)
	Expert level	3 (3.3%)
Total		**92 (100%)**

Table 1 indicates that 57.6% of the respondents were male, with the highest percentage being in the age group of 36–45 years old (42.4%). Out of 92 respondents, 69 (75%) held a bachelor's degree, while 38% of them had work experience ranging from 8 to 10 years. Additionally, 35 (38%) were tax employees, and 20 (21.7%) were IT specialists in the tax department. The results reflect the need for more focus on the concept of AI, as 37 (40.2%) of the respondents stated that they are slightly familiar with AI-based tax evasion detection tools, while 32 (34.8%) indicated that they are moderately familiar.

4.2. Hypothesis testing

To test *H1*, frequencies, percentages, means, and standard deviations were calculated, along with conducting a t-test (test value = 3).

Table 2. Perceived effectiveness of artificial intelligence in tax administration

N	*Items*	*Level of agreement*					*Mean ± SD*	*t-value*	*p-value*
		1	*2*	*3*	*4*	*5*			
1	I believe AI improves the accuracy of detecting tax evasion.	2 (2.2%)	2 (2.2%)	20 (21.7%)	48 (52.2%)	20 (21.7%)	3.89 ± 0.84	10.122	0.000
2	I think AI enhances data analysis to identify suspicious tax activities.	2 (2.2%)	1 (1.1%)	22 (23.9%)	52 (56.5%)	15 (16.3%)	3.84 ± 0.79	10.183	0.000
3	I see AI as an effective tool in detecting patterns of fraudulent tax behavior.	3 (3.3%)	4 (4.3%)	23 (25%)	40 (43.5%)	22 (23.9%)	3.80 ± 0.96	8.007	0.000
4	I believe AI reduces human errors in tax evasion detection.	1 (1.1%)	2 (2.2%)	30 (32.6%)	49 (53.3%)	10 (10.9%)	3.71 ± 0.73	9.228	0.000
5	I think AI accelerates the process of identifying tax evasion cases.	2 (2.2%)	2 (2.2%)	19 (20.7%)	63 (68.5%)	6 (6.5%)	3.75 ± 0.71	10.202	0.000
Overall		2 (2.2%)	2 (2.4%)	23 (24.8%)	50 (54.8%)	15 (15.9%)	3.80 ± 0.48	15.961	0.000

Note: 1 — Strongly disagree, 2 — Disagree; 3 — Neutral; 4 — Agree; 5 — Strongly agree.

Table 2 indicates the awareness and perception of the respondents regarding the role of AI-driven analytics in enhancing the efficiency of tax evasion detection in Palestine. To test *H1*, the Wilcoxon signed-rank test was used to see if the observed median scores were higher than a middle score of 3. The test showed a very strong and significant difference in results ($Z = -7.51$, $p < 0.001$), meaning that most people think using AI really helps with finding tax evasion. The overall mean was

(3.80 ± 0.48), with 65 (70.7%) of the respondents agreeing with that. The item "*I believe AI improves the accuracy of detecting tax evasion*" received the highest mean (3.89 ± 0.84) with an agreement percentage of 73.9%. While item "*I believe AI reduces human errors in tax evasion detection*" received the lowest mean (3.71 ± 0.73), with an agreement percentage of 64.2%. Looking at the results of the t-test, it is clear that the t-value for the overall mean was (15.961; p-value = 0.000), with the t-values for all items ranging between (8.007–10.183) at p-values less than 0.05. This result confirms that the use of AI-driven predictive analytics and automated auditing enhances the efficiency of tax authorities in identifying and preventing tax evasion in Palestine.

To test the *H2*, frequencies, percentages, means, and standard deviations were calculated, along with conducting a t-test (test value = 3).

Table 3. Perceived challenges of artificial intelligence in tax administration

N	*Items*	*Level of agreement*					*Mean ± SD*	*t-value*	*p-value*
		1	*2*	*3*	*4*	*5*			
6	I believe AI implementation in tax administration faces technical challenges.	3 (3.3%)	8 (8.7%)	14 (15.2%)	53 (57.6%)	14 (15.2%)	3.73 ± 0.94	7.440	0.000
7	I think AI requires continuous updates to remain effective in reducing tax evasion.	1 (1.1%)	6 (6.5%)	19 (20.7%)	60 (65.2%)	6 (6.5%)	3.70 ± 0.74	9.049	0.000
8	I believe AI in tax evasion detection raises concerns about data privacy.	2 (2.2%)	6 (6.5%)	15 (16.3%)	55 (59.8%)	14 (15.2%)	3.79 ± 0.86	8.865	0.000
9	I see the high cost of AI technology as a barrier to its implementation in tax administration.	2 (2.2%)	0 (0.0%)	10 (10.9%)	62 (67.4%)	18 (19.6%)	4.02 ± 0.71	13.791	0.000
10	I believe AI alone cannot replace human judgment in detecting complex tax fraud cases.	0 (0.0%)	3 (3.3%)	18 (19.6%)	63 (68.5%)	8 (8.7%)	3.83 ± 0.62	12.737	0.000
Overall		2 (1.7%)	5 (5%)	15 (16.5%)	59 (59.7%)	12 (11.6%)	3.81 ± 0.43	18.030	0.000

Note: 1 — Strongly disagree, 2 — Disagree; 3 — Neutral; 4 — Agree; 5 — Strongly agree.

Table 3 indicates that the use of AI-driven predictive analytics and automated auditing to identify and prevent tax evasion poses challenges for employees in Palestine, with the overall mean being (3.81 ± 0.43) and an agreement percentage of 71.3%. It is worth noting that the Wilcoxon signed-rank test showed a statistically significant result ($Z = -7.89$, $p < 0.001$), meaning that people actually felt the challenges were much higher than just normal. The item "*I see the high cost of AI technology as a barrier to its implementation in tax administration*" received the highest mean (4.02 ± 0.71) with an agreement percentage of 87%. While item "*I think AI requires continuous updates to remain effective in reducing tax evasion*" received the lowest mean (3.70 ± 0.74), with an agreement percentage of 71.7%. Looking at the results of the t-test, it is clear that the t-value for the overall mean was (18.030; p-value = 0.000), with the t-values for all items ranging between (7.440–13.791) at p-values less than 0.05. This result confirms that the use of AI-driven predictive analytics and automated auditing to identify and prevent tax evasion constitutes a challenge for employees in Palestine.

5. DISCUSSION

5.1. Descriptive statistics

The research sample of 92 Palestinian Income and Tax Department workers demonstrates characteristics that match findings previously observed in other studies about tax evasion and AI applications in tax management.

The research data demonstrates that males constitute 57.6% of the total participants, and subjects aged 36–45 years old make up 42.4% of the sample. Middle-aged professionals comprise the majority working in tax administration, according to the sample distribution, thus validating the findings by Alshira'h and Abdul-Jabbar (2019) about Palestine's dependency on experienced staff members for tax auditing operations due to tax evasion complexity.

Most of the participants hold a Bachelor's degree (75%), but the minority group consists of people with Master's degrees (12%) or Doctorate degrees (2.2%). The developing world has established this pattern of relying on practical experience over advanced academic qualifications to lead tax administration (Alm, 2021). Practical training priority over formal education may impede the smooth integration of AI technology because it needs specific training and advanced knowledge.

The study reveals that the major demographic group of workers holds between 8 to 10 years of professional experience (38%). Experience equips employees with the skills to detect tax evasion more efficiently because they understand tax procedures better, according to Banerjee et al. (2023). Traditional experience proves inadequate according to Borges (2024) for addressing new technology demands such as AI because it requires employees to constantly learn new skills.

The workforce consists primarily of tax officers at 38% while IT specialists in tax administration form 21.7% of the departmental employees. The limited number of senior managers who participated at 2.2% possibly reflects insufficient strategic involvement from leadership during the implementation of AI systems (Trenerry et al., 2021).

Research findings show that taxpayer understanding regarding AI-based tax evasion detection tools remains limited because 40.2% showed slight familiarity and 34.8% displayed moderate familiarity. Results showed that few people (8.7%) declared high familiarity with these tools, but 13% had no familiarity at all. The study matches the observations of Bukartaite and Hooper (2023) regarding the significant obstacles

that insufficient training and technological readiness create for AI adoption within tax administration.

Research data indicates that an important difference exists between the current level of technology progress and staff readiness to embrace new systems. The Palestinian tax authorities face difficulties with AI tool implementation because they lack proper training programs and insufficient technological infrastructure, according to AlQudah et al. (2024). Vitali and Giuliani (2024) support earlier research, which reveals that AI technology implementations disrupt operating systems, thus leading traditional workers to resist new processes.

Palestine's tax administration seems to underutilize the AI detection capabilities of tax evasion because most of its workforce lacks sufficient familiarity with AI tools. The combination of predictive analytics along with automated auditing systems creates opportunities for better tax compliance but needs suitable training and support for employees, according to Albalawee and Fahoum (2024).

The persistent tax evasion problem in Palestine shows that there are bigger problems in the system, not just people trying to avoid paying taxes. The absence of organized training and ineffective enforcement mechanisms collectively restricts AI adoption initiatives (Hani & Warad, 2023). The absence of technological proficiency among employees makes them unable to use AI-driven systems intended for tax compliance effectively (Nuryani et al., 2024).

Statistics show the tax administration in Palestine deals with several major issues stemming from limited technological understanding, along with deficient training and absent management support. Employee training, along with support, must address both employee engagement problems and issues related to technological readiness in order to meet the current needs. The literature demonstrates that AI tool implementation success depends on proper synchronization between technological progress and employee skills, and organizational administrative guidelines (Liu et al., 2022).

5.2. Artificial intelligence-driven analytics enhance tax evasion detection efficiency in Palestine

This research establishes strong evidence showing how AI predictive analytics, alongside automated auditing systems, boost tax authority efficiency for detecting and stopping tax evasion instances throughout Palestine. This outcome shows broad support from respondents for the positive role of AI in tax evasion detection because 70.7% of them approved or strongly approved of the AI effectiveness statements, while the average score came to 3.80 ± 0.48. The test results verified the accuracy of these findings by showing p-values less than 0.05 in every item and indicating statistical significance. *H1* proves valid based on the gathered data. The lower score might be a result of distrust in AI capability and fears about potential biases in the algorithms. This underscores the importance of human involvement for accurately assessing and making decisions in complicated situations.

Survey participants highly endorsed the statement that AI enhances tax evasion detection precision since the mean score reached 3.89 ± 0.84. The research by Nuryani et al. (2024) supports the conclusion that AI and big data work together to boost the identification of tax evasion, specifically in corporate structures. Their research demonstrates how AI provides tools that help tax authorities achieve better enforcement of tax protocols, especially when such activities are difficult to identify using standard auditing approaches.

These research findings are backed up by the study that Al-Taani et al. (2025) performed. The respondents explain that intelligent systems use complex pattern recognition on sensitive taxpayer data to show tax auditors how to detect tax evaders. The findings from Al-Taani et al.'s (2025) study support the data analysis improvement (3.84 ± 0.79) and identification acceleration (3.75 ± 0.71) achieved by AI, according to survey respondents.

This somewhat lower average score for "reducing human errors" (3.71 ± 0.73) indicates that employees often doubt that AI can replace human mistakes with perfect accuracy. This indicates that employees understand the advantages AI brings to data analysis while acknowledging its drawbacks in more sophisticated areas of decision-making. As a result, it's crucial to develop hybrid human-AI systems in which AI complements rather than replaces human judgment. People perceive AI effectiveness alongside human supervision needs, even though the process might create new errors from data handling and algorithmic bias sources. Various studies of AI applications present that intelligent systems act as human judgment supplements instead of complete replacements.

Collectively, the studies show that AI can improve detection rates, yet they point out the need for human involvement as well. The approval of *H1* demonstrates that tax authorities within Palestine should use AI predictive analytics and automated auditing systems.

5.3. Artificial intelligence tools pose challenges for tax authority employees in Palestine

The findings indicate that Palestinian employees face substantial challenges in dealing with AI-based predictive analytics and automated audits designed to detect tax evasion. Overall, employees perceive AI adoption as demanding, with a mean score of 3.81, a standard deviation of 0.43, and an agreement rate of 71.3%. The statistical significance of these results is confirmed by the t-value (18.030) and p-value (0.000), reinforcing the validity of the challenges identified.

Among the difficulties, the cost of AI technology emerged as the most critical barrier, with 87% of participants agreeing and a mean score of 4.02. This demonstrates that high financial investments remain the main obstacle to adopting advanced technologies, especially for organizations with limited resources (Vitali & Giuliani, 2024). Similarly, Trenerry et al. (2021) highlight that inadequate organizational support and insufficient structured training hinder effective AI implementation. Thus, the costs are not limited to financial expenditures but also include the training and support necessary for employees to adapt to new systems.

Another important concern relates to the need for continuous updates to sustain AI efficiency, which was acknowledged by 71.7% of respondents but recorded the lowest mean score of 3.70. According to the TOE framework, successful adoption requires organizational backing and adaptability. In Palestine, however, unstable security conditions and the absence of advanced digital infrastructures complicate policy development and continuous training. This aligns with Dragomirescu et al. (2025), who found that fraud detection systems disrupt workflows and oblige employees to frequently readjust work processes. Likewise, Liu et al. (2022), drawing on the TAM, emphasize that perceived usefulness and ease of use are critical for technology acceptance. These findings reflect the anxiety and discomfort employees experience when frequent updates and procedural changes are required.

Theory's view that organizations resist technologies requiring changes in daily practices (Scott, 2005). AI-driven predictive analytics and auditing raise fears of data misuse and breaches (Falah Alroud et al., 2025). The Palestinian auditing sector shows reluctance towards AI due to job insecurity and limited expertise (Alshira'h & Abdul-Jabbar, 2019). Similarly, AI tools demand advanced skills beyond standard training (Bukartaite & Hooper, 2023), and when progress outpaces readiness, job satisfaction declines (Ezeife et al., 2021).

Nonetheless, effective AI systems can enhance auditing accuracy and efficiency if accompanied by proper training and institutional support (Dragomirescu et al., 2025). For successful adoption, policymakers must invest in infrastructure, continuous training, and robust data protection. Barriers include costs, privacy concerns, technical unfamiliarity, and maintenance needs, alongside broader challenges such as political instability, import restrictions, and limited public spending, which hinder AI-driven tax modernization in Palestine.

6. CONCLUSION

This study, based on a survey of 92 employees from the Palestinian Income and Tax Department, has certain limitations regarding its generalizability to the broader Palestinian tax system or other government sectors. The results may also be influenced by participants' perceptions and by Palestine's unique political and technological circumstances. Moreover, the focus was limited to predictive analytics and audit applications of AI, without considering more advanced deep learning methods.

Despite these constraints, the findings provide strong evidence that AI can enhance efficiency in detecting and reducing tax evasion. Automated tax enforcement and predictive analytics were shown to significantly improve tax authority performance, though challenges such as high costs, privacy concerns, and the need for continuous updates remain. To maximize AI's potential, the department should invest in employee training, technological infrastructure, and data protection policies, while fostering collaboration with AI experts. Future research should evaluate diverse AI methods, expand applications to other sectors, and conduct long-term assessments to ensure sustainable success in strengthening tax compliance in Palestine.

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