JOURNAL OF MANAGEMENT AND BUSINESS SOLUTIONS

Modeling the Factors Affecting the Position of Artificial Intelligence in Tax Administration

1. Saied. Borzoie : Department of Accounting, Ker.C., Islamic Azad University, Kermanshah, Iran
2. Mehrdad. Ghanbari*: Department of Accounting, Ker.C., Islamic Azad University, Kermanshah, Iran
3. Foroozan. Mohammadi Yarijani: Department of Accounting, Ker.C., Islamic Azad University, Kermanshah, Iran
4. Maryam. Nooraie: Department of Accounting, Ker.C., Islamic Azad University, Kermanshah, Iran

*corresponding author's email: mehrdadghanbary@iau.ac.ir

ABSTRACT

The present study was conducted with the aim of modeling the factors affecting the position of artificial intelligence in tax administration. This research is an applied, survey-based, interpretive-exploratory, and quantitative study. The research participants consisted of 166experts in the fields of artificial intelligence and taxation, who were selected through cluster random sampling using G*Power software. The data collection instrument was a researcher-developed questionnaire derived from qualitative findings. For data analysis, in addition to descriptive statistics, Structural Equation Modeling (SEM) was employed using SmartPLS software (version 3.1.1) at a significance level of 0.05. The results indicated that the research model demonstrates an appropriate fit, and three variables—political factors ($\beta = -0.190$), inhibiting factors ($\beta = -0.112$), and infrastructural challenges ($\beta = -0.196$)—have a negative and significant relationship, while five variables—economic factors ($\beta = 0.149$), socio-cultural factors ($\beta = 0.238$), educational factors ($\beta = 0.171$), legal factors ($\beta = 0.122$), and managerial factors ($\beta = 0.749$)—have a positive and significant relationship with the position of artificial intelligence in the future of Iran's tax administration. Therefore, to maximize the utilization of artificial intelligence capabilities in taxation, it is necessary to seriously consider and manage the identified barriers and challenges while simultaneously strengthening the positive factors.

Keywords: Artificial Intelligence, Taxation, Drivers, Barriers

Introduction

The contemporary global landscape is increasingly characterized by rapid digital transformation, fundamentally altering the operational paradigms of various industries and organizational structures. At the forefront of this technological revolution is Artificial Intelligence (AI), a multifaceted domain encompassing machine learning, natural language processing, advanced predictive analytics, and deep cognitive modeling. The integration of artificial intelligence is no longer an abstract futuristic concept but a tangible strategic necessity that is comprehensively reshaping management practices, resource allocation, and operational efficiencies across diverse sectors. In recent years, scholars and practitioners have meticulously examined the roles of artificial intelligence in optimizing complex engineering systems, ranging from construction engineering and sophisticated project management to overarching macroeconomic planning frameworks (1). Furthermore, mathematical modeling and artificial intelligence datasets

Article history:
Received 28 December 2025
Revised 03 April 2026
Accepted 05 April 2026
Published online 01 July 2026

How to cite this article:
Borzoie, S., Ghanbari, M., Mohammadi Yarijani, F., & Nooraie, M. (2026). Modeling the Factors Affecting the Position of Artificial Intelligence in Tax Administration. *Journal of Management and Business Solutions, 4*(4), 1-15. https://doi.org/10.61838/jmbs.254

have proven indispensable in predicting and managing unprecedented global crises, demonstrating the robust analytical capabilities of these technologies in handling massive volumes of unstructured data with extraordinary precision and speed (2). Consequently, developing economies and emerging markets, particularly in rapidly growing regions such as Southeast Asia, are increasingly prioritizing the development and strategic deployment of artificial intelligence to foster domestic innovation, streamline cumbersome public sector operations, and maintain a competitive edge in the highly globalized digital economy (3). As public and private organizations transition into this new technological era, Human Resource Management (HRM) and broader organizational strategies must dynamically adapt to address the anticipated skill sets, emerging financial imperatives, and complex legal implications associated with widespread artificial intelligence adoption (4). In this broader context, artificial intelligence serves not merely as an isolated operational tool but as a critical catalyst for achieving overarching societal objectives, including the United Nations' Sustainable Development Goals (SDGs), by leveraging transformative technology for a sustainable and equitable economic future (5).

Building upon its widespread cross-industry applicability, artificial intelligence has profoundly disrupted the specialized fields of accounting, financial management, and corporate governance. The traditional methodologies of financial data processing, which historically relied heavily on manual human intervention and basic spreadsheet software, are rapidly being supplanted by automated, intelligent systems capable of continuous, real-time analysis and autonomous decision-making. Comprehensive reviews of the emerging literature underscore the transformative potential of artificial intelligence in enhancing the transparency of financial reporting, upgrading the rigor of corporate auditing, and revolutionizing overall financial management, signaling a definitive and irreversible shift in the path ahead for accounting professionals globally (6). By seamlessly analyzing vast, complex historical financial datasets, artificial intelligence algorithms can identify intricate, non-linear patterns and latent anomalies that might easily elude even the most experienced human auditors, thereby fundamentally enhancing the reliability and integrity of corporate financial disclosures. For instance, the empirical application of sophisticated artificial intelligence approaches has shown remarkable efficacy in systematically explaining effective financial variables and accurately predicting corporate financial recovery trajectories, offering stakeholders, investors, and regulatory bodies powerful predictive tools for proactive risk management and strategic planning (7). This technological evolution necessitates a substantial paradigm shift in how financial data is curated, securely stored, validated, and ultimately utilized for overarching organizational strategy. The formulation of robust, long-term corporate strategies, much like the rigorous prioritization of strategies using mixed quantitative models and fuzzy logic approaches, inherently requires the integration of advanced analytical capabilities to navigate highly volatile economic environments successfully (8). Consequently, the strategic integration of artificial intelligence into core financial infrastructures is not merely an incremental operational upgrade but a fundamental, holistic re-engineering of financial management architectures intended to ensure long-term agility, strict compliance, and sustained economic growth.

Within the broader spectrum of public financial management and macroeconomic policy, taxation constitutes the essential, foundational pillar of state revenue generation, uniquely enabling governments to fund critical public services, sustain national infrastructure, and drive comprehensive socio-economic development initiatives. The overall efficacy, equity, and sustainability of any fiscal system heavily depend on the baseline level of tax compliance exhibited by individual citizens and multinational corporate entities alike. However, intentional tax evasion and aggressive tax avoidance remain pervasive, systemic challenges, particularly within emerging economies and transitioning markets where regulatory frameworks, legislative oversight, and enforcement mechanisms may be

structurally sub-optimal or under-resourced (9). The persistent complexity of these compliance issues is further compounded by a myriad of psychological, socio-cultural, and economic factors that influence taxpayer behavior. For instance, empirical behavioral research has prominently highlighted the moderating role of patriotism, civic duty, and institutional trust in positively influencing sales tax compliance among small and medium-sized enterprises (SMEs), strongly suggesting that taxpayers' compliance behavior is driven by an intricate combination of rational economic calculations and deeply embedded, intrinsic societal values (10). Furthermore, the inherent human element in traditional tax auditing processes inevitably introduces critical vulnerabilities and systemic inefficiencies. The overall effectiveness of tax audits is frequently compromised by the severe potential for corrupt practices, where collusive or coercively corrupt tax auditors can significantly undermine organizational tax compliance, distort market competition, and progressively erode public trust in central fiscal institutions (11). Even in the strict absence of corruption, determining the mathematically optimal frequency, depth, and thoroughness of audits remains a complex logistical challenge, as the post-audit compliance behavior of audited taxpayers typically fluctuates based on their subjective perception of the audit process's effectiveness and technological sophistication (12). Therefore, relying solely on conventional, manual, and legally fragmented tax administration processes is demonstrably and increasingly insufficient to manage the immense complexities of modern, highly digitized globalized economies.

In direct response to the glaring operational limitations and structural inefficiencies of traditional fiscal systems, global tax administrations are aggressively pursuing comprehensive digital transformation, conceptually transitioning toward what is now widely recognized by international bodies as Tax Administration 3.0. This modern, visionary paradigm seeks to seamlessly embed taxation processes directly into the natural operational systems, commercial software, and daily digital ecosystems of taxpayers, utilizing artificial intelligence and big data analytics as the absolute core operational engine. Systematic literature reviews utilizing advanced textometry methods over recent years clearly demonstrate that digital taxation frameworks and artificial intelligence tools are undeniably instrumental in significantly improving tax compliance behavior, drastically reducing the compliance burden, and successfully modernizing national tax collection infrastructures (13). The ongoing development and strategic deployment of artificial intelligence in taxation specifically encompass the implementation of highly intelligent, natural language processing chatbots for instantaneous taxpayer assistance, fully automated optical character recognition for document processing, and sophisticated, real-time risk assessment models, all precisely designed to reduce administrative friction and dramatically enhance public sector efficiency (14). In-depth qualitative explorations of this phenomenon further confirm the profound, multi-dimensional impact of artificial intelligence on various taxation aspects, highlighting its distinct ability to rapidly streamline cumbersome bureaucratic procedures, continuously minimize costly human error, and effectively facilitate real-time, data-driven fiscal policy adjustments based on dynamic, localized economic data (15). Additionally, advanced artificial intelligence architectures are uniquely positioned to rigorously explore, model, and optimize the highly complex interplay between national tax revenue generation, institutional operational capacity, and overarching macroeconomic stability, directly enabling state policymakers to confidently design more resilient, equitable, and highly adaptive fiscal policy frameworks (16). The successful modernization of tax administration systems, as clearly evidenced by massive strategic digitalization initiatives in populous emerging countries such as Indonesia, powerfully showcases the immense, untapped potential of artificial intelligence applications to radically elevate public sector performance and permanently secure sustainable, predictable state revenues (17).

One of the most critical, technically demanding, and high-value applications of artificial intelligence within the domain of tax administration is the preemptive detection of complex tax fraud and the strategic, algorithmic optimization of investigative auditing processes. Traditional, manual audit selection mechanisms often rely heavily on rigid, static business rules or simple random sampling techniques, which consistently yield disappointingly low hit rates and fundamentally fail to identify highly sophisticated, multi-layered, and internationally coordinated tax evasion schemes. In stark contrast, modern artificial intelligence technologies, particularly those leveraging deep machine learning algorithms and complex neural networks, provide highly innovative, agile solutions for actively tackling tax evasion by swiftly identifying latent, hidden anomalies across massive, structured, and unstructured financial datasets (18). The contemporary scientific literature unequivocally supports the widespread application of artificial intelligence in tax auditing, specifically emphasizing its superior capability to rapidly cross-reference diverse, seemingly unrelated data points, comprehensively analyze taxpayer behavior historically, and autonomously flag high-risk individuals or entities with a level of remarkable statistical accuracy that surpasses human capability (19). For example, the precise, predictive modeling of systemic corporate tax evasion can be significantly enhanced by deploying advanced artificial intelligence models that specifically emphasize microeconomic components, sector-specific risk factors, and the historically complex behavioral relationships existing between taxpayers and specific tax auditors (20). Similarly, the strategic use of advanced computational algorithms greatly facilitates the rapid identification of sophisticated tax evasion by large legal entities, thereby actively mitigating the severe fiscal risks associated with highly complex, multinational corporate structures explicitly designed to obscure true taxable income and shift profits (21). Furthermore, the synergetic integration of artificial intelligence with other disruptive, emerging technologies, most notably decentralized blockchain ledgers, establishes highly secure, immutable fiscal records that directly foster unprecedented operational transparency and accountability in modern fiscal systems (22). Consequently, the dedicated exploration and rapid deployment of artificial intelligence techniques are universally recognized as vital, irreplaceable mechanisms for optimally enhancing tax compliance, vastly improving advanced fraud detection, and meticulously maximizing total revenue collection in forward-thinking, contemporary tax administrations (23). Ultimately, these interconnected intelligent systems play an absolutely indispensable and growing role in systematically strengthening global financial regulation, combating illicit financial flows, and rigorously ensuring the long-term integrity of the broader macroeconomic ecosystem (24).

Despite the highly documented, clear operational benefits and undeniable efficiency gains, the deep structural assimilation of artificial intelligence into national tax administration inevitably introduces a highly complex, multi-faceted array of legal, ethical, and socio-cultural challenges that must be meticulously, proactively managed by state authorities. The very fundamental, theoretical concepts of traditional tax policy and social equity are increasingly being scrutinized and re-evaluated through the analytical lens of artificial intelligence. For instance, modern, highly accessible generative AI platforms, such as ChatGPT and similar large language models, are increasingly being utilized by researchers, tax professionals, and the general public to evaluate complex normative fiscal concepts, such as accurately determining what exactly constitutes a taxpayer's legally and morally fair share of individual taxes within a given socio-economic context (25). Similarly, advanced artificial intelligence models are demonstrably capable of objectively analyzing, summarizing, and presenting the intricate, multi-layered pros and cons of implementing progressive versus regressive tax structures, strongly reflecting their growing, disruptive potential as supplementary, objective analytical tools for higher-level government policy formulation (26). However,

the broader, unchecked integration of autonomous artificial intelligence fundamentally necessitates the immediate establishment of a highly robust, dynamically adaptable legal infrastructure. Prominent legal scholars increasingly assert that the highly controversial concept of the direct taxation of artificial intelligence itself—whether implemented through taxing the corporate deployment of advanced automation, instituting a robot tax, or theoretically considering specific, autonomous AI agents as quasi-taxable electronic entities—poses massive, unprecedented jurisdictional challenges for both international tax law and domestic legal legislation (27). Furthermore, detailed comparative legal studies, such as the systematic examination of specific legal persons technically exempt from inheritance tax when analyzed across the vastly different tax laws of diverse legal jurisdictions like Iran and England, distinctly highlight the immense practical intricacies of adequately adapting rigid, legacy legal frameworks to seamlessly align with rapidly evolving modern financial realities (28). In essence, successfully navigating the widespread application of powerful AI technologies in modern taxation strictly requires a deeply holistic, interdisciplinary understanding of its diverse applications, systemic infrastructural challenges, and long-term strategic directions in order to effectively align exponential technological capabilities with necessary legal constraints and broader public policy objectives (29).

While the rapidly expanding global scientific literature extensively documents the widely disparate applications, technical methodologies, and broad policy implications of artificial intelligence across various financial and state fiscal domains, a truly comprehensive, localized evaluation of the specific, underlying factors affecting the structural position of artificial intelligence in specific, localized administrative environments remains critically and noticeably underexplored. In the precise context of Iran's national tax administration, the successful, sustainable integration of these highly intelligent technologies is entirely contingent upon a highly complex, dynamic interplay of specific regional drivers and distinct, localized structural barriers. The existing body of research broadly acknowledges the general, theoretical role of artificial intelligence in the fields of accounting and taxation (30); however, it frequently fails to holistically, mathematically model the multidimensional, interrelated factors that either actively facilitate or heavily impede this necessary digital transition at an institutional level. The current theoretical landscape noticeably lacks a robust, empirically tested structural equation model that concurrently measures the precise, weighted influence of macro-level political mandates, microeconomic constraints, deep-rooted socio-cultural paradigms, institutional educational readiness, critical infrastructural limitations, evolving legal frameworks, and overarching managerial factors, alongside specific, identified inhibiting structural barriers. Complex political dynamics and severe infrastructural bottlenecks often manifest as formidable, seemingly intractable obstacles to modernization, whereas focused educational initiatives and proactive, visionary managerial readiness can serve as powerful, necessary catalysts for institutional change. Vigorously addressing this evident empirical gap is absolutely vital for government policymakers, strategic institutional managers, and federal fiscal authorities who urgently require highly actionable, statistically sound quantitative insights to properly design highly effective technological roadmaps, allocate scarce national resources efficiently, and systematically mitigate severe potential implementation risks in the critical future evolution of the nation's overarching tax system.

Therefore, establishing a scientifically validated model to systematically investigate these diverse dimensions is imperative for facilitating the seamless transition toward an AI-driven fiscal administration. By empirically analyzing the intricate relationships between various exogenous barriers and drivers and the endogenous variable of technological integration, this research endeavors to provide a foundational framework for strategic planning and

resource allocation in the public finance sector. The aim of the current study is to model the factors affecting the position of artificial intelligence in the future of Iran's tax administration.

Methods and Materials

Based on its purpose, this research was an applied study, and in terms of the data collection method, it was a survey. The current research entails an interpretive and exploratory paradigm with a quantitative approach. The statistical population of the study included experts in the fields of artificial intelligence, computer science, and taxation, tax auditors and tax technology staff, faculty members in accounting, technology, and computer science at top-tier universities in the country, as well as practitioners, managers, and employees of tax-related departments, and heads of tax administration. The sample size in the structural equation modeling section was determined to be 166 individuals using GPower software, based on the number of variables and paths in the research model. The method for determining the sample size using GPower software is illustrated in Figure 1. It should be noted that the sampling method was cluster random sampling.

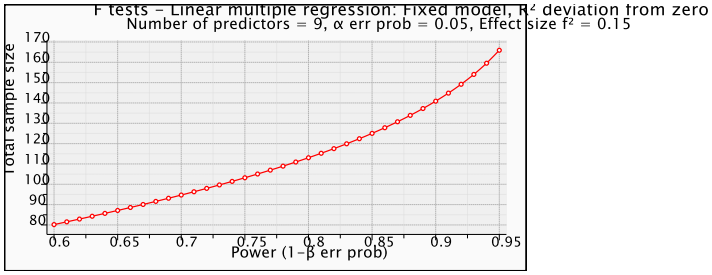

Figure 1. Determination of sample size using G*Power software

Considering that the current research is derived from a Ph.D. dissertation conducted using a mixed-methods (qualitative-quantitative) design, a researcher-developed questionnaire derived from the qualitative findings of the dissertation was used for data collection in this study. This questionnaire consists of 71items and 9components, including political factors, economic factors, inhibiting factors, socio-cultural factors, educational factors, infrastructural challenges, legal factors, managerial factors, and the position of artificial intelligence in the future of Iran's tax administration. In this study, expert opinion, convergent validity, divergent validity, and the Average Variance Extracted (AVE) criterion were used to assess the validity of the questionnaire, while the factor loadings of the questionnaire items, Cronbach's alpha, and composite reliability were used to measure the reliability of the questionnaire. All criteria indicated the appropriate validity and reliability of the research instrument, the detailed results of which are reported in the findings section.

For data analysis in the present study, first, the demographic information of the research participants was examined and described. Then, Structural Equation Modeling (SEM) in SmartPLS software (version 3.1.1) was used to fit the model of the position of artificial intelligence in the future of tax administration. It is worth noting that all analyses in the current study were performed at a significance level of 0.05.

Findings and Results

At the beginning of this section, the demographic characteristics of the research participants are described, the results of which are reported in Table 1.

Table 1. Demographic information of the research participants

Variable	Category	Frequency	Percentage
Age (years)	30or less	15	9.1
	31to 40	66	39.7
	41to 50	67	40.4
	More than 50	18	10.8
Gender	Female	45	27.1
	Male	121	72.9
Education	Bachelor's	47	28.3
	Master's	71	42.8
	Ph.D.	48	28.9
Work Experience (years)	5to 10	37	22.3
	10to 15	71	42.8
	More than 15	58	34.9

This section addresses the results related to the examination of the instrument and the model, as well as the relationships among the research variables. In this study, factor analysis and Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) approach were utilized. This algorithm consists of three main steps: 1) Fit of the measurement models, 2) Fit of the structural model, and 3) Overall model fit.

According to the PLS analysis algorithm, two criteria of reliability and validity are used to examine the fit of the measurement models. Reliability evaluation is conducted through three methods: measuring factor loadings, Cronbach's alpha, and composite reliability. Regarding the examination of the factor loadings of the indicators in Figure 2, the results showed that the factor loadings of all items related to all variables possess adequate validity, as the factor loading values for all items are greater than 0.4.

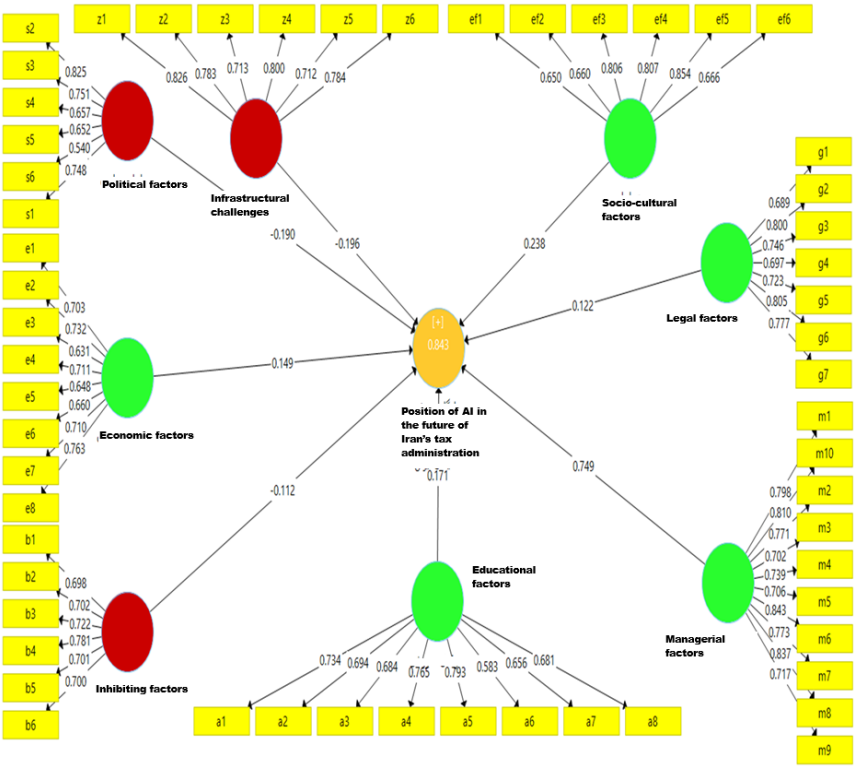

Figure 2. Factor loading values of the items

Subsequently, Cronbach's alpha and Composite Reliability (CR) were used to measure the reliability of the model. Cronbach's alpha is a criterion for measuring reliability and a suitable measure for evaluating internal consistency. Composite reliability is considered a more modern metric compared to Cronbach's alpha in PLS analysis; its superiority over Cronbach's alpha lies in the fact that the reliability of the constructs is calculated not in an absolute manner, but by taking into account the correlations of their constructs with one another. According to Table 2, it is evident that all values of Cronbach's alpha and composite reliability for the research variables are at appropriate and acceptable levels; therefore, the adequacy of the reliability status of the measurement model can be confirmed.

Table 2. Measuring model reliability through Cronbach's alpha and composite reliability

Latent Variables	Cronbach's Alpha	Composite Reliability
Political factors	0.793	0.844
Economic factors	0.759	0.798
Inhibiting factors	0.843	0.881
Socio-cultural factors	0.759	0.801
Educational factors	0.811	0.846
Infrastructural challenges	0.874	0.913
Legal factors	0.798	0.833
Managerial factors	0.844	0.893
Position of artificial intelligence in the future of Iran's tax administration	0.815	0.846

The second criterion in evaluating the fit of the measurement models is convergent validity, which examines the degree of correlation of each construct with its respective items (indicators). Table 3 reports the values related to convergent validity (AVE). Based on the AVE values, it is determined that the latent variables under study have appropriate convergent validity. In other words, there is a high correlation between each construct and its indicators, and consequently, the measurement models demonstrate a moderate fit, thereby confirming the appropriateness of the measurement models' fit.

Table 3. AVE coefficients of latent variables

Latent Variables	AVE
Political factors	0.763
Economic factors	0.762
Inhibiting factors	0.840
Socio-cultural factors	0.776
Educational factors	0.835
Infrastructural challenges	0.799
Legal factors	0.781
Managerial factors	0.837
Position of artificial intelligence in the future of Iran's tax administration	0.822

Divergent validity, which is measured using the Fornell-Larcker matrix, is another criterion for assessing the validity of the research instrument as well as the model fit. Its results are reported in Table 4. As is evident in this table, the square root of the AVE value for all first-order variables is greater than the correlation values among them, which indicates the divergent validity of the research instrument and the appropriate fit of the research model.

Table 4. Divergent validity of the instrument and research model (Fornell-Larcker matrix)

Variables	Political	Economic	Inhibiting	Socio-cultural	Educational	Infrastructural challenges	Legal	Managerial	Position of AI
Political	0.874								

Economic	0.685	0.883							
Inhibiting	0.574	0.714	0.917						
Socio-cultural	0.684	0.669	0.698	0.881					
Educational	0.574	0.661	0.604	0.714	0.914				
Infrastructural challenges	0.634	0.714	0.538	0.659	0.639	0.894			
Legal	0.587	0.633	0.601	0.618	0.647	0.664	0.884		
Managerial	0.594	0.648	0.559	0.597	0.597	0.587	0.587	0.915	
Position of AI	0.558	0.539	0.619	0.551	0.638	0.613	0.611	0.687	0.907

To evaluate the fit of the structural model using the PLS method in this study, the R Square or R^2coefficients, the Q^2criterion, and the Variance Inflation Factor (VIF) index are utilized. $R^2$is a criterion used to connect the measurement and structural components of structural equation modeling, indicating the effect that an exogenous variable exerts on an endogenous (criterion) variable. The Stone-Geisser $Q^2$is a criterion that determines the predictive relevance of the model. As shown in Table 5, the R^2values have been calculated for the endogenous constructs of the study. Higher R^2values associated with the endogenous constructs indicate a better fit of the model. According to Table 5, the strong and appropriate fit of the structural model is confirmed. Furthermore, based on Table 5 and examining the Q^2values associated with the endogenous constructs of the model ($Q^2 > 0$), it can be stated that the predictive relevance of the research's structural model is confirmed.

Table 5. R^2coefficients of endogenous variables

Endogenous Variables	R^2	Q^2
Position of artificial intelligence in the future of Iran's tax administration	0.731	0.279

Subsequently, Table 6 reports the results of the Variance Inflation Factor (VIF) index. According to the research results, all values related to the VIFindex were obtained below 5; therefore, the instrument used in this research is free from variance inflation (multicollinearity), and the research model possesses an appropriate fit.

Table 6. Convergent validity of the research instrument

Latent Variables	VIF
Political factors	1.134
Economic factors	1.435
Inhibiting factors	1.057
Socio-cultural factors	1.841
Educational factors	1.163
Infrastructural challenges	1.556
Legal factors	1.841
Managerial factors	1.914
Position of artificial intelligence in the future of Iran's tax administration	1.067

After evaluating the fit of the measurement and structural components of the model, the overall model fit is assessed using the GOFcriterion. Goodness of Fit (GOF) serves as an index that validates the overall PLS model. This criterion is calculated through the following equation.

Given that three values—weak (0.01), moderate (0.25), and strong (0.36)—have been introduced for GOF, obtaining a value of $0.721$for GOFindicates a strong overall fit for the research model.

The data analysis algorithm in the PLS method indicates that after evaluating the fit of the measurement models, the structural model, and the overall model, one can proceed to examine and test the research hypotheses and

arrive at the research findings. The fit of the model concerning the t-values dictates that these coefficients must be greater than 1.96to confirm their significance at a 95%confidence level.

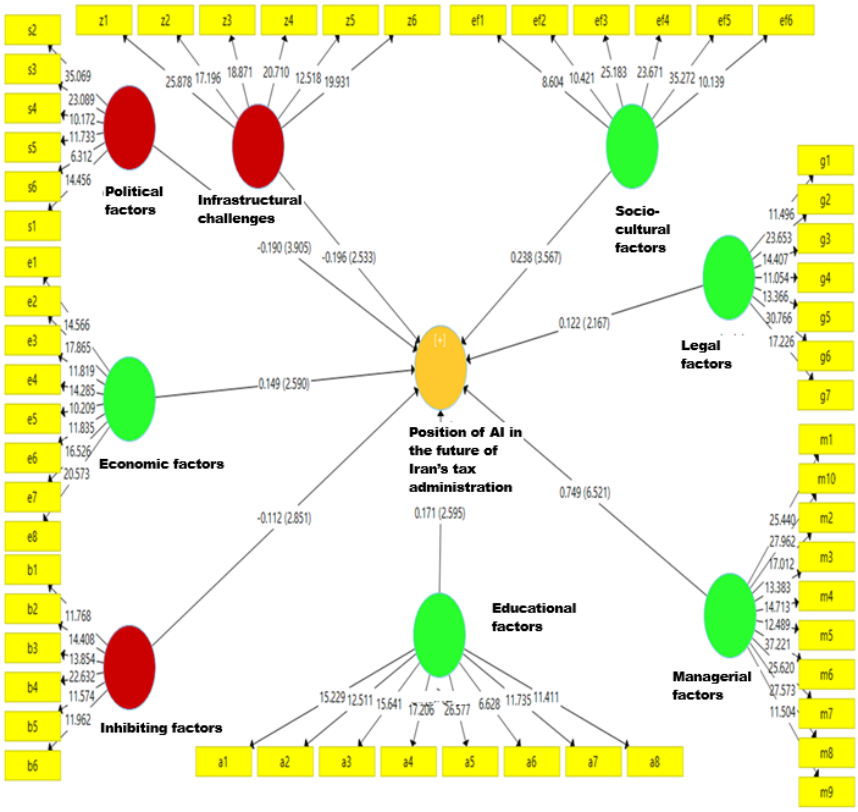

Figure 3. Path coefficient values and t-values of the model paths

Table 7. Results of Partial Least Squares analysis and evaluation of model paths

Model Paths		Path Coefficient (β)	t	p-value	Result
Political factors	→Position of AI in the future of Iran's tax administration	−0.190	3.905	0.001	Confirmed
Economic factors	→	0.149	2.590	0.012	Confirmed
Inhibiting factors	→	−0.112	2.851	0.045	Confirmed
Socio-cultural factors	→	0.238	3.567	0.001	Confirmed
Educational factors	→	0.171	2.595	0.010	Confirmed
Infrastructural challenges	→	−0.196	2.533	0.012	Confirmed
Legal factors	→	0.122	2.167	0.044	Confirmed
Managerial factors	→	0.749	6.521	0.001	Confirmed

According to Figure, as well as Table 7, it can be stated that the t-statistic for all paths is greater than 1.96; therefore, all paths of the research model are confirmed. The research results also demonstrated that three variables—political factors ($\beta = -0.190$; $t = 3.905$), inhibiting factors ($\beta = -0.112$; $t = 2.851$), and infrastructural challenges ($\beta = -0.196$; $t = 2.533$)—have a negative and significant relationship, while five variables—economic factors ($\beta = 0.149$; $t = 2.590$), socio-cultural factors ($\beta = 0.238$; $t = 3.567$), educational factors ($\beta = 0.171$; $t = 2.595$), legal factors ($\beta = 0.122$; $t = 2.167$), and managerial factors ($\beta = 0.749$; $t = 6.521$)—have a positive and significant relationship with the position of artificial intelligence in the future of Iran's tax administration.

Discussion and Conclusion

The primary objective of this empirical investigation was to systematically model the multifaceted factors affecting the position of artificial intelligence in the future of Iran's tax administration. The structural equation modeling (SEM) analysis yielded a robust predictive model, evidenced by a high coefficient of determination ($R^2 = 0.731$) and an excellent Goodness of Fit index ($GOF = 0.721$). The empirical results confirmed all formulated hypotheses at the 95%confidence level ($p < 0.05$), definitively categorizing the exogenous variables into statistically significant drivers and barriers. The structural path analysis revealed that managerial, socio-cultural, educational, economic, and legal factors serve as fundamental drivers with positive path coefficients. Conversely, infrastructural challenges, political factors, and overarching inhibiting factors operate as critical barriers, demonstrating significant negative path coefficients against the endogenous variable of artificial intelligence integration.

Among the identified drivers, managerial factors exerted the most profound positive influence on the integration of artificial intelligence within the tax administration ($\beta = 0.749; t = 6.521$). This overwhelming statistical significance underscores that the successful digital transformation of state fiscal systems is fundamentally a leadership and strategic management imperative, rather than merely an IT procurement issue. The realization of Tax Administration 3.0requires visionary leadership capable of orchestrating complex organizational change, redesigning archaic workflows, and fostering an innovative corporate culture. This finding strongly aligns with the literature indicating that the prioritization of strategic objectives through rigorous quantitative modeling is essential for navigating highly volatile technological environments (8). Furthermore, the complementary positive impact of educational factors ($\beta = 0.171; t = 2.595$) highlights the necessity of human capital development. As automated systems subsume routine analytical tasks, Human Resource Management (HRM) strategies must dynamically adapt to cultivate advanced data literacy and algorithmic oversight capabilities among tax professionals (4). Consequently, a holistic, interdisciplinary understanding of artificial intelligence applications is required by management to effectively align exponential technological capabilities with institutional strategic objectives (29).

Socio-cultural factors ($\beta = 0.238; t = 3.567$) emerged as the second most influential driver, indicating that internal organizational culture and external taxpayer perceptions critically dictate the trajectory of technological adoption. Internally, a culture that embraces continuous learning and mitigates algorithmic aversion among tax auditors is vital. Externally, the deployment of artificial intelligence must be perceived by the public as enhancing fairness rather than functioning as an opaque, punitive surveillance mechanism. This behavioral complexity is supported by empirical research demonstrating that socio-cultural variables, including civic duty and institutional trust, significantly moderate tax compliance behavior (10). Concurrently, economic factors ($\beta = 0.149; t = 2.590$) were validated as a significant positive driver. The substantial initial capital expenditure required for developing customized machine learning models and securing specialized digital talent necessitates dedicated financial allocations. However, this investment is economically justified by the technology's capacity to drastically reduce the administrative compliance burden, continuously minimize costly human error, and facilitate real-time fiscal adjustments (15). Advanced architectures ultimately optimize the interplay between tax revenue generation and macroeconomic stability, ensuring long-term institutional resilience (16).

The structural model also confirmed the positive, albeit comparatively smaller, influence of legal factors ($\beta = 0.122; t = 2.167$). The establishment of proactive, highly adaptable regulatory frameworks acts as an enabling driver by reducing legal uncertainty regarding data privacy, algorithmic accountability, and automated decision-making in

public administration. The unchecked integration of autonomous algorithms necessitates robust legal infrastructure to manage unprecedented jurisdictional challenges, including the theoretical taxation of artificial intelligence itself (27). Furthermore, specific legal constraints and outdated tax codes must be systematically modernized, as comparative legal studies highlight the massive practical intricacies of adapting rigid, legacy legal frameworks to seamlessly align with rapidly evolving digital financial realities (28). Without a proactive legal driver, the deployment of intelligent systems remains highly vulnerable to prolonged litigation and systemic compliance failures.

Conversely, the model explicitly quantified the severe detrimental impact of structural barriers, with infrastructural challenges exhibiting the strongest negative relationship with artificial intelligence adoption ($\beta = -0.196$; $t = 2.533$). The legacy hardware systems, fragmented data silos, and insufficient cloud computing capacities currently prevalent in traditional tax administrations critically impede the deployment of data-hungry machine learning algorithms. Effective artificial intelligence requires massive volumes of pristine, unified data; therefore, infrastructural deficits directly neutralize analytical capabilities (2). For example, the successful implementation of automated optical character recognition and natural language processing chatbots strictly depends on highly robust backend network infrastructure and interoperable data ecosystems (14). General inhibiting factors ($\beta = -0.112$; $t = 2.851$), encompassing technological path dependency and institutional resistance to disruptive innovation, further compound these infrastructural deficits. Overcoming these entrenched barriers is necessary to enable the synergetic integration of artificial intelligence with other emerging technologies, such as decentralized blockchain ledgers, which are crucial for fostering operational transparency (22).

Political factors also manifested as a significant barrier ($\beta = -0.190$; $t = 3.905$), reflecting the adverse effects of bureaucratic inertia, inconsistent governmental policy mandates, and frequent shifts in executive administration. In highly politicized environments, long-term technological roadmaps are often disrupted by short-term political cycles, resulting in fragmented digitalization efforts. Furthermore, entrenched political interests or corrupt networks may actively resist the transparency introduced by automated, algorithmic auditing. The overall effectiveness of traditional tax audits is frequently compromised by collusive practices, and the introduction of unbiased artificial intelligence threatens these illicit paradigms (11). Consequently, structural sub-optimal oversight and politically driven regulatory inconsistencies severely hinder the fight against tax evasion in transitioning markets (9).

Ultimately, mitigating these specific negative barriers and amplifying the identified positive drivers is absolutely essential for unlocking the highest-value applications of artificial intelligence: the preemptive detection of complex tax fraud and the strategic optimization of investigative auditing. When infrastructural and political barriers are dismantled, advanced algorithms can rapidly cross-reference diverse data points and autonomously flag high-risk entities with statistical accuracy that vastly surpasses human capability (19). Predictive modeling of systemic corporate tax evasion becomes highly effective when microeconomic components and historical behavioral relationships are seamlessly processed by deep machine learning algorithms (20). Similarly, mitigating infrastructural data silos enables algorithms to rapidly identify sophisticated tax evasion by multinational legal entities, directly combating complex profit-shifting schemes (21). Therefore, addressing the variables modeled in this study is the foundational prerequisite for transitioning toward highly secure, technologically advanced fiscal systems capable of identifying hidden anomalies across massive financial datasets (18).

Despite the rigorous methodological approach and the high statistical validity of the structural equation model, this study is subject to several inherent limitations that must be acknowledged. First, the research design relies on cross-sectional survey data collected at a single point in time, which restricts the ability to infer definitive temporal

causality between the exogenous factors and the longitudinal integration of artificial intelligence. Second, the reliance on a researcher-developed questionnaire, while meticulously validated through expert consensus and statistical thresholds, inherently introduces the potential for self-report bias, as respondents may subconsciously provide socially desirable answers regarding their organization's technological readiness. Third, the statistical population was geographically and institutionally confined strictly to experts operating within the specific context of Iran's national tax administration. Consequently, the unique macroeconomic sanctions, localized political dynamics, and specific historical developmental trajectory of Iran's public sector may heavily influence the path coefficients, thereby limiting the direct generalizability of these specific quantitative findings to tax administrations in highly developed Western economies or differing geopolitical environments. Finally, the extremely rapid, exponential pace of technological advancement in the field of artificial intelligence means that the specific infrastructural hardware metrics and software capabilities assessed during the data collection period may quickly become obsolete, potentially altering the weight of the identified infrastructural barriers in the near future.

To build upon the findings of this current structural model and address the aforementioned limitations, several critical avenues for future academic research are strongly recommended. Future researchers should prioritize designing longitudinal empirical studies to track the shifting influence of these identified drivers and barriers over an extended multi-year timeframe, thereby capturing the dynamic evolution of technological integration as organizational maturity increases. Additionally, conducting rigorous cross-national comparative studies utilizing multi-group structural equation modeling would be highly beneficial. Comparing the Iranian tax administration's structural model with data from diverse emerging economies or technologically advanced nations would isolate universally applicable factors from strictly localized geopolitical variables. Furthermore, future quantitative models should disaggregate the broad construct of "artificial intelligence" into distinct technological subsets—such as generative large language models, predictive machine learning algorithms, and autonomous robotic process automation—to determine if the managerial and infrastructural barriers differ significantly across specific technological applications. Finally, complementing this expert-focused survey with extensive qualitative phenomenological research aimed at understanding the psychological reception and algorithmic trust levels of the general taxpaying public would provide a more holistic, multidimensional view of the socio-cultural factors influencing digital taxation ecosystems.

For public sector practitioners, state policymakers, and executive management within the tax administration, the results of this study offer highly actionable, strategic directives. Given that managerial factors possess the highest predictive power, it is imperative that the tax administration immediately establishes a centralized, high-level artificial intelligence task force led by executive-level champions who possess both deep fiscal expertise and advanced technological literacy. This task force must aggressively pivot resource allocation toward resolving the critical infrastructural barriers identified in the model, specifically by decommissioning legacy, isolated on-premise databases and investing heavily in secure, scalable, and interoperable national cloud infrastructure. Concurrently, executive management must institute mandatory, continuous educational upskilling programs for current tax auditors, transitioning their core competencies away from manual data entry toward advanced data governance, algorithmic output validation, and complex anomaly investigation. To mitigate political and socio-cultural resistance, the administration should strictly avoid attempting an immediate, full-scale automation of the core audit function; instead, practice should dictate the deployment of highly visible, low-risk pilot programs—such as natural language processing chatbots for routine taxpayer queries or automated optical character recognition for standard tax return

processing. Demonstrating immediate, tangible efficiency gains through these pilot projects will actively build internal organizational confidence, foster necessary public trust, and sequentially dismantle the existing inhibiting factors, thereby ensuring a stable, scientifically grounded transition toward a fully modernized, AI-driven fiscal future.

Acknowledgments

We would like to express our appreciation and gratitude to all those who helped us carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

1. Pan Y, Zhang L. Roles of artificial intelligence in construction engineering and management: A critical review and future trends. Automation in Construction. 2021;122:103517.
2. Mohamadou Y, Halidou A, Kapen PT. A review of mathematical modeling, artificial intelligence and datasets used in the study, prediction and management of COVID-19. Applied Intelligence. 2020;50(11):3913-25.
3. Mongkol K. The future of artificial intelligence in Southeast Asia: The case of Thailand. Handbook of research on artificial intelligence and knowledge management in Asia's digital economy: IGI Global; 2023. p. 12-35.
4. Sakka F, El Maknouzi MEH, Sadok H. Human resource management in the era of artificial intelligence: future hr work practices, anticipated skill set, financial and legal implications. Academy of Strategic Management Journal. 2022;21:1-14.
5. Khattri U, Sharma P, Adarsh A, Kour GD. How Can Artificial Intelligence Enable Sustainable Development Goals?: Leveraging Technology for a Sustainable Future. Renewable Energy and the Economic Welfare of Society: IGI Global Scientific Publishing; 2025. p. 423-50.
6. Naghiha Najafabadi R. A comprehensive review of research related to artificial intelligence in accounting, taxation, financial management, and the path ahead. Accounting and Management Vision. 2024;7(97):1-10.
7. Harounkolaei K, Barzegar G. Explaining effective financial variables in predicting financial recovery using an artificial intelligence approach. Economic Modeling. 2023;17(61):89-104.

8. Mehrmanesh H, Saeidi N, Lesani P, Bayrami Latoran E. Strategy formulation and prioritizing strategies of Behnoush Iran Company by comparing fuzzy and QSPM approaches. New Marketing Research. 2012;2(3):135-54.

9. Hossain MS, Ali MS, Ling CC, Fung CY. Tax avoidance and tax evasion: current insights and future research directions from an emerging economy. Asian Journal of Accounting Research. 2024;9(3):275-92.

10. Alshira'h AF, Abdul-Jabbar H. Moderating role of patriotism on sales tax compliance among Jordanian SMEs. International Journal of Islamic and Middle Eastern Finance and Management. 2020;13(3):389-415.

11. Mawani A, Trivedi VU. Collusive vs. coercively corrupt tax auditors and their impact on tax compliance. Journal of Behavioral and Experimental Finance. 2021;30:100470.

12. Kasper M, Alm J. Audits, audit effectiveness, and post-audit tax compliance. Journal of Economic Behavior & Organization. 2022;195:87-102.

13. Belahouaoui R, Attak EH. Digital taxation, artificial intelligence and Tax Administration 3.0: improving tax compliance behavior–a systematic literature review using textometry (2016–2023). Accounting Research Journal. 2024;37(2):172-91.

14. Huang Z. Discussion on the development of artificial intelligence in taxation. American Journal of Industrial and Business Management. 2018;8(08):1817.

15. Rahayu P. The impact of artificial intelligence on taxation aspect: A qualitative study. InFestasi. 2024;20(1):38-53.

16. Saba CS, Monkam N. Leveraging the potential of artificial intelligence (AI) in exploring the interplay among tax revenue, institution. 2025.

17. Saragih AH, Reyhani Q, Setyowati MS, Hendrawan A. The potential of an artificial intelligence (AI) application for the tax administration system's modernization: the case of Indonesia. Artificial Intelligence and Law. 2023;31(3):491-514.

18. Abiola OA, Ifeanyi CO, Olajumoke BA. Innovative solutions for tackling tax evasion and fraud: Harnessing blockchain technology and artificial intelligence for transparency. International journal. 2023;2(1):010-8.

19. Nazarpour M, Nasl Mousavi SH, Hosseini Shirvani M. Application of artificial intelligence in tax auditing. Auditing Knowledge. 2020;20(81):198-226.

20. Moghri Gordroudbari M, Dadashi I, Mohseni Maleki B, Zabihi A. Predicting corporate tax evasion emphasizing economic components, taxpayers and tax auditors; relying on artificial intelligence. Tax Research Journal. 2023;32(58):131-64.

21. Rostambeigi H, Aynehband M. Tax evasion of legal entities using artificial intelligence. Tax Research Journal. 2023;34(60).

22. Ariyibi KO, Bello OF, Ekundayo TF, Ishola O. Leveraging Artificial Intelligence for enhanced tax fraud detection in modern fiscal systems. GSC Adv Res Rev. 2024;21(2):129-37.

23. Rahman S, Sirazy MRM, Das R, Khan RS. An exploration of artificial intelligence techniques for optimizing tax compliance, fraud detection, and revenue collection in modern tax administrations. International Journal of Business Intelligence and Big Data Analytics. 2024;7(3):56-80.

24. Nembe JK, Atadoga JO, Mhlongo NZ, Falaiye T, Olubusola O, Daraojimba AI, et al. The role of artificial intelligence in enhancing tax compliance and financial regulation. Finance & Accounting Research Journal. 2024;6(2):241-51.

25. McGee RW. How to Determine Your'Fair Share'of Taxes: Ask Chatgpt. SSRN. 2023:4413435.

26. McGee RW. Progressive v. Regressive Taxes: The Pros and Cons According to ChatGPT. SSRN. 2024.

27. Oberson X. Taxation of artificial intelligence. Research Handbook on the Law of Artificial Intelligence: Edward Elgar Publishing; 2025. p. 636-51.

28. Molaee A, Aghazadeh A. A comparative study of persons exempt from inheritance tax in the tax laws of Iran and England. Comparative Public Law. 2025;2(2):96-114.

29. Wang M. AI Technologies in Modern Taxation: Applications, Challenges, and Strategic Directions. International Journal of Finance and Investment. 2024;1(1):42-6. doi: 10.54097/v2kgty49.

30. Khaleghian B, Hosseinpour Y, Tolouei H. The role of artificial intelligence in accounting and taxation. Management and Accounting Studies. 2023;43(9):40-7.