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The impact of using types of artificial intelligence technology in monitoring tax payments

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A B S T R A C T

This study examines the relationship between the types of Artificial Intelligence (AI) technology employed and monitoring tax payments. A thorough literature review is conducted to examine different AI technologies in the context of tax administration. These include machine learning algorithms (MLA), natural language processing (NLP) technology, robotic process automation (RPA), explainable artificial intelligence (XAI), and advanced data analytics techniques (DAT). A variety of technologies, such as big data analytics, task automation, task automation, unstructured data analysis, and predictive modeling, are available to improve tax payment monitoring procedures. Recommendations for further study to expand our knowledge and use of AI in tax payment monitoring are included, along with the consequences of AI adoption for tax authorities, policymakers, and practitioners.

1. Introduction

AI has become a major force in the world of financial technology accounting, bringing with it a wave of transformation in areas such as tax administration (Alrfai et al., 2023; Alshirah, Lutfi et al., 2023; Idris, & Mohamad, 2017). Scholars have endeavored to comprehend the degree of AI adoption and its consequences for tax administration, considering governments over the globe striving to update their tax systems (Alghadi et al., 2023; Idris, & Mohamad, 2016). The goal of this study of the literature is to give a thorough summary of the research that has already been done, with an emphasis on how tax administrations are utilizing AI to keep an eye on industrial enterprises' tax payments (Alqudah, 2023a). The chosen citations provide information about the state of AI in tax administration throughout the world (Alshirah et al., 2022).

One of the most important aspects of financial technology accounting is the integration of AI into tax management systems, which offers prospects for modernization and efficiency (Alrfai et al., 2023). However, there is still room for worry over a thorough grasp of the difficulties and ramifications of types of AI in tax administration, particularly when it comes to tracking tax payments (Lutfi et al., 2022a). The current body of literature provides insightful information about the types of AI implementation in tax administrations (Alghadi et al., 2023). Notable studies have examined the rights of taxpayers in Latin

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American countries (Faúndez-Ugalde et al., 2020), Indonesia's potential for modernizing its tax administration system through AI applications (Saragih et al., 2023; Saad et al, 2022), and audit and tax in the context of emerging technologies (Atayah & Alshater, 2021).

The research of Faúndez-Ugalde et al. (2020) offers insights into the relationship between the adoption of AI and regulatory issues while addressing the more general topic of taxpayers' rights in Latin American nations. By offering a case study on Indonesia and highlighting the possible advantages of AI for tax system modernization, Saragih et al. (2023) provide a valuable contribution. Although these studies offer insightful analyses of the worldwide scene, particular consideration must be given to the difficulties associated with applying AI to Jordanian tax management, given its distinct setting (Alshirah et al., 2021).

Knowing how many types of AI Jordanian Tax Management is using is crucial as the country continues to establish its place in the rapidly changing financial technology sector. By examining the difficulties and prospects Jordanian Tax Management had while using types of AI to track tax payments, this study attempts to close the current vacuum in the literature (Alqudah, Amran & Hassan, 2019; Alghadi et al., 2023). By examining this context, the study hopes to provide insightful information that will help researchers, tax experts, and policymakers understand the subtleties of AI adoption in the Jordanian tax ecosystem. This will ultimately lead to the development of more efficient and customized strategies for the integration of types of AI in tax administration. it consists of Machine learning algorithms (MLA), Natural language processing (NLP) technology, Robotic process automation (RPA) technology, XAI technologies, and Application of advanced data analytics techniques (DAT).

Alzubi et al. (2018) has defined MLA models as Computational statistics, which focus on using computers to make predictions and are closely connected to the simulation of machine learning algorithms. Additionally, it has a relationship with Mathematical Optimization, which connects statistics to models, frameworks, and applications. Very scalable statistics-based approaches are used by NLP to effectively index and search massive amounts of text (Lutfi et al, 2022c). But NLP has partly converged over time. Since NLP now draws from a wide range of disciplines, especially in tax accounting (Lutfi and Alqudah, 2023; Nadkarni et al., 2011). The definition of RPA technology presents an interesting test case that is a socio-technical knowledge regime compliant with IT governance, security, architecture, and infrastructure that is propelled by competent users' demands for IT services and made possible by the consumerization of digital technology to employment for tax purposes (Gotthardt et al., 2020).

A collection of procedures and techniques known as XAI enables human users to understand and have faith in the output and outcomes produced by machine learning algorithms (Alrfai et al., 2023). The term "explainable AI" refers to an AI model's predicted effects and possible biases. It contributes to defining model correctness, fairness, transparency, and decision-making results driven by AI. When implementing AI models into production, an organization has to be able to explain AI to gain the confidence of its stakeholders. Explainability in AI aids in an organization's adoption of a responsible development strategy for AI (Mehdiyev, 2021). The term DAT refers to gleaning patterns, insights, and useful information from sizable and intricate databases is known as data analytics. Advanced data analytics techniques cover a broad spectrum of methods, such as text mining, statistical modeling, machine learning, predictive analytics, and data mining. These methods give businesses the ability to examine enormous volumes of both structured and unstructured data, spot patterns, forecast outcomes, and enhance decision-making procedures in a variety of industries, such as government, healthcare, finance, and business. The application of sophisticated data analytics techniques in the context of tax administration entails using data-driven insights to increase operational efficiency, identify fraudulent activity, improve tax compliance efforts, and guide policy choices (Saragih et al., 2023). Hence, this study deals with the impact of using types of AI technology in monitoring tax payments.

2. Literature review and hypothesis development

This research makes it clear that AI technologies include a wide variety of applications, consisting of Machine learning algorithms (MLA), Natural language processing (NLP) technology, Robotic process automation (RPA) technology, XAI technologies, and Application of advanced data analytics techniques (DAT). Although the majority of the literature focuses on AI applications in Industry and HRM, these technologies have a great deal of promise to improve tax payment monitoring procedures. Subsequent investigations ought to go more deeply into the particular kinds of AI technologies used in tax administration scenarios, their efficacy, and the effects they have on organizational performance. A comprehensive review of the relationship between AI, robots, advanced technologies, and HRM was carried out by Vrontis et al. in 2022. Their research shed light on the wider uses of AI technology across organizational functions, despite its primary focus on HRM practices. The evaluation emphasized how AI can revolutionize both operational effectiveness and decision-making procedures and monitoring tax payments.

2.1 Machine learning algorithms (MLA) and tax payment monitoring

Accuracy, efficiency, and compliance may all be increased with the use of machine learning algorithms, which have become more effective instruments for improving tax payment monitoring procedures. To investigate the use of machine learning algorithms in tax payment monitoring, this review summarizes the results of current studies. It focuses on the predictive power

of these algorithms, how they affect reporting behavior, and the identification of tax evasion. To evaluate the predictive accuracy of tree-based machine learning algorithms in predicting the reporting behavior of electronic billing machines (EBMs), Murorunkwere et al. (2023) carried out comparative research. its study demonstrated how machine learning models may be used to analyze large datasets and forecast compliance trends, giving tax authorities important insights into the behavior of its taxpayers. Shujaaddeen et al. (2024) presented a new machine-learning model for identifying tax evasion levels using a hybrid neural network technique in a related study. Their study showed how machine learning techniques may be used to identify and categorize cases of tax evasion, which would help tax authorities focus their enforcement efforts and minimize revenue losses. Furthermore, Shakil and Tasnia (2022) investigated the application of AI in Asia-Pacific tax administration. Their study shed light on the wider use of AI technology in tax administration procedures, such as tax payment monitoring, even if it did not particularly address machine learning algorithms. Their study emphasized how crucial it is to use AI solutions to boost tax administration compliance and operational efficiency. Collectively, these studies highlight the growing importance of machine learning algorithms in tax payment monitoring, offering tax authorities innovative tools to analyze taxpayer behavior, detect tax evasion, and optimize enforcement strategies. By leveraging the predictive capabilities of machine learning models, tax authorities can enhance their ability to identify high-risk taxpayers, improve revenue collection, and ensure compliance with tax regulations. Therefore, the following hypothesis will be put forward:

H_1: *The accuracy of MLA is positively correlated with the use of tax payment monitoring.*

2.2 Natural language processing (NLP) technology into tax payment monitoring

Natural language processing (NLP) technology, which includes skills in textual analysis, document interpretation, and sentiment analysis, has emerged as a potent tool for improving tax payment monitoring procedures. To investigate the use of NLP technology in tax payment monitoring, this study summarizes the results of current investigations, with an emphasis on how it could increase compliance, efficiency, and transparency. To address poverty and promote sustainable development among Muslims in India, Rabbani et al. (2021) presented a FinTech model for Zakat administration that is based on AI and natural language processing. Although the study's focus was on Zakat management, it showed that it is possible to employ NLP technology to evaluate textual material, extract pertinent information, and automate financial decision-making processes (Alqudah et al., 2023a). A new age of financial record-keeping was heralded by similar research by Faccia et al. (2023) that examined the use of NLP sentiment analysis in accounting transparency. Their study demonstrated how natural language processing (NLP) technology may be used to analyze textual data from social media and financial reports to gauge public opinion and find possible signs of fraud or transparency in accounting. Additionally, Joshi et al. (2024) examined the difficulties and potential in processing non-standard variations of a language in a survey on natural language processing for dialects. Despite not focusing on tax payment monitoring, their study offered insightful information on the state of NLP research generally and its possible uses in linguistic analysis and text processing tasks. Therefore, the following hypothesis will be put forward:

H_2: *The accuracy of NLP is positively correlated with the use of tax payment monitoring.*

2.3 Robotics Process Automation (RPA) technology in tax payment monitoring

Zhang et al. (2023) provided insights into RPA implementation through case studies in accounting, offering a comprehensive perspective from beginning to end. While their study focused on accounting processes, it highlighted the potential benefits of RPA in automating routine tasks, optimizing workflows, and improving operational efficiency, which applies to tax payment monitoring processes. In a similar research, RPA's advantages in industrial sectors were investigated by Nayak et al. (2023), who focused on the technology's effects on resource allocation, cost reduction, and process optimization. Their research demonstrated the wider application of RPA technology across other industries and its potential to boost innovation and competitiveness, despite its primary concentration on manufacturing. In contrast, the present position and difficulties in using smart RPA in accounting and auditing were discussed by Gotthardt et al. (2020). Their analysis emphasized the benefits and drawbacks of implementing RPA, such as issues with data security, compatibility with current systems, and organizational reluctance to change. Notwithstanding these obstacles, RPA technology has a great deal of promise to improve the efficacy and efficiency of tax payment monitoring procedures. Moreover, a case study on the application of RPA in the banking sector, with a particular emphasis on Deutsche Bank, was given by Villar and Khan (2021). Their study showed how RPA technology might be successfully integrated to automate several banking procedures, optimize workflows, and enhance customer support. Although tax payment monitoring was not the focus of their study, it did offer insightful information on the advantages and useful uses of RPA technology in financial institutions. These studies demonstrate the increasing significance of RPA technology in tax payment monitoring, providing tax authorities with cutting-edge instruments to streamline repetitive operations, boost accuracy, and increase compliance. Tax authorities may ensure timely and accurate tax collections, save processing times, and improve resource allocation by utilizing RPA's capabilities. Therefore, the following hypothesis will be put forward:

H_3: *The accuracy of RPA is positively correlated with the use of tax payment monitoring.*

2.4 XAI technologies in tax payment monitoring

The significance of integrating XAI into tax legislation to provide a minimal legal need for accountability and transparency was highlighted by Almada et al. (2022). Their research made it evident that precise rules and regulations are required when it comes to the use of AI in tax administration, especially when it comes to making sure that judgments made by the technology can be explained and understood. Mehdiyev et al. (2021) investigated the potential of XAI to help public administration procedures, with a particular emphasis on tax audit processes, in related research. Their study demonstrated how XAI helps tax auditors evaluate the dependability and fairness of automated choices by giving them insights into AI-driven decision-making processes. Furthermore, Ahmed et al.'s (2022) examination of the development of AI technologies in the context of Industry is added to this conversation. Their survey on XAI clarified the differences between XAI and conventional AI as well as how they affect decision-making. Even while their study didn't specifically target tax payment tracking, it nonetheless offered insightful information about the wider application of AI technology in business environments. When taken as a whole, these studies highlight the potential of XAI technologies in tax payment monitoring, providing tax authorities with cutting-edge instruments to improve decision-making processes' openness, accountability, and reliability. Tax authorities can increase taxpayer comprehension of tax rules and regulations, guarantee legal compliance, and boost public confidence in tax administration procedures by utilizing XAI capabilities. Therefore, the following hypothesis will be put forward:

H4: *The accuracy of XAI is positively correlated with the use of tax payment monitoring.*

2.5 The application of advanced data analytics techniques ((DAT) in tax payment monitoring

In the context of new technology, Atayah and Alshater (2021) carried out a retrospective review of audit and tax methods. Their study highlighted the potential of modern data analytics approaches in enhancing the efficacy and efficiency of tax payment monitoring systems, even as it offered insights into the larger landscape of technological improvements in accounting and taxes. Moreover, Setyowati et al. (2020) investigated the use of blockchain technology in value-added tax (VAT) systems in related research. Their research emphasized the wider implications of developing technologies for tax administration, including the potential for sophisticated data analytics techniques to improve compliance and enforcement operations, even though it was primarily focused on blockchain technology. Additionally, Saragih et al. (2023) examined the possibilities for modernizing tax administration systems using AI technologies, concentrating on the Indonesian context. The study's focus was on AI applications, but it also stressed the value of sophisticated data analytics methods for facilitating data-driven decision-making and streamlining tax administration procedures (Al Qudah et al., 2023; Lutfi et al., 2022d). When taken as a whole, these studies demonstrate the increasing significance of sophisticated data analytics methods in tax payment monitoring, providing tax authorities with cutting-edge instruments to evaluate enormous volumes of data, identify non-compliance trends, and enhance enforcement tactics (Lutfi et al., 2022e). Tax authorities may improve the efficacy, efficiency, and transparency of tax administration by utilizing sophisticated data analytics techniques. This will ultimately lead to increased revenue collection and budgetary sustainability. Therefore, the following hypothesis will be put forward:

H5: *The accuracy of the application of DAT positively correlated with the use of tax payment monitoring.*

3. Methodology

This study aims to assess the different kinds of AI technology used for tax payment monitoring. The methodology comprises a systematic approach to data collection, concentrating on relevant stakeholders to gather data on the opportunities, issues, and current practices about the various types of AI technology in tax payment monitoring.

To collect comprehensive data for this study, which aims to assess the extent to which Jordanian Tax Management uses AI to monitor tax payments, a structured survey instrument is created using survey design (Lutfi, 2023; Lutfi, 2020). Using a methodical approach to data collection, the strategy focuses on relevant stakeholders to gather information on the opportunities, challenges, and current practices around the use of AI in tax payment monitoring. Questions on the types of AI technologies, Machine learning algorithms, Natural language processing (NLP) technology, Robotics process automation (RPA) technology, XAI technologies, data analytics techniques (DAT), and tax payments were all included in the survey.

The sample comprises tax officers and AI specialists who work in the tax department. The tax department in Jordan, which is divided into 30 parts, sent out four questionnaires to each branch. Out of 120 questionnaires, 113 were accepted, while 7 were rejected.

4. Data Analysis

This study used partial least squares-structural equation modelling (PLS-SEM) 4.0 to verify the research variables and to examine the hypotheses (Lutfi, 2022; Marei et al., 2023). Due to the ability of the PLS-SEM to handle reflective constructs when running a small sample with high-precision results (Gefen et al., 2011; Alsaad et al., 2015; Alqudah et al., 2023; Lutfi, 2021), it was employed in this study. PLS path model contains two basic models: (1) a measurement and (2) a structural model. The measurement model investigates the association between the constructs and their respective measures. The structural model portrays the association between the constructs (Hair et al. 2014a). The measurement model was selected for all

second-order constructs, where reliability, composite reliability (CR), convergent validity (CV), effect size (f^2), collinearity and discriminant validity indicators were calculated. Hair et al. (2016) asserted that indicators with outer loadings between 40 and 70 per cent must be excluded from the scale if removing the indicator leads to a rise in the CR or the average variance extracted (AVE) above the proposed threshold value. In doing so (as shown in Table I), 6 items i.e., NLP1, NLP2, NLP3, NLP4, NLP5, TP5 meanwhile 5 items were related to one variable, which is Natural Language Processing variable, so the variable was dropped from the model. Thus 17 per cent of the items were removed from the model and 23 items were retained. Deleting some items is considered normal and common in the majority of studies that use questionnaires (Alqudah et al., 2019a; Alshirah, 2018; Hair et al., 2016). With regards to CR, all investigated variables exceed the expected value of 0.7. The instrument validity was verified by checking the convergent and discriminant validity (Hair et al., 2011). Meanwhile, the AVE is the standard employed for examining CV, which measures the value of variance that the indicators share with their respective variable (Hair et al., 2014; Alqudah, 2020). The findings of the CV are shown in Table 1, and the values of AVE for all variables are higher than the cut-off value of 0.5. The variance inflation factor (VIF) is generally utilized to determine multicollinearity (Petter et al., 2007). Based on the rule of thumb, a VIF value of five and above indicates a possible collinearity problem (Hair et al., 2014). VIF values (varied between 1.19 and 2.97) are all less than the cut-off value of five. Consequently, it can be inferred that the variables do not have any multicollinearity issues.

Table 1
Items loading, Indicators Reliability, VIF, CR, AVE (before & after deletion)

Constructs	Items name	Items loading before deletion	Items loading after deletion	VIF	CR	Cronbach's α	AVE
Data Analytics Techniques (DAT)	DAT1	0.596	0.599	2.160	**.90**	**.86**	**.66**
	DAT2	0.644	0.651	1.824			
	DAT3	0.919	0.917	2.005			
	DAT4	0.915	0.912	2.140			
	DAT5	0.920	0.917	2.165			
Natural Language Processing (NLP)	NLP1	**0.197**	-	1.518	.26	.34	.21
	NLP2	**-0.106**	-	1.479			
	NLP3	**0.278**	-	6.941			
*Dropped from the model	NLP4	**-0.142**	-	20.247			
	NLP5	0.956	-	13.214			
Machine learning algorithms (MLA)	MLA1	0.829	0.832	1.350	**.85**	**.85**	**.688**
	MLA2	0.802	0.800	1.913			
	MLA3	0.843	0.841	1.372			
	MLA4	0.843	0.845	1.543			
Robotics process automation (RPA)	RPA1	0.672	0.676	1.375	**.82**	**.81**	**.57**
	RPA2	0.704	0.710	1.477			
	RPA3	0.848	0.844	2.543			
	RPA4	0.757	0.754	2.081			
	RPA5	0.779	0.777	1.716			
Monitoring Tax Payment (TP)	TP1	0.753	0.741	1.350	.75	.74	.56
	TP2	0.810	0.811	1.913			
	TP3	0.711	0.744	1.372			
	TP4	0.680	0.696	1.543			
	TP5	**0.442**	-	1.162			
Explainable artificial intelligence (XAI)	XAI1	0.596	0.594	1.191	.81	.80	.565
	XAI2	0.709	0.705	1.687			
	XAI3	0.841	0.843	2.526			
	XAI4	0.826	0.827	2.978			
	XAI5	0.763	0.764	1.547			

To investigate the range to which a given variable of the study model is distinct from others, discriminant validity was evaluated. Fornell and Larcker (1981) recommended that discriminant validity is used when the AVE of an individual variable is more than the squared multiple correlations of that variable with other variables. As presented in Table 2, all AVEs were higher than the specified value and explain discriminant validity. However, based on the findings provided, there is an indication that the measurement model is reliable and valid. Therefore, we can determine that the current measurement model of this study is suitable for other analyses.

Table 2
Discriminant Validity

	DAT	MLA	RPA	TP	XAI
DAT	**0.812**				
MLA	0.476	**0.830**			
RPA	0.617	0.499	**0.755**		
TP	0.608	0.590	0.599	**0.749**	
XAI	0.614	0.579	0.623	0.640	**0.752**

The objective of the current study is to determine the effect of independent variables on Monitoring Tax Payments (structural model assessment). The model validity is evaluated by the value of R^2 and the structural paths (Chwelos et al., 2001). The

R^2 value shows that approximately 55 per cent of the variance in the Monitoring Tax Payment is considered by the proposed framework. Regarding the path structure, the study empirically examined the proposed associations by applying the bootstrapping procedure; 5,000 bootstrap samples were used to examine the significance of the path coefficients.

The t-value and path coefficient of each relationship are presented in Table 3. This table shows the association between data analytics techniques (DAT) and Monitoring Tax Payment (MTP) was positive and significant (T-value=2.406; p<0.01), showing that if the data analytics techniques increase, the Monitoring Tax Payment will increase. Accordingly, H1 is accepted. Concerning the association between Machine learning algorithms (MLA) and the Monitoring Tax Payment, the relationship was insignificant (T-value=1.496; p>0.05), showing that H3 is rejected. The association between Robotics process automation (RPA) and Monitoring Tax Payment (MTP) was positive and significant (T-value=1.658; p<0.05), showing that if the Robotics process automation increases, the Monitoring Tax Payment will increase. Accordingly, H4 is accepted. Finally, the association between XAI and Monitoring Tax Payment is positive and significant (T-value=2.271; p<0.05), indicating that if XAI increases; Monitoring Tax Payment will increase too, so H5 is accepted.

Table 3
The Result of Research Hypothesis

	Original sample (O)	Sample mean (M)	Standard deviation	T statistics	P values	The Result
DAT → TP	0.228	0.225	0.095	2.406	0.008	Accepted
MLA → TP	0.250	0.247	0.167	1.496	0.067	Rejected
RPA → TP	0.183	0.199	0.110	1.658	0.049	Accepted
XAI → TP	0.240	0.231	0.106	2.271	0.012	Accepted

Note: DAT - data analytics techniques; MLA - Machine learning algorithms; RPA- Robotics process automation; TP - Monitoring Tax Payment; XAI - Explainable artificial intelligence

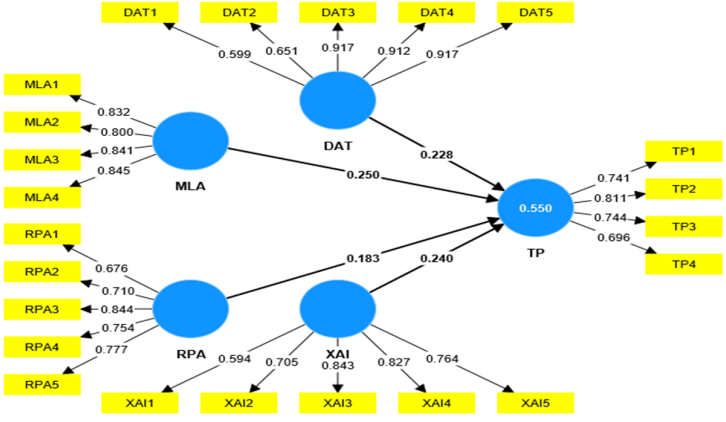

Fig. 2. Structural model results

5. Discussion

The use of types of AI technology for monitoring tax payments required by various tax payments is common; It influences decision-making and facilitates administrative and organizational cooperation within the tax division. The efficacy of machine learning algorithms (MLA) in identifying patterns suggestive of tax reporting compliance was discovered in research by Murorunkwere et al. (2023), providing insight into possible uses in tax payment monitoring tactics. Similarly, to identify degrees of tax evasion, Shujaaddeen et al. (2024) presented a unique machine-learning model built on a hybrid neural network architecture. Their model showed encouraging results in correctly identifying cases of tax evasion by combining many machine-learning techniques, underscoring the promise of cutting-edge machine-learning approaches in addressing tax compliance issues. Because machine learning algorithms may improve decision-making processes by analyzing and predicting data, they have attracted a lot of attention from a variety of fields. Machine learning algorithms provide great potential for enhancing compliance, identifying tax evasion, and streamlining revenue collection tactics in the field of tax payment monitoring, where precise and effective tax assessments are critical.

Numerous research papers have examined the issues and constraints related to NLP technology. Research conducted by Joshi et al. (2024) offers a thorough examination of natural language processing (NLP) for language dialects, emphasizing the difficulties brought about by linguistic variation. The study emphasizes how important it is to take slang, colloquialisms, and geographical differences into consideration when using NLP models because these elements can have a big influence on the models' accuracy and dependability. Additionally, Faccia, McDonald, and George's work from 2023 explores the difficulties associated with sentiment analysis utilizing NLP methods. Sentiment analysis is the process of removing subjective elements from textual data, including beliefs, attitudes, and feelings. Sentiment analysis findings may become inaccurate due to problems with contextual comprehension of sentiment, sarcasm, and irony, as the research points out. Furthermore, ethical issues

with prejudice, justice, and data privacy have become important obstacles in the development and application of NLP systems. The use of AI and NLP in delicate fields like finance and social welfare raises questions about algorithmic accountability and transparency as well as the possibility of unforeseen effects, as noted by Rabbani et al. (2021). With the use of Natural Language Processing (NLP) technology, unstructured textual data can now be processed, analyzed, and insights may be gained. The use of NLP technology is not without difficulties, nevertheless, despite its potential advantages. These difficulties vary from technological constraints and ethical issues to language ambiguity and complexity, making it difficult to use NLP solutions successfully in real-world situations, particularly when it comes to tracking tax payments.

The study of Zhang et al. (2023) demonstrates how RPA may save human labor and minimize mistakes in tax payment monitoring by automating operations including data input, reconciliation, and compliance checks. Moreover, Nayak et al. (2023) state that RPA helps businesses optimize operations and guarantee tax compliance by automating processes like inventory management and invoice processing, This, in turn, leads to reduced costs. Gotthardt et al. (2020) point out important factors such as data security, regulatory compliance, and organizational preparedness that must be addressed to achieve effective implementation, even if RPA adoption has promise for improving tax payment monitoring procedures. In the field of tax payment monitoring, robotic process automation (RPA) technology has become a game-changer, providing hitherto unseen possibilities for process simplification, accuracy improvement, and compliance improvement in tax administration. By automating repetitive, rule-based procedures using software robots, RPA enables enterprises to manage tax payment processes more effectively and efficiently.

Almada et al. (2022) support the incorporation of artificial intelligence (XAI) into tax legislation, stressing the need to set minimum legal requirements to guarantee accountability and openness in AI-driven tax administration procedures. Their study emphasizes how XAI helps to advance compliance, equity, and fairness in tax enforcement operations. Similarly, the Mehdiyev et al. (2021) study emphasizes the advantages of XAI in enabling better-informed decision-making and improving audit quality for tax by giving auditors insights into the logic behind AI-generated audit conclusions. Although Javed et al.'s research from 2023 does not directly address tax payment monitoring, it does highlight the importance of XAI in general for fostering accountability, openness, and confidence in AI-driven systems in a variety of industries. The term "explainable artificial intelligence" describes a collection of methods and procedures intended to give human-readable justifications for the choices and results produced by AI models. Through the explanation of the reasoning and decision-making processes behind AI systems, XAI technologies help stakeholders—such as tax authorities, legislators, and taxpayers—to comprehend and have more confidence in the results generated by AI algorithms.

In the context of evolving technology, Atayah and Alshater (2021) offer a retroactive study of audit and tax, highlighting the revolutionary effects of modern data analytics on tax administration. Their study demonstrates how data-driven decision-making procedures using DAT might help tax authorities discover anomalies, identify tax evasion, and maximize compliance efforts. Additionally, Saragih et al. (2023) demonstrate how tax authorities may make more accurate and efficient data-driven judgments by using AI-powered analytics to automate repetitive operations, optimize resource allocation, and deliver real-time insights. Advanced data analytics methods (DAT) have revolutionized the field of tax payment monitoring by leveraging big data to identify trends, extract insightful information, and improve decision-making. These methods cover a wide range of approaches, such as statistical modeling, machine learning, data mining, and predictive analytics, among others, and allow tax authorities to use massive volumes of data for more efficient tax compliance and enforcement.

6. Conclusions

To sum up, this research has investigated the connection between tax payment monitoring and the different kinds of AI technologies. We have identified several categories of AI technologies—such as machine learning algorithms, natural language processing (NLP) technology, robotic process automation (RPA), XAI, and advanced data analytics techniques (DAT)—and looked at how they are used in tax payment monitoring after conducting a thorough review of the literature. Our review reveals that each type of AI technology offers unique capabilities and benefits for tax administration. Machine learning algorithms enable predictive modeling and pattern recognition, enhancing the accuracy and efficiency of tax payment monitoring processes. While NLP suffers from a deficiency in facilitating the analysis of unstructured data, such as text documents and communication channels in the Jordanian tax department. RPA technology reduces manual labor and minimizes mistakes in tax payment monitoring by automating repetitive operations and workflows. Stakeholders can comprehend and have confidence in the judgments made by AI systems in tax administration because of the transparency and interpretability offered by XAI technology. By using big data analytics, DAT approaches can find hidden patterns and trends that enhance decision-making and compliance efforts.

7. Implications

The results of this study have several ramifications for practitioners in tax administration, policymakers, and tax authorities. First off, using AI technology has the potential to enhance the efficacy, transparency, and efficiency of systems used to monitor tax payments. Tax authorities may improve their compliance efforts, identify instances of tax evasion, and allocate resources more efficiently by utilizing AI-driven insights and automation capabilities.

The creation of legislative frameworks and guidelines should also be given top priority by legislators to guarantee the ethical and responsible application of AI in tax administration. Standards for algorithmic transparency, data privacy, and accountability may be established to assist reduce possible dangers and guarantee the integrity and fairness of AI-driven tax procedures.

Practitioners of tax administration must also finance capacity building initiatives and AI training programs to give staff members the skills and knowledge necessary to use AI technology appropriately. Creating a workforce trained in AI-driven analytics and decision-making can help with the acceptance and implementation of AI solutions in tax payment monitoring.

In general, the incorporation of AI technology into tax administration holds promise for revolutionizing tax payment monitoring procedures, enhancing compliance results, and augmenting taxpayer happiness and confidence. Tax authorities may meet changing demands and accomplish their goals in a more complicated and digitalized tax environment by embracing innovation and utilizing AI-driven insights.

8. Future Research

Future studies in this field may pursue several directions to further our comprehension of the connection between tax payment tracking and AI. Initially, longitudinal research might examine the long-term effects of AI deployment on taxpayer behavior, revenue collection, and tax compliance rates. Furthermore, comparative research might examine how well certain AI systems handle particular problems or enhance particular facets of tax administration.

Additionally, research may focus on developing hybrid AI models that integrate several technologies to enhance the capacity to track tax payments. For example, by combining machine learning algorithms with NLP technology, tax authorities may be able to look at both structured and unstructured data sources for more detailed insights. Similarly, tax automation may be more transparent and accountable when RPA and XAI technologies are used.

Furthermore, multidisciplinary research partnerships including data scientists, tax specialists, and legislators may make it easier to create AI-driven solutions that are specifically suited to the special difficulties and legal needs of tax administration. Using interdisciplinary knowledge and perspectives, researchers can develop novel strategies to improve tax payment monitoring and compliance initiatives.

Additional investigation is required to examine the particular uses and difficulties related to the integration of NLP technology in tax payment monitoring procedures and to pinpoint optimal approaches for optimizing its efficacy in augmenting transparency and adherence.

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