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## Citizens' Perspectives of AI Adoption in Taxation and Its Effects on Long-Term Voluntary Tax Compliance and Socio-Cultural Norms in Botswana

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**Abstract:** The government of Botswana continues to face the unprecedented challenge of tax noncompliance. In response to tax noncompliance, the Botswana Unified Revenue Service proposed the fusion of AI into the domain of tax. For the revenue service authority to discover the potential benefits of AI, the impact of adopting AI in the domain of taxes on long-term compliance behaviour must be thoroughly investigated. This study aimed to determine the influence of AI on long-term compliance and sociocultural norms in Botswana. This study employs a qualitative research approach; utilising data collected from interviews to delve into citizens' perceptions regarding the diffusion of AI into the tax system and its effect on tax compliance and sociocultural norms. The qualitative data collected was analysed through thematic analysis. The findings of this study suggest that the deployment of AI in the tax domain has the potential to positively influence voluntary tax compliance in Botswana, as perceived by the participants. However, the introduction of AI may also lead to disruptions in sociocultural cohesion, with stakeholders expressing concerns about its broader social impact. This study contributes to the ongoing debate on AI and taxation by developing a 'four pillars of the harmonised artificial intelligence framework', which facilitates the adoption of AI in the tax domain.

**Keywords:** artificial intelligence; machine learning; digitalisation; tax administration; Botswana

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### Introduction

Globally, the debate on the embrace and use of artificial intelligence (AI) has increased in recent years (Organisation for Economic Co-operation and Development 2023) and has deepened as 90% of tax jurisdictions cautiously seek to harness AI technologies to respond to tax noncompliance and other socioeconomic problems (Smart Africa 2021). Tax authorities are undertaking momentous digital transmogrification, deploying AI in tax systems to minimise malicious tax noncompliance (Belahouaoui and Attak 2024; Hemberg et al., 2016), enhancing the efficacy of tax revenue collection (Nose & Mengistu, 2023) and improving tax administration (Bruckner & Coil, 2024). AI technology is viewed as "the nascent", "transformative force" and "dominant" digital tool of the future that will potentially enhance sustainable economic development (Buckley et al., 2022; Nembe et al., 2024). It represents a new dawn in the

tax landscape, and tax revenue collection is now more technology based (Nose & Mengistu, 2023). In this regard, tax authorities have responded to the technological wave by extensively adopting AI in their tax landscapes (Augustine et al., 2023) to process large and extract valuable knowledge from unified data silos (heavy data) (Milner and Berg, n.d.) or “Tax Data Lakes” (Kestler, 2024; Wahab & Abu Bakar, 2021).

For example, Australia, the UK, Norway, and Canada have developed AI tax frameworks that can detect and predict “high-risk taxpayers” (Rahayu, 2021), leading to enhanced tax compliance (Bhrati et al., 2024). Although developed countries are taking a leading role in terms of the deployment of AI in tax functions, the application of AI is proliferating in some developing countries, such as South Africa, Rwanda, Kenya, Nigeria, the Seychelles and Mauritius, which are regarded as “technology hubs” (Gwagwa et al., 2020) because of their fast espousal of AI in key areas such as healthcare, food security, transportation, education, the environment, and manufacturing (Ramezani et al., 2023). These countries are beginning to realise the benefits of these innovative technologies (Gavoile & Zasova, 2022). For instance, South Africa is leading in terms of AI use in tax faculty and has spent more than US \$200 million (equivalent to R3 billion) on AI and ML investment to enhance tax administration (Fin24, 2019; BusinessTech, 2021; ITWeb, 2024). As a result of the adoption of AI in its tax function, the South African Revenue Services’ (SARS) tax revenue for the 2023/24 tax year increased by 3.2% (R54 billion) to R1.74 trillion compared to the previous fiscal year (ITWeb, 2024). The SARS used AI and ML tools to detect and deter criminality, cases of syndicate (or organised crime), impermissible and fraudulent refunds and other forms of tax noncompliance (ITWeb, 2024; United Nations Department of Economic and Social Affairs, 2023).

Currently, the rate of application of AI in taxation has been distinctly lower in developing countries (Nugraha, 2023; OECD, 2021b; Tang et al., 2022; Richins et al., 2020) than in OECD countries and other developed countries (Owens & Schlenker, 2022). It is therefore inferred that most developing countries, especially in Africa, are not yet ready to deploy AI in tax systems and processes (Shonhe & Kolobe 2023) due to its “novelty”, and its efficacy has not been tested (Rahayu, 2021). It is evident that many countries in Africa are still using conventional (or nondigital) methods of tax administration and enforcement measures to combat tax noncompliance (Moore, 2020; Milner, n.d; United Nations, 2023). This was also echoed by South African President H.E. Cyril Ramaphosa in his speech in 2020 when he accepted the AU Chairpersonship that “...but Africa is not fully prepared to seize the enormous opportunities that AI presents” (Smart Africa 2021). Furthermore, Wim Wuyts, the CEO of WTS Global, presented similar sentiments: “Tax functions have long recognized the need to digitize and automate tax processes... they are still reserved in terms of AI. Although intelligent tax solutions offer enormous potential, the organizational and IT infrastructures of most tax functions are not yet equipped for AI application” (Kestler, 2024). These statements also indicate that Africa is not ready for AI adoption in the tax system (Owens & Schlenker, 2022) despite a high level of tax noncompliance, which has invariably become shameful and discomfiture on the African continent (Fadayo, 2018).

Shonhe and Kolobe (2023), Tan et al. (2023), Keakopa (2022) and Rogerson et al. (2022) identify limited high-tech infrastructure to support AI, an absence of AI policy, a restricted capability to support revolution, an immature technology sector inept at modernisation and scarce data to train AI frameworks (or models) as constraints that restrain the application of AI-based solutions in tax functions in sub-Saharan Africa (SSA) (Owens & Schlenker, 2022). Notwithstanding these many documented challenges, some sub-African countries (SSAs) are willing to adopt AI in their tax system (UNESCO, 2022); for instance, Shonhe and Kolobe (2023) highlighted that Botswana ranks 98 out of 181 countries studied universally and ranks 7th out of 46 countries in SSA in 2022 in terms of AI readiness. Despite this growing interest and overall buoyancy, there is still limited conclusive pragmatic support for the implications of AI for future tax revenue collection and tax compliance, especially in Africa (Buckley et al., 2022; Gwagwa et al., 2020). Currently, the deployment of AI is not properly examined by researchers, and consequently, there is no adequate or comprehensive information regarding the implications of the use of AI in taxation for long-term tax revenue collection, sociocultural conditions and tax compliance at large. However, studies by UNCTAD (2021) and Shonhe and Kolobe (2023) provide a comprehensive mapping and AI readiness status in Botswana, not the implications of the deployment of AI in the field of taxation for long-term tax revenue collection, sociocultural conditions, and tax compliance from a public (citizens) perspective in Botswana. Therefore, this widely acknowledged gap in the extant literature serves as the impetus for the present investigation. Therefore, this study attempts to fill a research gap.

Based on the above premise, this study aims to examine the implications of the application of AI in the field of taxes on long-term tax revenue collection, tax compliance and readiness to coexist with AI from a public (citizen) perspective in Botswana (UNCTAD, 2021). With its economic transformative agenda enshrined in Vision 2036

of becoming a knowledge-based economy (United Nations Educational, Scientific and Cultural Organization 2021), Botswana presents a perfect case study for a deep understanding of taxpayers' perceptions of AI use in taxation on long-term tax revenue collection and compliance behaviour. To achieve the primary objective of this study, data was sourced from various of the Botswana Unified Revenue Services' (BURS) strategic stakeholders in Gaborone.

## **Literature**

Smart Africa 2021 noted that “the world is on the cusp” of digital transformation, and rapid digital innovation globally has presented numerous opportunities as well as new challenges (Saragih et al. 2023) and has primarily impacted economic growth. Unlike in the past, where human capital development was regarded as a growth enabler or driver, novel technologies such as AI influence economic development in both developed and developing countries (Adegboye et al., 2022). This persistent technological transformation has revolutionised the tax revenue collection model of several revenue authorities (Chitimira & Ncube, 2021). By harnessing AI technologies, tax authorities can enhance tax compliance and tax revenue collection efficacy while reducing taxpayer compliance costs (Nembe et al., 2024; OECD, 2021a, 2021c).

Globally, there is no absolute definition of AI. According to United Nations Educational, Scientific and Cultural Organization 2021, AI involves “algorithmic systems which deploy various scientific methods to provide a judgement or cognitive analysis that would have previously been carried out by human persons”. It can also be defined as “a branch of computer science dealing with the simulation of intelligence in a computer” (Rathi et al., 2021). In addition, Tapo et al. (2024:1) define AI as “an advanced computer and information science that allows a machine, device, software, program, code or algorithm to interact with its environment... perform actions, develop strategies to maximize its chances of successfully achieving...”. In addition, Smart Africa (2021:9) defines AI as any technology that enables machines to operate emulating human capabilities to sense, comprehend and act. Broadly, AI can learn and perform cognitive-related tasks, resulting in prediction and sound decision-making in both virtual and physical spaces (Rathi et al., 2021,:1228; Smart Africa, 2021; UNSCO, 2021).

The era of emerging AI presents several opportunities, and it could be argued that the use of AI in taxes could help improve tax administration (Raikov, 2021), equality and productivity (Zheng et al., 2020), predict taxpayers' compliance behaviour (Huang et al., 2019) and facilitate remote (or distance) audits (Faúndez-Ugalde et al., 2020) and subsequently better service delivery (Soled, 2023). Reports have also indicated that tax authorities worldwide can leverage AI technologies to detect, deter and prevent criminal behaviour, noncompliance, tax fraud, tax anomalies, and illegitimate fraudulent refunds within the tax landscape (Augustine et al., 2023; Faúndez-Ugalde et al., 2020), leading to tax revenue optimisation. Furthermore, AI is assisting revenue authorities globally in combatting money laundering (ML), organised crime, transfer pricing, smuggling and other illicit financial flows (Collosa 2023; Duncan, 2022). These emerging technologies use taxpayer data to predict or red-flag suspicious transactions, thereby making it difficult and even more costly for taxpayers who deliberately dodge their tax obligations (Estevão, 2020). AI technologies could also promote voluntary tax compliance (Segarra, 2020), leading to an increase in the tax ratio (or tax revenue) needed to finance ever-increasing government expenditures (Calijuri, 2023).

The literature on the implications of the application of AI in the field of tax on long-term tax revenue collection and tax compliance from the public (citizen) perspective remains very flimsy, especially in developing countries (OECD, 2023). AI provides night “version googles” or a “24-hour digital surveillance” that enables tax authorities to detect, deter and prevent tax fraud, tax crime and tax cheats or scams (UNESCO, 2021). AI technologies will make it costly for males to evade or avoid tax liabilities (Korenek, 2024). In other words, the availability of taxpayer information enables tax revenue collectors to verify and estimate taxable income and tax liability in real time (Wisesa, 2023). Although researchers predict potential harms, challenges, ethical issues, and corrosive impacts associated with adoption (Prires, 2023; Vadell, 2023), AI developers and policymakers tend to be positive about the possible benefits that AI offers (Augustine et al., 2023). The risks and challenges that may arise due to the use of AI in tax include privacy (Dougherty, 2023), risks of bias and discrimination (Odilla, 2023; Califuri, 2023; Seled, 2021), ethical issues (Kuźniacki et al., 2022; Rodríguez, 2021) and the accuracy of information (Bruckner & Coil, 2024). The deployment of AI-powered solutions could widen socioeconomic inequalities, given that access to these technologies varies significantly across geographical locations and economic levels (Nembe et al., 2024; Gravett, 2023; Ade-Ibijola & Okonkwo, 2023). United

Nations Educational, Scientific and Cultural Organization 2021 added that the deployment of AI is likely to “infringe on human freedoms, autonomy and dignity” and dehumanise employees due to constant surveillance.

As alluded to by Nembe et al. (2023), AI remains a powerful force for streamlining tax administration, detecting tax fraud, reducing tax crimes and engaging in other tax noncompliance behaviours. By tapping into AI technologies, revenue services can strengthen tax compliance enforcement, boost tax morale, improve institutional quality and improve tax revenue collection (Lindseth, 2020).

## Materials and methods

This study employs an exploratory qualitative research approach using a case study design and document analysis. The primary research instrument used in this study was semi-structured interviews with academics, taxpayer representatives, business communities, legal experts, civic society representatives, digital experts or consultants and tax consultants residing in Gaborone City. A purposive sampling technique was employed to select participants based on specific inclusion and exclusion criteria. The criteria for selecting participants included (i) education level, (ii) knowledge of AI or digitalisation, and (iii) general knowledge of Botswana’s tax system and tax administration. This targeted approach ensured that participants possessed the relevant expertise and experience for the study. However, it should be noted that the sampling process involved elements of stratification, as the researchers aimed to ensure diversity across these key characteristics. In total, 24 participants met the inclusion criteria. While purposive sampling was the primary method used, the process incorporated elements typically associated with stratified random sampling to ensure a well-rounded and representative sample. Twenty-one interviews were conducted from January 2024 to March 2024. Following the recommendations from the reviewers, the authors conducted three more interviews with employees from BURS who are senior in tax compliance in November 2024, ICT, and risk and investigation. Including BURS as a participant would provide a more comprehensive understanding of the potential benefits and challenges associated with AI adoption in Botswana’s tax domain. The interview questions (or guides) were developed from the literature under the following thematic areas: “Future tax revenue collection & tax compliance behaviour”, “sociocultural environments and readiness to coexist” and “risks and opportunities.”

In this study, the participants remained anonymous, and pseudonyms were used throughout this study. Furthermore, permission was sought from participants to record the interview sessions and to use some of the excerpts to stress a point during the analysis phase. Table 1 shows the participants’ details and pseudonyms or codes.

**Table 1.** Participants’ categories and pseudonyms.

Participant category	Code	Participants per category	Inclusion and exclusion criteria
Academia	AS	AS1; AS2; AS3	Degree in economics or accounting
General public	TP	TP1; TP2; TP3	Basic education
Tax consultancy	TC	TC1; TC2; TC3	Minimum of a tax-related professional qualification
Digital consultancy	DC	DC1; DC2; D3	Expert in AI and ML or data analytics or big data
Legal	LE	LE1; LE2; LE3	Commercial Law degree
Civic society	PC	PC1; PC2; PC3	Basic education
Business community	BC	BC1; BC2; BC3;	Basic knowledge of tax
Botswana Unified Revenue Services	BURS	BURS1, BURS 2, BURS 3	Tax experts
<b>Twenty-four (24) participants</b>			

**Source(s):** Authors’ own illustrations (2024)

Documents were used to substantiate the interview results. Data from documents was sourced from official statutes such as Income Tax Acts, the Constitution of Botswana, Human Rights Convection, the ICT Act, and the Personal Information Act.

In this study, the researchers conducted a thematic deductive approach to coding by first establishing predefined themes based on the study’s objectives and relevant literature, including “The impact of AI on the future of tax revenue collection and compliance”, “the public’s perception of harm (risks) and opportunities for using AI in taxation”, and “the public’s perception of the use of AI in taxation on sociocultural values and coexistence with digital technologies in Botswana”. The researchers then systematically applied these predefined themes

to the qualitative data collected through interviews with participants (Braun & Clarke, 2021). They carefully identified and coded relevant excerpts from the data that aligned with each theme, organising the responses under the corresponding categories. This approach allowed the researchers to analyse the data within a structured framework, linking the findings to the broader research questions and existing theories, while ensuring that the interpretation of the data remained consistent with the study’s focus on AI adoption in the tax system. The researcher who was responsible for coding was excluded from the interviews to enhance the reliability of the results. The researchers chose manual analysis and predefined themes to maintain a focused, theory-driven approach aligned with the study’s objectives. The predefined themes, grounded in existing literature, were crucial for addressing specific research questions regarding AI adoption in taxation. While qualitative analysis software such as NVivo or ATLAS.ti Version 24 can offer efficiencies, the manual approach allowed for a deeper, more nuanced interpretation of the data. This method ensured that the analysis remained context-sensitive and closely tied to the unique perspectives of stakeholders in Botswana’s tax system. The use of predefined themes was intentional, ensuring a coherent analysis rather than an exhaustive exploration of all themes.

In this qualitative study, the trustworthiness of the data was ensured through strategies such as data triangulation, which involved using multiple sources including interviews with various participants, document analysis and a literature review to corroborate findings, and member checking, where participants were asked to review and validate the accuracy of the interpretations of their responses. Furthermore, the researchers ensured transparency and consistency in data analysis by maintaining detailed documentation of the coding process. The researchers addressed potential bias in this study by ensuring a transparent and systematic approach to data collection and analysis, employing strategies such as member checking to validate findings with participants and maintaining clear documentation of the coding process to enhance objectivity and consistency. Additionally, the use of multiple data sources, including interviews and document analysis, provided a triangulation method to minimise individual researcher bias.

## **Findings and discussion**

This section presents the results of the survey interviews conducted with 21 purposively selected participants (public, academic, civic society, business community, legal and consultancy communities). In this study, three themes were identified. The first theme is the implications of AI adoption in taxation for long-term tax revenue collection. The second theme concerns the long-term risks and opportunities of using AI in taxation. The last theme is the future impact on sociocultural value and coexistence with AI technologies. The public perceptions related to the identified themes are presented and discussed below.

### ***Theme 1: The impact of AI on the future of tax revenue collection and compliance***

The impact of the deployment of AI in taxation on long-term tax revenue collection and tax compliance was identified through participants’ responses to the following interview question: “What are the short- and long-term effects of AI adoption in the domain of taxation on tax revenue collection and tax compliance in Botswana?”. The researchers investigated the perspectives of 21 participants from diverse backgrounds with the aim of determining whether there is a nexus between AI adoption and long-term voluntary tax compliance behaviour and sociocultural norms in Botswana. The interview data was classified under the sun-themes presented in Table 2 below:

**Table 2.** Extracts from participants.

<b>Emergent subthemes</b>	<b>Extracts from participants statements</b>
Tax revenue	<p>“In the short run, the government is likely to experience high level of compliance from taxpayers, which will contribute increased revenue.” (AS2).</p> <p>“The Botswana Unified Revenue Services (BURS) is going to collect tax revenue. Most people are going to voluntarily comply out of fear of being flagged by the system. Including the organised criminals are likely to comply and declare their income. 5 to 6 years after the implementation, believe me the criminal would have devised some sophisticated means to bypass AI software. They will develop some virus that will attack the system and ultimately reverse the numerous benefits obtained thus far since the formation of BURS.” (TC1).</p> <p>“Yes, in the first 3 years, the government is likely to collect more tax revenue thereafter the government shall experience a fall in tax revenue and taxpayers are not going to comply because they will find loopholes within the AI system and circumvent it.” (TP3).</p>

*(Continued)*

**Table 2.** (Continued)

Emergent subthemes	Extracts from participants statements
	<p>“AI can help us target high-risk areas for tax non-compliance, which should improve our audit processes and reduce the tax gap. Ultimately, this should contribute to an increase in tax revenue over time” (BURS1).</p> <p>“The government shall collect more tax revenue and increase voluntary tax compliance in the short term and going forward the BURS will start to complain about increase tax noncompliance.” (BC3).</p> <p>“If properly applied AI will result in high level of compliance and increase in tax revenue collected in Botswana due to real-time revenue collection and timely reporting. My worry is on the infrastructure available.” (DC2).</p>
Tax compliance	<p>“AI will help to weed out tax noncompliance, criminality, tax fraud and other complex or organised crime. because it has power to detect, deter and prevent such criminal behaviours. Furthermore, my experience with AI, is that there is no room for negotiation or corrupt practices, thus lowering the chances of unethical behaviours such as bribes, corruption e.tc., leading to increase tax revenue and reduced tax noncompliance.” (DC3).</p> <p>“I don’t think the AI will help to a larger extent, I believe that there are some conditions that must be met for it to be effective, for instance, Botswana must fully digitalise that is eliminate the use of cash in the payment ecosystem. As long as the taxpayers are still using cash then forget about the benefits of AI.” (DC1).</p> <p>“Anything for us without us it’s not for us, if the government implement this without our input, then that system is heading towards failure. BURS has introduced SAS and still long queues at BURS office...so I am foreseeing people not complying with the system at all.” (LC1).</p> <p>“AI can play a crucial role in improving tax compliance by identifying patterns of tax evasion and underreporting. Its ability to analyse large data sets quickly and accurately will allow us to better target non-compliant taxpayers.” (BURS2).</p> <p>“Every system is designed to address certain circumstances. First what is the problem? Why is that people evade tax? BURS must address the root causes of tax noncompliance rather than the symptoms, as long as the root causes of the problem is not addressed, them with or without AI taxpayers will continue to evade tax. In short there won’t be a change in terms of compliance level and tax revenue soon.” (LC2).</p> <p>“Since tax will be collected in real-time, Botswana is going to record a tremendous increase in tax revenue and high voluntary tax compliance in future. Due to reduced chances of tax evasion, elimination of errors or omissions” (TC1).</p>
Errors	<p>“AI does not allow errors, hence enhanced revenue optimisation. The system closes loopholes within Income Tax Act. No unfair deductions or exemptions. This will greatly contribute to increase tax revenue.” (AS2).</p> <p>“AI-driven automation could streamline our processes, reducing errors and delays in tax assessments and collections. With improved efficiency, we anticipate higher revenue generation and more timely payments from taxpayer” (BURS3)</p>

Source: Authors’ compilation (2024)

Most of the interviewees anticipate an increase in tax revenue in the first few years of the deployment of AI in a tax system. This increase is propelled by real-time revenue collection, the study and analysis of compliance and noncompliance patterns, and the deployment of resources to risky taxpayers (OECD, 2021a). Almost all the participants’ comments on the implications of AI in taxation for long-term compliance behaviour showed that tax fraudsters and organised criminals will eventually become sophisticated and devised mechanisms to bypass the system, leading to reduced tax noncompliance.

Furthermore, AI deployment in taxation detects, deters and prevents tax fraud, tax crimes, tax evasions, tax cheats, computation errors or omissions and other forms of tax noncompliance (Lindseth, 2020), which, in turn, augment tax revenue for the nation of Botswana and reduce tax noncompliance. The results of this study indicate that policymakers expect them to enhance their acceptance by the community at large. Policymakers feel that their input will help the system work better for citizens rather than oppress locals and residents of Botswana. According to this study, the involvement of taxpayers, the civic society, the public and academia will facilitate tax compliance and trust and confidence in the system more than it will be to impose on them. In conjunction with the above, Wisesa (2023) found that, when applied strategically, AI increases tax revenue and ultimately eliminates tax noncompliance in developing countries.

**Theme 2: The public perception of harm (risks) and opportunities for using AI in taxation**

The risks and opportunities associated with the use of AI in taxation were extensively examined through a semi-structured interview question: “In your view, what are the potential harms (or risks) and opportunities of AI integration in taxation in general? This theme sought to examine the potential harm (or risks) and opportunities associated with AI adoption in the field of taxation. Below are some of the comments extracted from the interviews (Table 3).

**Table 3.** Extracts from the participants’ statements.

<b>Emergent subthemes</b>	<b>Extracts from participants’ statements</b>
Opportunity	<p>“I wouldn’t say taxpayer will comply voluntarily; their compliance is system-enhanced compliance. Compliance is a process which involves trust and rewards.” (AS1).</p> <p>“The use of technology increase transparency, accountability and facilitate communication with taxpayer virtually. In the comfort of their homes many interface with BURS through intelligent chatbot and get prompt feedback. Such interactions can enhance trust and confidence in tax authorities and increase voluntary tax compliance.” (TC2).</p> <p>“The use of technology may enable BURS to detect patterns of noncompliance and suspicious transactions in real-time and develop some mechanisms to counteract such behaviour before it happens. This will help to reduce tax burden to few taxpayers. This means AI will bring tax justice and eliminate “devil deals” in future.” (LC2).</p> <p>“Tax automation reduces compliance costs. The introduction of AI system and self-service platforms has enabled taxpayers to submit tax returns and make payments without queuing. This will enhance tax compliance.” (TP1).</p> <p><i>“To revenue authority, deploying AI in tax system promotes faster and more efficient, accurate reporting and payment process of voluntary taxpayers”.</i> (BURS3).</p> <p>“Application of AI in tax system can facilitates tax filing protocols and provide timely access to taxpayer information. This will benefit the taxpayers because they are not over charged due to human errors.” (AS2).</p> <p>“The good news to taxpayers is that AI will make it possible for taxpayers to receive their refunds and returns in real-time, resulting in increased tax revenue for sustainable development. Thus, eliminate red tape.” (LC2).</p> <p>“I believe the use of AI in tax system will generate more tax revenue and will be used by the government to improve the living standard of 2.5 million citizens and reduce the spread of HIV and other known disease.” (PC3, BC2).</p>
Risk(s)	<p>“From a legal perspective, AI technologies will violate the right to privacy. AI relies on data and as such personal data is going to be used without consent.” (DC1).</p> <p>“Adopting AI in tax system is a form of colonisation- techno-colonisation, look at the WhatsApp platform it can change features without your consent, so shall these Westernised technologies to change our culture, systems and process, there will be infringement of freedom...we need a Botswana tailored software or program” (PC1).</p> <p>“The lack of human element in the tax system means that there is no room for negotiation, you can negotiation with a computer. Computer has no empathy.” (LC2).</p> <p>“The challenges associated with adopting AI software is that personal private information will be made available on the public domain, once a Taxpayer Identification Number (TIN) is assigned to a taxpayer. However, at the same time, it enables BURS to keep a track of taxpayer’s compliance history and trends” (BURS1).</p> <p>“The issue of adopting or deploying off-the-shelf system rather than self-build systems carries a lot of risk in the long run. The risk of cybersecurity is widespread as tax revenue services collect and store vast amounts of data in data silos of taxpayer information virtually. The attackers may use, or access taxpayers’ information or data and such information may be distorted or used in criminality activities.” (LC2).</p>

Source: Authors’ compilation (2024)

According to the study results, most participants, including tax consultants, civic society, and digital experts, agree that deploying AI in tax administration offers many benefits, such as reduced compliance costs, timely reporting, expedited refund processes, and reduced red tape or bureaucracy. Furthermore, AI improves efficiency and effectiveness in terms of detecting and deterring serious organised crimes, smuggling, money laundering, transfer pricing and other forms of nontax compliance. However, the application of AI in tax function without AI-specific strategies presents potential risks such as privacy concerns, bias and discrimination, ethical issues, and accuracy of information. This finding substantiates the arguments of Nembe et al. (2024) and (2023), who

identified the potential risks associated with AI adoption. Ade-Ibijola and Okonkwo (2023) also opine that AI presents new challenges and opportunities and that implementors must be very cautious when adopting it. It should be noted that the government should solely be accountable for the deployment of AI in the tax system. In this regard, the government must ensure a safe, reliable, and safe environment and reliable information. The responses of the participants showed that AI technology is a disruptive technology that will completely transform the tax landscape. This finding corroborates the view of Nose and Mengistu (2023) that AI-based technologies reshape the domain of taxes and cause changes in tax collection and processes. They view AI tools as the “new dawn”.

***Theme 3: The public perception of the use of AI in taxation on sociocultural values and coexistence with digital technologies in Botswana***

How do you perceive the influence of AI adoption in the field of taxation on the socio-cohesion of your society?

What are your thoughts on the possibility for the citizens of Botswana to coexist harmoniously with AI technologies?

These interview questions were posed to comprehend the views of the public on the implications of AI deployment in tax systems for sociocultural cohesion and coexistence with technologies. Below are some of the viewpoints on this theme (Table 4).

**Table 4.** Extracts from the participants’ statements.

<b>Emergent subthemes</b>	<b>Extracts from participants’ statements</b>
Access to technology	<p>“I have two observations on this question. The first one not everyone in Botswana has access to information and or technology. Second, we must acknowledge that not all people can be able to read or write in Botswana. Deploying AI technologies may create fissures or disparities in the use and access to technology. The is a violation of human rights of equality.” (PC3).</p> <p>“The AI for Botswana should fit in our experience, cultures, and values not the other way!” (BC2).</p> <p>“We do have capacity and knowledge of AI, teach us first” (BURS1).</p>
Job losses	<p>“The elimination of human element in tax system is a social concern. Imagine the system will be asking you to confirm whether you are human being or not. Culturally, it is a taboo.to make matters worse, this whole world is going to be under the influence of AI rather than our traditional leaders “dikgosi”, watch the space.” (AS1).</p> <p>“Right now, some of us have been served with notice of termination, now with this AI, I tell you there will be massive retrenchment here at BURS”. (BURS2).</p>
Cultural distortion	<p>“AI has a potential of eroding our traditional cultural practices and values. Tax collectors greet and assist elders. Now, digitally illiterate elders will be assisted by a computer, and they don’t know how to operate it.” (LC1).</p> <p>“The imposition of AI in our traditional tax system will contribute to loss of botho (ubuntuism). Our interaction with ourselves is limited by the so-called virtualisation. The human-to-human interaction shows a sign of sociocultural cohesion. Now automation limits our right to association and freedom.” (LE2).</p> <p>“A change is always associated with disruptions- there will be significant change on the ways we used to do business, to interact- very soon taxpayers will be dealing with machine without human interaction.” (BURS3).</p>

**Source:** Authors’ compilation (2024)

The results of this study reveal that the government of Botswana should consider fundamental conditions when deploying AI-powered tools in taxes, including the quest for human oversight. The total displacement of humans in the AI ecosystem results in the violation of the ethical rights of taxpayers. Tax-based AI should not be allowed to operate independently of human oversight. Participants felt that AI technologies should be used as a supplement rather than an alternative regarding decision-making. In addition, interviewees felt that the use of technology in tax contributes to the violation of fundamental human rights such as rights to privacy and freedom. This study revealed that taxpayers will undergo digital surveillance or constant monitoring by analysing their personal data without consent. This raises critical ethical questions, and as such, AI should not be given the autonomy to make decisions that require subjective human judgement and discretion. The responses above

indicate that the deployment of AI in tax fraternity countries means a reduced workforce, which eventually exerts more burden on the government due to reduced disposable income and increased unemployment. Replacing humans with AI in revenue services and the banking sector is unethical because AI does not have a sense of humanity, botho and/or empathy, particularly when assessing taxable income and tax liability (UNESCO 2021). To avoid inadvertent corrosive effects on taxpayers in Botswana, it is vital to develop statutory instruments or regulatory frameworks that will guide its deployment in all sectors of the economy. There is great controversy about the extent to which AI should be implemented. This debate is not confined to the domain of tax but has also attracted increasing attention in the social sphere. At the helm of the debate lies coexistence with AI technology. When participants asked about their thoughts about coexisting with AI in the domain of tax, they gave varied views. Below are some of the extracts on this theme (Table 5).

**Table 5.** Extracts from the participants’ statements.

Emergent subthemes	Extracts from participants’ statements
Coexisting	<p>“Over relying on Westernised technology is a barrier to our homegrown products. that is developed by citizens, for Botswana and indigenous problem. Over dependent on these foreign technologies may widen economic disparities and strengthening power differences between the West and Africa.” (TC2).</p> <p>“I have heard that banks in Botswana are downsizing because of AI. Deploying AI in taxation leads to the displacement of workers by machines or robotics. It’s already happening in the banking system, where they used to have 10 tellers now, they have been reduced to two (2). There will be massive retrenchment of BURS personnel once AI is applied.” (PC2).</p> <p>“The loss of jobs by the citizens leads to a rise in social ills, deviancy behaviours due to limited access to disposable income. It’s like we are undoing the benefits already accumulated by our able leaders.” (TC1).</p> <p>“I think we must not eliminate human element in the tax system because of AI. My experience with AI is that it doesn’t provide real-life answers to some problems. I remember it says to me “remember I am not human, I cannot provide practical life example... this means its decision is not absolute, hence the need of the natural person.” (DC1).</p> <p>“I think we can coexist with the AI technologies only when the following conditions are met. The first one is sensitisation of the community about its use, shortcomings, and opportunities available for them (Batswana). Second, the legal and regulatory instruments relating to AI ethics, data protection, and taxpayer’s rights and obligations.” (LC3).</p> <p>“We must not be lagging; we need to embrace AI in our tax system. However, our interaction with AI system should be for solutions to the societal challenges. Hence, the need for homegrown AI framework to address specific cultural related issues” (PC1).</p>

Source: Authors’ compilation (2024)

The documents analysed in this study reveal a solid regulatory and legal framework that facilitates digital tool usage and enables coexistence with AI technologies. The researcher analysed the Electronic Communications and Transactions Act (2014), Electronic Records Act (2014), and Data Protection Act (2018) to understand the legal framework governing digital interactions, data security, and privacy, which are critical to AI adoption in taxation. These documents provided context for addressing citizens’ concerns about privacy and the legalities of digital transactions. The Board Minutes (2022 and 2023) were analysed to gain insights into the strategic decisions and plans of the Botswana Unified Revenue Service (BURS) regarding AI integration into tax systems. Together, these documents helped contextualise the study within the relevant legal and institutional frameworks, informing the interpretation of citizen perspectives on AI. The government of Botswana has praised the crafting and enactment of various pieces of legislation to coexist with data-driven AI technologies such as the Competition Act (2018), the Industrial Property Act (2010), the Customs Act (2018), the Consumer Protection Act (2018) and the Cybercrime and Computer Related Crime Act (20180) (Shonhe and Kolobe 2023).

However, Botswana does not have an AI-specific policy framework or AI ethics (AI Ethics Lab, 2020). These findings infer that the democratically governed country is still lagging vis-à-vis the adoption of AI, as evidenced by the lack of statutory instruments or laws regarding AI ethics (UN-Department of Economic and Social Affairs, 2022). The absence of such regulatory and legislative frameworks that guide the implementation or adoption of AI in tax, use and protection of human rights exacerbates potential harm to the citizens and residents of Botswana (Mubangizi, 2022). Adopting AI technology without a roadmap or guidelines is detrimental to the safety and protection of both the environment and the citizens of Botswana (Mudongo, 2021). The government is pressured by the public to make massive amendments or legislative reforms and align them with the AI ethical recommendations of the United Nations Educational, Scientific and Cultural Organization (UNESCO)

(The World Bank Group, 2022; Tan et al., 2023). Calijuri (2023) and Raesima, 2021 argue that to enable human technology to coexist, the gatekeepers (government) must safeguard their rights to privacy, freedom and data.

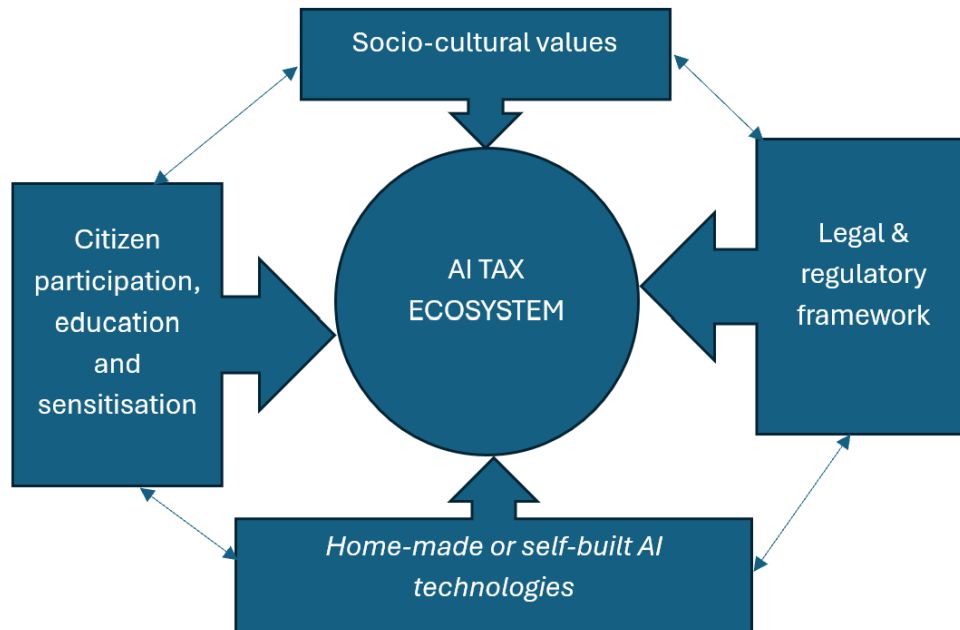
To enable coexistence with digital technology in the domain of tax, participants emphasise the need to craft and enact an AI policy framework that will guide its adoption and implementation, which is in line with the findings of Shonhe and Kolobe (2023), who recommended that there is a need to develop an AI strategy that will facilitate the implementation of AI in the field of taxation in Botswana because there is no such a strategy in place.

## **Discussion of results and proposed model of AI adoption and coexistence in a tax ecosystem**

The interview data and document analysis in this study converge to provide complementary insights into the regulatory framework, public perception, and strategic direction concerning AI adoption in taxation in Botswana. Legal documents such as the Electronic Communications and Transactions Act (2014) and the Data Protection Act (2018) laid the foundation for understanding the regulatory environment, particularly around data protection and privacy. These documents aligned with concerns raised by participants regarding the need for a robust AI policy framework, emphasising the ethical and transparent AI usage in tax administration. Stakeholders underscored the lack of AI-specific policies highlighted in the document analysis, stressing the need for a comprehensive strategy to guide AI adoption in Botswana's tax system. Moreover, the interview data further corroborates the issues highlighted in the documents, particularly the ethical risks associated with AI, including privacy violations and diminished human oversight. Participants emphasise the necessity of implementing safeguards to mitigate these risks, reflecting the legal insights that point to gaps in AI-specific ethics and governance. While the legal documents provided essential guidance on data protection and AI integration, the interviewees' perspectives revealed that, without a clear, ethical AI framework and governance structure, the risk of bias, discrimination, and privacy concerns could compromise public trust. This intersection between document analysis and interview findings highlights the need for a balanced approach to AI adoption in tax systems, where legal frameworks and ethical guidelines work together to ensure effectiveness while addressing societal concerns.

The findings of this study demonstrate that sociocultural values, citizen participation and knowledge, legal and regulatory AI frameworks and self-built AI tax systems make immense contributions to (i) long-term tax revenue collection, (ii) future tax compliance behaviour, (iii) acceptance, trust and confidence in AI-based tax systems, and (iv) long-term coexistence with AI technologies. In developing the model, titled "The 4 pillars for a harmonised AI framework", shown in Figure 1, the study utilised the identified pillars. The participants highlighted that the acceptability of an AI-based tax system hinges on sociocultural values and is an important pillar. During the interviews, the participants questioned the effects of the integration of AI tools in taxation on sociocultural values or cohesion. The study notes that sociocultural values are rarely considered when designing and adopting new technologies – they are often ignored, although they are fundamental to the success of the new system. The reason why novel tools do not embed sociocultural ideologies is that most of these technologies were developed by the Western community to solve their unique problems. Therefore, these technologies carry a Western ideology that is incompatible with the Botswana case. This study urges tax authorities to self-build AI systems rather than adopt the Eurocentric AI model.

The participants complained that policymakers should not consult or involve them when developing AI policies or when deciding whether to embrace a novel technology. It is also suggested that the effectiveness of AI adoption and use in the domain of taxes lies in the participation of local people (citizens), sensitisation and education. The BURS and responsible authorities educate citizens on the use and value of the proposed AI tax-based system before implementing it to increase the chances of its success and acceptability. Their contribution to the development of an AI policy makes them feel part of the process, leading to societal support, value, trust, and confidence in the AI tax system. The results of this survey reveal that Botswana has made great strides in developing a regulatory framework to enable the adoption of AI by developing and enacting legislation guiding (i) adoption or implementation, (ii) use, (iii) risks and mitigating measures, and (iv) coexistence with AI technologies. The results indicate that Botswana is ready to transform its tax landscape through the adoption of novel tech tools. However, the study revealed that, in Botswana, there is no AI framework that facilitates the deployment of AI in the tax system, protects taxpayers' rights and the environment, and therefore, an AI strategy is needed. The participants further indicated that the nonexistence of an AI strategy slows the adoption of AI in the realm of taxes and its acceptability by citizens. The strategy must be grounded in the values and ethics of Botswana.



**Figure 1.** The 4 pillars of the harmonised AI framework.

The last critical issue is whether to buy a ready product (off the shelf) or make its own (self-built systems). The developer and geographical location(s) of AI technology or software constitute a vital part of the integration process. According to the results of this study, most high-tech solutions were subsequently developed by Western and developing countries. Because they have been designed to solve peculiar problems, cultures, and environments, they remain incompatible with Botswana's systems, cultures, and environment. From a cultural perspective, tax authorities are urged to develop home-grown AI that will address compliance and ethical issues.

Based on the findings from this study, the researchers identified four key elements that influence the acceptance of AI in the domain of tax, namely socio-cultural norms, citizen participation and education, self-built AI technologies, and a legal and regulatory framework. The development of the four pillars of the harmonised AI framework is based on a comprehensive approach to AI adoption in Botswana's tax system, emphasising the integration of local context and ethical considerations. The first pillar stresses embedding socio-cultural norms within the AI-driven tax ecosystem, ensuring that AI technologies align with local values and practices. The second pillar highlights the importance of citizen participation and taxpayer inculturation, advocating for government-led efforts to educate and engage the community on the role and potential impact of AI in taxation. The third pillar calls for the development of self-built AI technologies tailored to Botswana's unique needs, rather than adopting foreign solutions that may not fit local conditions. Lastly, the fourth pillar underscores the necessity of a robust and supportive legal and regulatory environment to facilitate the effective and ethical deployment of AI in the tax system, ensuring that the technology operates within clear legal boundaries while protecting citizens' rights.

## Conclusion

The findings of this study demonstrate that the impact of the application of AI-based tax solutions is multifaceted and will continue to affect citizens and residents in Botswana. The following issues were raised by the stakeholders during the interview sessions: data privacy, discrimination, information bias, job losses, inequality and reduced disposable income. The study reveals that despite potential benefits associated with the deployment of AI in the domain of tax, it poses potential challenges to taxpayers, and, as tax authorities, they must devise measures to fully reap the benefits of its adoption. The findings demonstrate that people are willing to engage with BURS to facilitate the integration of AI in the tax domain and build trust and confidence in the system. The study also reveals that stakeholders are prepared to coexist with AI once the government demonstrates its willingness to develop an AI framework to facilitate the adoption of AI in the domain of taxes. The study further revealed that Botswana has developed several instruments, such as the Data Protection Act (2018), Electronic Communications and Transactions Act (2014), Industrial Property Act (2010) and Electronic Records

Act (2014), to protect taxpayers' rights, as enshrined in the United Convection and the Constitution of the Republic of Botswana. The participants also stressed the need for citizen participation in a home-grown AI software or program rather than Eurocentric or Westernised AI, which was developed to address their unique situation from Botswana or Africa. In addition, this study shows that the integration of AI in the domain of tax increases tax compliance and eventually revenue optimisation.

In conclusion, the deployment of AI in Botswana's tax system has both theoretical and practical implications. Theoretically, this study contributes to the literature on AI in public administration by emphasising the need for a comprehensive framework that balances technological innovation with ethical, legal, and regulatory concerns. It underscores the importance of addressing stakeholder concerns, such as privacy and fairness, to ensure sustainable AI adoption. Practically, the study provides a model for AI integration that prioritises citizen involvement to foster public trust and acceptance. By aligning AI with local needs and implementing safeguards, Botswana can optimise tax revenue, improve compliance, and strengthen relationships between taxpayers and tax authorities. The study recommends that BURS should integrate AI in tax functions and adhere to the proposed framework to enhance acceptance by taxpayers in Botswana. The study is not without limitations. One key limitation is the relatively small sample size of 21 participants, which restricts the generalisability of the findings. A larger sample size could potentially provide more robust and widely applicable insights. Moreover, while the study employs a qualitative research approach, the findings could have been further strengthened by adopting an exploratory sequential research design, incorporating triangulation to deepen the analysis and enhance validity. Additionally, it is important to acknowledge that the study's findings are based primarily on perceptions rather than empirical data, which may limit the objectivity and generalisability of the results. Based on these limitations, future studies should focus on factors that influence the adoption of AI using exploratory sequential research approach.

## Declarations

**Interdisciplinary Scope:** The interdisciplinarity is established through the associations between taxpayers (citizen), tax authority and taxation in an interpretivist paradigm, indicating the importance of subjective inclusive taxpayer education and participation.

**Author Contributions:** Conceptualization (Munjeyi), resources (Schutte), data curation (Munjeyi), formal analysis (Munjeyi), supervision (Schutte), validation (Schutte), investigation (Munjeyi), visualization (Schutte), methodology (Munjeyi), writing – original draft (Munjeyi), writing – review & editing (Schutte and Munjeyi). The published version of the article has been approved by the authors.

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