E-taxing maturity in developing economies: evidence from corporate tax payers in Ghana

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Abstract

Purpose – *The adoption of e-taxing plays an important role in modernizing tax administration. Ghana, like many other developing countries, has adopted e-taxing to modernize its revenue collection processes and improve its tax-to-GDP ratio. This study aims to examine the current state of e-taxing maturity in Ghana, focusing on the advancements made and what can be done to achieve a mature e-taxing system.*

Design/methodology/approach – *Through qualitative design, interviews were conducted with Ghana Revenue Authority, National Information Technology Agency and Businesses to provide an in-depth understanding of the strengths, weaknesses and opportunities for improving e-taxing maturity.*

Findings – *The study reveals mixed e-taxing maturity. While the digital service aspect of e-taxing has seen progress, digital infrastructure, digital analytics, digital integration and digital culture hinder the full actualization of mature e-taxing.*

Research limitations/implications – *The findings suggest the need for a comprehensive plan that addresses regulatory, cultural, technical and organizational aspects to drive digital transformation in e-taxing tax implementation.*

Social implications – *The lack of resilient infrastructure, especially in rural areas, can worsen societal inequalities. Owing to the lack of telecommunication infrastructure and poor internet connectivity in rural areas, businesses in these areas may lack the needed information for business growth and expansion. This can result in unfair treatment of rural businesses widening the inequality gap between businesses in urban areas and rural areas. Therefore, the study is important from the standpoint that implementing the recommendations will help to bridge the gap between businesses in urban areas and rural areas.*

Originality/value – *To the best of the author's knowledge, this study is among the first to conduct an empirical study on e-taxing maturity in Ghana.*

Keywords *E-government, E-taxing, E-taxing maturity, Institutional theory, Businesses*

Paper type *Research paper*

Introduction

E-government, the adoption of information and communication technologies (ICTs) to improve the delivery of public service, plays an important role in modern governance (Nwinyokpugi and Bestman, 2020). It has emerged as a transformative tool in the provision of government services, offering users expedient, effective and transparent engagement with government institutions (Distel and Lindgren, 2023). E-government applications offer users 24 / 7 access to public services without the need to go to a physical office (Nwinyokpugi and Bestman, 2020). E-taxing, which is a subset of e-government, encompasses the submission of tax returns and the electronic payment of tax. E-taxing provides several benefits; including reduced costs associated with the payment and filing of tax, improved transparency and facilitated compliance (Patnaik *et al.*, 2019). Owing to its impervious benefit, Ghana, like many other developing countries, has adopted e-taxing to

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modernize its revenue collection processes and improve its tax-to-GDP ratio. Though the government's e-taxing policy sought to rationalize the payment and filing of tax returns, the situation on the ground is far from what was expected. The reality is that e-taxing is ineffective leaving many business owners perturbed and struggling to meet their tax obligations (Agbo, 2022). The ineffective e-taxing system creates a vicious cycle: ineffective e-taxing system discourages business owners from filing tax returns and paying taxes ultimately resulting in tax evasion (Asegdew, 2020).

Rather than e-taxing ushering the country to a new era of effective tax mobilization, it has regrettably become a source of aggravation and ineptitude (Asegdew, 2020). Furthermore, despite the prevalent adoption of e-taxing globally, studies on e-taxing maturity are sparse, particularly in developing economy contexts. Previous scholars have focused generally on e-government maturity (Das *et al.*, 2017; Feleke and Lessa, 2024; Patergiannaki and Pollalis, 2023) leaving a significant gap in research specifically exploring the maturity of e-taxing in developing economies. Addressing this gap is particularly imperative because of the unique challenges and opportunities that developing economies encounter in administering e-taxing.

The study examines the current state of e-taxing maturity in Ghana, focusing on the advancements made and what can be done to achieve a mature e-taxing system. Through analysis of key stakeholder perspectives, the study provides an in-depth understanding of the strengths, weaknesses and opportunities for improving e-taxing maturity. The study seeks an answer to the research question:

RQ1. What is the level of maturity of e-taxing in Ghana?

The rest of the paper is structured as follows: theoretical underpinning, methods, findings, discussion, implications, conclusion and recommendation and limitations.

Theoretical underpinning

Theoretical framing

Institutional theory. Institutional theory provides a theoretical lens for examining the role of institutions in influencing firm behavior and performance. Institutional theory was postulated by Philip Selznick in his book, *Leadership in Administration*, authored in 1957. Institutional theory explains how organizations are influenced by both the internal and external environment, particularly values, practices, norms and customs (Jepperson and Meyer, 2021). Institutional theory postulates that organizations are not secluded entities but instead are rooted within a broader institutional context that shapes their practices, actions and performance (Aligica and Wagner, 2021).

The strength of institutional theory is ingrained in the theory's capability to explicate the reasons why organizations behave or act in a certain manner (Jepperson and Meyer, 2021). It takes into account the role of values, norms and beliefs in influencing the decisions of organizations. Institutional theory underscores the significance of symbolic actions and the quest for legitimacy in organizational behavior (Glynn and D'aunno, 2023).

Despite the strengths, of Institutional Theory it is exposed to some limitations. Critics argue that the theory ignore the function of individual agency and find it difficult to persuasively explain the occurrence of novel organizational forms (Löhlein and Müßig, 2020). Löhlein and Müßig (2020) criticize institutional theory's disregard for the role of agency and power in institutional change as well as the influence of principal actors within institutions. Delponte (2021) posit that institutional theory's extensive scope makes it hard to differentiate between non-institutional and institutional factors influencing the behavior of organizations. Although institutional theory is not without weakness, its power lies in its capability to explicate the behavior of organizations in ways that other theories cannot completely espouse

(Jepperson and Meyer, 2021). Institutional theory concentrates on the social framework and pressure that influence the decision-making of organizations, extending beyond the purely cogent, efficiency-driven elucidation of other models (Glynn and D'aunno, 2023). Institutional theory is influential in helping to comprehend why organizations make certain decisions not just for the fact that they are "best", but because of the fact that they are anticipated, legitimate and contribute to their social status.

The theory's main assumption of isomorphism, which explains the inclination of firms to become analogous, helps to explicate the astonishing homogeneity across firms in different sectors even when they function in varied contexts (Glynn and D'aunno, 2023). This consistency is usually driven by pressure to kowtow to communal expectations, legal concerns and the need to "conform to the rules" of traditional institutions (Jepperson and Meyer, 2021).

Institutional theory remains a useful theory in comprehending the behavior of organizations, providing valuable insights into culture, compliance, legitimacy and change (Burdon and Sorour, 2020). The theory continues to provide a resilient framework for examining firms within their social contexts, pushing the precincts of understanding and ensuring the adoption of more impactful interventions or policies (Burdon and Sorour, 2020).

In the context of e-taxing maturity in developing economies, institutional theory is instrumental in explaining: the role of formal and informal institutions in influencing the use and administration of e-taxing. Formal institutions for example official state policies, rules on tax laws and informal rules and social interest, influence the use and administration of e-taxing. Additionally, the effect of organizational culture (norms, practice and shared belief) within tax organizations and other stakeholders influences the inclination and approval of e-taxing interventions. Chen and Huang (2009) argue that the effect of external pressures including technological transformation, globalization and international best practices affect the use and implementation of e-taxing in developing economies.

Tax maxims

Tax is defined as a mandatory financial payment or levy charged upon an individual or business by a government or an agency of the state (Ajala and Afolabi, 2021). Smith (1793) asserts that there are four key maxims of taxation that must guide the design of an effective tax system: equity, convenience, certainty and efficiency. Equity means that the tax should be proportionate to the income of the taxpayer or legal entity. The implication is that those who earn more should pay more and vice versa (Ajala and Afolabi, 2021). Smith (1793) argues that individuals must contribute to supporting the government by way of tax proportionate to their abilities. Certainty is that individuals or legal entities must know exactly how much they are supposed to pay by way of tax and not capricious (Ajala and Afolabi, 2021). Certainty underscores the transparency and predictability of a tax system, limiting the possibility of fraud and ensuring that taxpayers know exactly how much they are supposed to pay (Eberhartinger and Zieser, 2021). Convenience is that tax must be imposed at a time and manner, in which the person or legal entity is in a position to pay (Eberhartinger and Zieser, 2021). This maxim implies that taxes should be levied in a manner that limits discomfort and adversity for taxpayers. Efficiency or economy maxim suggests that the cost incurred on the collection of taxes should be lower than the revenue generated (Ajala and Afolabi, 2021). The maxims influence contemporary tax policy and are cardinal principles for implementing efficient e-tax system.

E-taxing

E-taxing is defined as the filing and payment of taxes online or through other electronic means (Asegdew, 2020). E-taxing is the adoption of ICT to administer tax, including the collection of tax, processing and monitoring of tax compliance (Agbo, 2022). According to

Saiteu (2022), e-taxing is the online transfer of funds from a taxpayer to the tax authority for the purposes of settling tax obligations. E-taxing refers to the online submission of tax returns, payment of taxes as well as the management of tax systems through a secured electronic platform. It takes away the need to use paper forms rationalizing the whole tax process. E-taxing includes e-filing, e-payment, e-compliance and e-administration. E-filing is submitting tax returns online using preferred software or applications sanctioned by the tax authority (Natasya *et al.*, 2019). E-payment is making tax payments electronically through secure online payment platforms including credit card payments, electronic transfers, mobile money payments, credit card payments (Natasya *et al.*, 2019). E-compliance is using ICT to monitor tax adherence, including automated audits, risk assessment and data analysis (Kakui, 2023). E-administration is managing tax systems online for example registration of tax, collection of tax and communicating tax obligations (Saiteu, 2022).

E-taxing maturity

E-taxing maturity is defined as how advanced or efficient is the country's e-taxation system (Špaček *et al.*, 2020). It is explained as the level of development and quality of a country's e-tax system (Kondo, 2015). E-taxing maturity is not just about the filing of taxes online but an extensive approach incorporating various components:

Digital infrastructure: Digital infrastructure is the primary component that supports the effective functioning and connectivity of e-taxing systems (Li *et al.*, 2022). It includes several technological components that enhance the diffusion, processing and storage of e-taxing data (Li *et al.*, 2022). Digital infrastructure includes secure data, robust IT systems and reliable internet connectivity (Li *et al.*, 2022).

Digital services: Digital services are the type of e-taxing services provided by the tax authorities (Patnaik *et al.*, 2019). The digital services provided by tax authorities include business registration, filing of tax returns, payment of tax and tax-related communication. E-taxing services ensure taxpayer expediency and minimize administrative costs (Patnaik *et al.*, 2019).

Data analytics: Data analytics is the procedure of analyzing large sets of data to reveal trends, relationships, associations and insights (Mohamed *et al.*, 2020). Data analytics involves gathering, cleaning and analyzing data to make informed decisions and predictions on tax administration (Mwanza, 2017). By using several statistical and quantitative methods, data analytics helps tax authorities to comprehend tax patterns, behavior of business owners and market dynamics (Mwanza, 2017). Data analytics empower tax authorities to improve tax efficiency and drive innovation in tax administration (Mwanza, 2017). The use of data analytics in e-taxing helps to identify tax fraud, predict revenue patterns and provide personalized tax services (Kondo, 2015). This enhances the effectiveness and efficiency of tax administration (Kondo, 2015).

Digital integration: Digital integration relates to the effortless engagement and connection between different digital systems or applications (Morgan-Thomas *et al.*, 2020). Digital integration promotes flawless integration of tax platforms or applications with other government institutions and financial institutions to ensure tax compliance and abridge data sharing. It encompasses the exchange of data and functions across different systems in a seamless manner enhancing user satisfaction (Morgan-Thomas *et al.*, 2020). By integrating various digital applications taxpayers optimize the filing of tax returns and payments and minimize manual errors ultimately leading to improved user experience (Kondo, 2015).

Digital culture: Digital culture refers to the common actions, norms, values and beliefs that emerge from engagement within the digital landscape (Dey *et al.*, 2020). Digital culture embodies how people interact, create, use and collaborate online, influencing communities, networks, identities and views (Dey *et al.*, 2020). It shapes social values and promotes e-taxing information dissemination. Digital culture mirrors the transformative engagement between technology and society (Junaedi *et al.*, 2023). Embracing an e-taxing mindset within the tax administration system promotes modernization and incessant advancement in leveraging technology in tax mobilization (Mwanza, 2017).

E-taxing maturity accrues several benefits, transforming tax systems. According to Kondo (2015), e-taxing maturity brings about efficiency and precision in tax processing and collection. E-taxing reduces the dependence on manual data entry, reduces errors and rationalizes tax collection process (Mwanza, 2017). With e-taxing, taxpayers are able to submit their tax returns online, promoting faster processing times and minimizing administrative costs for both tax authorities and taxpayers. Patnaik *et al.* (2019) posit that e-taxing maturity enhances tax accountability and transparency. It provides taxpayers with easy to their tax information and obligations, promoting transparency in the tax administration. Špaček *et al.* (2020) argue that e-taxing allows tax authorities to track transactions and spot errors more effectively and enforce compliance. The transparency brought about by e-taxing improves public trust in the tax regime (Mwanza, 2017). Patnaik *et al.* (2019) posit that e-taxing maturity enhances the convenience of filing and paying taxes. It allows taxpayers to file tax returns and make payments from any location or geography, taking away the need to visit physical tax offices for the purposes of settling tax obligations. E-taxing systems also usually provide direction and assistance to taxpayers, simplifying the tax filing and payment procedure and minimizing the likelihood of errors (Mwanza, 2017). This ensures tax compliance and reduces the compliance costs on the part of taxpayers (Saiteu (2022). In addition, e-taxing maturity enhances data-driven decision-making and the formulation of effective policy (Špaček *et al.*, 2020). E-taxing produces huge amounts of data on the behavior of taxpayers, financial trends and revenue mobilization trends (Mwanza, 2017). Analysis of this data provides critical insights for policymakers in designing more targeted tax services and efficient tax administration systems (Kondo, 2015). Moreover, e-taxing maturity facilitates novelty and modernism in tax administration (Patnaik *et al.*, 2019). Artificial intelligence is more and more being incorporated into e-tax administration, enabling effective risk assessment, tax compliance monitoring and detection of fraudulent tax activities (Patnaik *et al.*, 2019). E-taxing maturity is revolutionizing the way taxes are filed and paid playing a momentous role in shaping taxation globally.

Historical perspective of tax in Ghana

Tax system in Ghana can be traced back to the colonial period till date (Aboagye and Hillbom, 2020). Tax administration was largely dependent on paperwork, face-to-face interaction between tax staff and taxpayers and the maintenance of physical records. Taxes collected included value-added tax (VAT), personal income tax, import and export duties, corporate tax, excise duties and several other forms of tax. In the payment of tax obligations, taxpayers had to visit tax offices to file and pay their taxes. The manual tax payment system was time-wasting, error-driven and prone to delays (Acquah, 2022). This created opportunities for tax staff to collect bribes and to engage in other fraudulent and corrupt practices (Acquah, 2022). The challenges associated with the filing and payment of taxes discouraged many people from paying taxes (Okpeyo *et al.*, 2019).

To address the shortcomings of the manual tax system, e-tax was introduced to overhaul tax administration, enhance effectiveness and improve compliance. The implementation of e-tax started in the early part of 2000. E-tax is administered by the tax regulatory body, the Ghana Revenue Authority (GRA). The GRA led the initiative integrating its various tax units and automating the tax administration process (Agyei-Ababio *et al.*, 2023). The e-tax platform is linked with various government databases for the purpose of information sharing and verification (Agyei-Ababio *et al.*, 2023). The introduction of e-tax ensured that taxpayers were able to file their tax returns and make payments online (Agyei-Ababio *et al.*, 2023). The transition from paper-based tax administration to online filing and payment of tax marks a major milestone in modernizing tax collection in Ghana, ensuring more transparency and tax compliance (Acquah, 2022).

Challenges in e-taxing use in developing economies

E-taxing has been introduced in several developing countries with the aim of improving efficiency, minimizing corruption and enhancing compliance with tax obligations. Despite the impervious benefit of introduction of e-tax, the system faces several challenges hampering its effectiveness.

One of the major challenges in implementing e-tax in developing countries is the poor technological infrastructure (Umar and Masud, 2020). In many developing countries, they lack the required technological infrastructure, for example, uninterrupted internet connectivity, resilient data centers and secured servers (Awasthi and Bayraktar, 2015). These technological infrastructures are nonnegotiable in the efficient functioning of e-tax systems (Awasthi and Bayraktar, 2015). The poor technological infrastructure leads to regular downtimes, reducing the trust the confidence that taxpayers have in e-tax (Awasthi and Bayraktar, 2015).

Another challenge in the implementation of e-tax in developing countries is digital illiteracy or the digital divide. Many taxpayers in developing countries do not have the required ICT skills to navigate e-tax portals (Suki *et al.*, 2011). The lack of ICT skills and knowledge results in error-prone tax filing, reduced compliance and reluctance to use e-taxing (Suki *et al.*, 2011).

Resistance to change on the part of taxpayers as well as tax staff hamper the adoption of e-tax (Okunogbe and Santoro, 2023). Taxpayers are used to manual tax filing and payment and resist transitioning to e-tax (Okunogbe and Santoro, 2023). Taxpayers resist the adoption of e-tax as a result of sensed complexity or misgiving about the use of technology (Zwick and Jurinski, 2019). Likewise, staff of tax authorities resist the implementation of e-tax as a result of fear of job loss, lack of training and the fear about the enhanced transparency and accountability that e-tax brings.

Also, developing countries encounter legal and regulatory obstacles in implementing e-tax. The existing tax laws and policies in many developing countries are not foolproof and require major reforms and amendments to conform to e-tax (Ogunbela *et al.*, 2021). According to Obara and Nangih (2017), amendments to tax laws and regulations and collaboration with telecommunication providers are imperative in implementing a functional e-tax system. Additionally, data privacy and security concern is another challenge in the implementation of e-tax in developing countries. The misuse of business information by tax authorities as well as unsecured e-tax platforms in many developing countries exposes e-tax to cyber attack (Chisala, 2022). Cost and financial constraints pose a significant challenge to the implementation of e-tax in developing countries. The investment in technological infrastructure, training of staff and maintenance costs pose financial burden to tax authorities (Obara and Nangih, 2017). Also, SMEs lack the financial capacity to invest in ICT equipment such as computers, smartphones and internet cost hampering their adoption of e-tax (Nyakundi, 2022).

Methods

Study area

The study was conducted in Ghana, a country located on the West Coast of Africa (Figure 1). Ghana is bordered by Burkina Faso to the north, the Gulf of Guinea and the Atlantic Ocean to the south, Togo to the east and Côte d'Ivoire to the west. Ghana has a total land size of roughly 238,533 square kilometers (92,098 square miles) (Robinson *et al.*, 2018). The study

Figure 1 Map of Ghana

Source: The permanent mission of Ghana to the UN (2024). https://www.ghanamissionun.org/map-regions-in-ghana

was delimited to the revenue authority and businesses in Ghana. The GRA is the government agency responsible for the collection and administration of tax in the country. As of the end of 2023, approximately 50,000 firms were registered to pay tax in Ghana (Frimpong *et al.*, 2023). The number encompasses small-, medium- to large-scale businesses across diverse sectors of the economy.

Design and sampling

The study was designed as a qualitative research. Interviews were conducted with GRA, National Information Technology Agency (NITA) and Businesses.

GRA is the agency responsible for administration and implementation of tax and NITA is responsible for implementing the government's ICT policies. In all 40 businesses were selected using the purposive sampling technique. Only businesses that pay tax electronically were selected. The justification for selecting businesses that pay tax online is that they have experience in using e-tax platforms and thus could provide significant insight. Stratified sampling was used to group businesses into small-, medium- and large-scale businesses. Representatives of the businesses (Account managers) were selected using purposive sampling. Purposive sampling is the sampling technique that relies on the judgment of the author in choosing the participants (Baltes and Ralph, 2022). The author selects the participants based on their expertise or in-depth knowledge of the theme of the study (Baltes and Ralph, 2022). The justification for purposely selecting account managers is that they are responsible for filing and paying the tax obligations of their businesses. Ghana was grouped into four zones (north, south, east and west) and 10 businesses were selected from each of the 4 zones. Even though 40 businesses were selected for the study, the interview was truncated after 32 participants due to data saturation. Data saturation is a concept in gathering qualitative data where after conducting some number of interviews, no new insight seems to come out from the participants (Braun and Clarke, 2021). Data saturation suggests that sufficient data has been collected and that the emergence of new insight related to the research question is unlikely to come up (Braun and Clarke, 2021).

Inclusion and exclusion criteria

Businesses chosen fall within small-, medium- to large-scale businesses. Regional Project on Enterprise Development (RPED (2002) groups firms that employ between 1 and 29 employees as small, 30–99 employees as medium and over 100 employees as large businesses. In addition, businesses selected must have been operating for not less than one year and must be tax compliant. Thus, businesses that were less than one year old and nontax compliant were excluded from the study.

Data collection and analysis

Data was collected using an interview guide. An interview guide is a research tool that contains questions on key areas to be asked the participant. The questions were probing in nature to solicit in-depth information. The use of a probing style in conducting the interview is widely approved as the right method especially if the study seeks to get access to in-depth information on a phenomenon from participants. Additionally, follow-up questions were asked about unclear answers to provide further clarification by the participants. By seeking approval from the participants, the interviews were audio recorded. After the completion of the interviews, the data was transcribed, coded and entered into the NVivo software program. The data was analyzed using thematic analysis following these steps; first the use of illustrative coding to label similar words, terminologies, phrases and sentences; second the use of categorical coding to condense the previous illustrative codes into second-order classification; third and last step was thematic coding where similar second-order classification was merged to form a general theme (Clarke and Braun, 2017).

Results

Digital infrastructure

The study reveals that e–taxing digital infrastructure is not matured (see Appendix). The views of large corporations, SMEs and the regulatory body provide evidence that digital infrastructure is not matured. In support of this claim, a representative of a large firm stated:

> The existing digital infrastructure for e-taxing is derisory; common system down-times and slow processing speeds make it difficult in filing and paying taxes efficiently, resulting in frustrations for businesses. The inability to file on time attracts a penalty to businesses which is no fault of theirs (In-depth Interview, Large Scale Business).

This was corroborated by a representative of SME who reported:

> Delays in the payment of tax online as a result of technical issues baffle me as a business owner (In-depth Interview, SME).

A representative of GRA affirmed that digital infrastructure is not matured with this voice:

> The poor data security measures and unstable internet connectivity has led to in the past instances of lost of tax information, underscoring the pressing need for upgrading e-taxing infrastructure. (In-depth Interview, Ghana Revenue Authority).

The findings on the current state of maturity of digital infrastructure for e-taxing suggest inadequate investment in e-taxing infrastructure. Large corporations in urban Ghana, usually have complex tax needs, hence the poor digital infrastructure results in delays in filing taxes within the time frame given by the tax authority. The inability to meet tax obligations within the deadline although, through no fault of large corporations, they are still made to pay penalties for missing the deadline. In ensuring that large corporations do not miss tax deadlines, they manage compliance by hiring the services of tax consultants who help them fast-track the preparation of their accounts so that they can file a week before the deadline. By filing a week before the deadline, it gives large corporations the chance to meet the deadline even when there is a technical issue as the issue is mostly resolved within a few days. SMEs in rural Ghana are exposed to greater challenges in filing and payment of taxes as a result of limited access to ICT and reliable internet connectivity resulting in noncompliance.

The findings underscore a lack of robust and adaptable e-taxing infrastructure. The common system breakdown and slow processing time pose significant challenges for businesses in filing and paying their tax obligations. This results in disappointment for business owners as they are unable to meet tax deadlines. Owing to system downtime businesses are not able to file and pay their taxes on time resulting in the payment of penalties through no fault of theirs. This creates an unjust yoke on taxpayers and negatively affects their budget.

The situation also highlights a lack of flexibility in the penalty system to accommodate technical glitches in the administration of e-taxing. Additionally, the lack of secure data storage raises question marks on the privacy and integrity of taxpayers' information. The report that there have been some instances of lost tax information in the past compromise data security as well as erode public trust in e-taxing.

Digital services

The study reveals that e-taxing services are matured (see Appendix). The views expressed by large corporations, SMEs and the regulatory body provide proof that e-taxing is matured. A representative of a large corporation stated:

> The adoption of e-taxing has considerably minimized effort and time required for filing and paying our tax obligation. With our large workforce the filling and payment of tax online has eased the burden of having to spend several days manually computing figures (In-depth Interview, large firm).

Similarly, SMEs reported that e-taxing services are matured. To emphasize this point a participant stated:

> Since the introduction of e-taxing, I am able to complete my tax filing and payment without having to go to the revenue authority. The filing and paying of taxes is much faster as compared to the manual tax regime. Now I pay my taxes in the comfort of my home enhancing convenience in the payment of tax (In-depth Interview, SME).

A representative of the regulatory body stated that:

> *We have been able to streamline tax filing process, improved tax compliance and also improve efficiency in the collection of tax* (In-depth Interview, GRA).

The findings on the maturity of e-taxing services reflect positive user experiences. Large corporations in urban Ghana underscore the point that the introduction of e-tax has helped to rationalize the filing and payment of tax and reduce the time and effort spent in processing tax. For SMEs in rural Ghana, e-tax has helped to minimize administrative burden and improve tax processing which is advantageous for small firms with limited manpower.

Business owners cherish the fact that they are now able to complete their tax obligations effortlessly in their offices. This convenience is welcomed by businesses, as they are able to use their time more efficiently. The reduced time used in filing and paying taxes online makes e-taxing faster as compared to the traditional tax method involving extensive paperwork and physical visits to tax offices. The elimination of paperwork and long queues signifies an e-taxing process benefiting businesses. The positive feedback from businesses with regard to digital services suggests acceptance of e-taxing services. The adoption of e-taxing services benefits businesses through the provision of accessible and convenient services.

Data analytics

The study reveals that data analytics for e-taxing is not mature (see Appendix). The views of large corporations, SMEs and the regulator provide evidence that data analytics is not matured. A representative of a large firm stated that:

> The emergent condition of digital analytic creates major obstacles for large corporations in the planning of tax, as the data that is needed to be able to undertake precise tax projection is mostly incomplete or inconsistently understood. Accordingly, large businesses are exposed to increased risks and uncertainty in devising their tax plans, resulting in poor financial choices and unanticipated liabilities (In-depth Interview, large corporations).

The inability to leverage data analytics for tax planning purposes was equally expressed by SMEs. A representative of a SME firm stated:

> As a result of the poor human resource hired by small firms, we are unable to leverage digital analytic efficiently to optimize our tax liabilities and eventually hampering our financial health and growth prospect (In-depth Interview, SME).

In support of data analytics not being matured, a representative of the regulator reported that:

> Although we use data analytics for the management of tax, fresh audits provide evidence that a considerable number of false tax returns keep on to slip through the e-taxing system. (In-depth Interview, Ghana Revenue Authority).

The emergent condition of digital analytics impacts large corporations as well as SMEs in the planning of their tax obligation. Large corporations in urban are unable to use digital analytics for tax purposes because of the complexity and volume of data. On the part of SMEs in rural areas, they are unable to leverage digital analytics for tax planning purposes because of their inability to hire competent human resources as well as the limited access to technology. Both large corporations and SMEs experience risk and uncertainty, but the scope and nature of the challenges and the impact differ greatly. Addressing data analytic challenges requires different solutions for large corporations and SMEs as their needs differ.

The findings on digital analytics of e-taxing also reveal two major issues: the continuous filing of dubious tax returns and the inaccuracy in predictive models for projecting tax revenues. Although the tax authorities have resorted to the use of digital analytics, a considerable number of false tax returns go through undetected. On the other hand, inaccuracy in predictive models for projecting tax revenue suggests that the models used are not dependable. The predictive model may be designed based on weak supposition, archaic data or a lack of cleverness required in managing the complexity of factors affecting tax revenues.

The issues highlighted by the continuous filing of dubious tax returns and the inaccuracy in predictive models for projecting tax revenues underscore the urgency to improve the data analytics used by the tax authorities. Improving the data analytics by the tax authorities will enhance fraud detection and improve the accurateness and dependability of their systems, eventually resulting in efficient fiscal management and improved public trust.

Digital integration

The study discovered that digital integration is not matured (see Appendix). The views by large corporations, SMEs and the regulator attest that digital integration is not matured.

A representative of a large corporation stated that:

> Many businesses face challenges in transferring their financial information automatically from their financial institutions to tax authorities. This usually results in disagreement that need to be solved manually, which is time-wasting and stressful. The anticipated ease of digital integration is just not there, and it creates more task for business owners and tax authorities (In-depth Interview, Large Scale Business).

A representative of SME added:

> There are several difficulties with the integration of tax systems. Despite the promise of providing effortless data sharing, as a tax payer I oftentimes find myself having to manually enter data which is time-consuming and error stricken. For instance, my banking records do not automatically integrate with the tax system, necessitating the reconcile of records manually. The lack of data integration of the e-taxing system results in compliance issues and increases the probability of making mistakes in the filing of filings. It is nauseating that in this digital era, the system is very disconnected (In-depth Interview, Small Scale Business).

In support of the immaturity of digital integration, a representative of the regulator reported that:

> There are fundamental challenges hampering digital integration of e-tax evidenced by weak telecommunication infrastructure, regular system downtime, and poor user-friendly interface. These challenges result in poor tax administration and compliance by tax payers. (In-depth Interview, GRA).

The e-taxing system and the system of financial institutions are not well-aligned. This lack of coherent alignment leads to financial discrepancies that are resolved manually.

Large corporations usually have intricate financial transactions that need elaborate documentation and complex accounting systems. The complex nature of accounting in large corporations result in discrepancies between filed taxes and actual financial transactions. For SMEs in rural areas, they usually do not have access to advanced technology and also have poor internet connectivity. SMEs do not have the tools required to manage effectively discrepancies between tax obligations and actual financial transactions.

Thus there is a gap between the expectations of digital integration and user experience. This unsatisfied expectation results in skepticism and lack of public trust for e-taxing.

Digital culture

The study found that digital culture is not matured (see Appendix). Both business owners (large corporations and SMEs) and tax authorities are not ready to embrace the adoption of digital culture. A representative of a large corporation stated that:

> Digital culture for e-tax is underdeveloped, which is evidenced by obstacles in ensuring compliance with changing e-tax policies. (In-depth Interview, Large Corporations).

This view was supported by SMEs. A representative of SME reported:

> Many SMEs do not have the resource and ICT skills to use e-tax platforms, resulting in low compliance to e-tax regulations. GRA have also failed to educate us on the use of e-tax platforms making it difficult for us to transit from the manual tax filing and payment to online tax system (In-depth Interview, SME).

In support of the claim that digital culture is not matured, a representative of a regulatory body stated:

> Despite several education to promote a digital mindset of employees of tax authorities, they still prefer traditional methods. The use of trans-formative digital tools for tax assessment and compliance is still minimal, suggesting a lack of total support of digital culture (In-depth Interview, National Information, Technology Agency).

In spite of efforts to advance a digital mindset, the tax administration process still depends on some conventional methods. There is resistance to change, implying that employees of tax authorities are not fully sold on the need to implement e-taxing. The skepticism and use of conventional approaches present barriers to attaining a full digital mindset within tax authorities. The resistance stems from several reasons such as fear of job loss, lack of education on e-taxing and a preference for maintaining the previous manual tax administration process. Without total support for the adoption of e-taxing, the efficacy and efficiency of e-taxing administration is compromised.

Discussion

The findings on the maturity of e-taxing resonate with many of the themes and issues in the broader literature on e-governance particularly in developing economies.

Digital infrastructure

The challenge of common system downtime and slow processing of tax is well-documented in the broader digital infrastructure literature. The dependence on online connectivity for filing and payment of tax introduces challenges, especially in geographies or areas with discrepant or erratic internet access. Norris (2001) and Gil-Garcia (2012) argue that digital divide issues can undoubtedly hamper the accessibility and efficiency of e-governance services. Promoting even access to e-government services requires upgrading of digital infrastructure and expanding broadband coverage, particularly in under-served regions (Van Dijk, 2006).

The digital infrastructure in its present state for e-taxing lacks robustness and scalability indicating weak planning and inadequate investment. Literature on e-governance underscores the significance of designing adaptable infrastructure that is able to handle increasing loads as well as adapt to increasing user bases (Hanseth and Lyytinen, 2010). Scalability in e-taxing systems is imperative in the sense that it ensures that the system is able to accommodate peak filing periods without having to compromise performance.

The common system downtime creates an awkward perception of the e-taxing system being unreliable. This shapes a negative psychology on the part of taxpayers toward an unwillingness to use the e-taxing system (Zucker, 1987). The negative perception of the poor digital infrastructure can hamper the broad acceptance and public trust of e-taxing systems, as it contravenes with the psychological expectations of the efficiency and dependability of digital services. Heeks (2008) explains that technical failures in e-governance initiatives result in user dissatisfaction. Likewise, the OECD (2018) argues that for e-governance services to be efficient, they ought to be dependable and high-octane, with reduced downtime.

Additionally, the penalty system's inflexibility, which does not take into consideration system failures, puts an unfair yoke on businesses. It reflects a tax regime where sanctions are imposed irrespective of whether the delay was caused by a technical glitch. In line with institutional theory, such rigidity in rules fails to take into account practical issues that taxpayers face, underscoring a lack of alignment between regulatory demand and operational realism. The extant literature highlights the need for regulatory framework to be flexible and responsive to technological difficulties (Scott, 2008). The present penalty system lacks this flexibility, thus unjustly burdening taxpayers and compromising compliance motivations. The inflexible penalty systems can discourage tax compliance and create acrimonious relationships between tax administrators and business owners (Keen and Slemrod, 2017). The World Bank Group (2016) underscores the need for e-governance solutions to be flexible to accommodate technical difficulties.

Digital services

The positive reception of digital services aligns with institutional theory, especially in comprehending how organizational practices evolve in reaction to advancement in technology. The positive feedback of e-taxing services can be interpreted as a strategy for obtaining trust in a digital age. By implementing e-taxing, tax authorities align with larger societal expectations for expeditious, convenient and automated integrated public services (Tolica and Sevrani, 2019). This confirms the concept of isomorphism, where organizations replicate the best models within their domain to attain legitimacy. The improved e-taxing services are driven by the need to modernize tax administration as well as efficiency in public services.

Data analytics

The poor data security and integrity of stored data are worrying. Bertot *et al.* (2010) posit that data security is the foundation of public trust in e-government services. Undermined data security can result in identity theft, financial loss and lack of integrity of the e-government. West (2004) underscores the significance of robust cyber-security measures for the safety of delicate data and maintains the legitimacy of e-government services. The several occasions of lost tax information underscore the need for trustworthy and robust data storage solutions. Resilient data management practices, such as frequent backups and data recovery plans, are imperative for achieving data integrity (Armbrust *et al.*, 2010). The lack of secured data undermines public trust in e-taxing system. Public trust is an important normative component, and its erosion results in reduced compliance and resistance in the use of e-government platforms (DiMaggio and Powell, 1983). Businesses expect a dependable and effective e-taxing system. In the event that this expectation is not met, it results in disappointment and discontentment, reflecting a misplacement between the institutional norms of public service delivery and the real performance of e-taxing system.

The perseverance of deceitful tax returns despite the adoption of data analytics can be analyzed through the optics of institutional credibility. Tax authorities, as institutions, seek to achieve legitimacy by effectively implementing tax rules and ensuring adherence. Notwithstanding, the continued occurrence of fraud suggests a gap between the role of tax authorities role and their actual performance.

Institutional theory argues that organizations usually embrace new technologies such as data analytics to gain legitimacy and show their dedication to contemporary, effective practices (DiMaggio and Powell, 1983). Nevertheless, just adopting a technology for its sake does not guarantee successful outcomes if the prevailing institutional structures, practices and values are misaligned with the technology's capacity. If tax authorities adopt data analytics without a critical assessment of their efficacy, this can result in widespread, but sub-optimal practices.

Additionally, the lack of accuracy in predictive models for projecting tax revenues is explained by institutional logic which is the norms and beliefs that direct an organization's practices in its operations. If tax authorities use obsolete or too simplistic data analytics as a result of ingrained institutional logic, the resulting revenue projections will be wide of the mark. Upgrading data analytics requires a change in institutional logic that takes into consideration current realities (DiMaggio and Powell, 1983).

Digital integration

Institutional theory argues that organizations are affected or imparted by coercive pressures (DiMaggio and Powell, 1983). Coercive pressures is the informal or formal pressures influencing organizations (Jepperson and Meyer, 2021). The demand for digital integration of tax authorities and financial institutions systems can be seen as a coercive pressure where businesses are demanding the adoption of digital integration to improve tax efficiency and accuracy. The misalignment between tax authorities and financial institutions systems results in disconnected systems that do not communicate efficaciously, leading to inefficiency and manual workarounds. The findings also underscore a momentous decoupling. The e-taxing policy is expected to streamline tax processes and eliminate manual effort. But the reality is that there are still manual data entries and reconciliation, resulting in errors and inefficient tax administration. Decoupling creates deception of conformity and modernism, while the fundamental practice and process remain fragmented and obsolete.

Institutional theory also underscores the significance of trust and legitimacy (Jepperson and Meyer, 2021). Business owners' experiences of digital integration reflect a loss of legitimacy and trust in the system. The unmet expectations and the consequential operational challenges compromise the integrity of tax authorities. For businesses to develop trust in e-taxing, the system must constantly provide efficient tax service delivery. When there is a gap between the expectation and the actual experience of tax payers, it results in skepticism and discontentment, which hamper the use of e-taxing.

The findings on digital integration of e-taxing system, detail significant challenges that are understood through the lens of institutional theory as issues such as misalignment of institutional logic, decoupling, weak technological institutionalization and loss of legitimacy and trust are profound. Attending to these challenges necessitates a concerted effort to integrate the logic and systems of different institutions, make significant investments in resilient technological solutions and develop trust through continuous and dependable digital integration practices.

Digital culture

The findings suggest that there is resistance from employees of certain departments in tax organizations to the implementation of e-taxing. The resistance to e-taxing can be attributed to the prevailing values and beliefs within the larger institutional environment. Some government organizations are currently not using digital tools in the provision of public service and this has created a sense of conformance and in-activeness within the tax administration.

Institutions are shaped by prevailing logic or norms that influence their actions and choice-making processes(Jepperson and Meyer, 2021). Conventional approaches to tax analysis and compliance are rooted within the institutional logic of the tax system. Employees may be used to a particular way of working and may see the adoption of e-taxing as contradictory to the accepted values or norms. The friction between conventional approach to working and digital logic contributes to resistance to the acceptance of e-taxing.

Furthermore, the resistance among certain departments implies the absence of institutional entrepreneurship within the tax authorities. This is a result of inadequate advocacy or support for embracing digital tools. The lack of change champions pushing for e-taxing leads to inertia and resistance. The findings on digital culture align with institutional theory by underscoring the power of internal institutional logic, external institutional pressures and the lack of institutional entrepreneurship on resistance to the adoption of digital culture in tax administration (Jepperson and Meyer, 2021). Addressing the digital culture barriers is vital in improving the effectiveness and efficiency of tax administration.

Implication/recommendation

The findings suggest the need for a comprehensive plan that addresses regulatory, cultural, technical and organizational aspects to drive digital transformation in e-taxing tax implementation. The lack of maturity of digital infrastructure highlights the need for investment in robust e-taxing infrastructure, especially in regions with discrepant or erratic internet access. The government should prioritize investment in broadband to under-served regions to ensure that there is evenhanded access to e-taxing services. Scalability of the e-taxing system is also imperative in the design of digital infrastructure to ensure that the system is able to accommodate increasing loads, especially during peak tax filing periods.

Additionally, the lack of flexibility in the penalty systems, regardless of system failures, poses an unjust burden on firms and compromises the motivation to comply with tax laws. The penalty system should be accommodating and responsive to technological bottlenecks, taking into account the practical issues that taxpayers face. Flexibility in e-taxing administration is vital to conform to technical challenges and ensure trust between businesses and tax authorities.

Issues with regard to data security and legitimacy underscore the need for resilient data management and cyber-security measures. It is imperative that tax authorities implement secure data storage, backups and disaster recovery plans to protect sensitive information and ensure trust in e-taxing administration.

Furthermore, the findings reveal conflict of logic among the different institutions involved in e-taxing integration, resulting in disjointed systems and operational inefficiency. The government should take steps to integrate particularly the logic of tax authorities, financial institutions and other relevant agencies to ensure effortless data transfer. Developing robust digital integration practices is fundamental to enhancing the legitimacy of e-taxing.

The resistance to e-taxing underscores the need for institutional entrepreneurship and support for e-taxing. Campaigns to promote e-taxing should concentrate on addressing the existing institutional barriers, including values, rules, policies, laws and ingrained practices. Encouraging employees to act as e-taxing change agents will help to drive digital transformation in tax administration.

Also, tax authorities should regularly evaluate the effectiveness of e-taxing, incorporating the feedback from businesses to determine areas for improvement. This reiterative technique will help to find solutions to emerging challenges so that tax authorities are able to meet the changing tax needs of businesses.

Implication to society

The lack of resilient infrastructure, especially in rural areas, can worsen societal inequalities. Owing to the lack of telecommunication infrastructure and poor internet connectivity in rural areas, businesses in these areas may lack the needed information for business growth and expansion. This can result in unfair treatment of rural businesses widening the inequality gap between businesses in urban areas and rural areas. Therefore, the study is important from the standpoint that implementing the recommendations will help to bridge the gap between businesses in urban areas and rural areas.

Conclusion

The exploration of e-taxing maturity uncovers mixed performance. While the digital service aspect of e-taxing has seen progress, digital infrastructure, digital analytics, digital integration and digital culture hinder the full actualization of mature e-taxing. Digital infrastructure for e-taxing faces major challenges such as regular system downtime, slow tax processing and insecure data storage. These challenges make the filing of taxes and payments inefficient and contribute to a loss of trust in the tax administration system. Urgent infrastructure upgrade is required to improve the scalability and reliability of e-taxing, ensuring data security and easy access to tax information for taxpayers. Challenges exist in the use of data analytics for tax administration purposes. The inability of e-taxing analytics to detect fallacious activities and inaccuracy in revenue projections underscores the need for improved data analytic competence. The fragmented systems and the use of manual data reconciliation procedures highlight the significance of realizing coherent digital integration across tax authorities in related organizations. Again, the cultural change toward the adoption of digital tools among employees of tax authorities remains incomplete. Resistance to change and dependence on conventional models hamper the use of digital tools and processes. Finding a solution to resistance to the use of digital tools and promoting a culture shift toward digitization are essential for achieving the full potential of e-taxing system.

While e-taxing has the potential to modernize revenue collection and enhance tax compliance by businesses, finding solutions to the associated challenges is imperative in attaining a mature system. Collaboration among the various tax stakeholders including tax authorities, financial institutions, businesses and government agencies is necessary to surmount the challenges and drive sustainable growth toward effective and efficient e-taxing ecosystem.

Limitations

The study was conducted as a qualitative research thus limiting the generalization of the findings. The weakness of qualitative study is the inability to generalize its findings hence the limitation is not unique to this study.

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Appendix

Table A1 Data analysis and findings

Research question 1 *First-order codes*	*Compressed first-order categories*	*Explanation*
Research question 1. Internet connectivity is poor 2. Non friendly interface 3. Cyber security concerns 4. Regular system breakdown 5. Inadequate user support and training	Not matured digital infrastructure	Foundational components that enable the functioning and connectivity of e-taxing are weak
1. Accuracy of tax calculation has improved 2. Time for paying tax has reduced 3. Reconciliation is easily done	Matured digital services	Users are satisfied with the e-taxing services provided
1. Lack of real-time analysis 2. Poor data security 3. Poor reporting tools 4. Poor data collection	Digital analytics is not matured	Inability to uncover patterns, correlations and insights in e-taxing
1. Fail to integrate e-taxing with other systems 2. Frequent system outages 3. Complex user interface 4. Limited adoption	Digital integration is not matured	Ineffective interaction between different digital systems, platforms, or applications
1. Lack of e-taxing readiness 2. Poor support to users 3. Inconsistent service delivery 4. E-taxing personnel lack the required skills	Digital culture is not matured	Shared practices, values and norms that emerge from interactions within e-taxing are not embedded in the organization

Source: Author's own work

About the author

Anthony Acquah holds a PhD in Public Administration and Policy Management from the University of Ghana. His research interests lie in the areas of public policy, public administration and e-government. He has collaborated actively with researchers in several disciplines and have significant number of publications to his credit. Acquah has served in various faculty positions for close to 20 years. Areas of teaching include social policy, public administration and economics at the graduate and undergraduate levels. Currently, Acquah is an adjunct lecturer at the University of Ghana Adult Education and Distance Education where he has been a faculty member since 2020. Anthony Acquah can be contacted at: pagzytony@yahoo.co.uk