EXAMINING THE POTENTIAL IMPACT OF TECHNOLOGY-ENABLED TAX ADMINISTRATION ON REVENUE GENERATION IN GHANA

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ABSTRACT

This study aims to investigate the possible effects of technology-enhanced tax administration on revenue generation in Ghana. It reviews the systematic improvement that has been gained by the revenue authority as a result of digital transformation of the tax generation system in Ghana. At the same time, the digitation of the tax generation system has created a convenient basis for both customers and officers of the tax authority to mobilise tax resources for the government. The study utilised a qualitative approach, employing simple descriptive case study methodology. Primary data for the study was obtained from the employees of Ghana Revenue Authority (GRA) at the Headquarters in Accra and respondents from small scale and large-scale businesses through semi structured interviews across the southern and northern part of Ghana. Purposive sampling technique was used to select fourteen (14) participants from GRA and twenty-one (21) participants from the small scale and large-scale businesses, and this made a total number of thirty-five (35) participants for the study. Thematic analysis was used in analysing the data. Seven (7)) main themes were generated from the findings. The findings revealed that technology-enabled tax administration provides insights into taxpayer behaviour, non-compliance, and high-risk sectors. It also provides customers with convenience digital platforms, makes it easier for taxpayers to fulfil their obligations and reduce revenue leakage. Besides this, electronic audit trails have strengthened tax administration's ability to detect fraud, improves accuracy in revenue reporting and strengthens the overall tax administration process. It was also found that concerns about protection of personal and financial information stored in digital systems and capacity building programs to equip employees with the necessary data skills are some of the challenges associated with technology-enabled tax administration.

INTRODUCTION

There is no gainsaying that technology has significantly enhanced the way organisations behave and how productivity is assessed. It has given rise to the scientific approach of measuring employee performance and organisational productivity. Specifically, the meteoric rise of technology in every facet of the business world cannot be overlooked. Every aspect of equipment and tool has been transformed by Industry 4.0 and this has facilitated the ease of achieving higher employee engagement in the organisation.

BACKGROUND OF THE STUDY

The case of tax administration in Ghana and the use of technology-based approach is one instrumental way of using twenty-first century work process to achieve higher productivity and ensure increased employee engagement. Tax administration is defined as the process of reviewing a tax return or claim for credit, rebate or refund. Tax administration is also the assessing, verification, determination, litigation or processing of tax liability of a person engaged in an economic activity (Okello, 2014). Effective tax administration is very crucial to every government since it is one of the key source of revenue mobilisation for developmental projects for the government. Without a reliable and efficient tax administration system, the government's source of revenue and finance for economic development would be undermined Mansor & Gurama (2015). Often, the institutional body established by the government is the primary organisation that supervises and administer all the tax related implementation, remittance and mobilisation. In our 21st century economies, taxes are the most important sources of revenue for the governement and all taxpayer are obliged by law to pay their taxes accordingly (Olabisi & Enahoro, 2016).

Good tax administration entails strong technical skills by the administrative body which should also be easy to understand and facilitate payment of the intended taxes. As such, the tax administrative institution should be adaptable enough to be able to identify and assess the consequence of both current tax policies and future ones based on the economic trends of economy. Besides this, the national tax institution should be able to simplify the present tax system within the country, be aware of any changes in the law and emerging avoidance practices by taxpayers whilst maintaining a link between the rule of law and tax administration.

Tax administration services encompass taxpayer registration, payment of tax liabilities, submission of tax returns, filing challenges to assessed taxes, and requesting refunds for overpaid taxes. This is implemented to mitigate or eradicate asymmetric information between taxpayers and tax authorities (Darono, 2017). A nation's capacity to generate sufficient resources dictates its capability to ensure the security and overall welfare of its citizens, as well as to foster national development. The tax revenue of each nation is essential for its economic sustainability and governance.

Optimal tax methods hinge on the acknowledgement that multiple technologies exist, each capable of providing answers for taxing authorities. The technology employed in tax administration includes the internet, e-filing, Interactive Voice Response (IVR), Electronic Data Interchange (EDI), and the Ghana Integrated Tax Management and Information System (GITMIS).

Research indicates that tax leakage in developing nations results from inadequately resourced or trained administrators, ineffective tax collecting mechanisms, insufficient enforcement of tax legislation, and little penalties for non-compliance (CITE). The aforementioned issues enable both local and external entities to exploit the system, as tax authorities predominantly lack the necessary technical expertise to address intricate structures employed to evade taxation; furthermore, tax penalties are insufficient to deter tax evasion (Boakye, 2018).

For governments to achieve the maximum revenue, tax administration need to conduct their duties with prudence and full cognizance of the potential loopholes and limitations that exists in the revenue generation system. Technology has played a crucial role in assessing and facilitating easy payment of taxes and administrating its efficiency.

This study therefore seeks to assess the potential impact of technology-enabled tax administration on revenue generation in Ghana.

Research Questions

- What are some the effects of technology-enabled tax administration on revenue generation in Ghana?
- Are there any benefits of technology-enabled tax administration on revenue generation in Ghana?
- What are some of the challenges involved in technology-enabled tax administration in Ghana?

Three key significance can be attained from this study. Initially, it emphasises the suggested methods for achieving effective and efficient tax generation through technology. Secondly, the study's findings will aid the government, together with its agencies and other policymakers, in developing regulations that facilitate the efficient implementation of technology in tax administration. This study would enhance the current understanding of technology-enabled tax administration in Ghana and assist tax officials in formulating strategies to augment revenue generating in the nation.

LITERATURE REVIEW

Introduction and definition

The literature review explores the role of technology in tax generation in Ghana and the highlights some of the potential benefits to the tax administrators at Ghana Revenue Authority and the tax payers. Technology-enabled tax administration provides a significant contribution to the mobilisation of taxes in a simplified, easier and efficient way. It is a constructive means to close some of the loopholes and tax evasion avenues inherent in the tax administration system. Technology-enabled tax administration is the use of specific digital system that has been developed to manage and administer tax policies in the country. It provides guidance and processes to pay and administer tax during a particular year.

Tax Administration Polices

Balunywa et al. (2017) asserted that evading taxes inevitably incurs some type of penalty. Tax policies are implemented to address budget deficits, stimulate long-term growth, or mitigate other domestic pressures (Romer & Romer, 2015). Taxes vary based on the economic policies implemented by governments and serve as instruments for social engineering that facilitate economic progress (Sani, 2010). Omagor and Mubiru (2008) assert that taxation should adhere to four principles: predictability, equity, convenience, and economy. They also asserted that these laws and regulations must be adhered to for tax assessment, collection, and implementation, and they may be referred to as the principles of taxation (Omagor & Mubiru, 2008).

Ali et al. (2016) assert that the tax system exhibits a degree of flexibility, hence enhancing the potential for tax revenue, which escalates with rising incomes. The progressive nature of direct taxation is highly beneficial for emerging nations as it fosters equitable distribution of justice. (Ali et al., 2011). The nation depends significantly on its residents, and in direct taxation, there exists a certainty that requires each taxpayer to be fully aware of their obligations, which will result in increased tax revenue as the population grows (Akakpo, 2009).

Technology-enabled Tax Administration

An organisation that collects the maximum tax revenue from available resources in the shortest time frame and at the lowest collection expenses can be deemed efficient. An efficient tax system can only be achieved if an institution adopts a scientific approach to taxation. Farzbod (2015) asserts that the tax system in developing nations incurs substantial costs to society, characterised by low efficiency, elevated collection fees, time wastage for taxpayers, and minimal tax revenues. The identified issues can be resolved with the implementation of technology.

Wilde & Reinganum (2016) assert that advancements in tax administration technology are not unequivocally beneficial; nevertheless, the advantages encompass 24/7 access to tax services, remote service accessibility, decreased service fees, alleviated workloads for tax officials, and automated procedures. Key drawbacks encompass elevated expenses, supplementary communication channels that may be inadequately handled, increased knowledge prerequisites, and the necessity for policies (Wilde & Reinganum, 2016).

Erard (2014) asserts that the budgeting for technology-enabled tax administration frequently focusses solely on the initial expenditure for equipment acquisition, while many institutions overlook the ongoing maintenance costs and the necessity for future upgrades. Furthermore, institutions neglect to account for educational expenses incurred by users, including both tax officials and taxpayers, as well as the expenditures associated with supplementary human resources for management and outsourcing.

Agyei-Ababio et al. (2022) examined the digitalised methods of income mobilisation in Ghana. Information technology solutions were examined for their application in revenue mobilisation within an emerging economy. The research employed a qualitative case study as its methodological approach. Purposive sampling was selected for the sample design, and the study additionally employed the snowball sampling technique to select individuals from one stage to the next. The findings indicated that the information technology facilitating revenue mobilisation in Ghana is referred to as the Total Revenue Integrated Processing System (TRIPS), which has recently been launched and implemented in numerous GRA offices to enhance tax administration. TRIPS facilitates a comprehensive system for revenue collection and management, encompassing all direct and indirect taxes through its array of processing modules tailored to meet the operational requirements of the Ghana Revenue Authority (GRA).

Tax Administration Cost and Geographical Coverage

Contemporary tax administration aims to enhance tax revenue while reducing administrative expenses and taxpayer compliance costs (Okello, 2014). There remains potential for enhancement in the design and implementation of client-centric taxpayer service programs, as well as in fostering more engagement with the business sector and other stakeholders. Boakye (2016) asserted that tax leakages in developing nations arise from inadequately resourced and poorly trained administrators, ineffective tax collecting systems, failures in legal enforcement mechanisms for tax collection, and little penalties for tax non-compliance. These factors enable both local and external businesses to exploit the system, as tax officials predominantly lack the necessary technical expertise to detect intricate international tax arrangements employed to evade taxes, and the penalties are inadequate to deter tax evasion (Boakye, 2016). The Ghanaian government attempted to decentralise tax enforcement to the local level to facilitate district-oriented public administration.

Darison (2014) endeavoured to delineate the nature and scope of tax coverage in the Accra Metropolis and to evaluate the issues local governments encounter in revenue production within the metropolis. The influence of enhanced revenue generation on metropolitan growth and the potential of information communication technology systems in augmenting local government revenue generating. The study employed a case study methodology to gather data on revenue performance and structure within the Accra Metropolis, issues in revenue mobilisation, and the application of ICT in tax administration in the region. Institutions and submetros that employed ICT systems for revenue mobilisation were selected, and an institutional questionnaire was utilised to gather the data. The research elucidated the characteristics and scope of tax coverage in the Accra metropolis. The study demonstrated the efforts of the Accra Metropolitan Assembly and certain sub-metros in implementing ICT systems in their operations, indicating that the central government, via the Accra Metropolitan Assembly, should facilitate the sub-metros as the primary centres for local government revenue generation.

Effectiveness of Tax Administration

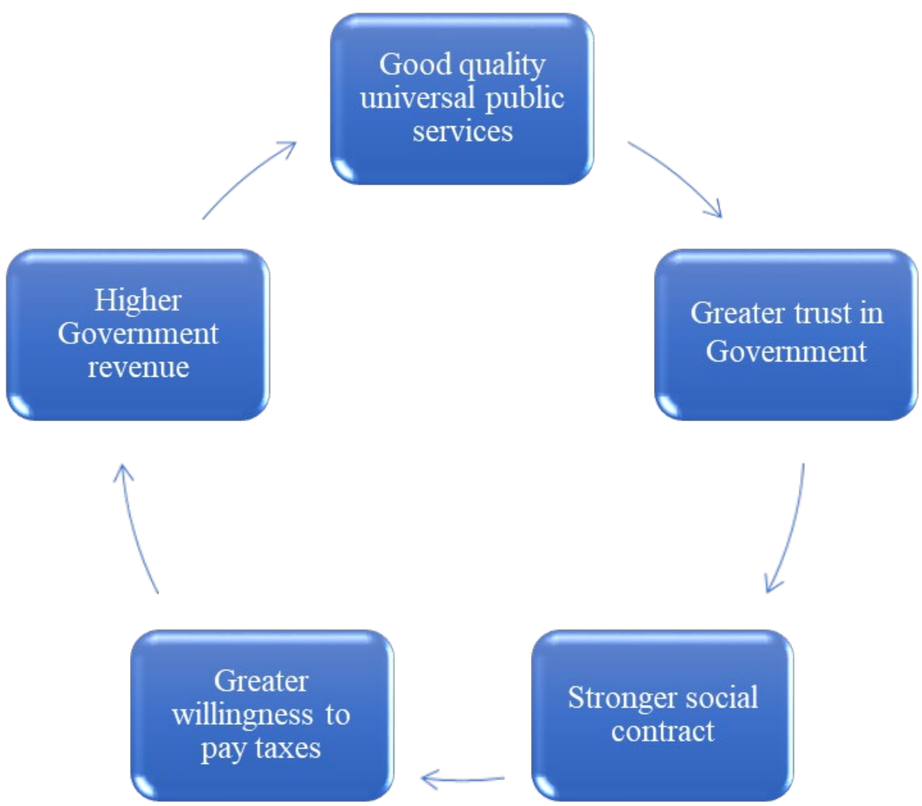
Frimpong (2018) conducted a study evaluating the efficacy of tax administration and revenue mobilisation within specific agencies of the Ghana Revenue Authority (GRA) in the Kumasi Metropolis. The study aimed to evaluate the difficulties faced by tax collectors in performing their responsibilities, as well as the hurdles encountered by taxpayers in fulfilling their tax obligations, and to explore potential solutions to these issues. Data was collected through a questionnaire administered to revenue organisations and taxpayers subject to examination for the study. The study indicates that tax education and capacity training can aid both taxpayers and revenue collectors in performing their responsibilities. Taxpayers should also be educated on and training programs for tax collectors such as workshops and seminars should be implemented. Rewarding the staff to attract skilled labour should also be considered by the revenue organizations.

Osei (2021) examined the efficacy and efficiency of tax management utilising the Ghana Revenue Authority, focussing on the Kumas Asokwa office in the Ashanti region. The research was descriptive and included a quantitative methodology. The study population consisted of 200 individuals, comprising staff and management members of the Ghana Revenue Authority (GRA) Asokwa office in Kumasi. Stratified random sampling was employed to choose 132 participants for the research. The findings indicated that GRA has implemented essential measures to attain efficiency in tax management. It also demonstrated that judicious steps had been implemented to guarantee the Asokwa division's efficacy in tax management.

Social Contract Theory

Social contract theory is a political concept that posits an agreement between the governed and their governing authorities. It delineates the rights and obligations of each individual (Abdullah, 2012). This theory posits that citizens must be prepared to claim their entitlements from the government when the government guarantees their protection and provision of social amenities. This is significant for taxation, since citizens are inclined to pay taxes when the government assures them of adequate provision of social amenities, including decent roads, healthcare, education, power, employment opportunities, and security. For this reason, the social contract theory explains the rationale behind taxation by asserting that the taxpayer must pay taxes primarily because of the benefits the individual receives from public services. The theory posits that there should a good understanding between the citizens and the rules that have been made for them. This ensures that everyone acts according to the rules, and they also know their rights and responsibilities. When tax administrators understand the role of taxing citizens and the citizens also understand their role responsibilities, everyone will do what is expected of them so that revenue can grow, and this also affects revenue generation.

Figure 2 explains that when there are good quality universal public services in the country, there is greater public trust in Government, and this builds a stronger social contract between the Government and the citizens to pay their taxes. This generates more revenue for the government to provide quality public services to the citizenry and the cycle continues.



RESEARCH METHODOLOGY

Research Design and Participants

Burns and Grove (2001) characterised study design as explicitly delineated frameworks within which research is executed. The researcher employed a descriptive qualitative methodology. A straightforward descriptive case study employing a semi-structured interview methodology was conducted. The nature of the research questions, the type of data to be collected, and the study design all affect the selected research approach. A total of thirty-five (35) participants comprising of employees of Ghana Revenue Authority and Small and Medium Size industries. The breakdown of the participants includes the following (Male – 17; Female – 18) aged between nineteen (19) years to forty-seven (47) years old (Age 19 -24 = 7; 25 – 29 = 7; 30 – 34 = 5; 35 -39 = 6; 40 – 45 = 4; 46 and above = 6 were recruited from GRA and the tax paying industries. According to Creswell (2007), the researcher established that a sample size of twenty (20) to thirty-five (35) was appropriate for data collection. The use of a qualitative case study enabled the researcher to gain deeper insights into the phenomena of technology-based tax administration being examined. This study fits with the study of digital tax mobilisation in Nigeria by **(CITE).**

Pilot Study

To avoid issues arising from a research instrument that has errors, a pilot study was carried out (Mutz & Muller, 2016). The main purpose of the pilot study is to collect some form of information to check if the developed research instrument is free from errors or formulate assumptions for the study (Kaur et al., 2017). Pilot study was carried out to test the questions that were asked of participants for the interviews. This was done to find out whether appropriate responses can be gathered from the questions for the study and questions were free from errors and in the right order. The pilot study involved eight (8) participants', four employees from Ghana Revenue Authority and four owners of small scale industries.

Study Location and Population

The study was carried out at the Ghana Revenue Authority (GRA) Headquarters which is the responsible for the administration of taxes and custom duties in the country. Since all the tax authorities in the country reports to the Headquarters, it was more convenient to use the Headquarters as the point of gathering data, couple ten (10) with the small and medium size industries across the country.

Study Population

The population consisted of managers and personnel at the Ghana Revenue Authority. Participants for the study were selected from this pool. A study population is a distinct assemblage of examples from which the researcher selects the sample and, consequently, the sample findings (Akhtar, 2016). All individuals or items that meet the study's requirements may be incorporated into a population. This study included a population of twenty-five workers from the Ghana Revenue Authority (GRA).

Sample Size and Sampling Method

Out of the total number of employees at the Ghana Revenue Authority, eight (8) participants were chosen for the study using purposive sampling. They were selected to represent the entire staff of the GRA. Ten (10) small and medium-sized industries were also selected for the semi-structured interviews. A semi-structured interview guide served as the research instrument, which was suitable for data collection since it explored the respondents' experiences pertinent to the topic matter. The interview enabled the researcher to investigate further into matters that necessitated additional clarity.

Data Analysis

Participant responses were examined through theme analysis. The researchers choose this methodology primarily because it elucidates important traits and reveals surprising meanings to address the study issues. The researchers employed the six phases of thematic analysis proposed by Braun and Clarke (2006), which comprised (i) familiarisation with the data; (ii) generation of initial codes; (iii) identification of themes; (iv) review of themes; (v) description and naming of themes; (vi) report generation. During the initial phase, participants' replies were meticulously analysed, and pertinent information was documented. Focussing on the research topics while coding is beneficial in minimising the number of generated codes and facilitating the construction of code categories (Belotto, 2018). During the second phase, a structured coding process was implemented. Open coding was employed rather than utilising the pre-existing codes in the data. Subsequent to this process, the researchers compared, deliberated, and modified the coding procedure. The codes were amended to eliminate semantic redundancy and reduce ambiguity. In the third phase, codes with linked material were organised into preliminary themes. These themes elucidated the predominant patterns arising from the data and relevant to the study topics. In the fourth phase, the researchers analysed, refined, and defined the themes utilising the guided questions recommended by Maguire and Delahunt (2017). In the fifth phase, the researchers refined and delineated the themes to highlight their uniqueness and different interrelationships. Multiple iterations of coding, categorisation of codes into themes, and adjustments of themes and subthemes occurred before the final phase. In the sixth phase, the researchers selected the most representative instances of the themes and subthemes and formulated the final analysis in relation to the study question.

RESULTS AND DISCUSSION

Demographics of Participants

Participants were chosen by the purposive sampling method. This strategy enabled the researcher to obtain comprehensive information from the selected participants for the study. This section presents the demographics of the study participants. The researcher enquired about the participants' age range, gender, greatest educational attainment, job positions, and years of employment inside the organisation. Participants were selected from an import company, an export company, a small-scale industry, a private company, and a multinational corporation.

Table 1 Demographics of Participants

Variable	Frequency
Age Range	
58 and above	10
35-40	6
30-34	5
25-29	7
19-24	7
Gender	
Male	17
Female	18
Academic Qualification	
PhD	4
Master's degree	8
1st degree	11
Diploma	12
Work Experience	
5-7	7
8-10	4

11-13	4
14 and above	3
Organization	
GRA	10
Import company	1
Export company	1
Small-scale industry	2
Private company	2
Multinational corporation	2

Findings of Research Questions

The data in this study were examined via a thematic method. The participants were initially granted access to the categories to evaluate the researcher's perspective and analysis for data verification.

RQ1: What are the effects of technology-enabled tax administration on revenue generation in Ghana*?*

The first objective of the study seeks to find out the nature of technology-enabled tax administration on revenue generation in both the short term and long term. Technology has played a critical role in expanding and facilitating the ease of revenue generation by the Ghana Revenue Authority. It has provided the ability to reach tax payers who avoided and evaded taxes. As such the impact of technology has offered a greater level of revenue mobilisation in the country. In light of this, three themes were generated from the objectives and were primarily based on the statements from participants. They included (i) limits administrative burdens and encourages tax compliance, (ii) identifies potential tax evasion and avoidance and (iii) fulfilling tax obligation by taxpayers.

Limiting administrative burdens and encouraging tax compliance

The process of creating an enabling environment where administrative burdens are made easier and encouraging tax compliance enhances increase tax revenue. The aspect of reducing the burden of tax administration is crucial to make efficient decision-making and ease the burden of tax compliance. Participants statements attest to the issue less administrative burden and tax compliance. Three employees of Ghana Revenue authority who have been in the organisation for twelve years asserted that,

> *Technology-enabled tax administration enhances revenue generation in several ways. First, it improves efficiency by automating processes such as tax return filing, data collection, and taxpayer registration. This reduces administrative burdens and encourages compliance, leading to increased tax revenues. Second, it enhances accuracy in tax calculations and reduces the likelihood of errors or fraud. Third, it improves transparency by providing taxpayers with online access to information and services, making it easier for them to understand their tax obligations and comply with the law* (Participants 7, 8 and 9).

Four owners of an export company which has existed for seventeen years also opined that,

> *Technology-enabled tax administration enhances revenue generation by enabling streamlined tax processes and improving compliance. It allows the export company to automate tax calculations, filings, and payments, reducing human errors and ensuring accurate and timely reporting. Additionally, technology-enabled systems can leverage data analytics to identify potential tax evasion or non-compliance, enabling the export company to take appropriate actions to maximize revenue collection (Participants, 3, 5, 8, 19).*

Identifies potential tax evasion and avoidance

This theme examines the ability technology allowing the tax institution in identifying tax evasion and avoidance. This easy identification of tax evasion has enhanced the level of tax mobilisation in the country. In light of this, participants made the following statements. Five members of a whole sale import company who have been in this business over the past twenty years affirmed that,

> *Automated systems reduce manual processes, paperwork, and administrative burdens, resulting in faster and more accurate tax collection and processing. This efficiency leads to increased revenue generation. Technology-enabled systems*

provide taxpayers with user-friendly interfaces, clear instructions, and real-time access to their tax information. This facilitates easier and more accurate tax reporting, reducing the likelihood of underreporting or tax evasion (Participants 11, 17, 27, 33 and 35).

Fulfilling tax obligation by taxpayers

The ability of tax payers to meet the regulations and policies in tax filing is one of the cardinal goals of Ghana Revenue Authority. As such the effect of technology enabled tax administration has been immensely beneficial to taxpayers in fulfilling their tax obligations. To this end, participants confirmed to the theme above. For instance, a Chief revenue officer who has been working in GRA for ten years also expressed that:

Technology-enabled tax administration significantly enhances revenue generation through multiple mechanisms. Firstly, it enables the automation and digitization of tax processes, resulting in faster processing times, reduced errors, and improved operational efficiency. Secondly, advanced data analytics tools provide insights into taxpayer behaviour, non-compliance patterns, and high-risk sectors, enabling targeted enforcement actions and improved revenue recovery. Thirdly, digital platforms and online payment systems make it easier for taxpayers to fulfil their obligations, increasing compliance rates and reducing revenue leakage (Participant 1).

RQ2: Are there any benefits of technology-enabled tax administration on revenue generation in Ghana?

The benefits of technology-enabled tax administration on revenue generation in Ghana are numerous and consequential to enhanced revenue mobilisation. The major themes that were gathered from this research question included (i) reduces errors and misinterpretation of tax-related information and (ii) data management, analysis, and reporting, leading to improved decision-making. These themes were collaborated by the statements provided by participants

Reduces errors and misinterpretation of tax-related information

The question of limiting errors and processing of tax related information by tax payers has largely contributed to increased tax generation and revenue mobilisation. This theme was affirmed by the statements provided by participants. For instance, two owners of a pharmaceutical company and have been in this business for more than fifteen years stated that,

> *Automation of tax processes reduces the time and effort required for manual tasks, both for taxpayers and the tax authority. It minimizes the need for physical paperwork, manual data entry, and in-person visits to tax offices, resulting in time and cost savings for all parties involved. Technology-enabled systems reduce the chances of errors and misinterpretation of tax-related information. Automated calculations, data validation checks, and electronic record-keeping contribute to more accurate tax assessments, reducing the likelihood of underpayment or overpayment of taxes. Digital platforms provide taxpayers with easy access to information about their tax obligations, including tax rates, deadlines, and filing requirements. It fosters transparency in the tax system and empowers taxpayers to make informed decisions, reducing confusion and misunderstandings (Participants 29 and 32).*

Data management, analysis, and reporting, leading to improved decision-making

The theme of data management and enhanced decision-making on the part of tax payers has increased the quest of the tax institution to improve decision making and manage data effectively. Participants statements on the positive impact of data management and improved decision-making are indicated in the following assertions. For example, a thirty-year-old male revenue officer who has been working for five years at the GRA also stated that;

> *Technology-enabled tax administration positively affects employees and the GRA. For employees, digital systems streamline their work processes, reducing manual paperwork and repetitive tasks. This allows them to focus on higher-value activities and enhance their productivity. For the GRA, technology enables better data management, analysis, and reporting, leading to improved decision-making and resource allocation. Additionally, digital systems enhance the GRA's ability to provide timely and accurate services to taxpayers, fostering better relationships between the authority and the public (Participant 15).*

A male employee who has worked in the export company for seven years also opined that,

> *Resistance to Change: Employees may resist the adoption of new technologies due to fear of job displacement or a lack of understanding of the benefits. Technical Infrastructure Limitations: Inadequate technical infrastructure, such as unreliable internet connectivity or outdated hardware, can hinder the smooth implementation of technology-enabled tax administration. It will also be expensive to get the needed infrastructure to support the technology enabled tax administration"*

RQ3: What are some of the challenges involved in technology-enabled tax administration in Ghana?

The third research question explored some of the key challenges associated with technology-enabled tax administration. Two themes were prominent in the statements provided by participants. They were (i) employees need to upskill and reskill employees to adapt to new technologies and processes (ii) taxpayers may have the necessary technological literacy or access to digital devices and internet connectivity. Specifically, these two themes dominated the statements provided by participants. A female worker who has been in working in an export company also asserted that;

> *Pertinent challenges arising from the transition from manual to technology-enabled tax administration include the need to upskill and reskill employees to adapt to new technologies and processes. This requires comprehensive capacity building programs, change management initiatives, and effective knowledge transfer. Additionally, integrating new technology systems with existing infrastructure and legacy systems can pose technical challenges and require seamless data migration strategies (Participant 12).*

A twenty-nine-year-old female assistant commissioner from the GRA office has the view that, "the cost of acquiring the technology, software and network needed to facilitate the technology-enabled tax administration is huge and can pose a challenge if GRA is not able to acquire all these, the technology enabled tax administration may not be effective (Participant 4).

Taxpayers may not have the necessary technological literacy or access to digital devices and internet connectivity.

This theme reviews some of the challenges and difficulty of taxpayer not having the requisite technical skills to manage technology might compromise the importance of technology enabled tax generation. The challenge of both employees and tax payers not technically savvy might limit some of the positive effects of revenue generation as alluded to by participants. For instance, the Chief revenue officer who has been working in GRA for 10 years also expressed that;

> *The successful implementation of technology-enabled tax administration relies on robust and reliable digital infrastructure, including internet connectivity and power supply. In some cases, inadequate infrastructure in certain regions or remote areas may hinder the effective adoption of technology. Not all taxpayers may have the necessary technological literacy or access to digital devices and internet connectivity to fully participate in technology-enabled tax administration. This can*

create a digital divide and present challenges in ensuring equal access and compliance (Participant 1).

A male employee who has worked in the export company for seven years also opined that,

> *Resistance to Change: Employees may resist the adoption of new technologies due to fear of job displacement or a lack of understanding of the benefits. Technical Infrastructure Limitations: Inadequate technical infrastructure, such as unreliable internet connectivity or outdated hardware, can hinder the smooth implementation of technology-enabled tax administration. It will also be expensive to get the needed infrastructure to support the technology enabled tax administration." (Participant 9).*

The findings from the three research questions reflects on the statements provided by participants in responds to the research objectives. Most of the participants' analysis showed the positive effects of technology enabled had a significant impact on revenue generation and has significantly increased the amount of taxes mobilized by the government. The challenges associated with the lack of technical skills and literacy on the part of tax payers are gradually been addressed as the taxation system is transformed by technology.

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The primary purpose of the study was to assess the possible impact of technology-enabled tax administration on revenue generation. The research was directed by the established objectives to attain the study's primary aim, which also informed the themes of the literature evaluation. The study examined both established and novel concepts related to taxation, technology-enabled tax administration, the attributes of an effective tax system, the theoretical framework of social contract theory, and empirical research on tax administration, thereby enhancing the clarity of the investigation.

It was also found that, public concerns emanated from the use of technology systems in tax administration and some of these concerns according to the participants are that, integrating new technology systems with the existing structure is a complex process, inadequate technical infrastructure such as unreliable internet connectivity makes it difficult for taxpayers to use the digital systems. Some individuals are not able to navigate and use digital platforms effectively, individuals living in remote areas may not access to digital devices and reliable internet connectivity.

Some individuals are not able to navigate and use digital platforms effectively. The public may have concerns about the digital platforms being secured, and they are also concerned about protection of personal and financial information stored in digital systems and the risk of unauthorized access. Technical and slow time responses impact public trust in digital systems, digital systems create frustration when they are not user friendly to the public unavailability of technical support for digital issues makes the public concerned.

Conclusion

Technology-enabled tax administration has enhanced the way Governments collect and manage taxes. it has brought numerous benefits and efficiencies to the tax administration process. technology has streamlined tax administration processes, reduce manual work and increased accuracy in the tax system. Automated systems for tax registration, return filing and assessment have greatly reduced paperwork and processing time. this has led to quicker tax collections and improved compliance. Technology has enabled tax authorities to enhance compliance by implementing data analytics tools which can identify potential tax evasion. This helps to reduce tax gaps and ensure fairness in the tax system. With the use of technology taxpayers can access online portals from the comfort of their homes thereby eliminating the need for physical visits to the offices.

While technology-enabled tax administration offers significant benefits, there are also challenges to consider. Tax administration requires robust technological infrastructure that can handle large volumes of data and ensure seamless integration across various systems. Developing and maintain such infrastructure can be difficult and expensive especially for less developed areas that have limited resources. The digital divide among taxpayers as a result of not having equal access to technology can also hinder the effectiveness of adopting technology-enabled tax administration. Besides that, there are also challenges of resistance to change and privacy concerns among the public. Addressing these challenges is important for the successful operation of technology-enabled tax administration.

5.4 Recommendations

In view of the research findings, the recommendations were made:

- It is crucial to ensure widespread access to online services and include difficulties in accessing tax compliance, such as mobile platforms or offline options, to mitigate the concern of the public about the digital divide to ensure inclusivity.
- Tax authorities should promote digital literacy by conducting awareness campaigns and provide training programs to improve digital literacy among taxpayers. This will enable them to effectively navigate digital platforms and take advantage of technology-enabled tax administration.

• Ghana Revenue Authority (GRA) should establish mechanisms for continuous monitoring and evaluation of technology-enabled tax administration systems to identify areas for improvement, address challenges and ensure the effectiveness of the implemented measures.

• Implement robust cybersecurity measures, access controls and data encryption protocols to ensure the security and privacy of taxpayer information. Regular audits and assessments should be conducted to identify and address vulnerabilities. This will build the trust of taxpayers in the tax system since they know that their personal information is very secured.

- Ghana Revenue Authority (GRA) should foster effective communication and stakeholder engagement by addressing concerns, providing clear information, and seeking feedback from taxpayers, employees and relevant stakeholders. This will also build the trust of the public and ensure buy-in from all partied involved.

Areas for further study

This study is confined to the Ghana Revenue Authority and employs a qualitative methodology. Additional research should be undertaken to evaluate the effectiveness and efficiency of technology-enabled tax administration systems. Additionally, subsequent investigation may employ a quantitative methodology to assess the applicability of the themes identified in this study. The quantitative technique can involve a greater number of participants than this study.

REFERENCES

Agyei-Ababio, N., Ansong, E. & Kudjo, P. (2023). Examining Information Technology Solutions used in revenue mobilization in an emerging digital economy. Wisconsin Journal of Arts and Sciences 5(1), 14-15

Balunywa, W., Namatovu, R., Dawa, S., & Kyejjusa, S. (2017). Global Entrepreneurship Monitor (GEM). Executive Report Uganda.

Bird, M. & Casangera de Janstcher, J. (2018). Improving tax administration in developing country.

Boakye, T. (2016). Tax administration in Ghana: Perceived institutional challenges. Afro-Barometer, briefing paper, 124

Boateng, R. (2016). Research made easy. CreateSpace Independent Publishing Platform.

Braun, V. & Clarke, V. (2021). Conceptual and design thinking for thematic analysis. doi:10/1080/2159676X.2019.1704846.

Burns, N. & Grove, S. K. (2001). The Practice of Nursing Research, Conduct, Critique and Utilization. 4th edition. W. B. Saunders Company, Philadelphia

Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches.* Sage publications.

Erard, B. & Feinstein, J. S. (2014). The role of moral sentiments and audit perceptions in tax compliance, public finance/finances 49.

Farzbod, J. (2015). Investigation of the Effective factors in the tax efficiency, M. A. Thesis Government Management Training Centre: Tehran.

Kaur, N., Figueiredo, S., Bouchard, V. & Mayo. N. (2017). Where have all the pilot studies gone A follow up on 30 years of pilot studies in Clinical Rehabilitation. 31(9), 38-48.

Olabisi, J., & Enahoro, J. A. (2016). Tax Administration and revenue generation of Lagos State Government, Nigeria . *Research Journal of Fianance and Accounting.*

Ovute, E. E., & Eyisi, A. S. (2017). The impact of Tax systems and Environments on Federally collectible Tax Revenue: A study of some selected States of South East Nigeria. *Journal of Finance and Accounting*.

Webley, P., Hessing, D. J., Robben, H. S. & Elfers, H. (2014). Does deterrence defer? Measuring The effects of deterrence on tax compliance in field studies and experimental studies.

Wilde, & Reinganum (2016). Game of Tax Compliance: Toward an Interactive Theory of Law Enforcement. *Journal of Law Economics and Organization.*