AKENTEN APPIAH-MENKA UNIVERSITY OF SKILLS TRAINING AND ENTREPRENEURIAL DEVELOPMENT

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ASSESSING THE IMPACT OF DIGITALIZATION IN ACHIEVING PROPERTY TAX COMPLIANCE

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ASSESSING THE IMPACT OF DIGITALIZATION IN ACHIEVING PROPERTY TAX COMPLIANCE

BY

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DECLARATION

Student's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree at this university or elsewhere.

Candidate's Name: Thomas Afoakwa

Signature: …….. Date: ……

Supervisors' Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development.

Supervisor's Name: Mr. Alfred Morrison

Signature: ……. Date: ……....

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DEDICATION

As a gesture of appreciation I dedicate this work to the Most High God for his unmerited favour, strength and grace bestowed upon me. For it is His grace and mercies that has kept me up to this far.

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ABSTRACT

The study assessed the expectations of digitalisation of property tax systems in Ghana. It examined the effect of accessibility and reliability in tax digitalisation on property tax compliance in Ghana. Moreover, the study investigated the effect of effort expectation in tax digitalisation on property tax compliance in Ghana. Finally, it assessed the effect of cost in tax digitalisation on property tax compliance in Ghana. The study is quantitative, non-experimental, and adopts the descriptive cross – sectional survey design. Owners of immovable structures in Accra and Kumasi formed the population. Structured questionnaire was used as the data collection instrument. Simple random sampling technique was used to select 370 respondents. Covariance-based structural equation modeling was used as the analysis technique. The study revealed that property tax owners expect digitalisation of property tax in Ghana. Moreover, the effect of accessibility on property tax compliance was found to be significantly positive. Additionally, the effect of effort expectation on property tax compliance was found to be significantly positive. However, the effect of cost involved in tax digitalisation on property tax compliance was found to be positive but statistically insignificant. The study recommends that the Government of Ghana through the Ghana Revenue Authority should developed accessible, reliable, cost effective, and hustle-free digitalized property tax system. This will lead to property tax compliance among property tax payers in Ghana. It is also recommended that, property tax payers should be educated on the operation of the digitalised property tax system.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study attempts to evaluate how Ghana's property tax systems have become more digital in terms of obtaining tax compliance. The study's background, problem statement, research aims, research questions, significance of the study, study scope, study limitations, and study organization are all presented in this chapter

1.1 Background to the Study

Governments exist to provide public goods, infrastructure and services at subsidized cost or no cost, since profit maximization is not the primary motive of governments. The ability for governments to discharge their responsibilities efficiently and effectively to enhance national development is fueled by their ability to generate revenue, *all things being equal*. Martinez-Vazquez et al. (2022) opine that effective revenue mobilization contributes to economic growth. Government revenue may come from variety of sources such as tax, non-tax, grants and donations and other revenues.

The main source of government revenue is tax (Fossung and Warah, 2022) which is crucial for economic development and reduces the over reliance of countries on foreign aids and natural resources (Okunogbe and Santoro, 2023). The fact that tax revenues (both direct and indirect) contribute to economic growth does not mean that tax authorities should impose and collect taxes from persons that does not match their incomes since this will increase their cost of living and discourage investments. This is in tandem with the assertion of Jimenez et al. (2013) that tax authorities are expected to levy fair tax on persons and ensure productive business environment. Additionally, tax authorities are

expected to assess and collect taxes from persons in agreement with the relevant tax laws (Martinez-Vazquez et al., 2022).

Digitization is the process of converting information from analogue to digital (computer readable) format (Taylor and Francis, 2018). Digitalization is the use of modern tools and technologies to change a business model, provide relatively new revenue and value producing opportunities. It is the process of leveraging on digital tools to be efficient and effective in a business. (Yuhao Niu et al, 2022). As opined by Martinez-Vazquez et al. (2022), digitalized system provides the necessary features expected by users, assures users about the ability to provide the needed services (reliability), ensures that users can easily access the features and ensures that users incur less cost in accessing the service.

The term "digitalization of tax administration" refers to a shift in how tax administration operates as a result of widespread usage of contemporary technology, intelligent devices, the Internet, and the growth of e- Government. Incorporating new digital tools, procedures, and solutions ensures that taxpayers will have less work to do to comply with their tax obligations while improving services to tax subjects and maintaining economic efficiency indicators (Bao and Zerbino, 2020).

The construction of paperless communication between the tax subject and the tax administration is referred to as the digitalization of tax administration communication. The development of new digital communication channels and the adoption of paperless tax administration are both made possible by artificial intelligence technologies. Process automation, chatbots, and digital assistants are the three main trends of the digital age. The ease of tax registration and payment, the automation of data analysis, and the enhancement

of communication between tax subjects and tax administrations are the key drivers of the expanding investments in new information technologies. These should be done with the motive of generating enough tax revenues at a reduced cost to government (Kamara et al., 2023). This study therefore argues that effective and efficient tax systems are those that take into consideration demands of both tax payers and government. As such, digitalization of the tax systems is appropriate to reduce if not to eliminate tax evasion to minimize the tax burden in the form of payments of interest and penalties by the tax payer whiles improving the tax revenue of government. Moreover, it will reduce tax payers' risk and costs involved in travelling distances to file returns with tax authorities whiles minimizing tax administration cost.

Kamara et al. (2023) assert that the roles of tax authorities in assessing tax returns and collecting tax revenues have been strengthened by digitalizing the tax systems. Digitalization of tax system which involves the use of Information Technology to collect tax payers' data, assess the data to determine the tax payable and receive tax payment has augment the traditional tax system (Sebola, 2020) and encouraged international taxation to improve tax revenue mobilization for sustainable economic development (Ajala and Adegbie,2020).

In the public sector, digitalization must take into consideration the latter's unique characteristics and be employed to make it easier to carry out state functions, compared to the private sector, where it can help businesses become more profitable and where the effects are simpler to assess. Along with reducing social pressure, providing for people's needs, and redistributing income in line with the public interest, the state also aims to

uphold legality, integrity, and democracy (Manzoor, 2014). These conditions must all be taken into account.

To this end, property rate which is a direct tax levied on the assessed value of properties in Ghana and regulated by the Local Government Act 2016 (Act 936) can be digitalized to improve tax revenue. Digitalization has two conceptual connotations that are intertwined and sometimes used interchangeably in a variety of literary works. The process of digitizing, or the conversion of analog material (such as pictures, videos, and text) into digital format, is referred to as digitization (The Oxford English Dictionary, 2019; Gartner, 2019). Additionally, digitization is described by Brennen and Kreiss (2016) as the physical process of transforming distinct analog information streams into digital bits. The adoption or expansion of the use of digital technology by organizations, industries, and nations is related to digitalization, which is of second importance (The Oxford English Dictionary). Brennen and Kreiss (2016) assert that the process of digital transformation involves the restructuring of numerous spheres of social life around the infrastructure of digital communication and media.

The distinction between conceptual meanings can also be illustrated using a straightforward example. In the case of digitization, we use a digital tool to convert an analog contract record into a digital contract record. This digital contract record is then recorded in the form of a PDF file and kept on the hard drive of our computer. An analog contract record is scanned into a digital contract record during the process of digitization, and the digital contract record is then saved in digital PDF format. Following that, a cloud service that can be accessed from any location at any time receives this PDF via the Internet. Both times, the process was digitalized, but in the second instance, we made

greater use of the potential provided by digitalization. Although the word "digitalization" inherently conveys a good sense, this is typically not the case with digitization. The case also demonstrates the urgent necessity for digitization in order to achieve digitalization. Therefore, digitization is a technical process that transforms analog information streams into digital bits with discrete and discontinuous values or that are based on two distinct states (Feldman, 1997). The digital world is characterized by these two distinct states, which leads us to the conclusion that digital information is "discrete and pure," whereas analog information is "continuous and noisy," (Robert Pepperell, 2003). Robinson (2008) provides a much more thorough definition of his analogy, stating that it is comparable to smoothly changing, bearing the qualities of appearing immaculate and untouchable credibility of space and time. It makes comparisons with analogies to space and time, which provide infinite division, and by doing so, links something real and organic to the artificial and arbitrarily clipped accuracy of the digital.

In addition to having symbolic aspects, digitization also has material dimensions and produces information that can be expressed in a variety of ways, using a variety of materials, and in a variety of systems. Theoretically, digitized signals can be stored and transmitted in practically any material having two simple states, including silicon transistors, punch cards, and atoms (Brennen and Kreiss, 2016). Manoff (2006) downplays the significance of the physical systems (transistors) that information is stored on and instead stresses the immaterial nature of information acquired through digitalization. The main discovery made by the authors (Manoff, 2006; Hayles, 2003) in this regard is that bits of material transistors are physically oriented as bits on which digital information is stored and transmitted. Even while digital information is not restricted to a certain class of materials, it is ultimately built on the arrangements of those components.

Digitization is a special process since it mediates between the physical and intangible in this specific way. Verhulst (2002) goes on to say that any types of data, including alphanumeric texts, graphics, still and moving images, and sounds, can be digitized in the same way that digitized information may be represented on any set of transistors. According to Van Dijk (2006), the conversion procedure uses precise technical mechanisms and calls for a particular technical setup that realigns the original signal.

Despite the widespread misconception that digitization is a technical process, humans have made decisions about what to include and exclude in the algorithms that carry out the digitization process. Using the history of sound reproduction as an example, Jonathan Sterne (2003) argues that analog technology is similarly applicable. Both technologies, however, interpret the reality. As a result, digitization produces data that has a number of distinguishing qualities, or as Negroponte (1995) notes, it is the universality of digitized information. The idea of digital convergence should be stressed in the context of digitalization and its effects on society. Tilson et al. (2010) note that because digitalization fosters sectoral convergence, it has a significant impact on society. This is founded on the convergence of (digitized) media, which is responsible for social and technological transformation in the areas of statehood, globalization, social structures, and the production of culture and knowledge (Brennen and Kreiss, 2016).

The concept of digital convergence (Watson, 2012) has been investigated through various social processes and domains, and various kinds of convergence have been established. In both senses (digitization and digitalization), four major aspects of digital convergence are highlighted: infrastructure (network), terminal (device), functionality and its relation to rhetoric, and market convergence (Brennen and Kreiss, 2016). Oblak and Petri (2005) note

that technical advancements must be taken into account at every stage of the information infrastructure, from content design to its dissemination and consumption, in order to appropriately manage digital convergence. This is an instance of technological convergence, which is defined as the "fusion of all mediated communication modalities into electronic, digital formats supported by computers."

Even while research clearly demonstrates that there is a shift in brain function, the precise consequences of online social networks are yet unknown (Giedd, 2012; Crone, 2018). In contrast to how throughout human history the existence of a dominant institution, or system, has conditioned changes in reality perception, in the information and communication technology age the perception of reality can be influenced by a single viral posting of text, images, or videos on an online social network. The areas of problems listed by Davidsson et al. (2016) include business models, privacy and integrity concerns, security, interoperability, scalability, usability, and data gathering and deployment. These types of difficulties are essentially ubiquitous and can be used in all spheres of human endeavor. However, this very universality of problems also demonstrates how widespread digital convergence actually is. On the one hand, it provides more opportunity to fix the problems caused by digitization, but on the other, because of convergence, it also increases the risks that, if not addressed, could cause serious.

The economic sector, which is crucial to the growth and evolution of society, is significantly impacted by digitalization (Denecken, 2016; Katz et al., 2014). In the framework of the nation, digital solutions provide advantages that can standardize infrastructure and information transfer while also streamlining security and intelligence systems and facilitating economic activities. The business may, among other things, search for enhancements in the delivery and usage of public services, the issuing of identification

documents and certificates, the control of funds, and accessibility to services offered by the public or private sector. As permissions can now be given online, digital solutions also result in positive improvements in the framework of laws imposed by the government. While this is going on, the digitization of bureaucracy speeds up the processing and processing of procedures and, when combined with digitalization, leads to a more extraordinary sectoral organization.

1.2 Problem Statement

Despite the Tax Acts in Ghana, including the Income Tax Act 2015 (Act 896) as amended, tax mobilization in Ghana is low. This suggests that the tax system in Ghana is not effective as expected. Should this problem persists, government will be unable to raise adequate revenue to meet its expenditure which will negatively affect the economy.

The expansion of the economy depends on taxes. Taxation is inextricably linked to delivery of public goods, economic social safety nets, political accountability, and redistribution. Tax income have also helped nations become less dependent on external aid and earnings from normal resources. Nevertheless, a lot of African nations don't generate enough tax money. The Sub-Saharan African nations do not raise enough tax income (Bassongui and Houngbédji, 2023). As one of the Sub-Saharan African nations, Ghana faces a problem with its tax collection. Mobilization despite the existing tax laws such as the Income Tax Act 2015 (Act 896) with series of amendments. With reference to Article 245 of the 1992 Constitution of Ghana, the parliament of the Republic decides the functions of District Assemblies. In line with this, Section 144 of the Local Governance Act, 2016 (Act 936) mandates District Assemblies to be the only authority to levy rates such as property rates for District Assemblies despite any customary law to the contrary.

Moreover, in spite of the increase in population and households, property tax evasion has skyrocketed resulting in decrease in Internally Generated Fund (hereafter, IGF) and government tax revenue as a whole. For instance, the Ghana 2021 Population and Housing Census revealed the population and households of individuals to be 30,792,608 and 8,345,414 respectively. The report unveiled that the population and number of households of Ghana has grown five-fold since independence. Regardless of such increase, the Local Government is unable to generate enough IGF to cover their activities and has resulted in the Government of Ghana (here after, GOG) transferring funds which could have been used for other purpose to meet national objective to support their activities.

For this reason, the GOG has excelled in bilateral and multilateral borrowing, slowing down economic growth. Due to the significance of digitalization in enhancing trading platforms, increasing productivity and improving service effectiveness, a number of extant literatures have examined the nexus that exits between digitalization and tax compliance. For instance, Fossung and Warah (2022) assessed the intermediating part of behavioral intentions in the association amid tax digitalization and tax obedience. In another study, Bassongui and Houngbédji (2023) performed a systematic review of the consequence of tax digitalization on tax revenues. In a different study, Okunogbe and Santoro (2023) examined the role of data technology in increasing tax collection. In furtherance, the benefits and execution of digital improvements in tax administration were examined by Kamara et al. (2023).

It can be inferred from the foregoing discussion that all the studies considered tax system in general instead of a specific tax type such as property rate. According to the researcher,

there hasn't been any research done to assess the impact of digitalization of property tax systems in achieving tax compliance in Ghana. This study therefore finds a critical gap in literature to be filled. For this reason, this current study extends and underwrites to literature by examining the effect of digitalization of property tax systems in achieving tax compliance in Ghana.

1.3 Research Objectives

The primary aim of this study is to assess the effects of digitalisation of property tax systems in achieving tax compliance in Ghana. The particular goals are to;

i. Assess the expectations of digitalisation of property tax systems in Ghana.
ii. Examine the effect of accessibility and reliability in tax digitalisation on property tax compliance in Ghana.
iii. Investigate the effect of effort expectation in tax digitalisation on property tax compliance in Ghana.
iv. Assess the effect of cost in tax digitalisation on property tax compliance in Ghana.

1.4 Research Questions

The subsequent study inquiries are offered in order to fulfil the aforementioned study objectives:

i. What are the expectations of digitalisation of property tax systems in Ghana?
ii. What is the effect of accessibility and reliability in tax digitalisation on property tax compliance in Ghana?
iii. What is the effect of effort expectation in tax digitalisation on property tax compliance in Ghana?

iv. What is the effect of cost in tax digitalisation on property tax compliance in Ghana?

1.5 Significance of the Study

Apart from this present study having practical implications, it contributes to both theory and literature. Theoretically, the present study contributes new knowledge to property tax obedience in the setting of tax payers in Ghana. Findings from the study would provide some significant insights that are pertinent to decision makers, including officials of Ministries, Departments, Agencies, Metropolitan assemblies, Municipal Assemblies, District Assemblies, central government, authors and academics.

The study would offers insight that would assist Heads of covered entities to study the effect of digitalisation on property tax obedience. Academics and authors can gain from the current study by using it as empirical evidence and a point of reference. It would also support academic research and writers that explore property tax compliance, digitization, and their interrelationships.

1.6 Scope of the Study

Among the 16 regions in Ghana, the study was confined to Ashanti Region and Greater Accra Region. The justification for including these regions in the study is the fact that they have the highest population and households with diverse business operations. Moreover, these regions are the most developed regions in Ghana and have management ready for such digitalization. The contextual and geographic scope of the study was the owners of immovable structures which have been in existence for 5 years and beyond in the aforementioned regions. This is justified by the fact that the researcher considers these

property owners to be aware of property rate since they must have been visited by the property rate collectors by then. In terms of the conceptual scope, the study focused on tax digitalization and property tax obedience.

1.7 Limitations of the Study

The conduct of the study experienced some challenges. First is, getting access to data from the respondents were difficult. The respondents were reluctant to give information for the study, difficulty in getting respondents to devote time and respond to questionnaire were also encountered. The researcher therefore applied for an introductory letter from AAMUSTED and attached it to the questionnaire before issuing it to the respondents. This aroused the respondents' confidence in the fact that the study was purely an academic exercise, and not to indict any staff.

Secondly, insufficient financial resources restricted access to literature. The researcher therefore utilised the Wi-Fi on AAMUSTED campus. Moreover, the study is limited due to insufficient time for the study conducted. Additionally, the study was quantitative in nature which limits the ability of respondents to express themselves through interviews.

1.8 Organisation of the Study

There are five chapters in the study: Chapter 1 highlights the context of the study, research issue, purpose and goals, research questions, importance of the study, scope, and limits of the study; Chapter 2 reviews pertinent literature that addresses conceptual review, conceptual framework, empirical review, and theoretical review; and Chapter 3 presents the study's methodology. The research approach is presented in Chapter 3. This includes the study environment, demographic, sample size, sampling method, data source, and research strategy. The data collected are analysed in Chapter 4 together with the results of

the analysis. Last but not least, Chapter Five summarizes the conclusions drawn in Chapter Four, draws some administrative and academic recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The society has existed over ages so as societal problems. Hence, researchers always make considerable attempt to solve these problems by conducting studies. Therefore, whatever studies a researcher tries to undertake, similar studies already exist. New studies tend to contribute and extend the already existed studies by way of introducing new variables or using different methodology. Hence, this chapter of the thesis reviews the already existed relevant and related studies on the various variables and their relationships to provide theoretical and empirical basis for achieving the study's aims and objectives (please refer to chapter 1, section 1.3).

2.1 Concept Review

2.1.1 Digitalisation of property tax systems

The practice of assessing, collecting, and administering taxes using an electronic platform or media is known as tax digitalization or electronic taxation (here after, e-tax). Che-Azmi and Kamarulzaman (2014) assert that e-tax is a method by which governments around the world employ ICT to provide high-quality public services and disseminate public administration information. Tax digitalization refers to the use of an online platform to gather and administer tax information. It is an online platform that gives taxpayers access to services offered by the tax authorities, such as receiving a TIN and completing tax returns electronically (Nkwe, 2020). E-tax is an online platform via which an individual taxpayer can access all the tax authority's services over the internet (Swee, 2017).

In order to transition the objective of a Continual and predictable experiences for taxpayers, timely data for decision-making, and automated detection of suspicious activity

are characteristics of electronic systems that will replace manual systems in tax administration. Manual systems are characterized by tax official discretion across taxpayers, laborious and error-prone data entry, and case-by-case detection of evasion. During registration drives, tax authorities can identify taxable items (such people or property) using technology-based methods and gather data on the tax liability that the taxpayer might otherwise try to obfuscate. Okunogbe and Santoro (2023) claim that tax authorities might, for instance, mandate that businesses use electronic billing machines (hereafter, EBMs) to track sales transactions. They might also gather data from these parties, such as employers, vendors, customers, or financial institutions. When tax evasion occurs, the tax authority can utilize technology to spot it. Technology allows for the automated discovery of inconsistencies amid self-reported and third-party tax obligation by collecting and analyzing massive amounts of data.

By creating an individual taxpayer risk profile and giving priority to those at advanced risk of evasion, analysis of various evasion indicators enables a tax authority to target audits based on data. Technology can also be used to streamline processes and enhance taxpayer service delivery. Services such as electronic payment and filing can streamline and standardize the tax-paying process for all taxpayers. EBMs lower the expenses associated with gathering and submitting data (Okunogbe and Santoro, 2023). Taxpayers can receive information quickly and affordably using electronic communication channels like email and SMS. As a result of this technology, there are fewer options for extortion and collaboration between taxpayers and tax agents.

The practice of assessing, collecting, and administering taxes using an electronic platform or media is known as tax digitization (electronic taxation). Tax digitalization is a method

by which governments around the world employ ICT to provide high-quality public services and disseminate public administration information (Che-Azmi and Kamarulzaman, 2014). Tax digitalization refers to the use of an online platform to gather and administer tax information. It is an online system that allows taxpayers to have access to services offered by the tax authorities, such as receiving a tax identification number and electronically filing tax returns (Nkwe, 2013). Swee (2017) defines tax digitalization as an online platform via which an individual taxpayer can access all the tax authority's services over the internet.

2.1.2 Tax compliance as a concept

Marti (2019) opined that tax compliance is the willing and complete execution of tax responsibilities as prescribed by law. Tax compliance is the act of compiling statistics and filling out tax return forms, as well as declaring income that is taxable and paying all taxes responsibilities within the prescribed time frame, without waiting for the authorities to take action (Fossung and Warah, 2022). Simply put, tax compliance encompasses how well a country's taxpayers adhere to the different tax regulations enacted by policymakers.

Tax compliance is a result of taxpayers' attitudes toward government measures aimed at meeting the country's basic infrastructure and social demands. Fishbein and Ajzen (2020) assert that social psychological concerns, business and economic, industry and political, industry as some of the elements that influence tax compliance behavior. According to Davis (2018), developing nations can increase their tax revenue through self-assessment by implementing a tax week, tax advice, a computerized tax system, routine audits, examinations of taxpayers, the application of fines and penalties, and tax sensitization and education are all examples of tax enforcement. According to Nkundadabanyanga et al.

(2017), there are other elements that significantly affect taxpayers' willingness to abide by the law in order to raise tax revenue, such as tax education, the availability of a service-oriented attitude, routine auditing, accountability, and fairness on the part of the government. To increase tax revenue, a strategic plan is necessary to reach the required degree of conformity with tax laws without cohesion and enforcement (Appah and Ogbonna, 2021).

On the basis of the above discussion, if the demands of taxpayers are strategically met by putting in place the necessary facilities, transparency, accountability, and a variety of other factors can lead to taxpayers' willing obedience. Akintoye and Tashie (2013) argue that the establishment of good infrastructure, moral ethics, good tax rates, tax authority accountability, taxpayer faith in government, and a good platform for tax declaration will result to voluntary tax payment by taxpayers. As a result, tax compliance entails detailing the payment of all taxes in agreement with established tax laws, court rulings, and regulations (Chatama, 2020).

Kline (2020) defined tax compliance as the willing and complete execution of tax responsibilities as prescribed by law. Tax compliance is the act of compiling statistics and filling out tax return forms, as well as declaring the receipt of all taxable income and the timely payment of all tax liabilities. window, without awaiting action from the authorities. Simply, tax compliance refers to how well a nation's taxpayers follow the various tax laws that have been passed by legislators. This definition, like many others, can be viewed from a number of angles. The definition of tax compliance has additional definitions. Tax compliance is a result of taxpayers' attitudes toward government measures aimed at meeting the country's basic infrastructure and social demands. Fishbein and Ajzen (2021)

cited social psychological concerns, business and economic, industry and political, industry as some of the elements that influence tax compliance behavior.

Davis (2019) claims that by implementing a tax week, tax counseling, the use of an electronic tax system, routine checks, audits, and examinations of taxpayers, the imposition of fines and penalties, and tax sensitization and education, developing countries can increase their tax revenue through self-assessment. If the demands of taxpayers are strategically met by putting in place the necessary facilities, transparency, accountability, and a variety of other factors can lead to taxpayers' willing compliance.

Akintoye and Tashie (2021) stated that the establishment of good infrastructure, moral ethics, good tax rates, tax authority accountability, taxpayer faith in government, and a good platform for tax declaration in the Nigerian state of Lagos aided in inspiring voluntary tax payment by Nigerian taxpayers. Willful non-payment of taxes has resulted in compliance gaps in tax income in most Nigerian states (Appah and Ogbonna, 2014). Tax revenue in Nigeria is heavily influenced by taxpayer self-assessment. As a result, a robust compliance plan will undoubtedly boost an economy's tax collection. As a result, tax compliance entails detailing the payment of all taxes in accordance with established tax laws, court rulings, and regulations. Registration, timely submission of tax returns, reporting, and early payment of all tax duties on the due date are all examples of tax compliance Chatama (2020).

The financial-fiscal form that civic spirit takes on is the accurate disclosure of one's assets and income to government agencies, along with the timely payment of one's debts on the terms set forth by the law. According to conventional wisdom, taxpayers typically pay

their tax obligations out of either fear of not being discovered evading or defrauding taxes or out of a desire to conform and abide by fiscal regulations (Scholz and Pinney, 2019). However, because each taxpayer's budget reflects their financial commitments, there is a well-known, logical potential that they may underreport (Porumboiu et al., 2019). Studies on voluntary compliance demonstrate the necessity for paradigm adjustments to enhance the population's willingness to pay taxes, as opposed to employing the state's coercive power to collect sums owed for the budget. Since using state authorities to collect taxes, charges, and contributions results in expenses that are higher than the amounts collected, the decrease in costs associated with budget revenue collection serves as the justification.

Burwell and Jorn's (2020) answer is to simplify the tax code because this factor affects both willingness of taxpayers to follow the law and their level of tax literacy (Saad, 2014). The law must be unambiguous and simple enough for all taxpayers to grasp, but it is also crucial to consider the level of taxes that are established. To put it another way, the taxpayer must understand that while the public sector needs funds, extra state services cannot be supplied if individual payment requirements are not met. Additionally, because they will influence how the taxpayer distributes their income, the typology and values of tax responsibilities must be modified to reflect the condition of the national economy. The taxpayer's actions are a reaction to a variety of external and internal stimuli, including the economic and social context as well as psychological factors such as how the taxpayer views the tax system they are required to abide by, its fairness, and the actions of other taxpayers (Erard and Feinstein, 2021). The compliance tactics that revenue-collecting organizations must employ must be geared toward creating a "partnership" with the citizenry, enabling the latter to respond favorably and voluntarily to the legal obligations. The objective of fiscal compliance is voluntary cooperation; under no circumstances can

coercive legal action be used (Phua, 2015). This is especially true because, globally, opportunities for capital movement enhance the scope of tax evasion. Frey (2020) offers proof that stringent oversight and sanctions ultimately result in higher disobedience.

The development of a communal norm of obedience is represented by voluntary agreement, which is tied to the state's capacity to raise fiscal morality among citizens (Luttmer and Singhal, 2019). Low voluntary compliance poses a financial risk to the state and raises the likelihood that tax claims won't be collected at the anticipated rate (Porumboiu and Brezeanu, 2019). Tax morale is highly connected with trust in governmental institutions (Torgler, 2020). The amount of income has a big effect on the population's fiscal behavior, but there is no disputing the importance of other variables as well. We will list a few at random, including risk aversion, education, standard of living, and how people perceive tax laws. Accordingly, the state's fiscal revenues are a product of its fiscal policies, the economy, and other factors (Mara et al., 2019), as well as the taxpayers' spending habits.

The study controlled for age, gender and education due to their potential effect on tax compliance. For instance, Porumboiu and Brezeanu (2019) found socio-demographic variables such as gender, education, age, and income to influence tax compliance behavior.

2.1.2.1 Tax compliance cost

When paying taxes, taxpayers must pay a variety of expenses known as tax compliance costs (Wulandari, 2021). According to Tresnalyani and Jati (2018), the complexity and wide range of interpretations of tax regulations prevent taxpayers from fully complying with their wish to do so. Tax evasion and tax avoidance are two tax non-compliance behaviors that taxpayers frequently engage in, despite the increased cost of compliance that they must bear (Sucahyani and Sukartha, 2017).

Earlier studies on the effect of tax compliance costs on taxpayer compliance have produced a range of conclusions. According to the findings of Larasdiputra and Saputra (2021); Suyati and Sugiharto (2021); and Tresnalyani and Jati (2018), taxpayer compliance rises as a result of the rising cost of tax compliance, which is financed by the Tax Compliance Cost. They discovered that Tax Compliance Costs have a detrimental impact on taxpayer compliance, contrary to Wulandari (2021) and Chindengwike (2022). The study's conclusions imply that when the expense of complying with tax laws rises, taxpayers become more tax-compliant.

2.1.2.2 Mechanisms and Functional Digital Tax

It would also be feasible to immediately deduct tax after a business deal from an online tax account with the possibility of internet-connected cash registers that provide data about turnover and sale volumes to the federal tax office. A company tax account may automatically deduct corporation tax liabilities.

In order to comply with its mandate and obligation to report volume, buyer, and seller information directly to the federal tax office, banks and stock market platforms in Austria began automatically deducting taxes from stock exchange gains in 2012 (BMF 2017). The business practitioner who obtains capital during the selling procedure has the gain tax resulting from stock exchange business directly deducted from his or her account. The end result was complete payment of taxes owed and legal security. According to Casapicola (2016), tax prepayment is used to tax corporations in other business activities, which necessitates that managers and owners send monthly or quarterly forecasts and tax payments to the federal tax office along with all issues causing business volatility. All tax liabilities resulting from turnover might be collected directly by connecting the

computerized accounting systems of businesses (including all cash registers) with the online accounts that the businesses have with the tax authorities. Tax-deductible items like fixed costs, social insurance, or employee compensation are also included in the accounting system's overall tax assessment. The tax application integrates into the everyday accounting operations like a second bank account with incoming and outgoing responsibilities.

The implementation of a digitalized turnover system, such as a virtual account that bundles all revenue, payments to the social security system, and pension contributions, would be a huge advantage for self-employed people as well as small and medium-sized businesses, which frequently lack internal tax experts. Economically, a direct connection between revenue and tax via electronic applications would entail a reduction in the administrative work that businesses and independent contractors currently have to do, especially when determining income taxes for small and medium-sized businesses. A self-employed tax account that is accessible online would also lower administrative barriers to self-employment. Academic research on the subject of the influence of taxes on business decisions included this topic as well: "An irrational strong importance of taxes in an individual's decision-making behavior is one of the most popular assumptions about the behavioral effects of taxation" (Hundsdoerfer and Sichtmann, 2008). According to research conducted in 2008 on the subject, "tax aspects are over weighted in entrepreneurial decision-making" (Hundsdoerfer and Sichtmann, 2008). A decrease in administrative duties like tax accounting would also favorably affect business choices.

2.1.2.3 The Development of Online Tax Accounts and Just-In-Time Taxation

How far are we from "just-in-time taxation" on the internet? Worldwide tax administrations are advancing their systems more quickly than businesses may anticipate. A new income register developed by Finland is scheduled to go into effect by the end of 2018: The Finnish Tax Administration described the project as follows in May 2017: "Beginning on January 1, 2019, the Tax Administration, the Social Insurance Institution (Kela), the Unemployment Insurance Fund, and earnings-related pension providers will all use the information contained in the Incomes Register. The register will be utilized starting in 2020 by the Occupational Safety and Health Administration, Statistics Finland, the Education Fund, non-life insurance providers, unemployment funds, and the administrative arm of the Ministry of Economic Affairs and Employment. The Incomes Register accepts information via software interface, user interface, or, under rare circumstances, on paper (Vero, 2017).

Digitalization of taxes in Brazil: The continuous requirement to submit annual indirect or direct tax returns "may soon be redundant, or at the very least turn into simple reconciliation events" due to Brazil's high level of tax openness, according to Kielstra (2015). How did that come about? Brazil has made two significant revisions to its tax code for the purpose of increasing tax transparency: Another American state started electronic audits as a result of attention given to Brazil's advancement; Mexico's tax authority is seen as being at the forefront of "digitizing and automating taxation" by starting electronic audits based on data submitted electronically by taxpayers: "All correspondence will be conducted electronically through the taxpayers' registered email accounts, and documents will be made available to taxpayers in an electronic drop-box" (Mingram and Grosselin, 2016).

2.1.2.4 Data Security: The Most Critical Aspect of Tax Digitalization

One of the most private pieces of information that governments will (may) have in the near future is timely tax information. Data leaks might therefore be leveraged by hackers, business espionage, and stock market speculation with ease. As a result, consulting firms globally create big data solutions that offer the security required for open just-in-time applications.

McKinsey and Company (2017), a consulting firm, presented a potential remedy for the risk of unwanted access and data manipulation in February 2017 by "using block chain to improve data management in the public sector". Government tax enforcement via block chain technology is even one of the top-rated block chain application scenarios that the consulting company. In their model, "each person or organization would have all relevant data stored in a dedicated ledger within an encrypted block chain database" (Cheng et al., 2017). The amount of security that block chains offer is the key justification for this evaluation.

2.1.3 Taxation in Ghana and Africa as a whole

According to Okunogbe and Santoro (2023), tax collection in Ghana and throughout Africa is low, but comparable to other areas with comparable income levels. Similar to nearly everywhere else, consumption taxes—which include sales tax, value-added tax (VAT), and excise tax—make up the majority of taxes in Sub-Saharan Africa (49%). Therefore, it is claimed in this study that Ghana has an extremely low property tax rate. This is due to the fact that tax compliance costs are higher for taxpayers in Africa than in nations with comparable income levels (Okunogbe and Santoro, 2023). Furthermore, tax administration practices in African nations like Ghana rely more on manual processes, in-

person encounters between taxpayers and tax collectors, and less on technology. For instance, 72% of businesses in African nations claim they must meet with tax officials, and for those who are, 3.2 meetings are held annually on average. (World Bank Enterprise Surveys, 2020). But as a country's income rises, so does its use of information technology for tax administration, such as electronic filing. For instance, according to the World Bank (2016), electronic filing was used in 32% of low-income nations, 65% of middle-income countries, and 85% of high-income countries as of 2016.

For instance, in 2018 Sub-Saharan African countries paid 14% of their GDP in taxes (UNU-WIDER Government Revenue Dataset, 2021). This average throughout the continent obscures significant national diversity. Rates are as high as 28-33% in high- and upper-middle-income nations like the Seychelles, Namibia, and South Africa, while they are as low as 7% in low-income nations like Ghana, Chad, the Democratic Republic of the Congo, and Ethiopia, according to the UNU-WIDER Government Revenue Dataset (2021). Over the past three decades, these figures have remained stable, with African nations collecting an average of 12–15% of their GDP in taxes from 1990 to 2020. The Middle East, North Africa, and South Asia have rates similar to Sub-Saharan Africa at around 14%. The largest prevalence, at 32%, is in the Europe and Central Asia region. Higher income countries typically tax their population as a percentage of GDP.

Across the continent, there has been a significant increase in the usage of information technology. Less than 5% of Africans were internet users in 2008. With about 90 subscriptions per 100 persons across the continent, mobile cellular service has a very high penetration rate. This is more than twice as high as the prevalence rate a decade earlier. Africa has made impressive strides in some areas of technological innovation, particularly

in the adoption of mobile money. This is because businesses like M-Pesa are able to forge ahead of the curve in terms of technology, allowing customers to avoid using conventional financial service providers.

With more than half of the adult population having a mobile money account, Kenya has been a pioneer in this area. High levels of mobile transactions are also seen in other nations, such as Ghana, Gabon, Namibia, Zimbabwe, Uganda,. Mobile money is most frequently used to transmit remittances, although commercial applications like paying utility bills and receiving compensation are beginning to take off. This has potential for Africans who use digital services for tax-related objectives. The usage of information technology is expanding throughout Africa's various governmental sectors. Comparatively to other government agencies, tax administrations frequently set the pace for technology adoption and digitization in many nations (World Bank, 2016).

2.1.3.1 Role of Information Technology in Increasing Tax Mobilization in Africa

In order to transition tax administration from manual systems, which are characterized by tax official discretion across taxpayers, laborious and error-prone data entry, and case-by-case detection of evasion, to a reliance on electronic systems, where there is a more consistent and predictable experience across taxpayers, timely data for decision-making, and automated detection of suspicious activity. This paper examines how technology may help to improve core tax administration functions for the four main tax types: consumption taxes, property (real estate) taxes, trade taxes, and income taxes (personal income, corporate income, and payroll taxes), using the framework developed in (Okunogbe and Santoro, 2023).

2.1.3.2 Compliance

The government has to be able to pinpoint the tax base in order to collect taxes. In order to identify taxable entities (such as people or property during registration drives), tax authorities might employ technology-based tools to gather information. They can also use these technologies to gather information on the tax liability that the taxpayer might otherwise try to conceal. For instance, tax authorities might demand that businesses utilize electronic billing systems to keep track of sales transactions, or they might gather data from outside sources like employers, vendors, clients, or financial institutions.

2.1.3.3 Monitor Compliance

The tax authority can use technology to identify tax evasion when it takes place. With the help of technology, it is now possible to gather and analyze massive volumes of data in order to automatically spot discrepancies, like discrepancies between one's own self-reported tax liabilities and that of a third party. Building a risk profile for each taxpayer and giving priority to those at higher risk of evasion allows a tax authority to target audits with a data-centric approach by analyzing various indicators of evasion.

2.1.3.4 Facilitate Compliance

Technology can be used to streamline processes and enhance taxpayer service delivery. Services like electronic filing and payment can streamline and standardize the tax-paying process for all taxpayers. Information gathering and submission expenses are decreased via electronic billing machines. Taxpayers can receive information quickly and affordably using electronic communication channels like email and SMS. As a result of these technologies, there are less opportunities for collusion and extortion because there are fewer in-person interactions between taxpayers and tax officials. In addition to these three fundamental tasks, technology may also help with tax administration.

2.1.4 Technology and Real Estate Taxes

Despite making up only around 3% of all taxes in African nations (Figure 3b), real estate taxes are frequently the main source of funding for local administrations. In comparison to other revenue streams like transfers from the federal government, it has also been demonstrated that increases in property taxes are more directly linked to increases in spending on public services (Gadenne, 2017). It will be crucial to have the right information technology systems in place to enable the application of real estate taxes as more nations pursue fiscal decentralization plans.

Real estate taxes would initially appear to not be affected by the main information challenge in taxation: the ability of authorities to identify the tax base and compute tax liabilities. This is because the tax base is visible and immovable. However, in reality, many tax administrations in Africa find it difficult to maintain complete and accurate cadasters and other databases for real estate taxation purposes. When cadasters do exist, they are sometimes outdated, and property assessments frequently do not correspond to current market prices. Additionally, administrative procedures used to collect tax money and find defaulters may be ineffective and susceptible to fraud.

Second, technology is crucial for facilitating and overseeing real estate tax compliance. The optimal technology solution will incorporate billing, payments, appeals, and enforcement in addition to supporting property identification using a geographic database and value. Only 17 percent of local governments in Ghana have any form of revenue software to help with billing, according to a census report by Dzansi et al. (2022), and they found that using technology is linked to increased revenue collection. Additionally, they discover that revenue collectors who used electronic tablets with geographical data and

navigational instructions to more conveniently locate properties earned twice as much income as collectors in the control group utilizing a randomized trial in a sizable municipal administration. The cost of compliance and income loss can both be decreased with the use of technology solutions. The use of a payment system in door-to-door property tax campaigns in Kananga, Democratic Republic of the Congo, is described by Weigel (2020) and Bala'n et al. (2022). Instead of going to the tax office, taxpayers paid tax collectors in cash, which reduced their compliance expenses.

2.1.4.1 Technology and Income Taxes

A significant source of income for African countries, income taxes paid by people, businesses, and employees account for roughly 33% of total revenues (UNU-WIDER Government Revenue Dataset, 2021). Corporate income and other personal income taxes are often self-declared, offering more scope for evasion than Pay-As-You-Earn (PAYE) taxes, which are withheld at source from wages and salaries (Kleven et al., 2011). Because of this, they are more susceptible to broader structural problems like high informality and low tax morale, which in some cases also influence other tax categories. The informality of many people's and businesses' operations—many of which operate entirely outside the reach of the tax authority—is a major barrier to income tax optimization. The fact that there is a high percentage of non-compliance among taxpayers, including those who are properly registered, presents a second significant difficulty for income taxes. Thirdly, it is challenging for African tax administrations to effectively monitor self-reported income tax compliance due to significant constraints in their traditional enforcement techniques.

In this situation, technology may play a significant role in improving the efficiency of income tax collection in a variety of ways. Technology can be utilized to streamline tax registration procedures for taxpayers, such as by creating one-stop shops for businesses.

Additionally, taxpayer e-services like e-filing and e-payment options, as well as web tax portals, can greatly lessen the compliance burden, improve the predictability and transparency of taxes, and decrease the opportunity for corruption, all of which may boost compliance willingness. IT systems for tax administration, such Electronic Fiscal Devices, can give vital sales data that can subsequently be automatically cross-checked with self-reported income tax forms. The tax administration may also receive and compare information from third-party reporting, such as VAT information from customers and suppliers and rental income withholding against self-reported income.

2.1.4.2 Property Tax and Technology

Although only 3% of taxes in African nations are property taxes (Okunogbe and Santoro, 2023), they are frequently the main source of funding for local administrations. As more countries implement fiscal decentralization policies. The right information technology systems must be in place in order to make it easier to apply property taxes. Property taxes would initially appear to be unaffected by the major information problem in taxation and the capacity of management to find out the tax base and assess tax obligations countries due to the identifiable and unbiases of the tax base (Okunogbe and Santoro, 2022).

However, in reality, several tax agencies in Africa, particularly Ghana, struggle to maintain complete and correct cadasters and other databases for the purpose of property taxation. When cadasters do exist, they are sometimes outdated, and property assessments frequently do not correspond to current market prices. Additionally, administrative procedures used to collect tax money and find defaulters may be ineffective and susceptible to fraud. These problems might be aided by technology (Okunogbe and Santoro, 2023). This is so that properties may be identified and valued with the use of

technology. Traditional valuation methods, such as those based on building expenses, are allegedly expensive and time-consuming (Kamara and Kamara, 2023). Other times, property owners are requested to self-declare the value of their assets, albeit this information is prone to fraud. Computer-assisted mass appraisal techniques are often employed in middle- and high-income nations to determine an estimated market value for real estate utilizing information on the property's attributes (location, size, amenities, etc.), as well as the sale price from recent transactions. The requisite information on current purchase prices, however, is usually missing in many African contexts, such as Ghana, with poor real estate markets (Okunogbe and Santoro, 2023).

The goal of tax administration is to transition away from manual systems, which are characterized by tax official discretion regarding taxpayers, laborious and error-prone data entry, and case-by-case detection of evasion. Instead, tax administration will rely on electronic systems, which provide taxpayers with a more uniform and predictable experience, timely data for decision-making, and automated detection of suspicious activity. In this thesis, the paradigm developed by Okunogbe and Santoro (2022) is used to assess how technology could support Ghana's property tax system. The findings of the study may have implications for basic tax administration responsibilities for the main tax types, including income taxes (personal, corporate, and payroll), trade taxes, and consumption taxes.

Tax compliance can be ensured through technology (Okunogbe and Santoro, 2022). The government must be able to pinpoint the tax base in order to be able to collect taxes. Tax authorities may gather data to identify taxable entities (such as people or property during registration processes) using technology-based techniques. Additionally, these

technologies can be used to gather information on tax liabilities that a person might otherwise try to conceal. For instance, tax authorities may mandate that businesses use electronic billing machines (EBMs) to keep track of sales transactions. Additionally, they might get data from places like financial institutions, vendors, clients, and employers.

Using technology, Compliance can also be tracked (Okunogbe and Santoro, 2022). The tax authority can use technology to identify tax evasion when it takes place. Large volumes of data can be collected and analyzed using technology, and discrepancies between self-reported and third-party tax obligation can be automatically found. By developing a risk profile for each taxpayer and giving priority to those at higher risk of dodging, analysis of various evasion indicators enables a tax authority to target audits based on data.

Technology can also be employed to make compliance easier (Luttmer and Singhal, 2019). Technology can be used to streamline processes and enhance taxpayer service delivery. Services such as electronic payment and filing streamline and standardize the tax-paying process for all taxpayers. EBMs lower the cost of gathering and submitting data. Taxpayers can receive information quickly and affordably using electronic communication channels like email and SMS. Additionally, these technologies lessen taxpayer-tax official face-to-face interactions, which lowers the potential for extortion and collusion (Okunogbe and Santoro, 2022).

In addition to these three fundamental tasks, technology may enhance tax administrations' capacity to make prompt and data-driven decisions, such as projecting revenues, gauging progress, and keeping tabs on employee performance (Torgler, 2020). The Freetown City Council in Sierra Leone recently adopted a more straightforward "points-based" system

with assistance from the International Growth Centre, the International Centre for Tax and Development, and the UK government (Grieco et al., 2019). The project mandated that Freetown's government find and measure properties using satellite images. They then sent out teams to gather information on qualities that could be easily seen, like the condition of the walls, roofs, and windows. They then developed a straightforward model to determine the taxable value of each property using the available data on rental values.

With this strategy, the number of properties on the tax register increased by approximately 20,000, from 57,000 to about 110,000. Importantly, the new approach resulted in significantly larger tax bills for the most valuable properties, owned by the wealthiest taxpayers and traditionally under-taxed (Kamara et al., 2020). As a result, the tax structure is now more progressive. Similar evidence may be found in Senegal, where only approximately a third of the cadastral plots in Dakar are currently appraised, according to Knebelmann et al. (2021).

Due to defective and biased valuation techniques, the rental values shown on the roll are frequently lower than those discovered from other sources, such as owner surveys and real estate specialists. Additionally, the cadastral data on plots in the tax database is not linked to the taxpayers' accessible and known addresses. It is impossible to issue tax notices to the majority of property owners due to the inconsistent data. Another problem is that tax agents must manually gather updated data on properties, which is time-consuming, labor-intensive, and prone to error. The following paragraph presents the case study from Liberia that illustrates how utilizing information from a recently developed computerized tax database improved tax collection.

Like many low-income nations, Liberia has a significant non-compliance rate for real estate taxes. Without complete information on property location, ownership, and values, tax enforcement cannot be carried out in a systematic manner, and many properties remain outside of the tax net. Only 5% of residential property owners were aware of the existence of a property cadastral registered for taxes, according to estimates from 2013 by Olabisi. A low-cost technical investment has been made by the Liberia Revenue Authority (LRA) to build a new property database. Young people were hired and taught by the tax authorities to record properties' locations, owners, photos, and GPS coordinates using open-source software on tablets. The 'foot soldiers,' as they were known, went door to door and performed a quick interview with each household to record property attributes and gather ownership information including a picture of the property. As a result, a new property database was created, which the tax authority then used to administer property taxes.

The tax authority sent letters to taxpayers requesting payment of real estate taxes using the data from this new database. Property owners were assigned at random to one of four different notice kinds before they were sent out (Okunogbe, 2021). A "plain notice" explaining the property tax need and the payment process was given to the first group. The "detection notice" for the second group was tailored using information from the new tax database; it was addressed to the owner of the property by name and included a picture of the property. A "penalty notice" outlining the legal ramifications of noncompliance was given to the third group. A "detection and penalty notice" that included elements of the first two notices was given to the fourth group.

The finding and warning notice caused recipients' rates of property registration and tax payment to treble in comparison to the baseline registration rate of 4% and payment rate

of 2% among those who received the basic notice. This intervention demonstrates how organizing publicly accessible information on property tax liabilities using technology might increase tax compliance. It draws attention to the interdependent functions of informing taxpayers of the government's capacity for detection and warning them of the repercussions of noncompliance. The fact that less than 15% of those who received alerts registered or made a payment, underlines the possibility that other factors, such as enforcement, may be significant.

Next, expertise is crucial for simplifying and overseeing real estate tax compliance. The optimal expertise solution will incorporate billing, payments, appeals, and enforcement in addition to supporting belongings proof of identity using a geographic database and value. Only 17% of local governments in Ghana are reported by Dzansi et al. (2022) to have any form of revenue software to help with billing or a computerized database of properties. They also found that using technology is related to higher revenue collection. Instead of going to the tax office, taxpayers paid tax collectors in cash, which reduced their compliance expenses.

To provide taxpayers with receipts, tax collectors employed portable printers. Each transaction was recorded in the device's memory, and the government database was frequently downloaded. Supervisors checked that the incomes put matched the volumes on the issued receipts in order to detect leakages. Numerous of the technologies discussed in this section can be implemented by local governments at affordable costs due to the increasing growth of open-source software for the development of geospatial databases and straightforward record keeping. Software must be piloted and tested to ensure that it satisfies the specific requirements in a given setting. In order to demonstrate how

georeferenced data systems and satellite imagery tools can be used in the detection, registration, characterization, and valuation of properties, Knebelmann (2022) gives thorough illustrations from the experiences of more than 15 property tax digitalization initiatives in various nations.

2.1.5 IT adoption in Africa

Across the continent, IT usage is still expanding significantly. Less than 5% of Africans used the internet in 2008. By 2018, this percentage had grown five times to 25% (World Development Indicators, 2018), and it is still rising (Okunogbe and Santoro, 2023). With around 90 subscribers per 100 persons across the continent, mobile cellular service has a particularly high penetration rate—more than twice as high as it was a decade ago. Africa has advanced significantly in various technology fields, particularly with regard to the uptake of mobile money.

This is because businesses like M-Pesa are able to forge ahead of the curve in terms of technology, allowing customers to avoid using conventional financial service providers. Kenya has been a pioneer with more than 50% of adults using a mobile device. High levels of mobile transactions are also present in nations including Ghana, Gabon, Namibia, Zimbabwe, Uganda, and Zimbabwe. While sending remittances is the most popular use of mobile money, other business uses, like paying energy bills and collecting compensation, are beginning to take off. This has potential for Africans who use digital services for tax-related objectives. The use of IT is expanding throughout Africa's many governmental sectors. Comparatively to other government agencies, tax administrations frequently set the pace for technology adoption and digitalization in many nations (World Bank, 2016).

2.1.5.1 Technology and consumption taxes

Sales tax, VAT, and excise taxes are all examples of consumption taxes. Like the rest of the globe, Africa is adopting VAT more frequently; it now makes up around 40% of all tax revenue (ATAF, 2019). The VAT has a great potential to increase compliance, despite being quite sophisticated and difficult to administer (Slemrod and Velayudhan, 2022), mostly due to its inherent self-enforcing system, which requires buyers to declare their input purchases in order to apply the VAT they paid toward their own VAT duty on sales. As a result, even while reporting the same transaction, buyers and sellers have opposite motivations: buyers want to maximize the amount they pay, while sellers want to decrease the amount they receive reducing the opportunity for evasion (Porumboiu and Brezeanu, 2019). A paper trail, or a record of the exchanges made by the several traders who make up the value chain, is produced by the VAT, which is significant. Such a trail offers tax administration a plethora of data for their monitoring role, especially when it is digitalized (Okunogbe and Santoro, 2022).

A complex tax like the VAT can be correctly administered with the help of technology. In the majority of African countries, electronic fiscal devices (EFDs), such as EBMs, have been implemented concurrently with the introduction of VAT (Mascagni et al., 2022). EFDs are gadgets that automatically record transactions as they happen and send this data electronically to the tax authority. These tools could potentially enhance tax compliance in a variety of ways. They help define at first. Second, and related to the first point, the authority may make use of this data to create an audit plan based on data-based, automatic flags of anomalies and discrepancies, which will ensure proper enforcement. Third, by helping tax-paying companies keep records, EFDs are thought to make compliance simpler.

Particularly in their more advanced form, EFDs have the potential to store significant data on sales, purchases, and inventory that taxpayers can access when paying their taxes (Mascagni et al., 2022). Similar to this, more sophisticated software-based EFDs that are coupled with e-filing platforms can provide taxpayers with more information regarding deadlines, VAT rates, and other topics. In contrast to these important theoretical benefits of EFDs, the research that is currently available on their impact in Africa. As evidenced in scenarios outside of Africa (Fan et al., 2018), it is true to argue that such technology improved the collection of VAT income. Some encouraging data from Ethiopia is provided by two studies analyzing the impact of electronic sales register machines (ESRMs), or EFDs as they were known there, on VAT compliance.

The following paragraph lists the main takeaways from these evaluations. Adoption of ESRM has generally beneficial effects. On the one hand, the adoption increases reported sales and VAT liabilities, according to Ali et al. (2021). They also demonstrate that, despite an increase in employment rates, this improvement did not result in the reduction of the revenue base. On the other hand, Mascagni et al. (2021) discover an increase of 48% in tax revenue, including VAT. The 12% increase in income taxes is evidence of spillover effects. They also track beneficial effects on reporting accuracy.

However, a strategic taxpayer response partially dampens such a favorable effect. Mascagni et al. (2021) and Ali et al. (2021) mostly rely on data on administrative taxes provided by the revenue authority. The authors have access to data on tax returns and payments from a wide range of years as well as the adoption date of machines. A difference-in-differences design is used in both investigations. In Ali et al. (2021), a matching method that makes adopters and non-adopters more comparable strengthens the

design. In Mascagni et al.'s (2021) study, the sample is subject to a number of limitations (for instance, never adopters are excluded), and a triple difference-indifference is employed to balance out the treatment and control groups.

In a separate context, Eissa and Zeitlin (2014) find that the initial version of EBMs, which automatically records a firm's sales, causes an average 8% increase in VAT payments in Rwanda. The effects differ greatly by industry and company size, with smaller companies, as well as companies in the computing/printing, building, and restaurant industries, suffering greater effects. However, a growing body of qualitative research demonstrates how taxpayers typically struggle to make the most of technology, which has worrying implications for equity. For instance, Mascagni et al. (2022) demonstrate that, particularly for small taxpayers, the anticipated benefits of EBM do not always manifest. The authors first demonstrate that smaller businesses are more likely to have poor record keeping (as indicated by discrepancies between the VAT returns, they give in to and the data inevitably stored in the EBM).

They then conducted focus group conversations to show that smaller taxpayers are disproportionately affected by the complexity, confusion, and technical concerns with the EBM, such as difficulty topping up SIM cards, as well as problems with the essential tools, such as PCs and internet connections. For smaller taxpayers who already have limited resources when utilizing the conventional EBM, the more modern version EBM2 appears to be still expensive—especially in terms of the necessary equipment (computers, connectivity, etc.). This disproportionate impact brought on by ever-evolving versions of EBMs and other advanced technologies could worsen already-existing disparities in the taxpayer population.

Similar challenges are encountered when deploying EBMs in Kenya and Tanzania. The absence of training for VAT-collecting firms was noted as a barrier in six of the seven studies that Eilu (2018) reviewed that were based on the adoption experiences of these two nations. This led him to draw this conclusion. The significant sunk costs linked to technology adoption were the second most frequently mentioned issue. The potential of the VAT-generated paper trail, which has proven to be essential in other situations (Pomeranz, 2015; Carrillo et al., 2017), is still unclear as far as African revenue authorities are concerned. This is due to the fact that it is still unclear how well the built-in procedures of the VAT will be able to identify the tax base and check compliance. Despite the usage of EBMs, recent data reveals that data provided by buyers and sellers for the same transactions frequently varies (Mascagni et al., 2019). In general, a difficulty like this suggests that much more could be done in terms of investing in automated databased monitoring systems, which have shown to be successful in more developed environments (Mittal and Mahajan, 2017; Shah, 2020).

2.1.5.2 Technology and trade taxes

Trade and customs taxes account for a sizeable component of total tax receipts, accounting for 14% of them in Africa compared to 4% on other continents. Additionally, according to the World Customs Organization (2017), numerous countries obtain the majority of their VAT revenue at the border. National customs departments are crucial for fostering trade and interaction with foreign investors, and they also contribute significantly to revenue mobilization. At the same time, large levels of corruption are usually present in customs organizations. This is primarily due to the fact that risk-based systems of control and accountability.

Technological innovations have the potential to significantly enhance the administration of trade tariffs. Like automated VAT systems, automated customs systems also produce high frequency transaction level data that can be used for tax monitoring. It is hardly surprising that the initial, unproven initiatives to digitalize and automate tax administration started in customs offices, particularly in underdeveloped countries. These efforts typically took place at the same time as more thorough improvements to the customs bureaucracy. One example is the Asycuda platform for trade taxes, which offered the first "pilot" examples of data management system integration and automation. This paved the way for the implementation of automated methods for the administration of domestic taxes as well. All essential operations of customs tax administration can be considerably enhanced by a fully integrated customs management system like Asycuda, which rapidly processes all necessary customs documentation, including cargo manifests, customs declarations, payments, and other regulatory obligations (UNCTAD, 2020).

First, technological advancements may make it easier to define the value and quantity of imported goods are included in the taxable basis. Interconnected systems that required merchants to produce a unique taxpayer identification number in order to identify the tax base and connect them to other tax databases would be very beneficial to the tax administration (World Customs Organization, 2014). In order to enhance risk assessment and profiling policies, artificial intelligence tools like pattern recognition can be very helpful (World Customs Organization, 2014).

Last but not least, Technology might, more broadly, streamline the import and export of commodities via customs, which would encourage international trade by making cross-border transactions less burdensome. Single Windows are one-stop, Asycuda-integrated

electronic solutions that let dealers submit data to meet all import and export regulatory requirements. at a single point of entry. Single Windows improve and standardize traders' experiences by minimizing interactions with inspectors, considerably cutting application processing times, and enhancing predictability and transparency (UNCTAD, 2020). Additionally, Asycuda's integrated e-payment modules significantly reduce merchants' compliance costs and the time it takes for customs clearance, improving their experience while accelerating the transfer of money to government accounts (UNCTAD, 2020).

However, there isn't a lot of evidence currently available about how technology is affecting African practices. According to a first batch of qualitative research, data sharing and automated cross-checks between domestic and customs authorities are currently only partially integrated. According to Mayega et al. (2021), the URA e-tax in Uganda still requires integration-related changes. For instance, the system cannot verify part of the given data against data that is already present in Asycuda World's customs platform and other sub-databases in the e-tax platform. Malawi has experienced a comparable problem, according to Ligomeka (2019). To cross-check information from domestic tax returns and data from the customs information management platform, the tax administration in Zambia successfully implemented a data matching operation in 2018 (ATAF, 2019). This is some positive oblique evidence. A second line of research suggested that deliberate sabotage by customs officers could lead technology in customs agencies to quickly backfire. The case study from Madagascar that succinctly illustrates this concept and provides new evidence of the effects of IT-based data on customs performance in an African country is summarized in the following paragraph.

Nearly 50% of all tax revenue in Madagascar came from customs in 2019, and the country has a very low tax to GDP ratio (below 10%). The undervaluation of imports and other forms of corruption by customs agents were major issues since revenue monitoring was concentrated within a limited group of inspectors. Around two thirds of non-oil imports and three quarters of non-oil tax revenue have their declarations approved by only 16 inspectors in Toamasina, the country's main harbor. On average, each inspector in the country is in responsible of overseeing the management of the 10 million USD in annual import revenue.

To assist customs with IT, equipment, risk analysis, and advice on the worth of trafficking goods, Toamasina's customs office teamed with a company that offered information services. Such guidance includes a thorough assessment on the cost and caliber of declared products. Only high-risk declarations that are more likely to avoid tariffs are given the advise. The effects of such intervention on customs outcomes and inspectors' behavior were assessed by Chalendard et al. in 2020. There are two steps in the process. First, using a regression approach, the authors gauge the effects of providing third-party value guidance information on inspector behavior and customs outcomes. Second, in an innovative custom randomized controlled experiment, high-risk customs declarations are assigned to the customs risk management unit for better information provision, and declarations are randomly tagged for additional monitoring. First, the authors show that getting third-party valuation guidance increased the likelihood that products would be scanned by 10% and the risk that a declaration would be deemed fraudulent by 22%, respectively. Third-party data accessibility also led to an average 5.2 percentage point increase in tax revenue.

However, for situations where there is the most potential for corruption, third-party value guidance is least beneficial in enhancing customs outcomes. Such evidence is supported by the RCT, which shows that even with better information, outcomes are still not as favorable. The majority of customs outcomes were not improved by greater monitoring either. An important takeaway from this study is that if customs officials' motivations for corruption remain substantially unaltered, they might not respond to new IT-based information in the best way possible. Additionally, increased surveillance is mostly ineffectual in a setting where there is little concern for compliance and a pervasive culture of impunity.

2.1.5.3 Technology and income taxes

According to the UNU-WIDER Government Revenue Dataset from 2021, income taxes paid by people, businesses, and employees account for around 33% of all revenues in Africa. Compared to Pay-As-You-Earn (PAYE) taxes, which are withheld at source from wages and salaries, corporate income and other personal income taxes are frequently self-declared, providing more opportunity for evasion (Kleven et al., 2011). They are therefore more vulnerable to larger structural issues like high informality and low tax morale, which can occasionally also affect other tax categories. Income tax optimization is significantly hampered by the informality of many people's and enterprises' operations, many of which operate completely beyond the purview of the tax authority.

The existence of an informal sector, according to Joshi et al. (2012), produces horizontal inequities and economic distortions that may be harmful to how people view taxes and the moral character of a community. The majority of the damage to revenue inside the informal sector is caused by the hardest to tax professions, such as those of doctors, lawyers, and

architects (Ogembo, 2020). Even among those who are duly registered, professional and high net worth individuals who use tax minimization tactics cause significant revenue losses and harm to the fairness of the tax system (Santoro and Waiswa, 2022).

The majority of taxpayers in Africa who are registered either do not file their returns or zero-file, and there is a substantial prevalence of non-compliance even among those who are formally registered (Santoro, 2021). Income taxes are significantly hampered by this. Taxpayers in Africa also have very low morale and a lack of desire to pay. Low willingness to pay has been linked to a variety of factors, including mistrust of the government (Bratton and Gyimah-Boadi, 2016), dissatisfaction with public services (Blimpo et al., 2018), an opinion that the tax system is unfair (Okunogbe and Edjigu, 2022), and the challenge of navigating complicated tax regulations (Mascagni and Santoro, 2018).

Thirdly, it is challenging for African tax administrations to effectively monitor self-reported income tax compliance due to significant constraints in their traditional enforcement techniques. In this situation, technology may play a significant role in improving the efficiency of income tax collection in a variety of ways. Technology can be utilized to streamline tax registration procedures for taxpayers, such as by creating one-stop shops for businesses. Furthermore, taxpayer e-services including electronic filing and payment choices, as well as online tax portals, can significantly reduce the burden of compliance, increase tax predictability and transparency, and reduce the chance for corruption, all of which may increase compliance willingness.

IT systems, such as EFDs, can provide crucial sales data for tax administration, which can subsequently be automatically cross-checked against self-reported income tax forms.

Additionally, the tax administration may obtain and compare data from third-party reporting, such as VAT data from clients and suppliers and data on rental income withholding vs self-reported income. The currently known evidence is described below and is once again fairly ambiguous.

2.1.5.4 Pay as you earn

Theoretically, there is less room for evasion with PAYE than with self-declared income due to the employer's at-source PAYE tax deduction (Kleven et al., 2011); nevertheless, there is very little actual evidence from Africa to support this. Instead, the available descriptive evidence indicates that there are still significant gaps in the quality of PAYE returns data, which makes it difficult for revenue authorities to use it effectively and creates opportunities for tax fraud. One problem is people's improper tax identification. According to descriptive data from Ethiopia (Mascagni and Mengistu, 2019) and Uganda (Mayega et al., 2021), the tax identification numbers (TINs) for employees are frequently missing or entered incorrectly in employers' PAYE forms.

As a result, the tax authorities is unable to trace individual payments over time or compare those people' records with those of other databases. It is also possible for the amount of taxes sent to be inaccurate when reporting aggregated PAYE taxes at the employer level without connecting to specific individuals. Additionally, it is challenging to calculate individual income totals and implement progressive income tax rates since taxpayer-level data from PAYE cannot be matched to other data sets (such income tax returns). The PAYE data are not completely digitized, which is a second issue that was brought up in the Ethiopian context but is prevalent in many countries. It is quite unlikely that this data will be analyzed because many returns are retained in paper form, which is vulnerable to loss or decline over time (Mascagni and Mengistu, 2019).

2.1.5.5 Corporate and personal income taxes

In order to make it easier for self-declaring business income earners to comply with the law and pay corporate or personal income taxes, several technology interferences, such as EFDs and e-filing/e-payment systems, have been developed in Africa. It is also still unknown if the increases in VAT revenue related to EFDs would result in a corresponding rise in income taxes. If anything, despite considerable increases in VAT reporting, EFD users in Ethiopia only slightly enhance their income tax filing (Mascagni et al., 2021). The complexity of the IT system used by the tax management, which would restrict differences, also influences compliance gaps of this nature. A first strand of the research examines variables related to taxpayers' acceptance of and actual experiences with tax e-services in relation to the potential use of IT to facilitate compliance of income taxpayers. This evidence is summarized in the paragraph that follows.

In accordance with traditional tax procedures, taxpayers and tax officials must frequently meet in person and paperwork must be filed on paper. This approach has a variety of drawbacks, such as high compliance costs, tax authorities' collusion or extortion, and bad tax records that limit the analysis that tax agency may conduct for compliance monitoring and forecasting. Although new technology has the potential to digitize taxpayer services, there are major adoption barriers that might severely limit the potential for revenue mobilization. Many African governments have been investing heavily in e-services to move from paper-based systems to entirely digital platforms. As an example of such e-services, e-filing and e-payment services enable the electronic filing of returns and the electronic payment of tax liabilities. The majority of completely automated and integrated tax administration systems contain these electronic services. The linked web portals have several benefits in terms of better record keeping, access to assistance, and clear deadline

information. Many African studies try to understand the difficulties in adopting these e-services.

2.2 Challenges of Tax Digitalization from the perspective of Tax Administrators

The tax administration itself plays a significant role in a variety of factors that affect the success of digitalization interventions (Okunogbe and Pouliquen, 2022). First, finance is a crucial consideration. Governments must acquire sufficient money for the introduction, development, and upkeep of any technology. Constraints on the budget are generally seen as a key issue everywhere. For instance, Malawi has a budget set aside just for implementing information technology, yet it is insufficient. The new automated system Tax Pro Max was significantly developed with funding from Nigeria's tax agency. The revenue authority frequently asks for assistance from the government and donors.

To properly benefit from any technology, the tax administration must also have the necessary tools and a strong infrastructure (Okunogbe and Pouliquen, 2022). Internet connectivity, for instance, is a significant problem for tax administration in Malawi. The very same information technology systems occasionally have outages, and traffic is frequently backed up. These systems' traffic management continues to be a problem, particularly with the integrated tax administration system (ITAS), which frequently crashes. But due to the system's high cost, which is consistent with the financial issue mentioned above, it has not been improved.

Hard infrastructure obstacles including inadequate internet access and power outages are anticipated to seriously hinder the success of the current digitalization in Ghana and Sierra Leone. The same risk is recognized in Nigeria, where it is predicted that infrastructure

problems will have a substantial impact on Tax Pro Max and e-services for taxpayers. In Rwanda, there is peak-time system congestion that is predicted to get worse without sufficient (and costly) investments in server and storage capacity increases.

This is occurring at the same time that more and more people are coming into the tax net. Automatic cross-checks of multiple data sets, including VAT, income taxes, and EBMs, were built up by Rwanda's tax office. A benefit of the availability of tax infrastructure and procedures is More work could be done in this area, which might eventually lead to pre-filling of income tax forms, which is now typical in high-income nations, that the self-reported turnover for income taxes is already benchmarked to the amount of sales as conveyed by the EFD.

Third, the readiness and incentives of revenue authority staff to use the new technology are another crucial prerequisite. Because tax authorities in Sierra Leone are accustomed to a particular method of operating that may be challenging to change in a short period of time, there are worries over change management, which will determine whether the digitization turns out to be optimal or not (Mascagni et al., 2022). Similar experiences have been reported from Malawi, where technological advancements have closed gaps that certain employees had previously exploited for unlawful activities. As a result, there was a lot of opposition and the introduction of digitalization was delayed.

According to Mayega et al. (2019), there appear to be few incentives for personnel to change in the case of Uganda. They frequently oppose using new technologies for tax collecting because it is inconvenient for them. While ITAS modules are more complex, with a variety of frequently sophisticated checks and controls, and demand more training

and dedication, staff are highly familiar with Excel, where they have greater freedom in what to input (Okunogbe and Pouliquen, 2022). Similar to Ethiopia, manual and digital processes coexist there and are challenging to change.

Many returns are manually entered by tax officials instead of being caught in SIGTAS, especially outside of the capital. Due to staff members' poor comprehension, many declarations are lost as a result of this. The revenue authority is giving staff members ongoing training to combat this problem. Additionally, RRA in Rwanda conducts extensive training where even little changes (such as minor adjustments to a single module) are thoroughly reviewed with the personnel, who are then fully prepared to handle these changes (Okunogbe and Pouliquen, 2022).

The similar tendency is reinforced in Nigeria, where technology is prevalent and staff workers seem to be welcoming the shift. These encounters with tax authorities serve as a reminder of the necessity to guarantee that digitalization is accompanied by a significant change in workplace culture and organizational changes for the workforce. This suggests that there won't be a separate information technology division in charge of the digitalization process. Moving from case-by-case enforcement to extensive, data-driven interventions, for example, are significant improvements that can be made to optimize the impact of newly acquired data and monitoring capability on compliance (Okunogbe and Pouliquen, 2022).

These structural changes are especially important when digitalization is combined with an increase in the number of registered taxpayers. Additionally, it is crucial to ensure that the needs of the tax authorities and the IT solutions chosen are adequately matched because

digitalization initiatives are sometimes very expensive. The procurement procedure should involve extensive staff consultation, and maintenance contracts ought to be flexible enough to accommodate upcoming software updates.

2.2.1 Challenges of Tax Digitalization from the perspective of Taxpayers

First, the infrastructure limitations and connectivity concern prevalent inside a particular tax administration inevitably have an impact on the ability of taxpayers to use a technology. Taxpayers frequently have to resort to manual processes when connectivity is poor, which is a problem shared by the selected countries (Okunogbe and Pouliquen, 2022). For instance, when EFDs are down, organizations must manually record transactions, which reduces the benefits of this technology (Santoro et al., 2022b).

Due to a lack of internet connectivity, Ethiopian taxpayers had to go to the regional tax office in order to submit electronically until recently. The same pattern can be observed in Eswatini, where electronic filing was mandated in 2021; however, taxpayers in remote locations without sufficient internet access are still required to visit the local offices or internet kiosks in order to access the web portal and file their returns (Santoro et al., 2022).

Due to poor internet connectivity, the Ghana Revenue Authority (GRA) has made it possible for taxpayers to file tax returns online in Ghana, although this alternative is not as frequently used as it could be. As a more user-friendly tool for tax declaration and payment for presumed taxpayers as opposed to the electronic-tax platform that requires an internet connection, the RRA in Rwanda introduced the USSD-based M-declaration application that runs on basic feature phones, with the clear policy intention of reaching less connected taxpayers and facilitating their compliance. The software also makes it

easier to pay taxes through a direct link to mobile money systems that operate without a hitch on USSD phones.

Information technology literacy and high adoption costs should be considered when implementing new technologies (Santoro et al., 2022). For instance, in Uganda, the new e-register system that was integrated with the national ID database received little taxpayer participation, which resulted in a loud response from taxpayers that the URA's registration process was overly burdensome. To give another example from Uganda, the main issue with electronic filing is that the average taxpayer lacks the knowledge of the tax code and familiarity with information technology tools necessary to complete online forms (Okunogbe and Pouliquen, 2022). Due to the fact that computerized returns are only available in English, there are additional language restrictions at play.

This suggests that most taxpayers must utilize a middleman or tax agent to register or file returns, which could lead to agents preying on taxpayers' ignorance and overcharging them. Taxpayer education in Malawi is one of the MRA's key concerns. However, COVID-19 prompted MRA to suspend its tax education and training initiatives. There is a significant chance that the intended electronic filing system won't be extensively used because of knowledge and training gaps. Last but not least, the majority of Rwandan taxpayers are familiar with the country's e-government platform, Irembo, as well as basic IT solutions which reduces their resistance to using technology for taxation.

The cost of compliance is still considerable, and smaller taxpayers are disproportionately affected. The authority is aware that it is customary for less-educated taxpayers to go to tax centers to receive staff assistance with electronic filing, to consult with tax consultants,

or to go to designated internet cafés. The launch of the aforementioned M-declaration app, which essentially eliminated the need for small firms to engage accountants and so cut their compliance expenses, is another example of how the RRA intended to lessen the burden on smaller taxpayers (Schreiber, 2018). In order to reduce their tax liabilities, taxpayers may actively exploit an IT system (Mascagni et al., 2021).

Taxpayers are aware of the risk and are aware that, in the case of self-declared income taxes in particular, the quality of incoming data from new information technology options and their wider potential for improving compliance largely depend on the taxpayer's choice of what to declare and how to use the tools. According to taxpayers, enforcement actions are necessary to prevent taxpayers from posing as taxpayers in order to avoid the new reporting requirements linked to the use of new technologies

2.3 Theoretical Review

This study found to main theories. Stakeholder theory and the Unified Theory of Acceptance and Use were appropriate for reaching the research aims.

2.3.1 Stakeholder Theory

The stakeholder theory which is intimately linked to the legitimacy theory is particularly useful for justifying and analyzing the expectations of stakeholders from an institution. The stakeholder theory describes how an entity interacts with its external and internal stakeholders (Freeman, 1984). It explains why stakeholders' information needs necessitate the introduction of digitalisation of property tax systems.

The stakeholder theory explains that for an entity to be successful, it must consider the interest of stakeholders (Parmar et al., 2019). Additionally, Riyadh (2020) asserts that the

ability of an entity to achieve its objectives is dependent on its effort to tighten its relationship with stakeholders. On this basis, the study contends that law makers are required to seek the support of tax payers with regards to the digitalization of property tax system.

The theory is essential in this study to explain the qualities that the digitalized system must have in order to satisfy stakeholders demand in order to comply with property tax payment. In light of this theory, the study posits that when the digitalized system is developed to ensure less effort expectation, accessibility and reliability, and less costs, taxpayers will be satisfied which will lead to property tax compliance.

2.3.2 Unified Theory of Acceptance and Use of Technology

Unified Theory of Acceptance and Use of Technology, or UTAUT, was created by (Venkatesh et al, 2003). Based on social cognition theory to describe a user's initial motivation for using an information system and their subsequent behavior. Understanding the discrepancy between someone's intended usage of an information system and their actual use of the system is the goal of UTAUT (Venkatesh et al., 2003). The UTAUT model demonstrates how behavioral intention and actual use of a system are influenced by performance expectancy, effort expectancy, social influence, and facilitating factors. Users will adopt a new system depending on their expectations of it, i.e., their perceived performance and the work they will put in to obtain that performance. Their decisions are also influenced by their social circumstances. All these characteristics are considered when determining whether or not a user intends to use a system. Gender, age, experience, and voluntary usage are all characteristics that determine behavioural intention and use behaviour.

This typical will be useful since it shows how factors like performance expectations, effort outlooks, social influence, and enabling circumstances affect Ghanaian taxpayers' acceptance of the digitization of property tax for the goal of tax compliance in Ghana.

When viewed from the lens of this theory, this study postulates that when the digitalized tax system is less costly to use, easily accessible and reliable, and demands less effort to use, the taxpayers will accept it, leading to property tax compliance.

2.4 Empirical Review

2.4.1 Expectation of Digitalization of Property Tax

The use of digitalization as a technique to identify and lessen avoidance and evasion is growing. Digitalization of tax has significant ramifications for taxpayers. EY (2017) suggest that this includes taxpayers examining the assessing their readiness, defining their company strategy, monitoring the digital requirements, assessing Data quality and integrity, streamlining data submissions, responding to authority inquires, and ensuring they are sustainable and improving. The digitalization of tax raises a number of policy goals. Digitalization can assist with reducing the costs of operating the tax system in the medium to long term compared to analogue (or partially analogue) systems (EY, 2017). However, initial set up costs can be substantial. Digitalization could enable governments to develop new areas of social and economic activity that are designed to influence behaviours via tax policy. It will also increase both the volume and organisation of information that government receives, and when associated with more powerful tools of analysis, may provide enhanced information to support national statistics (Schreiber, 2018).

2.4.2 Effect of accessibility and reliability in tax digitalisation on property tax compliance

This section of the chapter presents the findings of the related and relevant studies. As a guideline to this section and to construct a critical analysis of the issues under study, each paper is systematically reviewed by indicating the research topic, main aim of the study, population, sample size and sampling technique, data analysis and results. The gaps in these studies were identified and the need to address them in literature highlighted before the findings were presented.

In Nigeria, Ajala and Adegbie (2020) conducted research on how information technology affects efficient tax assessment. The primary objective of the study was to examine how Nigeria's effective tax assessment has been impacted by information technology. The Federal Inland 2,857 people in Lagos State, Nigeria, from the Revenue Service and six selected multinational corporations' management and administrative employees participated in this study. The stratified sample size consisted of 641 respondents. The study employed descriptive and inferential analysis techniques showing that information technology has a positive, significant impact on tax assessment. To support efficient tax assessment in Nigeria, the study advised that the government establish enabling tax legislation and eliminate the ambiguities and complexities in the tax system.

Sadress and Juma (2020) investigated the role of adoption of electronic tax system as a mediating element in order to understand how perceptions about electronic tax systems and tax compliance are related. The purpose of this paper was to evaluate, using data from small business enterprises (hereafter, SBEs) in Uganda, the mediating function of the deployment of an electronic tax system in the link between attitudes regarding electronic

tax systems and tax compliance. Utilizing closed-ended questionnaires was a component of the researcher's quantitative research methodology.

This study used a cross-sectional, correlational research approach. The data was analyzed with SPSS v22 after 214 SBE managers completed usable surveys. The results showed that using of the electronic tax system is a biased intermediary in the relationship between attitudes toward the system and tax compliance. The results show that the implementation of an electronic tax system and one's attitude about it are both related to tax compliance. As a cross-sectional study, it was unable to monitor behavior changes over time.

The study's limitation was that it adopted a quantitative research methodology, which constrained respondents' freedom of expression. Despite the fact that there have been numerous studies on tax compliance, this one employed data from SBEs in Uganda, a developing economy in Africa, to offer one of the first empirical proofs of the association between adoption of an electronic tax system and tax compliance.

Olaoye and Atilola (2019) studied how information technology affects tax compliance in Kenya. The purpose of the study was to determine how Nairobi, Kenya's Kenyan Revenue Authority (KRA) employed information technology to enhance tax compliance. The study examined the effects of blockchain, big data analytics, and e-taxation on tax compliance. The target demographic for the investigation, which used a survey research design, was the entire I. T. KRA workforce. Purposive sampling was employed to administer the questionnaire, which was distributed to a sample population of 65 respondents.

The data were analyzed using inferential statistics and a descriptive statistic of means and standard deviation. The results demonstrated that information technology has a substantial

information technology has a significant positive impact on tax compliance. The study urged that new information technology be properly trained, and that the government adopt policies that allow users' information to be kept private.

2.4.3 Effort expectation in tax digitalisation and property tax compliance

The Efficacy of Mediating Effects was the title of a study by Masunga et al. (2020) on the impact of behavioral intentions to use the ICT tax system on tax compliance behavior. The goal of the study was to ascertain how Tanzania's usage of ICT tax systems as a mediating factor on tax compliance behavior affected behavioral intentions. 109 higher education students majoring in taxation made up the study's sample population. The results also showed that tax compliance was significantly impacted both directly and indirectly by performance and effort expectations (complementary mediation). The study's conclusions suggest that the government should keep funding technology awareness programs to encourage better tax compliance among current and potential taxpayers.

Etim et al. in 2020 looked at how the digitalization of Nigeria's economy affected tax compliance. The data collecting technique for this survey study design was a well-structured questionnaire that was distributed to personnel of the Federal Inland Revenue Service in the Nigerian state of AkwaIbom. The sample size was forty (40), and the data were examined using simple percentages, descriptive statistics, and regression analysis. The study's findings demonstrated that the tax system's digitalization has a significant negative impact on tax compliance. As a result, they pushed the Nigerian government to pass tax laws that supported taxing e-transactions and included taxes on them.

2.4.4 Cost in tax digitalisation and property tax compliance

Hanrahan (2020) examined the impact of digitalization on tax collection in OECD nations using static and dynamic panel data analysis. Panel data from 1995 to 2018 that included all OECD countries were used for the study. The study analyzes tax revenue using both static and dynamic panel data analysis methods to look at how the advent of digitalization has affected tax revenue. The findings suggest that digitalization may have a detrimental effect on a nation's capacity to raise more money through taxes in a nation with strong digital dynamics.

Chijioke et al. (2018) used already existing data from the Federal Inland Revenue Service and the Central Bank of Nigeria to study the effects of e-taxation on Nigeria's revenue generation and economic growth during a four-year period (2013- 2016). The findings indicate that after the bringing into existence and the adoption of e-taxation, both federally collected revenue and the tax to GDP ratio drastically decreased.

The impact of taxing the digital sector on revenue generation in Zimbabwe was examined by Wadesango et al. in 2020. The aim was to look into how the digital economy is taxed and how it affects network infrastructure. Data for the publication was gathered using questionnaires using a quantitative research methodology. The results of the study showed that digitalization has both positive and negative effects on the nation. They came to the conclusion that the government ought to adopt digital technologies on a broad scale.

In the Kibwezi sub-county of Kenya, Kiringa and Jagongo (2016) looked into the impact of online tax filing on SME tax compliance. The results showed taxpayers' opinions regarding online tax filing as well as their technical proficiency with tax compliance and return submission. The study used a descriptive survey research methodology, with the

respondent completing a self-administered questionnaire to gather primary data. There were 1,800 SMEs in the study's population, and 316 of them were chosen at random to represent the population. The researcher examined the data with descriptive and inferential statistics utilizing t-test analysis. The results of the study show that online tax filing affects SMEs' level of tax compliance. An adverse association between online tax filing. The findings of the correlation test revealed a negative link between online tax filing perception and tax compliance, but a positive correlation between technical tax filing skills and tax compliance

The studies mentioned above indicate that the literature has produced inconsistent findings. Furthermore, the researcher is unaware of any study that has examined how Ghana's property tax system's digitalization has affected tax compliance. In order to close this research gap, the current study aims to accomplish the goals outlined in chapter 1 of the thesis.

2.4 Conceptual Framework

A conceptual framework represents the researcher's synthesis of literature on how to explain a phenomenon. It maps out the actions required in the course of the study given previous knowledge of other researchers' point of view and observations on the subject of research. The relationships between the variables under examination are represented diagrammatically in Figure 2.1. The arrows indicate the direction of the relationship, while the concepts in the rectangle are the variables. The independent variables are those that are fastened to the arrow's nock. The dependent variables, on the other hand, are those that are connected to the arrow's bullet point. It can be inferred from Figure 2.1 that, accessibility and reliability, effort expectation, and cost involved are the independent variables.

Property tax compliance is regarded as the dependent variable. The study controlled for gender, age, and education due to their potential effect on property tax compliance.

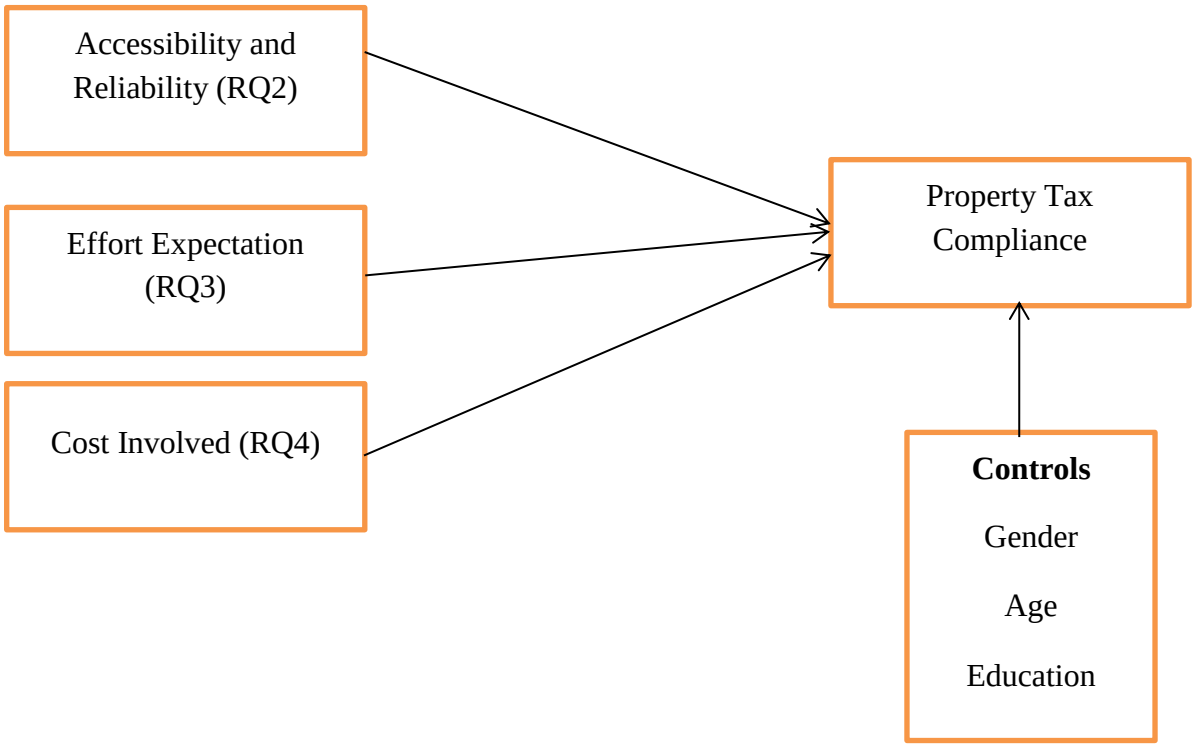

Figure: 2.1 Conceptual Framework

Source: Researcher's own construct (2023)

2.5 Chapter Summary

The chapter reviewed related and relevant past studies. It reviewed literature on the main concepts of the study. Additionally, the theories underpinning the study were featured. Moreover, findings from related past studies (empirical review) were presented. Finally, the diagrammatical representation of the relationships studied was presented. It was discovered from the entire literature review that, digitalization of tax system has the potential to influence property tax compliance.

CHAPTER THREE

METHODOLOGY OF THE STUDY

3.0 Introduction

This study attempts to evaluate how Ghana's property tax systems have become more digital in terms of obtaining tax compliance. The study's context, demographic, sample size and method, data source, data collection instruments, data validity and reliability, research design and data analysis are all covered in this chapter.

3.1 Research Philosophy

Research philosophy refers to the nature of knowledge and how knowledge is developed (Saunders et al., 2012). The assumptions made about knowledge and how the researcher views the world influences the choice of research philosophy. In light of this, the research method selected for a study will depend on the research philosophy. Four main philosophical assumptions have been identified to underline conduct of research. These include paradigm, epistemology, ontology and anxiology. Paradigm is an interpretation of the method used in gathering and elucidating knowledge about a phenomenon (Saunders *et al.*, 2012). As the researcher asserts that the existence of universally truth yet to be discovered, the naïve realism paradigm was adopted (Ponterotto, 2005). As the researcher did not intrude in the study's findings and reported the findings as they are, the positivism epistemology as an objective view to Ontology was adopted. As the researcher had expectations on the outcome of the study but believed that the expectation may be realised or not depending on the study's findings, a value-free Axiology was adopted.

3.2 Research Approach

Quantitative approach to research design was adopted in this study. Asenahabi (2019) elaborated that quantitative research encompasses the collection and analysis of data by adopting mathematical and statistical techniques to data analysis. Quantitative method involves scientific method (Grinnell Jr and Unrau, 2010) and supports the positivist paradigm (Rovai et al., 2013). Hence, the deductive approach to research was utilised as the study adopted the positivist paradigm which allows the development of hypotheses and analytical techniques to data analysis.

The study adopted the quantitative and deductive research approaches as it generalises the effect of digitalization on property tax compliance in Ghana by drawing sample from the population using the notion of already formulated theories (Hyde, 2000).

3.3 Research Design

Setting up a suitable framework for a study is the goal of research design (Hürlimann, 2019). The research design used in this study was survey research. The study is quantitative as it aimed at examining the effect of digitalization on property tax compliance, which necessitated regression analysis. A questionnaire is typically used to perform surveys (Robson, 2020). According to Saunders et al. (2012), a questionnaire enables the collection and analysis of quantitative data using both descriptive and inferential statistics.

In this study, a quantitative research methodology was used. According to Asenahabi (2019), quantitative research is concerned with gathering and analyzing data using mathematical and statistical methods. The positivist worldview is supported by quantitative methodology, which also incorporates scientific methodology (Grinnell Jr. and Unrau, 2010; Rovai et al., 2013).

This study uses a quantitative approach to research since it examines the causal relationship between the variables as well as defining the variables. For instance, the study aims to evaluate the extent of Ghana's property tax systems' digitalization, the country's level of property tax compliance, the impact of tax digitalization's accessibility and dependability on that compliance, the impact of that compliance's effort expectations on that compliance, and the cost of that digitalization's implementation on that compliance.

3.4 Population of the Study

The population is the total number of observational units. The researcher's population was 5,862,745 property owners as stipulated in the latest 2021, population and Housing Census. The study considered as property owners are those having immovable properties such as buildings, and stores and are required to pat property tax. The owners of immovable structures in Ghana formed the population. However, Greater Accra and the Ashanti Region alone constitute almost 50 percent of total immovable properties in Ghana (Ghana statistical Service, 2021). Hence, the population was expected to be 2,931,373 (50%× 5,862,745).

3.5 Sample Size and Sample Technique

Usually, if the population is huge, it is not possible to involve everyone in a study. Due to this, the researcher chose 370 respondents for the study from Accra and Kumasi using the standards set forth by Krejcie and Morgan (1970). We spoke with the respondents randomly to get their responses. Regarding sample strategy, the current study used simple random sampling, which is a probability sampling strategy..

3.6 Source of Data

For the study, primary sources of data were used. The study used primary data since it was more interested in the people than in the organizations. Primary data also known as Raw data collected from source (Boeije and Hox,2005). In this context, the data was gathered from property owners.

Primary Data refers to a data collected by the researcher through a methodology designed to answer specific questions. Primary data collection includes surveys, questionnaire interviews etc. The researcher used primary data because he wanted a direct and detailed insight into the target audience and their subsequent behaviour. (Mwita, 2022)

3.7 Data Collection Instruments

The device used to collect data is referred to as a data collection instrument. Structured questionnaires were employed as the study's data collection tool.

Five (5) components made up the questionnaire that was created. Section A provided information about the respondents' demographics; Section B provided information about the measurement items' accessibility and reliability; Section C provided information about the effort expected; Section D provided information about the cost involved; and Section E provided information about the measurement items' compliance with property tax laws. There were six (6) measurement items for effort expected, six (6) for effort and reliability, five (5) for cost involved, and six (6) for property tax compliance. There were also six (6) measurement items for accessibility and reliability. The source for all of these measurement elements were adoped from Fossung and Warah (2022). On a Likert scale of 1-Strongly disagree to 5-Strongly agree, the measurement items were answered.

3.8 Data Collection Procedure

In the beginning, the researcher met some respondents to discuss the goals of the study and ask for their support. This method was chosen because it enables direct communication between the researcher and the respondents. The questionnaire was mailed to the respondents' residences and places of employment, which is how they had access to it. Prior to visiting respondents, phone calls were made to make sure they could complete the questionnaire at their convenience. Each participant was required to answer a questionnaire.

3.9 Data Validity and Reliability

Cronbach's Alpha was calculated for each variable used in the study to ensure that they all complied with the validity and reliability requirements. Table 3.1 shows that all of the unobserved variables have Cronbach's Alpha values higher than the required minimum of 0.70. To ascertain whether multicollinearity exists, correlation was conducted. To find measurement items with weak factor loadings (less than 0.5) and factors loading on various dimensions, exploratory factor analysis (hereinafter, EFA) was done in SPSS. Measurement items loading on different or multiple constructs and having poor factor loadings (less than 0.5) were removed from the analysis during the exploratory factor analysis (Amoako et al., 2022).

The total variance extracted (hereinafter, TVE) from the results (Table 3.2) was 80.959%, exceeding the minimum criterion of 50%. The current study achieved 0.908 on the Kaiser-Meyer-Olkin (hereafter, KMO) measure of sampling adequacy, which indicates strong sample adequacy. KMO should be at least 0.6. Additionally, the results of the Bartlett's Test of Sphericity must be statistically significant in order to demonstrate the strength of the relationships between the variables and ensure EFA. The obtained results (X2 =

6061.613; Sig. 0.000) demonstrated that EFA was adequate because there was sufficient correlation between the variables. Additionally, the Determinant of Correlation should not equal zero (zero), indicating that the data utilized for the estimation are positive and definite. The EFA determinant was 1.613E-10, which is greater than zero (0) but less than one.

The Average Variance Extracted (AVE) and Composite Reliability (CR) were then calculated using the factor loadings of the retained measurement items.

Table 3.1 Construct Validity and Reliability

Unobserved Variables	**Cronbach's Alpha**	**Composite reliability**	**Average variance Extracted**
Accessibility and Reliability	0.941	0.951	0.796
Effort Expectation	0.959	0.957	0.787
Cost Involved	0.911	0.933	0.735
Property Tax Compliance	0.959	0.955	0.779

Table 3.2 Exploratory Factor Analysis (EFA)

	Component			
Measurement Items	**1**	**2**	**3**	**4**
AR1			.883	
AR2			.910	
AR3			.900	
AR4			.907	
AR5			.859	
EE1	.868			
EE2	.888			
EE3	.918			
EE4	.899			
EE5	.877			
EE6	.876			
CI1				.819
CI2				.848
CI3				.879
CI4				.874
CI5				.867
PTC1		.827		
PTC2		.899		
PTC3		.885		
PTC4		.882		
PTC5		.907		
PTC6		.892		

Total Variance Explained		*80.959%*
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		*.908*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*6061.613*
	Df	*231*
	Sig.	*.000*
a. Determinant		1.613E-10

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Source: Field Work (2023)

3.9.1 Confirmatory Factor Analysis (CFA)

A CFA was performed to assess the model's fitness. The Hair et al. (2010) criteria, which recommend that CMIN/DF should be 3, GFI.8; PClose>0.05; TLI.9; CFI.9; RMSEA.08; and RMR.08, were used to evaluate the data's fitness. Additionally, the standardized factor loadings (SFL) must to be higher than 0.5. All of these thresholds were found to be satisfied by the results shown in Table 3.3, leading to the conclusion that the dataset fit the model as predicted.

Table 3.3 Confirmatory Factor Analysis (CFA)

Model-fit Indices CMIN=376.579; DF=202; CMIN/DF=1.864; GFI=.889; PClose=.133; TLI=.967; CFI=.971; RMSEA=.056; RMR=.073	**Factor Loading**
Accessibility and Reliability (AR)	
AR1	.859
AR2	.906
AR3	.885
AR4	.903
AR5	.820
Effort Expectation (EE)	
EE1	.853
EE2	.891
EE3	.932
EE4	.909
EE5	.880
EE6	.899

*Cost Involved (*CI*)*	
CI1	.756
CI2	.789
CI3	.852
CI4	.859
CI5	.843
Property Tax Compliance (PTC)	
PTC1	.801
PTC2	.891
PTC3	.897
PTC4	.897
PTC5	.930
PTC6	.927

Source: Field Work (2023)

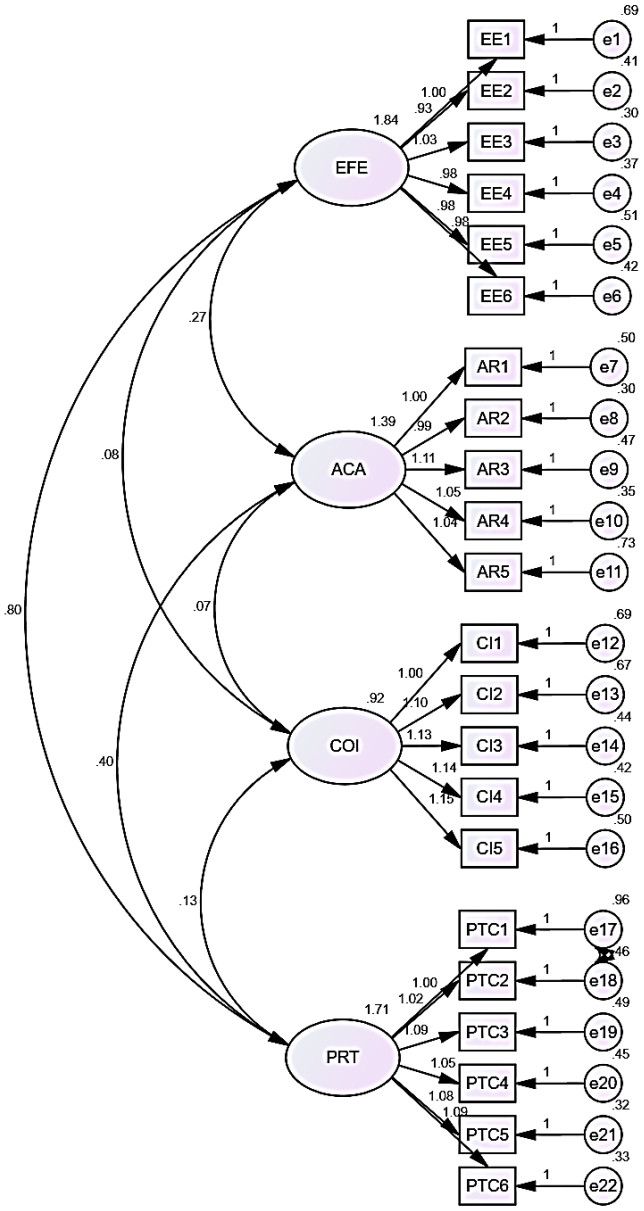

Figure 3.1 Confirmatory Factor Analysis

Source: Field Work (2023)

3.9.2Discriminant Validity

By comparing the square root of the extracted raw average variance (AVE) to the matching inter-correlation coefficients, the discriminant validity was determined. AVE is displayed in bold, italicized, and underlined text because it was larger than each correlation coefficient. The correlation that was highest was 0.437, and the least AVE was 0.857. Results as presented in Table 3.2 also suggest that the highest correlation score in the entire

model was 0.437 (between effort expectation and property tax compliance), which was less than 0.7, and was concluded that there was no multicollinearity in the dataset.

Table 3.3. Discriminant Validity

	Gender	Age	Education	AR	EE	CI	PTC
Gender	-						
Age	.084	-					
Education	-.006	.020	-				
AR	.002	-.001	-.030	**0.892**			
EE	.028	.038	-.063	.160**	**0.887**		
CI	-.022	.208**	-.079	.071	.057	**0.857**	
PTC	.106	.027	-.132*	.245**	.437**	.111	**0.883**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

$\sqrt{AVE}$ ~ *Bold, and underline.*

3.10 Data Analysis

The Amos software (version 23) was used to run the results. Structural Equation Modelling (SEM) was used as the analysis technique. Frequencies and percentages measurement were used to present the demographic information. Moreover, mean scores and standard deviation was run for all the measurement items. Finally, path analysis was performed to determine how digitalisation of property tax systems in achieving tax compliance. When using a questionnaire to gauge opinions, there is a chance that the results will vary depending on how the questionnaire was created. This is known as Common Method Bias, or CMB for short. As a result, it becomes vital to use systematic and statistical

methodologies to assess for the existence of this bias (Podsakoff et al., 2012). As a result, the author ran a pilot test to get rid of all ambiguous sentences and give the same explanations for the observed items. Every point on the Likert scale also had a specific label, such as 1 for "strongly disagree," 2 for "disagree," 3 for "indifferent," 4 for "agree," and 5 for "strongly agree." In terms of statistics, the well-known Harman's one-factor test was used to identify the presence of CMB. When a single factor accounts for 50% or more of the variance among the measuring items, this test indicates the presence of CMB. When Harman's one-factor test was performed in SPSS, the findings showed that the measurement items lacked CMB since the first factor's value was less than 50% at 35.187%.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.0 Introduction

This study assesses the impact of digitalization of property tax systems in achieving tax compliance in Ghana. The outcomes of the data examination are shown in this chapter. In order to interpret the numbers gathered, the chapter also explains the outcomes. It also includes a discussion of the traits of the respondents and a descriptive study of the factors, such as accessibility and dependability, expected effort, cost, and property tax compliance. The data was analyzed using frequencies, percentages, mean scores, and SEM procedures, and the results were then presented.

4.1 Respondents Characteristics

Table 4.1 indicates that 51.1% of the respondents were male, with the rest of the respondents (48.9%) being female. As a result, men made up the majority of the responders. According to the respondents' age distribution, 5.4% of respondents were under the age of 20, 13.3% were between the ages of 21 and 40, 37.4% were between the ages of 41 and 60, and 43.9% were over the age of 60. Thus, those who were older than 60 years old made up the majority. Table 4.1 shows that 70.5% of the respondents held a First Degree, 24.1% had Masters and 5.5% had Doctorate. Thus, majority of the respondents had First Degree.

Table 4.1 Respondents' Demographics

Variable	Responses	Frequency (*N*)	Percentages (*%*)
Gender	Male	142	51.1
	Female	136	48.9
	Totals	***278***	***100.0***
Age	Less than 20 years	15	5.4
	21-40 years	37	13.3
	41-60 years	104	37.4
	Above 60 years	122	43.9
	Totals	***278***	***100.0***
Education	First Degree	196	70.5
	Masters	67	24.1
	Doctorate	15	5.4
	Totals	***278***	***100.0***

Source: Field Work (2023)

4.2 Descriptive Analysis

4.2.1 Accessibility and Reliability

Table 4.2 provided the descriptive analysis for this concept. The measurement items were rated on a Likert scale of 1-strongly disagree to 5-strongly agree, with mean scores larger than 3 categorized as belonging to the "agree" range and mean scores less than 3 classified as belonging to the "disagree" range. The respondents agreed that the digitalized tax system should be reliable and accessible, as evidenced by the total mean score for these factors being 3.536 (above 3). Furthermore, it was found that the mean scores for each of the 5 individual test items included in this construct exceeded 3. This means that the respondents agreed that the site should be well secured; sensitive to corrections accessible at any time and everywhere; be free from spam; and able to keep their information safe.

Table 4.2 Accessibility and Reliability

Variables	Mean	Std. Deviation
The website should be ……		
Well secured	3.741	1.138
Sensitive to corrections	3.554	1.478
Accessible at any time and everywhere	3.507	1.369
Free from spam	3.493	1.294
Able to keep our information safe	3.385	1.498
Total	***3.536***	***1.263***

Source: Field Work (2023)

4.2.2 Effort Expectation

Table 4.3 provided the descriptive analysis for this concept. The measurement items were rated on a Likert scale from 1 for strongly disagreeing to 5 for strongly agreeing. The "agree" range was defined as having a mean score larger than 3, and the "disagree" range as having a mean score less than 3. The general respondents believed that users shouldn't have to exert much effort to visit the site because the mean score for effort expectation was 3.492 (above 3). Additionally, it was found that the mean scores for each of the six observed items under this construct were all greater than 3. This means that the respondents agreed that the website should be programmed to understand various languages; user friendly; respond quickly, easy to understand; logged in easily; and simple to operate.

Table 4.3 Effort Expectation

Variables	Mean	Std. Deviation
The website should be……		
Programmed to understand various languages	3.594	1.507
User friendly	3.536	1.461
Respond quickly	3.489	1.478
Easy to understand	3.478	1.591
Logged in easily	3.446	1.509
Simple to operate	3.410	1.421
Total	***3.492***	***1.363***

Source: Field Work (2023)

4.2.3 Cost Involved

Table 4.4 provided the descriptive analysis for this concept. The measurement items were rated on a Likert scale from 1 for strongly disagreeing to 5 for strongly agreeing. The "agree" range was defined as having a mean score larger than 3, and the "disagree" range as having a mean score less than 3. The respondents agreed that they will spend less money transitioning from a manual system to a digital one because the total mean cost involved score was 3.504 (above 3). Furthermore, it was found that the mean scores for each of the construct's five measurement items were all higher than 3. This means that the respondents agreed that they have to spend less in engaging professionals in managing the site; changing from the manual to digital; installing an app to assess the site; remembering the site name; and training to be familiar with the site.

Table 4.4 Cost Involved

Variables	Mean	Std. Deviation
I have to spend less in/on …….		
Engaging professionals in managing the site	3.572	1.272
Changing from the manual to digital	3.540	1.270
Installing an app to assess the site	3.500	1.313
Remembering the name of the site	3.493	1.332
Training to be familiar with the site	3.417	1.268
Total	***3.504***	***1.110***

Source: Field Work (2023)

4.2.4 Expectations of Digitalisation of Property Tax Systems in Ghana

The last variable was property tax compliance. The measurement items were rated on a Likert scale from 1 for strongly disagreeing to 5 for strongly agreeing. The "agree" range was defined as having a mean score larger than 3, and the "disagree" range as having a mean score less than 3. The conclusion was drawn that the respondents agreed to pay their fair share of property taxes because the aggregate mean score for compliance with the tax code was 3.431 (above 3). Furthermore, it was found that the mean scores for each of the six measuring items included in this construct were all higher than 3. This means that the respondents agreed they will pay the right amount of tax when the mode is digital, accept all tax amendments when the mode is digital, get to know tax amendments easily when the mode is digital, need extensive knowledge on the site before they can file and pay their returns through the site, pay their interest and penalties on time when the mode is digital, and pay their taxes on due date when the mode is digital.

Table 4.5 Property Tax Compliance

Variables	Mean	Std. Deviation
I will……		
Pay the right amount of tax when the mode is digital	3.496	1.527
Accept all tax amendments when the mode is digital	3.489	1.538
Get to know tax amendments easily when the mode is digital	3.468	1.526
Need extensive knowledge on the site before I can file and pay my returns through the site	3.446	1.635
Pay my interest and penalties on time when the mode is digital	3.342	1.590
Pay my taxes on due date when the mode is digital	3.342	1.502
Total	***3.431***	***1.416***

Source: Field Work (2023)

4.3 Path Analysis

The path analysis was estimated using SEM in Amos. Table 4.6 presents the results of the analysis. The study controlled for gender, age, and education due to their potential effects on property tax compliance.

The results of the study as presented in Table 4.6 shows that, the unstandardized Beta coefficients of gender, age, and educational qualification are 0.224, -0.021, and -0.205 respectively. This implies that, for every unit change in gender, age, and educational qualification, there will be a corresponding change in property tax compliance by 0.224 (22.4%), -0.021 (-2.1%), and -0.205 (-20.5%) respectively. The results pointed out that gender had positive but statistically insignificant effect on property tax compliance (p-

value > 0.05). Moreover, age and education had negative but statistically insignificant effect on property tax compliance (p-value > 0.05).

4.3.1 Effect of accessibility and reliability in tax digitalisation on property tax compliance

The effect of accessibility and reliability in tax digitalisation on property tax compliance was found to be statistically significantly and positive ($\beta = 0.209; p < 0.01$). This suggests that accessibility and reliability in tax digitalisation affects property tax compliance by about 20.9%, '*ceteris paribus'*. Making the tax system easily accessible will encourage tax payers to easily file and pay their taxes. Empirically, the finding of this study was in tandem with Fossung and Warah (2022) which found accessibility and reliability to have a positive and significant relationship with tax compliance. Theoretically, the finding of this study has a strong connection with the stakeholder theory which suggests that meeting stakeholders' needs will win their support and improve organisational performance.

4.3.2 Effect of effort expectation in tax digitalisation on property tax compliance

Moreover, statistically significant positive effect of effort expectation in tax digitalisation on property tax compliance was revealed by this study ($\beta = 0.394; p < 0.01$). This implies that a unit increase in effort expectation in tax digitalisation will result in 39.4% increase in property tax compliance. When taxpayers put in less effort in utilizing the tax system to file and pay their taxes, they will be encouraged to comply with the tax provisions. The result of this study is in harmony with the finding of Fossung and Warah (2022) which found effort expectation to have a significant positive effect on tax compliance. Theoretically, the finding of this study supports the stakeholder theory which

argues that firm performance is improved when entities satisfy the interest of multiple stakeholders.

4.3.3 Effect of cost involved in tax digitalisation on property tax compliance

The effect of cost involved in tax digitalisation on property tax compliance was found to be statistically insignificantly and positive ($\beta = 0.092; p > 0.05$). The study therefore found inadequate statistical evidence to establish the effect of cost involved in tax digitalisation on property tax compliance. Since digitalization will provide more value to taxpayers in filing and paying their taxes, costs may not be of significant interest to them. Empirically, the finding of this study was in tandem with Fossung and Warah (2022) which found cost involved to have no effect on tax compliance. Theoretically, the finding of this study has a strong connection with the UTAUT which suggests individuals will adopt a new system depending on their expectations such as cost.

Table 4.6 Path Coefficients

Paths	Unstd. Estimates	S. E.	C. R.
Age → PRT	-.021	.081	-.263
Gender → PRT	.224	.140	1.595
Education → PRT	- .205	.121	-1.690
AR → PRT	.209	.062	3.365**
EE → PRT	.394	.057	6.876**
CI → PRT	.092	.077	1.197

Bias-Corrected (BC) Percentile Method; 5000 Bootstrap sample; 95% Confidence level

** ~ P-value significant at 5% (0.05); ** ~ P-value significant at 1% (0.01)*

Source: Authors' calculations (2023)

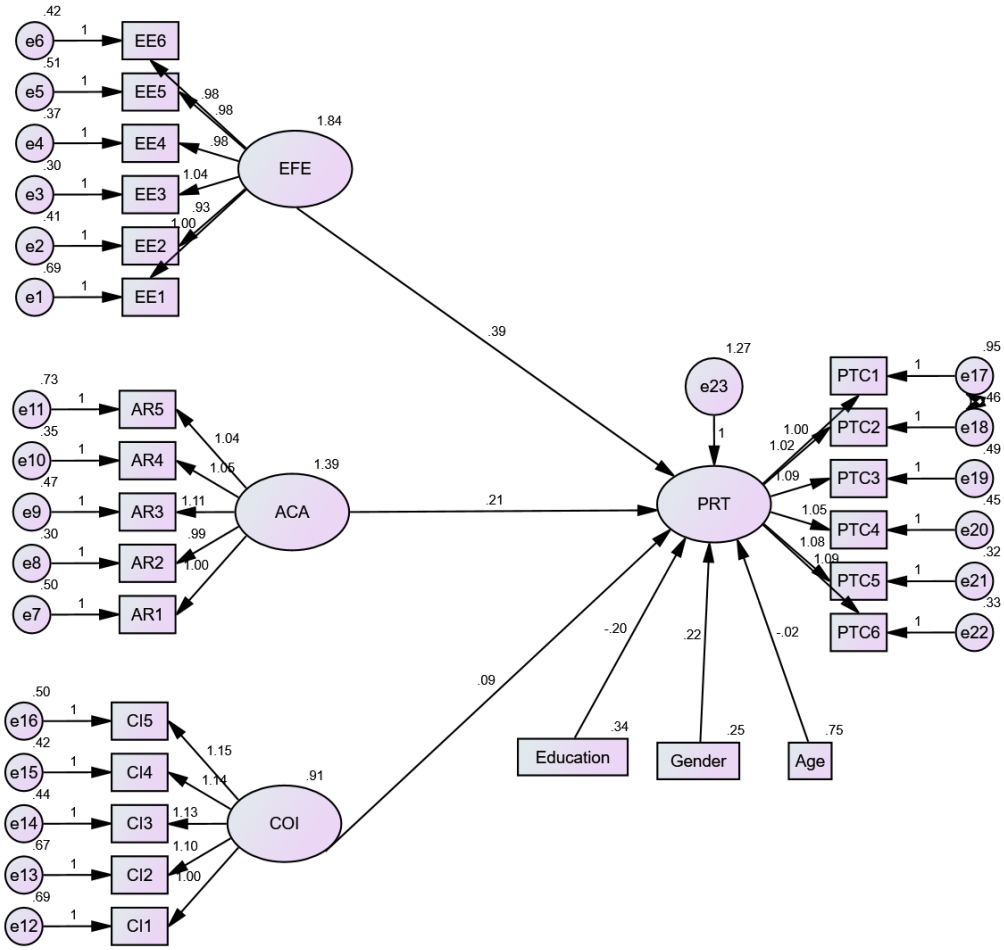

Figure 4.1: Structural Equation Model

Source: Field Work (2023)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

It is crucial to summarize the study's major conclusions after reviewing related and pertinent papers, using the appropriate technique, and analyzing the data. On the basis of the findings, the chapter delivers conclusions and offers some suggestions for digitalization and property tax compliance.

5.1 Summary of Findings

5.1.1 Expectation of digitalisation of property tax systems in Ghana

It was identified respondents agreed to all the measurement items under the three latent variables used to measure digitalisation of property tax. The respondents agreed that digitalised property tax system should be well secured, free from spam, wrong information should be easily corrected in the site, accessible at any time and everywhere, keep their information safe, provide tax information needed, easy to understand, simple to operate, programmed to understand various languages, user friendly, logged in easily, respond quickly, spend less on training to be familiar with the site, less in remembering the name of the site, do not require professionals engagement in managing the site, spend less on changing from the manual to digital, and spend less on installing an app to assess the site.

5.1.2 Effect of accessibility and reliability in tax digitalisation on property tax compliance

The effect of accessibility and reliability on property tax compliance was found to be significantly positive. That is, property tax payers are bound to comply with property tax

provisions if the digitalised property tax system is well secured, free from spam, wrong easily correct wrong information in the site, accessible at any time and everywhere, keep their information safe, and provide tax information needed. This means that the more accessible and reliable the digitalized property tax system, the more tax payers will comply with property tax payments.

5.1.3 Effect of effort expectation in tax digitalisation on property tax compliance

The effect of effort expectation on property tax compliance was found to be significantly positive. That is, property tax payers are bound to comply with property tax provisions if the digitalised property tax system is easy to understand, simple to operate, programmed to understand various languages, user friendly, logged in easily, and respond quickly. This means that the less effort tax payers will put in to operate the digitalized property tax system, the more tax payers will comply with property tax payments.

5.1.4. Effect of cost involved in tax digitalisation on property tax compliance

The effect of cost involved in tax digitalisation on property tax compliance was found to be positive but statistically insignificant. Hence, spending less on training to be familiar with the site, less in remembering the name of the site, do not require professionals engagement in managing the site, spend less on changing from the manual to digital, and spend less on installing an app to assess the site do not guarantee property tax compliance.

5.2 Conclusion

5.2.1 Expectation of digitalisation of property tax systems in Ghana

The study's findings were concluded that property tax payers are ready to welcome digitalisation of property tax system should in case the system will be easily accessible and reliable, less effort expectation, and cost effective.

5.2.2 Effect of accessibility and reliability in tax digitalisation on property tax compliance

The study revealed a statistically significant positive effect of accessibility and reliability in tax digitalization on property tax compliance.

5.2.3 Effect of effort expectation in tax digitalisation on property tax compliance

Additionally, statistically significant positive effect of effort expectation in tax digitalization on property tax compliance was revealed by the study.

5.2.4 Effect of cost involved in tax digitalisation on property tax compliance

Finally, the study found the effect of cost involved in tax digitalization on property tax compliance to be statistically insignificant and positive.

5.3 Recommendations

In view of the aforementioned conclusions, it is advised that the government of Ghana through the Ghana Revenue Authority should developed accessible, reliable, cost effective, and hustle-free digitalized property tax system. This will lead to property tax compliance among property tax payers in Ghana.

It is also recommended that, property tax payers should be educated on the operation of the digitalised property tax system. There should be clear provisions within the tax laws regarding non-compliance with property tax. This will deter tax payers who wish to evade property tax.

The Government of Ghana should as well as institute motivational packages to award tax payers who comply with property tax provisions. This will encourage other property tax payers to comply with property tax provisions within the tax laws.

Moreover, it is recommended that the Government of Ghana through the Ghana Revenue Authority should involve property tax payers in developing the digitalized property tax system.

5.4 Future Research Suggestion

The study was confined to property taxpayers in Kumasi and Accra, Ghana. Future studies are encouraged in different regions and/or countries to increase generalization. Additionally, this study adopted structured questionnaire. Future studies may consider adding interview to encourage respondents to express themselves. This study collected data at a point in time. Future studies may undertake longitudinal studies to assess how digitalization of property tax influences tax compliance over time. This may generate interesting results on the nexus amidst digitalization and tax compliance. Finally, this study considered property tax. Future studies are encouraged to include other forms of taxes such as income tax.

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APPENDIX

AKENTEN APPIA- MENKA UNIVERSITY OF SKILLS TRAINING AND ENTREPRENEURIAL DEVELOPMENT

FACULTY OF BUSINESS EDUCATION

DEPARTMENT OF ACCOUNTING STUDIES

QUESTIONNAIRE FORM

Dear respondent,

*Please could you spend some few minutes to complete this questionnaire? The investigation's goal is to "*assess the impact of digitalization of property tax systems in achieving tax compliance in Ghana*". This is entirely an academic activity. You are entreated to respond to the questions sincerely since any information provided will strictly be kept confidential. Kindly respond to the* questions by ticking (√) the appropriate response applicable in your case. There is no correct or incorrect response.

Section A: Demographics

1. ***Gender:*** Male [ ] Female [ ]
2. **Age:** Less than 20 years [ ] 21-40 years [ ] 41-60 years [ ] Above 60 years [ ]
3. ***Level Of Education***

   J.H.S[ ] S.H.S [ ] First Degree [ ] Masters [ ] Doctorate [ ]

Section B: Accessibility and Reliability

Please rate how strongly you concur with the following claims on the acceptability of tax digitalization. Use a Likert scale to give your response. 5 = Strongly agree, 1 = Strongly disagree, 2 = Disagree, 3 = Indifferent, 4 = Agree

Code	**Accessibility and Reliability (adapted from Fossung and Warah, 2022)**	**1**	**2**	**3**	**4**	**5**
AR1	The site should be well secured					
AR2	The site should be free from spam					
AR3	Wrong information should be easily corrected in the site					
AR4	The site should be accessible at any time and everywhere					
AR5	The site should be able to keep our information safe					
AR6	The site should be able to provide tax information I need					

Section C: Effort Expectation

4. Please rate your agreement with the following claims about the effort required to reach the tax payment website. Use a Likert scale of 1 (strongly disagree), 2 (disagree), 3 (indifferent), 4 (agree), and 5 (strongly agree) to express your opinion.

Code	**Effort Expectation (Adapted from Fossung and Warah, 2022)**	**1**	**2**	**3**	**4**	**5**
EE1	The site should be easy to understand					
EE2	The site should be simple to operate					
EE3	The site should be programmed to understand various languages					
EE4	The site should be user friendly					
EE5	The site should be logged in easily					
EE6	The site should respond quickly					

Section D: Cost Involved

5. Please indicate the extent to which you agree with the following statements regarding the economy of tax digitalization. Respond using a Likert scale of: ***1=Strongly disagree, 2=Disagree, 3=Indifferent, 4=Agree and 5=Strongly agree.***

Code	**Cost Involved (adapted from Fossung and Warah, 2022)**	**1**	**2**	**3**	**4**	**5**
CI1	I have to spend less on training to be familiar with the site					
CI2	I have to spend less in remembering the name of the site					
CI3	I do not have to engage professionals in managing the site					
CI4	I have to spend less on changing from the manual to digital					
CI5	I have to spend less on installing an app to assess the site					

Section E: Property Tax Compliance

6. Please indicate the extent to which you agree with the following statements regarding the compliance of property tax. Respond using a Likert scale of: ***1=Strongly disagree, 2=Disagree, 3=Indifferent, 4=Agree and 5=Strongly agree.***

Code	**Property Tax Compliance (Adapted from Fossung and Warah, 2022)**	**1**	**2**	**3**	**4**	**5**
PTC1	I will need extensive knowledge on the site before I can file and pay my returns through the site					
PTC2	I will pay my taxes on due date when the mode is digital					
PTC3	I will pay my interest and penalties on time when the mode is digital					
PTC4	I will pay the right amount of tax when the mode is digital					
PTC5	I will get to know tax amendments easily when the mode is digital					
PTC6	I will accept all tax amendments when the mode is digital					