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DIGITAL TAX SYSTEM AND TAX COMPLIANCE AMONG SMALL BUSINESSES IN THE CAPE COAST METROPOLIS: ROLE OF DIGITAL LITERACY



CLEMENT OWUSU

2025

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DIGITAL TAX SYSTEM AND TAX COMPLIANCE AMONG SMALL BUSINESSES IN THE CAPE COAST METROPOLIS: ROLE OF DIGITAL LITERACY

BY

CLEMENT OWUSU

Thesis submitted to the Department of Accounting of the School of Business, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Commerce degree in Accounting.

NOVEMBER 2025

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DECLARATION

Candidate's Declaration

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

Candidate's Signature…….....Date…….....

Name: Clement Owusu

Supervisor's 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 University of Cape Coast.

Supervisor's signature ……..... Date …….....

Name: Emmanuel Yaw Arhin (Ph.D.)

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ABSTRACT

This study evaluates the effectiveness of the digital tax system and its influence on tax compliance among small businesses in the Cape Coast Metropolis, with emphasis on the moderating role of digital literacy. Specifically, the study sought to: (1) assess the effectiveness of digital tax systems among small businesses, (2) assess the level of tax compliance among small businesses, (3) examine the effect of the effectiveness of digital tax systems on tax compliance, and (4) examine the moderating role of digital literacy in the relationship between the effectiveness of digital tax systems and tax compliance. The study was anchored in the Technology Acceptance Model and the Theory of Planned Behaviour, within a post-positivist framework. A quantitative design was employed, using a descriptive cross-sectional survey. A total of 331 small business owners and managers were selected through purposive and convenience sampling. Data were analysed using SPSS version 26 and SmartPLS version 4. Findings indicated that participants viewed the digital tax system as beneficial in improving tax administration, particularly by promoting accurate reporting, on-time filing, and making tax obligations easier to manage. Tax compliance rates were reported to be quite high, bolstered by system features that motivate timely payments and reduce penalties. A significant positive relationship was found between the effectiveness of the digital tax system and tax compliance as well as between digital literacy and tax compliance. However, digital literacy did not significantly moderate this relationship.

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KEYWORDS

Digital Tax System (effectiveness)

Tax Compliance

Digital Literacy (skills)

Small Businesses



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DEDICATION

To my parents: Mr Paul Owusu Tweneboah and Mrs Regina Abena Koshie



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LIST OF ABBREVIATIONS

TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
NBSSI	National Board for Small Scale Industries
DLS	Digital Literacy Skills
LTC	Level of Tax Compliance
DTSE	Digital Tax System Effectiveness
PU	Perceived Usefulness
EU	Ease of Use
TA	Tax Awareness
IC	Information Communication
CCM	Content Creation and Management
SS	Safety and Security
CADTS	Challenges Associated with Digital Tax System
OADTS	Opportunities Associated with Digital Tax System
CCM	Cape Coast Metropolis
DTS	Digital Tax System
SBs	Small Businesses
SMEs	Small and Medium Enterprises
SME	Structural Equation Modelling
AVE	Average Variance Extracted

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CHAPTER ONE

INTRODUCTION

In recent years, tax administrations worldwide have adopted digital technologies to enhance efficiency, improve taxpayer engagement and reduce compliance challenges. Ghana has introduced digital tax systems to simplify filing processes, widen the tax base and strengthen compliance. However, in the Cape Coast Metropolis, tax compliance among small businesses remains limited, even though they form an essential part of the local economy and revenue mobilisation efforts. The ability of users to utilise digital tax systems is just as important to their success as their technical characteristics. Limited technological skills, low awareness and unstable internet access hinder many small business owners. Digital literacy may therefore influence how effectively these systems support compliance. This study investigates this connection and how digital literacy functions as a moderator.

Background to the Study

Governments have consistently looked for efficient methods to levy taxes on their populace, primarily throughout history. According to Ricciuti et al. (2019), the authority of a government to impose taxes is one of its most significant powers, deeply affecting both individual welfare and economic activities. Because of the nature of taxes, people are forced to give up their money or assets, frequently with no immediate or obvious benefits in exchange (Coetzee, 1993; Theron, 1994).

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Historically, taxation dates back to ancient civilisations, with Agalega (2017) noting that it existed as far back as the era of Adam.

For instance, in ancient Israel, taxes were levied on the populace to pay for the building of important structures like the Tower of Babel and the Temple of Jerusalem. Similarly, during the Roman Empire, taxes were collected by provincial governors on behalf of the emperor, including various forms such as consumption taxes, customs duties, and sales taxes (Agalega, 2017; Horster, 2023). This early form of taxation, known as "Tributum", was a head tax levied on residents. Thus, the idea of taxes has spread throughout the world as a vital and consistent way for governments to raise money (Bird, 2015).

Tax revenue generation is a core function of any government, serving as the lifeblood of the state by funding social programmes, infrastructure projects, and public services. It also plays a significant role in redistributing wealth from higher-income groups to those in need, enabling the government to influence economic behaviour by altering the costs of various activities (Sabry, 2024). Through taxation, governments can provide essential public goods such as law enforcement, social amenities, and economic infrastructure, fostering financial independence from external aid, which often comes with restrictive conditions (Blanton et al., 2021).

Despite its importance, tax non-compliance has been a persistent issue as old as taxation itself. This challenge affects tax systems worldwide, with sub-Saharan African countries being among the most impacted (Valerian, 2023). While developed nations often see tax compliance rates of around 35%, compliance in

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many African countries remains below 23% (GIZ, 2010, as cited in Nkundabanyanga et al., 2017).

The emergence of Information and Communication Technologies (ICT) has significantly transformed the way governments deliver services, enhancing both efficiency and accessibility. Across the globe, many public sector institutions have adopted ICT tools to improve service provision, broaden reach, and offer greater convenience to the citizenry (Millard, 2017). E-government, or the use of ICT to provide governmental services like electronic tax submission, is a significant component of this digital transformation (Uyar et al., 2021). The adoption of electronic filing systems is meant to improve tax compliance and expedite administrative procedures, according to Lannai (2024). E-filing is associated with numerous benefits, including user convenience, reduced filing errors through automated checks, and decreased administrative burden on tax authorities (Pramesti et al., 2020).

The effective utilisation of digital government services is largely dependent on users' ability to navigate such systems, which necessitates a certain degree of digital proficiency. Digital literacy refers to the foundational skills necessary for operating ICT tools, such as using email, conducting online searches, and engaging in virtual discussions (Kim & Yang, 2016). Liu et al. (2020) elaborate that digital literacy comprises a blend of technical, cognitive, and sociological abilities. Martínez-Bravo et al. (2022) classify these competencies into procedural technical skills, cognitive capabilities, and social and creative proficiencies, highlighting their essential role in engaging with contemporary digital platforms. As such,

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digital literacy serves a crucial part in promoting the uptake of electronic government initiatives, including digital tax systems, particularly among small-scale enterprises (Wassermann & Bornman, 2020). Strengthening digital literacy alongside tax-related education can contribute to resolving issues related to revenue mobilisation and improving compliance rates (Kasyoka et al., 2022).

In Ghana, the tax system encompasses both individuals and businesses in the formal and informal sectors. While there has been notable progress in tax administration within the formal sector, the informal sector, dominated by small businesses, still faces significant compliance challenges. In developing nations like Ghana, where they account for over 86% of all employment, small businesses constitute a fast-expanding sector of the economy with substantial potential for raising tax income. (Peprah et al., 2020). Integrating a larger proportion of small businesses into the tax net could substantially enhance revenue collection.

Although small businesses have the potential to significantly enhance tax revenue, Ghana's tax system largely focuses on the formal sector, leaving a substantial portion of the informal sector untapped (Hammond et al., 2023). Despite its size, only around 5% of people and companies in the unorganised sector are subject to taxes, according to Ordonez (2014). This issue is compounded by the fact that many small businesses in Ghana often evade taxes by either not filing their returns or underreporting their income to reduce their tax liabilities (Fagariba, 2016).

In Ghana, the informal sector has a number of difficulties, such as a shortage of trained workers, restricted access to technology and money, inadequate record-

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keeping, and low levels of entrepreneurship. Moreover, these businesses often operate in small, segmented markets and lack regulation, further complicating tax compliance efforts (Ayee, 2007). For instance, research conducted in the Tema Metropolis by Seidu (2010) on income tax compliance among independent contractors found that high non-compliance rates are a result of low tax knowledge levels. This finding suggests that improving tax education could enhance compliance among self-employed taxpayers.

Despite growing interest in tax compliance within the Ghanaian context, many prior studies have primarily addressed broader dimensions (Acquah, 2024; Mbilla et al., 2023; Opoku, 2020; Peprah et al., 2020), frequently ignoring how digital literacy specifically affects the utilisation of digital tax systems. For example, Nartey (2023) investigated compliance behaviours among Ghanaian small and medium-sized enterprises (SMEs), while Carsamer and Abbam (2023) investigated how religious beliefs influence such businesses' compliance decisions. Similarly, Amaning et al. (2021) investigated the impact of taxpayer education on compliance practices in Ghanaian SMEs. Bruce-Twum (2023) investigated the effect of tax compliance costs on the fiscal behaviour of small businesses in developing countries, with a focus on Ghana. Furthermore, Attobrah's (2020) doctoral thesis examined the relationship between tax compliance and compliance costs among Ghana's small-scale taxpayers.

Considering Ghana's small businesses' (SBs') persistent difficulties with tax compliance and the dearth of studies examining the impact of digital literacy in this setting, policymakers often turn to findings from other regions. However, such

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external studies may not adequately reflect the unique socio-economic and technological conditions within the Ghanaian setting. This emphasises the need for context-specific research on how digital literacy influences small businesses' use of digital tax systems and improves compliance. With a focus on the crucial role that digital literacy plays, the current study aims to investigate the efficacy of digital tax systems in encouraging tax compliance among small and micro-enterprises within the CCM.

Statement of the Problem

It is generally presumed that the adoption of DTS will have a favourable influence on tax compliance among small businesses operating within the Cape Coast Metropolis, with digital literacy serving as a key moderating factor in this relationship. This assumption suggests that as the digital competence of small business operators improves, so too will their ability to navigate and utilise the digital tax platform, thereby enhancing their compliance with tax obligations. Moreover, business owners and managers who demonstrate a high level of digital literacy are more likely to appreciate the advantages of the digital tax system, adhere to tax regulations, and fulfil their tax responsibilities on time. Consequently, digital literacy is not only essential for promoting usability but may also contribute significantly to raising compliance levels within the small business sector.

Since Ghana's independence, taxing the informal sector, primarily composed of small businesses, has remained a significant challenge for successive governments. Despite the sector's large size, its tax contribution is disproportionately low. Many informal sector participants purposefully escape

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taxes or are not reported to the Ghana Revenue Authority. Additionally, the sector remains highly fluid due to the lack of robust regulatory policies to monitor its activities effectively (Frimpong, 2023).

In Ghana, achieving anticipated tax revenue targets remains a challenge, largely because self-employed people and small and medium-sized businesses (SMEs) in the unorganised sector frequently fail to comply (James & Alley, 2002; GRA, 2021). It is estimated that the self-employed account for approximately 86.3% of economic activity, yet less than 30% are formally registered and assessed for taxation, leading to substantial revenue losses (James & Alley, 2002; GRA, 2021). In the Cape Coast Metropolis, for example, less than 60% of small businesses filed tax returns, meaning that only 40% of potential revenue was uncollected, limiting the government's ability to address critical developmental needs such as infrastructure, access to potable water, quality education, and youth unemployment (GRA, End of Year Report 2022). Research indicates that factors including limited education, cultural practices, insufficient knowledge of tax laws, and the intricacy of the tax code is a factor in non-compliance. (Chan et al., 2000; Abdul, 2003; Atawodi & Ojeke, 2012; Yong & Martin, 2016).

The Ghanaian government loses more than US$45 million annually due to the informal sector's failure to pay taxes (Ababio & Mangueye, 2021). Tax administration has recently improved, although compliance is still quite difficult, especially for small businesses. Small businesses in Ghana have low tax compliance rates and frequently engage in tax evasion and avoidance, according to studies by Adam (2009), Seidu et al. (2015), and Fagariba (2016). Tax compliance

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remains a critical issue for businesses in Ghana, where failure to meet tax obligations often leads to severe consequences such as closures. The Ghana Revenue Authority (GRA) shut down the Manna Height Hotel in Mankessim, Central Region, on November 21, 2019, due to a tax debt of ¢301,504.40 (JoyNews, 2019). This incident underscores critical compliance issues, particularly regarding tax obligations, within businesses in CCM. This raises questions about whether the current digital system affects small businesses' tax compliance and whether digital literacy may moderate this influence.

Although interest in tax compliance among small businesses is growing globally, there remains a notable research gap in Ghana. Fagariba (2016) and Antwi et al. (2015) acknowledge the limited empirical investigation into the specific challenges faced by small businesses in meeting tax obligations in Ghana. However, their studies do not provide an in-depth examination of the role digital literacy contributes to the development of compliant behaviour, particularly in the loosely organised sector. This absence of localised evidence presents a difficulty for policymakers, who are often compelled to depend on international research that may not fully reflect Ghana's unique socio-economic realities.

Given the increasing reliance on digital tax systems to simplify tax processes and enhance compliance, there has been a shift towards utilising technology to streamline tax administration. However, despite the introduction of digital tax systems in Ghana, small businesses in the Cape Coast Metropolis continue to exhibit low levels of compliance (Frimpong, 2023). Among the crucial

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elements that may be contributing to this issue is the disparity in digital literacy among small business owners.

According to Adu et al. (2020), the capacity to successfully explore and utilise online tax platforms significantly impacts tax compliance. Although digital tax systems hold potential for improving compliance rates, their effectiveness is limited when taxpayers lack the necessary digital skills to utilise these platforms efficiently. The literature suggests that digital tax systems can enhance compliance by making tax filing and payments more accessible and simplifying the process. The importance of digital literacy as a moderating element in this relationship, however, is not well supported by empirical data, particularly for small firms in developing nations like Ghana.

Santoro et al. (2024) and Yamoah (2024) acknowledge the potential of digital tax systems to improve compliance but emphasise the need for more research into how digital literacy affects the adoption and effectiveness of these systems among SME owners. Given the crucial role small businesses play in the Ghanaian economy, this knowledge gap is significant. In order to improve tax compliance and guarantee that the advantages of digital tax systems are fully exploited, closing the digital literacy gap may be essential.

Although several studies have examined tax compliance and the introduction of digital tax systems globally, existing empirical evidence remains fragmented and inconclusive, particularly in developing economies. Most prior studies (Carsamer & Abbam, 2023; Nyarkpoh et al., 2023; Batrancea et al., 2022; Addo, 2022) focused largely on the general determinants of tax compliance, such

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as awareness, perceived fairness, and enforcement, rather than the actual effectiveness of digital tax systems in shaping compliance behaviour.

Even in contexts where digital tax systems have been studied, the empirical focus has often been on the technical or administrative side, leaving little insight into taxpayers' lived experiences, perceptions, and behavioural responses. This creates an empirical vacuum concerning how digital tax systems function as behavioural mechanisms that influence compliance among small business operators in Ghana. Additionally, few empirical research have concurrently examined the relationship between compliance outcomes and the efficacy of the digital tax system while accounting for the role of moderating variables such as digital literacy. Consequently, there is insufficient scientific clarity on whether the effectiveness of digital systems directly enhances compliance or whether this relationship depends on taxpayers' technological competence and literacy levels.

The contextual landscape of tax administration varies considerably between developed and developing economies. Most studies investigating digital tax systems and compliance have been conducted in countries with advanced digital infrastructures such as Malaysia, Indonesia, and the United States (Rachmawan et al., 2020; Hassan et al., 2021). Limited research has focused on Sub-Saharan Africa, and even less on Ghana, where infrastructural, cultural, and literacy-related factors shape taxpayers' ability to use digital systems effectively. Within Ghana, existing studies have concentrated predominantly on large corporate taxpayers or national-level analyses (Antwi et al., 2015; Addo, 2022; Carsamer & Abbam, 2023; Nartey, 2023; Nyarkpoh et al., 2023), thereby overlooking small business operators who

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constitute the backbone of the Ghanaian economy and are disproportionately affected by technological changes in tax administration. In particular, the Cape Coast Metropolis remains understudied despite being a growing economic hub for small businesses. This study therefore addresses this contextual gap by focusing specifically on Cape Coast Metropolis small businesses, a segment whose tax compliance behaviour under digital systems remains largely undocumented.

Despite the availability of digital tax systems, low tax compliance among small firms is still an issue, underscoring the necessity of focused initiatives to close the digital literacy gap. Policymakers looking to increase compliance rates among small businesses in the Cape Coast Metropolis must comprehend how digital literacy shapes the efficacy of digital tax systems. Thus, the purpose of this study is to investigate how digital tax systems affect tax compliance, with particular attention to the moderating role of digital literacy. The objective is to generate insightful observations that can inform the development of effective tax education and digital literacy programmes aimed at enhancing compliance among small businesses within the CCM.

From the reviewed literature, it is evident that while digitalisation offers promising avenues for improving tax administration and compliance, its success depends heavily on users' digital competence, trust, and perceived system efficiency. Lessons drawn from previous studies show that when digital systems are transparent, reliable, and easy to use, taxpayers are more likely to comply voluntarily. However, in settings where digital literacy levels are low, the benefits of such systems are diminished, leading to non-compliance or system avoidance.

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These insights underscore the need for context-specific research that not only evaluates the effectiveness of digital tax systems but also considers behavioural and literacy-related dimensions. With a focus on Cape Coast Metropolis' small companies, the current study contributes to filling these empirical and contextual voids. By examining how digital literacy moderates the relationship between system effectiveness and tax compliance, the study provides evidence that can guide policy design, enhance digital inclusion, and strengthen Ghana's ongoing efforts to improve voluntary tax compliance through digital transformation.

Purpose of the Study

The purpose of this research is to determine how digital tax systems affect small business tax compliance in the Cape Coast Metropolis and to assess the extent to which digital literacy moderates this relationship.

Objectives of the Study

The study seeks to:

1. Assess the effectiveness of digital tax systems among small businesses in the CCM.
2. Assess the level of tax compliance among SBs in the CCM.
3. Examine the effect of the effectiveness of digital tax systems on tax compliance among SBs in the CCM.
4. Examine the moderating role of digital literacy in the relationship between the effectiveness of digital tax systems and tax compliance.

Research Question

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1. How effective are digital tax systems among small businesses in the CCM?
2. What is the level of tax compliance among small businesses in the CCM?

Hypotheses

1. H_0: There is no statistically significant effect of the effectiveness of digital tax systems on tax compliance among SBs in the CCM.

   H_1: There is a statistically significant effect of the effectiveness of digital tax systems on tax compliance among SBs in the CCM.

2. H_0: Digital literacy does not statistically moderate the relationship between the effectiveness of digital tax systems and tax compliance among SBs in the CCM.

   H_1: Digital literacy statistically moderates the relationship between the effectiveness of digital tax systems and tax compliance among SBs in the CCM.

Significance of the Study

By concentrating on how digital tax systems and digital literacy interact, this study will add to the expanding corpus of research on tax compliance. Policymakers, including the Ghana Revenue Authority (GRA), will gain important insights from this study on how to customise digital tax measures to increase small firms' compliance with different degrees of digital literacy. Additionally, by emphasising the value of digital skills in efficiently utilising online tax platforms, the findings will benefit SME owners. This can guide the creation of focused

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training initiatives meant to raise business owners' digital literacy and strengthen their capacity for compliance.

Additionally, by emphasising the value of digital skills in efficiently utilising online tax platforms, the findings will benefit small business owners. This can guide the creation of focused training initiatives meant to raise business owners' digital literacy and strengthen their capacity for compliance. Along with examining the benefits and difficulties related to the execution of digital tax systems, the study will provide helpful suggestions for overcoming obstacles and utilising digital technologies to increase compliance.

Delimitations of the Study

This study is exclusively focused on small businesses functioning within the CCM. Digital literacy is regarded as a moderating component in the study, which looks at how digital tax systems affect tax compliance. Larger enterprises are excluded due to their distinct compliance behaviours and access to more advanced digital resources. The geographical scope is limited to the Cape Coast Metropolis, allowing for a detailed analysis within a specific context.

Limitations of the Study

The study's findings could be impacted by a number of limitations. Firstly, participants may misrepresent their digital skills or compliance levels due to social desirability bias, which could impair the accuracy of replies about digital literacy and tax compliance habits. Secondly, concentrating on the Cape Coast Metropolis can restrict the results' applicability to other areas with distinct digital infrastructure and economic circumstances. Lastly, the rapidly changing landscape of digital

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technologies may require continuous updates to the findings as new tools and systems are adopted.

Definition of Terms

Small Businesses (SBs): Small businesses are defined as enterprises employing between 0 and 100 individuals. This classification encompasses micro-enterprises with up to 5 employees, small-scale enterprises with 6 to 29 employees, and medium-sized enterprises employing between 30 and 99 persons.

Digital Literacy: the ability to swiftly and critically acquire, evaluate, and produce information using a range of digital tools. It encompasses a wide range of skills, including the ability to operate digital devices (such computers, cell phones, and tablets), understand and use digital tools and software, communicate online, and safely handle personal data. Digital literacy also involves the ability to evaluate online content for credibility, ethical considerations, and security risks.

Digital Tax System: describes the utilisation of electronic platforms., software, and online tools by both the tax authorities and taxpayers to automate, manage, and streamline tax processes. It enables taxpayers to register, file returns, make payments, and access tax-related information digitally, reducing paperwork and enhancing efficiency. Digital tax systems improve accuracy, transparency, and compliance monitoring, while minimising human errors and administrative delays, thereby facilitating effective tax administration and promoting ease of doing business.

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Tax Compliance: Tax compliance is the degree to which taxpayers accurately report, declare, and pay taxes according to legal requirements. It involves adhering to tax laws, regulations, and deadlines set by the tax authorities. High tax compliance ensures sufficient revenue collection for government operations, supports fairness in the tax system, and reduces the need for enforcement measures. Factors influencing compliance include taxpayer awareness, perceived fairness, convenience of tax systems, penalties, and incentives provided by authorities.

Organisations of the Study

The study is divided into five distinct sections. The research is presented in Chapter One by looking at the general background of digital taxation and its significance, with an emphasis on small enterprises' tax compliance procedures in Ghana's Cape Coast Metropolis. The problem statement is emphasised in this chapter, along with the significance of comprehending how digital tax systems might improve compliance. Additionally, it provides an overview of the study's goals, main research topics, importance, scope, and overall structure.

The efficacy of Ghana's digital tax systems, the degree of tax compliance among small businesses, and the influence of digital tax effectiveness on tax compliance are only a few of the subjects covered in Chapter Two's study of the pertinent literature on digital taxation. It looks at how digital literacy impacts small businesses' tax compliance processes and covers significant issues with the use of digital technologies in tax procedures. The research methodology, including the methods and strategies used for data collecting and analysis, is covered in detail in Chapter 3. The premise of the study, the target population, and the sampling

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strategies used to select participants are all covered in detail. It also covers the methods employed, the ethical concerns brought up by the study, and the reliability and validity of the data collection tools.

Chapter 4 presents and analyses the collected data, interpreting the findings in light of the corpus of knowledge already available on digital tax systems and small firms. It draws attention to significant data discoveries regarding how digital literacy affects small enterprises' tax compliance. Chapter Five concludes the study and provides conclusions, an overview of the key findings, and recommendations for improving tax compliance by utilising digital tax systems.



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CHAPTER TWO

LITERATURE REVIEW

Introduction

This section offers a thorough analysis of pertinent literature with an emphasis on the study's theoretical underpinnings, fundamental ideas, and conceptual framework. Empirical research pertinent to the goals of the study is given special consideration. Additionally, to guarantee clarity and contextual understanding, key terms and concepts that are crucial to the study are specified.

Theoretical Review

Technology Acceptance Model (TAM)

Davis engineered the Technology Acceptance Model (TAM) in 1986 to explain the fundamental factors driving user adoption of information technologies. Grounded in the Theory of Reasoned Action (TRA), TAM provides a theoretical lens for examining why individuals accept or reject specific technologies, and it serves as a guide for enhancing system design and implementation. The model is particularly useful for assessing tax compliance behaviour among small businesses within the context of digital tax platforms (Night & Bananuka, 2020). It focuses on how external factors such as technological infrastructure, user competence, and system interface shape users' core beliefs, notably perceived usefulness (PU) and perceived ease of use (PEOU). These beliefs subsequently affect users' attitudes, intentions, and actual engagement with the system (Davis et al., 1989).

Davis (1986) asserts that users' opinions about a system have a significant impact on their choice to utilise it and that PU and PEOU are important factors in

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determining these opinions. PU is a measure of how much small businesses believe the digital tax system will help them save time, streamline tax compliance procedures, and minimise errors. PEOU, on the other hand, reflects whether users find the system easy to navigate and use, which is especially important for small businesses with varying levels of digital literacy. As noted by Davis et al. (1989), favourable attitudes toward a system increase behavioural intentions to use it, which subsequently drive actual adoption. The model also highlights that people are more likely to interact with mechanisms that they think will result in favourable outcomes, including increased compliance and fewer penalties.

The Technology adoption Model (TAM) is a popular framework for assessing user adoption of technology and has acquired strong empirical support for its explanatory power across varied technologies, user groups, and organisational contexts (Hu et al., 1999; Theriou, 2015; Thalassinos et al., 2015; Rupeika-Apoga & Nedovis, 2015; Grima et al., 2016; Theriou et al., 2014). According to the paradigm, users' attitudes towards utilising a system are influenced by their Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), which in turn impacts their behavioural intention and, ultimately, their actual system use. (Davis, 1989; Venkatesh & Davis, 2000; Alharbi & Alsheehri, 2021).

TAM has been widely used in many different fields of study. Marangunić and Granić (2015), in a comprehensive review of TAM literature from 1986 to 2013, observed its widespread application in fields such as e-commerce, healthcare, education, and organisational information systems. Within education, Granić and Marangunić (2018) demonstrated that TAM effectively explains users' acceptance

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of learning management systems and online learning platforms. Similarly, Alharbi and Alsheehri (2021) reaffirmed that PU and PEOU consistently predict technology adoption across different contexts. TAM was used in the healthcare industry by Chau and Hu (2002) and Holden and Karahanna (2018) to explain telemedicine and electronic health record adoption.

In financial technology research, Uula and Avedta (2023) showed that TAM effectively accounts for consumers' adoption of mobile banking systems, While in impoverished nations like Ghana, Kelly and Palaniappan (2023) applied the model to examine continued usage of mobile money services. Collectively, these studies highlight TAM's robustness and versatility in predicting technology acceptance across diverse sectors and socio-economic contexts.

The application of TAM in this study adds to both theoretical advances and practical execution.Theoretically, it extends the use of TAM to an underexplored domain—digital tax systems in developing economies—by linking technology adoption to compliance performance outcomes rather than merely to usage intention (Ali et al., 2022). Practically, it identifies key criteria including usefulness, ease of use, and digital literacy that policymakers and the Ghana Revenue Authority can target to enhance participation in digital tax systems among small businesses. This approach aligns with the recommendations of previous scholars (Granić & Marangunić, 2018; Kelly & Palaniappan, 2023), who emphasise the importance of applying TAM in emerging socio-economic contexts to address local technological challenges.

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One well-known approach for understanding user acceptability of technology is the Technology acceptability Model (TAM).and has gained strong empirical support across various technologies, user groups, and organisational settings (Hu et al., 1999; Theriou, 2015; Thalassinos et al., 2015; Grima et al., 2016). It posits that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) shape users' attitudes towards using a system, influencing their behavioural intentions and actual use (Davis, 1989; Venkatesh & Davis, 2000). TAM has been applied in diverse fields such as education, healthcare, e-commerce, and financial technology (Marangunić & Granić, 2015; Chau & Hu, 2002; Uula & Avedta, 2023). In developing contexts, it has explained continued adoption of mobile money and digital platforms (Kelly & Palaniappan, 2023).

In relation to digital taxation, TAM provides a suitable theoretical basis for understanding how small business operators adopt and use tax platforms. PU reflects the perceived benefits of enhanced compliance and efficiency, while PEOU relates to user-friendliness and digital literacy. This study extends TAM to the underexplored area of digital tax systems in developing economies, linking technology adoption with compliance performance outcomes (Ali et al., 2022) and offering practical insights for policy interventions.

TAM offers a valuable lens for examining how digital tax systems are adopted and how they influence tax compliance among small businesses. At its heart, TAM identifies two key constructs: PEOU, which measures how user-friendly a system is thought to be, and PU, which has to do with the conviction that technology would improve productivity. These perceptions shape users' attitudes,

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intentions, and eventual system usage. When individuals perceive a system as both straightforward and beneficial, they are more inclined to adopt it, potentially leading to improved compliance. Moreover, external influences such as infrastructure, user training, digital literacy, and governmental support can significantly affect adoption patterns by influencing opinions about usefulness and simplicity of use.

In contrast to the Theory of Reasoned Action (TRA), TAM argues that attitudes and perceived usefulness both influence behavioural intention (BI) to utilise a system. This distinction is crucial for understanding tax compliance, as small businesses may adopt digital tax systems for practical benefits, such as increased efficiency and accuracy in fulfilling tax obligations, even if their attitudes toward the system are neutral. By emphasising these key determinants, the TAM serves as a practical framework for recognising and addressing the elements that affect the adoption of digital taxation systems. It offers critical insights for improving compliance and mitigating challenges associated with system adoption.

Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB), introduced by Ajzen (1991), extends the Theory of Reasoned Action (TRA) by incorporating the construct of perceived behavioural control (PBC). Although TRA concentrates on how behavioural intentions are influenced by attitudes and subjective standards, TPB recognises that people may not always have complete control over their actions. It highlights that external conditions such as the availability of resources, time constraints, individual capabilities, and support from others can significantly

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impact a person's capacity to engage in a specific behaviour (Ajzen, 1991). Together, these outside influences give rise to what Ajzen refers to as perceived behavioural control, or the conviction that one has the ability and chance to act in a particular way.

According to TPB, a person's perceived behavioural control influences both their actual capacity to carry out a behaviour and their intention to do so. According to Ajzen (1991), the perception of control is more psychologically significant than actual control, as it influences both behavioural intentions and actions. The theory suggests that individuals' perceptions about their ability to control a behaviour are often stronger motivators than actual control, shaping their willingness and determination to engage in the behaviour.

TPB has been applied in diverse domains. For instance, a meta-analysis found that TPB accounted for about 39% of variation in intentions and 27% in behaviour across 185 studies up to 1997 (Hu et al., 1999). In the realm of environmental science, TPB has supported analysis of green consumption, waste management and sustainable transportation (Emekci, 2019). In health behaviour research, TPB constructs have significantly predicted intentions to test for HIV (attitude and perceived control making unique contributions) (Ayodele, 2017). Furthermore, in information systems research, TPB has been used to explore individuals' technology-related behaviours, often integrated with models such as the TAM (Chen et al., 2007; Yousafzai et al., 2010; Teo & Tan, 2012).

When considering the Cape Coast Metropolis's small enterprises' tax compliance and digital tax systems, TPB offers a useful framework for

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understanding adoption behaviours. Adoption of digital tax systems is impacted by small businesses' perceptions of control over the system as well as their attitudes toward the technology and the subjective standards of their social environment (such as peer pressure or governmental expectations). How small businesses view their capacity to implement and use digital tax systems successfully can be impacted by several factors, including infrastructure, training opportunities, digital literacy, and access to technology. If small businesses perceive barriers such as insufficient skills or lack of resources, they may feel less confident in their ability to use the system effectively, which can reduce their likelihood of adoption and result in lower compliance rates.

The perceived behavioural control is critical in understanding small businesses' compliance with tax systems. If small businesses believe they lack the necessary resources or skills to effectively use digital tax systems, their intention to adopt the system will likely be weakened, and they may ultimately avoid using it altogether. Research has demonstrated that perceived behavioural control significantly impacts the intention to adopt new technologies, particularly when there are challenges related to infrastructure and training (Venkatesh & Davis, 2000). This perception of control, therefore, plays a central role in shaping both the adoption behaviour and the compliance outcomes of small businesses.

By integrating perceived behavioural control into this study, a deeper comprehension of the elements that affect small businesses' adoption of digital tax systems and their subsequent compliance will be achieved. This approach allows

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for the exploration of not just attitudes and social norms, but also how external factors and resource availability influence behaviour (Wachira, 2022).

Conceptual Review

The Concept of Taxation

In order to finance public goods and implement macroeconomic and fiscal policies, governments levy taxes as a mandatory fee on individuals, businesses, and other organisations (Agalega, 2017). According to Fagariba (2016), taxation is an obligatory contribution made by individuals, businesses, and organisations, aimed not at providing specific benefits to the taxpayer, but at enhancing the collective well-being of the nation and its citizens. Taxation can therefore be understood as how governments extract resources from the population to sustain state operations.

Recent studies emphasise that taxes are compulsory payments with a broader societal purpose, distinct from other sources of government income such as user fees or the sale of state assets (Chijoriga & Mayunga, 2022; Osei & Osei, 2021). Unlike payments made for specific goods or services, taxes are unrequited, meaning they are not exchanged for direct benefits to the individual taxpayer but are intended to finance public services that benefit society as a whole. The fundamental role of taxes, as noted by these scholars, lies in their ability to provide a consistent flow of income for the government to pay for infrastructure and vital services.

While taxes serve as the principal source of government revenue, they differ from other forms of income generation due to their obligatory nature. As noted by Appiah et al. (2024), taxes are collected from both individuals and businesses to

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support national growth and development, irrespective of any immediate or specific benefits the taxpayer might receive in return. This distinction reinforces the idea that taxpayers contribute to the broader public good, with their obligations extending beyond any immediate personal gain.

The Concept of Small Businesses

Small businesses have drawn a lot of attention as a significant component of the unorganised sector in a number of nations worldwide.However, the meaning of SBs varies across countries and institutions, often shaped by local conditions or the criteria set by international organisations like the World Bank and the OECD. Typically, small businesses are classified based on factors such as the value of their assets, the capital they employ, their annual turnover, or the quantity of workers they have (Mukasa, 2011).

The definition of small enterprises varies across sources and jurisdictions. Pedraza (2021) describes small and micro-sized businesses as independent entities that are not part of larger corporations and employ fewer than a specified number of people. Similarly, Cook and Nixon (2012) characterise small enterprises as those with fewer than 100 employees and annual revenues below EUR 15 million. Abor and Quartey (2010) cite the European Commission's 1996 definition, which classifies small enterprises as having fewer than 250 employees, an annual turnover of under EUR 40 million, and total assets not exceeding EUR 27 million. In contrast, some countries set the employee threshold at 200, while in the United States, small businesses are defined as firms employing fewer than 500 individuals.

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Gole (2012) adopts a different approach, defining small businesses based on financial assets.

In Ghana, small businesses are described as small, privately owned enterprises with few employees and low sales volumes, often structured as sole proprietorships or partnerships. While some small businesses are incorporated as limited liability companies, there is typically no clear separation between the business and its owners (Nkuah et al., 2013). The Ghanaian small business sector is often associated with owner-managers who lack formal management training, inadequate record-keeping practices, and limited access to financing, which collectively hinder their growth and tax compliance (Seidu et al., 2015). Despite their significant role in providing approximately 80% of employment in the Ghanaian economy (ISSER, 2003), small businesses contribute less than 27% of domestic tax revenue. Widespread tax non-compliance is a major factor, stemming from the informal nature of many of these businesses (Adam, 2009).

The Ghana Enterprise Agency (GEA), formerly known as the National Board for Small Scale Industries (NBSSI), defines small enterprises in Ghana based on the number of employees and the value of fixed assets, which does not include buildings and land. Micro enterprises are defined as companies that have fixed assets worth no more than $10,000 and employ one to five people. Conversely, small businesses have fixed assets of no more than $100,000 or employ six to 29 individuals. Additionally, the Ghana Enterprise Agency divides companies into four groups: micro-enterprises, which employ fewer than five people; small enterprises,

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which employ six to 29 people; medium-sized businesses, which employ thirty to 99 people; and large enterprises, which employ one hundred or more people.

According to Amarteifio and Frimpong (2019), small enterprises are those that have zero to one hundred employees. This category included small businesses with five to twenty-nine employees, medium-sized businesses with thirty to ninety-nine employees, and microbusinesses with fewer than five employees. They pointed out that rather than the value of fixed assets, the number of employees is usually used to categorise small firms in Ghana. This approach is preferred due to the challenges associated with valuing assets, which stem from variations in accounting practices and fluctuations in the exchange rate. Their study followed this employee-based definition and included micro, small, and medium-sized businesses, making the phrase "small business" an appropriate collective designation.

The Concept of a Digital Tax System

A digital tax system is the application of technology to improve how taxes are collected, reported, and managed by both taxpayers and tax authorities. Essentially, it involves creating online platforms and tools that make tax processes easier, faster, and more transparent. By adopting these systems, governments aim to reduce inefficiencies in traditional tax collection methods, combat tax evasion, and improve compliance rates (OECD, 2021).

These systems include features such as online tax filing, e-invoicing, and automated tax assessments, allowing taxpayers to manage their tax obligations without having to physically visit tax authorities. For example, businesses can now

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issue electronic invoices that are automatically reported to the tax authority, or individuals can file their taxes from their phones using simple apps (Hassan et al., 2022). These systems are particularly helpful for small businesses that often lack the time or resources to navigate complex manual processes.

Digital tax systems rely on some key elements:

1. Online Filing: Taxpayers can register, submit returns, and make payments online, making the process less stressful and more convenient.
2. Real-Time Reporting: Transactions can be shared with tax authorities instantly, reducing delays and errors in assessments.
3. Mobile Technology: Many systems are designed for mobile devices to accommodate users who may not have access to computers. This is especially relevant in regions where mobile phone usage is higher than internet connectivity via computers (Alm et al., 2022).

For governments, digital tax systems help increase revenue by ensuring more people and businesses pay their fair share. They also improve transparency, as the digital records create clear transaction trails. For taxpayers, the systems save time and reduce the hassle of dealing with paperwork, making tax compliance easier and less intimidating (Night & Bananuka, 2020).

The implementation of digital tax systems, while beneficial, comes with notable challenges, particularly in developing countries. Many small businesses face barriers such as insufficient technology infrastructure, erratic internet connectivity, and restricted availability of digital tools such as computers.

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Additionally, some entrepreneurs lack the necessary digital skills, while others resist change due to their familiarity with manual processes (Wachira, 2022; Hassan et al., 2022). These challenges show that in order to guarantee the success of digital tax systems, governments must solve infrastructural gaps and offer comprehensive training and awareness initiatives. (OECD, 2021; Night & Bananuka, 2020). Without such support, the potential benefits of these systems may remain unrealised, particularly for small businesses.

The Concept of Tax Compliance

Tax compliance refers to the readiness of individuals and organisations to meet their statutory tax responsibilities in full. Marti (2010) defines it as the accurate and voluntary fulfilment of all obligations related to taxation. Similarly, According to Doran (2009), tax compliance is the timely filing of necessary tax returns and the accurate disclosure of tax obligations in accordance with the applicable tax laws, rules, and court rulings at the time of filing. Fundamentally, tax compliance involves honest income reporting, correct determination of tax dues, punctual filing of returns, and prompt settlement of tax payments (Antwi et al., 2015). Any deviation from these requirements or applicable tax regulations is regarded as non-compliance.

Timely filing of tax returns, accurate reporting of income and tax liabilities, and timely payment of tax obligations are all components of voluntary tax compliance (Plumley, 1996). However, Terkper (2003) points out that many small and medium-sized taxpayers often fail to voluntarily register with tax authorities. Examples of non-compliance that persist even among those who do register include

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inadequate record-keeping, failing to file tax returns, and delaying the payment of tax obligations.

The structure of the tax system, chances for non-compliance, taxpayer attitudes and views, and demographic characteristics are the four main categories of factors that Fischer et al. (1992) identified as impacting tax compliance. They argue that non-compliance opportunities, such as income sources, vocations, and income levels, can directly affect compliance, even while factors like peer pressure and the perceived fairness of the tax system impact attitudes and perceptions. Among the demographic variables that significantly impact compliance behaviour are age, education level, and race.

According to Murdvee (2014), who researched the psychology of tax behaviour, tax compliance is defined as the taxpayer's ability and motivation to fulfil their tax obligations. He distinguishes three types of compliance:

1. Committed compliance: Taxpayers willingly and voluntarily pay their taxes without objections.
2. Capitulative compliance: Taxpayers comply reluctantly, often as a result of external pressure.
3. Creative compliance: Taxpayers actively seek ways to reduce their tax burden by legally redefining income or claiming deductions within the boundaries of tax laws.

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These various dimensions and forms of compliance emphasise the complexity of taxpayer behaviours and the need for well-structured systems and policies to encourage compliance while addressing barriers to adherence.

Tax Non-Compliance

The primary goal of any tax administration is to legally collect fees and taxes. This goal is jeopardised, though, when qualified people disregard tax laws, making it impossible for them to pay their taxes. This situation is commonly referred to as tax non-compliance. James and Alley (1999) argue that non-compliance not only undermines the equity and efficiency of an economic system but also has far-reaching consequences beyond the mere failure to comply.

According to Hananga et al. (2013), tax evasion and avoidance are among the most important issues confronting government revenue collection systems. Fagariba (2016) further links tax evasion to large budget deficits, which in turn reduce investment in public goods. Similarly, Shahrodi (2010) found that widespread non-compliance within a tax system places an undue burden on honest taxpayers, creating an environment conducive to tax evasion. These results highlight the negative effects of non-compliance on societal equity and government revenue.

Empirical Review

The growing importance of technology in tax administration has made electronic tax compliance a crucial study topic. Digitalisation, taxpayer education, and attitudes towards electronic tax systems are some of the elements that affect

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compliance. This section examines pertinent research on digital taxes and tax compliance.

Effectiveness of Digital Tax Systems among Small Businesses

Abdi et al. (2024) conducted a study in Eastleigh, Nairobi County, to investigate the influence of digitalisation effectiveness on turnover tax compliance among textile-based SMEs. A total of 243 SMEs were randomly selected from a stratified sample drawn from the study's target population of 620 textile enterprises. Structured questionnaires were used to collect data from the chosen companies, and both descriptive and inferential statistical techniques were used to analyse the findings. The findings indicated that digitalisation significantly improved turnover tax compliance by simplifying tax processes, enhancing record-keeping accuracy, and reducing the time required for filing returns.

SMEs that adopted digital tools reported higher compliance rates compared to those relying on manual processes, demonstrating the positive role of digitalisation in fostering accountability and transparency. However, the study also identified challenges, including limited access to digital infrastructure, a lack of technical expertise among business owners, and resistance to adopting new technologies due to costs. The study concluded that enhancing the effectiveness of digitalisation in promoting tax compliance requires overcoming specific barriers through strategic interventions. These include ensuring affordable access to digital technologies, implementing training initiatives, and introducing incentives to encourage SMEs to adopt digital solutions.

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The use of Quick Response Code Indonesian Standard (QRIS) technology to improve tax collection among micro, small, and medium-sized firms (MSMEs) registered at the KPP Karangpilang Surabaya tax office was investigated by Pramudianti et al. in 2023. The study used both quantitative and qualitative research approaches and concentrated on a population of registered MSMEs. Purposive sampling was used to calculate the sample size. Structured questionnaires and interviews were used to collect data, and descriptive and inferential statistical techniques were used to analyse the findings. The results showed that by streamlining payment procedures, boosting transparency, and lessening the administrative load on SMEs, QRIS technology greatly improved tax compliance.

Additionally, businesses that adopted QRIS reported improved attitudes toward fulfilling tax obligations due to its convenience and efficiency. However, challenges such as uneven digital adoption rates, limited awareness of QRIS benefits, and the need for more extensive outreach programmes were identified as barriers to its broader implementation. The researchers observed that QRIS technology is an effective tool for modernising tax collection systems and recommended increased promotion, training, and technical support to encourage adoption among SMEs and improve compliance rates.

Focusing on the Ilala tax district, Jumanne and Mrindoko (2022) examined the effectiveness of Tanzania's e-filing system in enhancing tax collection. The study targeted a population of taxpayers, including both individual filers and small and medium-sized enterprises (SMEs), and utilised a stratified random sampling method to select 100 participants. Data were gathered via structured questionnaires

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and interviews and analysed through both descriptive and inferential statistical techniques. The results indicated that the e-filing system significantly improved tax collection by reducing submission delays, minimising errors in tax returns, and encouraging greater compliance due to its convenience.

Participants expressed increased satisfaction with the tax process, attributing this to the system's efficiency and time-saving nature. Nonetheless, the study also identified several barriers to widespread adoption, including inadequate internet access, limited digital literacy, and occasional technical disruptions. The authors concluded that, although the e-filing system has positively impacted tax administration in the Ilala district, its full potential can only be realised through enhancements in infrastructure, taxpayer education, and system reliability. Their recommendations underscored the need for broader access to digital resources and strengthened support mechanisms to further improve compliance and tax collection.

Baseka (2022) investigated the factors that influence tax compliance and the adoption of digital tax systems among small and medium-sized companies (SMEs) in Arusha, Tanzania. The study used a mixed-methods methodology, which included structured surveys and interviews. A stratified random sample of 155 SMEs was drawn from a target population of 1,540 enterprises. Grounded in the Technology Acceptance Model (TAM) and the Innovation Diffusion Theory, the research revealed that perceived ease of use, perceived usefulness, and external influences such as government enforcement measures and peer pressure played a significant role in SMEs' acceptance of the digital tax platform.

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This acceptance, in turn, contributed to improved levels of tax compliance. Additionally, SMEs with higher levels of digital literacy exhibited better compliance outcomes, while barriers such as limited awareness, inadequate training, and technological infrastructure challenges, particularly in rural areas, hindered acceptance. The study highlighted that SMEs using the digital tax system experienced faster, more accurate tax filing compared to those relying on manual processes. To encourage wider adoption and improve compliance, the author recommended awareness campaigns, training programmes, and infrastructure improvements, emphasising their importance for supporting SMEs and optimising the digital tax system's effectiveness.

Otekunrin et al. (2021) examined the role of the electronic tax (e-tax) system in curbing tax evasion in Nigeria, with a focus on its effectiveness in enhancing compliance and boosting revenue collection. The study utilised secondary data derived from 60 respondents, comprising tax officials and representatives of small and medium-sized enterprises (SMEs). Findings indicated that the e-tax system significantly reduced opportunities for tax evasion by improving transparency, streamlining tax processes, and increasing accessibility to tax services. SMEs that adopted the system reported greater levels of compliance, attributing this to the platform’s user-friendliness, decreased administrative burden, and provision of real-time access to tax information.

However, the research also highlighted key challenges hindering broader adoption, including poor infrastructure, limited digital literacy, and concerns over data security. While the system proved effective in mitigating tax evasion, the

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authors emphasised that its full potential could only be realised through enhanced cybersecurity measures, comprehensive taxpayer education, and substantial investment in infrastructure.

Mustamim et al. (2021) investigated the efficacy of online tax service systems in promoting taxpayer compliance during the COVID-19 pandemic. The primary aim of the study was to assess how the adoption of online tax services influenced compliance behaviour amid the challenges posed by the pandemic. Data were gathered by using structured questionnaires administered to small and medium-sized enterprises (SMEs) and individual taxpayers who had enrolled in the online tax system. The findings showed that by streamlining tax reporting and payment procedures, which were essential during the pandemic when in-person encounters were scarce, the online tax service system greatly increased compliance.

Taxpayers appreciated the convenience and accessibility of the system, which reduced the burden of compliance and increased the timeliness of filings. However, challenges such as limited familiarity with digital systems, inadequate internet access in certain areas, and a lack of technical support hindered the system's full effectiveness. The authors concluded that although the online tax service system contributed to improved compliance during the pandemic, sustaining this progress in the long term would require tackling key challenges. They recommended increased public awareness efforts, infrastructure enhancements, and the provision of reliable technical support as critical measures for maintaining consistent taxpayer compliance.

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Mukuwa and Phiri (2020) examined the impact of electronic services on tax compliance and revenue collection among small and medium-sized enterprises (SMEs) in developing nations, using Zambia as a case study. The study employed purposive sampling to select 400 SMEs registered with the Zambia Revenue Authority. Data collection was carried out through structured questionnaires, and both descriptive and inferential statistical methods were applied in the analysis. The findings indicated that the adoption of e-services significantly enhanced tax compliance and revenue mobilisation by simplifying tax procedures, lowering compliance costs, and improving transparency.

SMEs that actively engaged with e-services demonstrated higher compliance levels compared to those using conventional manual processes. Nevertheless, the study identified key obstacles to broader adoption, including low levels of digital literacy, limited infrastructure, and the high cost of transitioning to digital platforms. The authors recommended the implementation of targeted training initiatives, investment in digital infrastructure, and the provision of government incentives to facilitate the uptake of e-services and strengthen compliance within the SME sector.

Together, the studies show how digital technology can improve tax compliance for SMEs in various geographical areas while also highlighting shared difficulties. Abdi et al. (2024), Pramudianti et al. (2023), and Jumanne and Mrindoko (2022) consistently demonstrate that digital systems, such as digitalisation tools, QRIS technology, and e-filing systems, enhance compliance by simplifying processes, reducing administrative burdens, and increasing

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transparency. Similarly, Baseka (2022), Otekunrin et al. (2021), and Mukuwa and Phiri (2020) reinforce this narrative, showing that ease of use, transparency, and efficiency foster better compliance. However, all studies identify barriers, such as limited infrastructure, lack of digital literacy, and resistance to adoption due to costs, as significant impediments.

While studies like Abdi et al. (2024) and Pramudianti et al. (2023) focus on targeted interventions, including training and awareness campaigns, others, such as Jumanne and Mrindoko (2022) and Mukuwa and Phiri (2020), emphasise infrastructure improvements and government incentives. The research's scopes differ noticeably: Baseka (2022) and Abdi et al. (2024) concentrate on the effects of certain digital technologies on SMEs, whereas Otekunrin et al. (2021) and Mustamim et al. (2021) expand the viewpoint to encompass lowering tax evasion and pandemic-related compliance issues. These studies all agree that in order to optimise the advantages of digital tax systems in terms of increasing compliance, strong digital infrastructure, improved taxpayer education, and systemic assistance are required.

Level of Tax Compliance among Small Businesses

Carsamer and Abbam (2023) explored the influence of religion and religiosity on tax compliance among SMEs in Ghana. Their study sought to determine whether the nation's strong religious orientation promotes voluntary compliance or whether organisational and institutional factors play a more decisive role. Using a quantitative case study approach, the study surveyed 472 SME owners across Accra and Kumasi, employing purposive, quota, and convenience sampling

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techniques to ensure diverse representation. The findings revealed that religiosity had no significant effect on tax compliance, as many SME owners perceived tax evasion as ethical, particularly in response to institutional inefficiencies and government corruption. The study found that institutional factors such as transparency, fairness, and equity within the tax system were more influential in predicting compliance than religious beliefs.

Additionally, demographic characteristics, including age, educational attainment, and the size of the business, played a significant role in shaping compliance behaviour. Trust in government institutions also emerged as a critical determinant, with lower levels of trust associated with a reduced willingness to comply with tax obligations. Additionally, the research emphasised the importance of fair and consistent tax enforcement, recommending that tax offences be treated as serious financial crimes rather than minor infractions. Carsamer and Abbam concluded that improving transparency, reducing corruption, and fostering trust between taxpayers and the government are more effective strategies for enhancing compliance than relying on religious influence. The study suggested stronger enforcement mechanisms, fair tax policies, and expanded tax education initiatives to improve voluntary compliance among SMEs in Ghana.

To gain a deeper understanding of the factors influencing tax compliance decisions, Nartey (2023) analysed both the supply side (SMEs) and the demand side (tax authorities) to assess compliance behaviour among small and medium-sized enterprises in Ghana. The study employed a survey-based design and collected responses from 233 participants, comprising 64 officials from the Ghana

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Revenue Authority (GRA) and 169 SME managers. Data were analysed using covariance-based structural equation modelling (AMOS Graphics version 23). The research drew on the Theory of Reasoned Action (TRA) to explain behavioural intent and Utility Theory by Allingham and Sandmo (1972) to explore motivational factors behind compliance.

The results revealed that institutional pressures (isomorphic forces) and perceptions of fairness within the tax system significantly influenced compliance, indicating that SMEs are more inclined to comply when tax policies are perceived as equitable and institutional norms support such behaviour. However, strategic reactions to these institutional pressures were found to have no significant effect on compliance levels, suggesting that while SMEs may adopt coping mechanisms, these do not necessarily translate into improved tax adherence. The study concluded that enhancing tax compliance in Ghana requires a transparent and fair tax environment, stronger institutional enforcement, and improved dialogue between tax authorities and SMEs. Nartey recommended legislative reforms focused on fairness, institutional credibility, and educational outreach to foster trust and encourage voluntary compliance among SMEs.

Nyarkpoh et al. (2023) examined the interplay between corruption, trust in government, and tax compliance within the Ghanaian context, focusing on how perceptions of institutional integrity shape taxpayers' willingness to adhere to tax obligations. Adopting a quantitative research methodology, the study surveyed 350 participants comprising individual taxpayers and SME owners from various sectors and applied regression analysis to evaluate the impact of corruption and trust on

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compliance behaviour. The findings revealed that perceived high levels of corruption had a detrimental impact on tax compliance, as individuals were less inclined to meet their tax responsibilities when they believed public funds were being mismanaged or unfairly allocated.

Conversely, trust in government emerged as a strong predictor of voluntary tax compliance; taxpayers were more willing to adhere when they saw the tax system as fair, transparent, and beneficial to societal well-being. The report also made clear how uneven tax laws and lax enforcement further weaken public confidence in the government, which in turn fuels a rise in tax cheating. According to Nyarkpoh et al., promoting a culture of tax compliance in Ghana requires enhancing government responsibility, lowering corruption, and guaranteeing openness in tax administration. To restore confidence and improve voluntary tax compliance, the authors suggested stepping up enforcement actions, implementing anti-corruption programmes, and stepping up public awareness campaigns.

Batrancea et al. (2022) explored tax compliance behaviour among 2,786 self-employed individuals from eleven countries, including both post-communist (PCO) and non-post-communist (non-PCO) nations. The study employed the Slippery Slope Framework (SSF) to assess how trust in tax authorities and perceived authority influence attitudes toward compliance. Using an experimental, scenario-based design and applying both frequentist and Bayesian analytical methods, the researchers found that increased trust in authorities fostered greater voluntary compliance, while a stronger perception of authority power led to higher levels of enforced compliance. These findings supported the fundamental

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propositions of the SSF. PCO taxpayers demonstrated higher compliance intentions and lower tax evasion rates than non-PCO taxpayers, likely due to historical enforcement-driven compliance behaviours transitioning into structured tax-paying attitudes. Additionally, the study found that power had a bigger influence in PCO nations and trust had a stronger function in non-PCO countries, indicating that various governance histories influence taxpayer behaviour.

It is interesting to note that when power and trust were both strong, their impacts decreased rather than strengthened one another, suggesting that too much state control can counteract the positive effects of trust. According to the study's findings, fostering trust rather than depending just on enforcement is a more viable and economical approach to compliance, especially in non-PCO nations where excellent public service delivery, transparency, and fairness can significantly improve tax compliance. PCO administrations can preserve long-term compliance by striking a balance between deterrence tactics and initiatives to foster trust. In order to establish a more stable and efficient tax system, the authors suggested lowering corruption, enhancing public accountability, and encouraging collaboration between companies and tax officials.

Addo (2022) examined tax compliance among SMEs in Ghana, focusing on the role of tax awareness and tax knowledge in influencing compliance behaviour. Using a quantitative descriptive research design, the study surveyed 395 SMEs in the Greater Accra region, employing a simple random sampling technique to collect primary data through structured questionnaires. The analysis, conducted using descriptive and inferential statistical techniques, including frequency distributions,

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percentages, regression, and correlation analysis, revealed a high level of tax compliance among SMEs, with most businesses filing tax returns, declaring accurate income, and making timely tax payments. Key determinants of compliance included government spending priorities, tax service quality, fairness in tax administration, and regular audits by the Ghana Revenue Authority (GRA).

Since businesses with a greater understanding of taxable income and due dates demonstrated higher adherence to tax duties, the study also demonstrated that tax awareness greatly improves compliance. In a similar vein, tax expertise was a key component of compliance, with SMEs with accounting personnel knowledgeable about tax regulations showing higher levels of compliance. Nevertheless, obstacles, including contradictory tax data from dubious sources and restricted access to tax processes on the GRA website, had a detrimental effect on compliance. The GRA should increase the transparency and accessibility of tax-related information to encourage voluntary compliance, while SMEs should invest in tax education workshops and seminars, according to the study's conclusion that tax awareness and knowledge have a significant beneficial impact on SMEs' tax compliance.

Hassan et al. (2021) investigated the factors that influence voluntary tax compliance among individual taxpayers in Pakistan, using theoretical frameworks such as attribution theory, equity theory, expected utility theory, and social exchange theory. The study integrated economic, behavioural, social, and institutional perspectives. Adopting a quantitative approach, the researchers surveyed 435 individual taxpayers from Southern Punjab and employed structural

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equation modelling (SEM) for data analysis. The data found that the simplicity of the tax system had the greatest influence on filing behaviour, outweighing characteristics like perceived government spending and tax morale. Perceptions of fairness were found to mediate the relationship between tax morale, simplicity, and compliance behaviours.

The study underscored that taxpayer views on fairness are shaped by the complexity of tax procedures and the visibility of how public funds are utilised; dissatisfaction with tax administration was shown to reduce compliance, even among those with strong tax morale. To enhance compliance, the authors recommended simplifying tax processes, increasing taxpayer education, and ensuring equitable tax enforcement. Further suggestions included launching public awareness campaigns, engaging with influential voices, and upgrading digital tax infrastructure. Greater transparency in tax laws and equitable distribution of public resources were also identified as means to foster trust and encourage compliance. The authors called for future research using experimental designs, case studies, and larger samples to enrich understanding, acknowledging limitations such as small sample size, reliance on self-reported data, and the absence of qualitative perspectives.

Rachmawan et al. (2020) investigated how perceptions of procedural justice and degrees of understanding of taxes impact voluntary tax compliance among MSME taxpayers in Malang Raya, Indonesia, with trust in tax authorities examined as a mediating variable. Employing a quantitative research design, the study surveyed 405 individual taxpayers through convenience sampling and analysed the

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data using structural equation modelling (SEM-PLS) with WarpPLS 6.0. The results showed that perceived procedural justice significantly influenced both trust in tax authorities and voluntary compliance, with trust acting as a mediating factor between procedural fairness and compliance behaviour. However, tax knowledge did not moderate the relationship between procedural justice and either trust or compliance, indicating that taxpayers may value simple and equitable tax procedures more than technical knowledge when deciding whether to comply.

The study highlighted that a transparent and just tax system fosters trust, which in turn leads to increased voluntary compliance. For MSMEs in Malang, simplified procedures were especially important, as they alleviated the burden of frequent tax filings. The authors advised policymakers to prioritise procedural fairness in tax administration as a means of building public trust, rather than focusing solely on tax education. They also encouraged future studies to consider other fairness dimensions, such as distributive and retributive justice, and refine the tax knowledge construct by breaking it into multiple components for more detailed analysis.

Collectively, the evidence suggests that perceptions of fairness, institutional trust, and knowledge of tax regulations have a more profound impact on tax compliance among SMEs and individual taxpayers than religious beliefs or strict enforcement alone. Challenging the assumption that Ghana's deeply rooted religious culture promotes tax compliance, Carsamer and Abbam (2023) found that many SME owners justify non-compliance based on perceived government inefficiencies and corruption. Similarly, Nyarkpoh et al. (2023) observed that trust

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in public institutions and the belief that tax revenues are managed fairly significantly influence compliance, while perceptions of corruption serve as a deterrent. Nartey (2023) further confirmed that firms are more inclined to comply when they view tax policies as equitable and institutions as transparent and accountable. On a broader scale, Batrancea et al. (2022) demonstrated that voluntary compliance is closely linked to trust, whereas coercive enforcement proves effective primarily in low-trust contexts.

This finding is consistent with the conclusions of Hassan et al. (2021) and Rachmawan et al. (2020), who emphasised the importance of simplified procedures and fair treatment by tax authorities in encouraging compliance. From a policy standpoint, Addo (2022) highlighted the value of tax education and awareness in aiding SMEs to meet their obligations, echoing Hassan et al.'s (2021) argument that streamlined processes significantly enhance taxpayer engagement. Nevertheless, issues still exist that impede compliance efforts, such as restricted access to tax information (Addo, 2022) and inadequate institutional frameworks (Nyarkpoh et al., 2023). These studies indicate that governments should prioritise fostering trust, enhancing transparency, streamlining tax processes, and boosting education in order to create a more tax-compliant society rather than depending just on fines and enforcement.

Impact of Digital Tax Systems' Effectiveness on Tax Compliance

Al-Okaily (2024) investigated the determinants of Digital Taxation Information System (DTIS) adoption and its effect on tax compliance, focusing on the mediating role of trust in e-government services (TIE) and the moderating effect

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of taxpayer awareness. The study employed a quantitative design using Partial Least Squares Structural Equation Modelling (PLS-SEM) and collected data from Jordanian university lecturers, selected through purposive sampling due to their regular income and consistent tax obligations. The results indicated that perceived usefulness (PU), perceived ease of use (PEU), attitude (ATT), knowledge (KN), subjective norm (SN), awareness (AW), and trust in government (TIG) all significantly influenced DTIS adoption and utilisation. Trust in e-government services was found to mediate the relationship between trust in government and the use of DTIS. However, contrary to expectations, awareness did not moderate the relationship between subjective norms and DTIS usage. The study applied both the Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA) to the context of digital taxation, highlighting that favourable perceptions of system usefulness, ease of use, and social influence play a key role in sustaining DTIS engagement.

The study found that trust in government is important in moulding views toward e-government platforms, since people who trust public institutions are more likely to adopt digital taxation systems. Furthermore, the study recommended that governments should simplify tax filing systems, actively seek user feedback, and implement awareness campaigns to enhance taxpayer engagement with DTIS. Despite its contributions, the study acknowledged limitations, including the narrow geographic scope (Jordan), the use of cross-sectional data, and the focus on a single taxpayer group (university faculty), suggesting that future research should include longitudinal studies, a more diverse taxpayer sample, and comparisons across

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different DTIS platforms (mobile apps vs. websites) to improve the generalisability of findings.

Meiryani et al. (2023) explored the determinants of tax compliance by assessing the effects of e-system modernisation, self-efficacy, and digital literacy among individual taxpayers registered with the Kalideres Primary Tax Service Office in Indonesia. The study employed a quantitative methodology, gathering data from 100 participants using structured questionnaires, and analysed the responses through multiple linear regression with SPSS version 23. Anchored in the Theory of Planned Behaviour (TPB), the research investigated how taxpayers' attitudes, subjective norms, and perceived behavioural control contribute to their willingness to comply with tax obligations. The findings revealed that e-registration, a component of e-system modernisation, significantly improves tax compliance, as it simplifies taxpayer identification and facilitates online systemisation, especially in response to COVID-19. However, e-filing had no effect on taxpayer compliance, suggesting that while more individuals use e-filing, it does not necessarily lead to increased compliance due to variations in prior tax registration and reporting behaviours. Additionally, self-efficacy positively influenced taxpayer compliance, indicating that taxpayers with higher confidence in their ability to meet tax obligations were more likely to comply.

On the other hand, digital literacy did not significantly influence tax compliance, since awareness of taxation issues was not enough to ensure compliance if individuals lacked adequate digital skills or access to necessary government resources. The study concluded that simplifying tax registration and

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improving taxpayer self-efficacy are key drivers of compliance, whereas digital literacy alone is insufficient without proper education and awareness initiatives. The authors recommended that future research incorporate additional moderating or intervening variables, expand the sample size, and utilise advanced statistical analysis tools such as SmartPLS or AMOS to improve the robustness of findings.

Nartey (2023) examined tax compliance behaviour among SMEs in Ghana by considering both supply-side (SMEs) and demand-side (tax authorities) perspectives, with particular attention to the effects of isomorphic pressures, perceived fairness, and strategic responses. The research employed a quantitative approach, surveying 233 respondents comprising 169 SME managers and 64 officials from the Ghana Revenue Authority (GRA). Data were analysed using covariance-based structural equation modelling through AMOS Graphics version 23. The results indicated that institutional pressures and perceptions of fairness positively influenced compliance, suggesting that SMEs are more inclined to comply when they view the tax system as equitable and are encouraged by institutional norms. In contrast, strategic adaptations to regulatory pressures showed only minimal impact on compliance behaviour, indicating that the strategies SMEs adopt in response to external pressures do not necessarily lead to higher compliance levels.

The study also uncovered a perceptual gap, as tax officials were more likely to view the system as fair compared to SME managers. Drawing on the Theory of Reasoned Action (TRA) and Utility Theory (Allingham & Sandmo, 1972), the research affirmed that tax compliance is shaped by a combination of normative

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social influences and economic incentives. While the study was limited to Ghana, making generalisation difficult, the results provide insights applicable to other developing economies with similar tax environments. The study recommended that fiscal transparency be improved, tax regulations be more closely monitored, and a mixed-method approach be employed in future research to capture deeper insights into SME tax compliance behaviour.

Bellon et al. (2022) examined the effects of digitalising tax compliance through the implementation of VAT e-invoicing in Peru, focusing on the shift from traditional paper-based invoicing to electronic systems and its implications for firm-level tax compliance and performance. Employing a quasi-experimental research design, the study utilised the staggered introduction of e-invoicing across firms to assess its impact on tax reporting practices. The results demonstrated that within the first year of adoption, e-invoicing contributed to over a 5% increase in reported sales, purchases, and VAT liabilities, with the most notable effects observed among smaller enterprises and industries with historically high levels of non-compliance. The authors concluded that electronic invoicing enhances compliance by reducing administrative workload and increasing the likelihood of detection, thereby making tax evasion more challenging.

However, firms with pre-existing VAT credit balances offset much of the revenue gains from e-invoicing, highlighting a limitation of the reform in terms of overall tax revenue mobilisation. The authors concluded that while digital tax tools like e-invoicing enhance compliance, they should be complemented by broader tax policy reforms to maximise revenue collection. The study provided valuable

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insights for policymakers in developing economies looking to leverage digitalisation to improve tax administration and compliance.

Brockmeyer and Sáenz Somarriba (2025) investigated the impact of electronic payment technology on tax compliance in the context of Uruguay's financial inclusion reform. The study utilised a policy-driven quasi-experimental design, leveraging administrative tax data to analyse the effects of mandating electronic payments for business transactions. The reform aimed to reduce cash transactions, increase the visibility of economic activity, and improve compliance with tax regulations. The findings indicated that the adoption of electronic payment systems led to a significant reduction in tax evasion, as businesses were compelled to report transactions that were now more transparent and traceable.

The study also found that sectors previously dominated by cash transactions experienced the most pronounced compliance improvements, particularly among small and medium-sized enterprises. However, the reform faced challenges, including resistance from businesses unfamiliar with digital tools and disparities in access to electronic payment infrastructure in rural areas. The authors concluded that integrating electronic payment technologies into tax systems can enhance compliance and revenue collection but emphasised the need for complementary policies to support businesses in adopting digital solutions effectively.

Le et al. (2021) investigated the determinants of electronic tax compliance among small and medium-sized enterprises (SMEs) in Vietnam, focusing on the influence of both internal and external factors. Adopting a quantitative research design, the study gathered data from 823 SMEs using structured questionnaires

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based on a five-point Likert scale. The relationships between variables were analysed through multiple regression analysis. The results indicated that perceived ease of use, perceived usefulness, and trust in the electronic tax platform were key drivers of compliance.

Additionally, external support in the form of government assistance and training initiatives was found to enhance compliance further. Despite these positive influences, the study also identified significant obstacles, namely, underdeveloped technological infrastructure and limited awareness of digital tax procedures in rural regions, which hindered broader adoption among SMEs. Compared to larger enterprises, SMEs were found to face greater resource constraints, impacting their ability to comply effectively. The authors concluded that addressing these challenges through improved infrastructure, targeted training programmes, and fostering trust in electronic tax systems is essential to boosting compliance rates, offering valuable insights for policymakers aiming to promote user-friendly and accessible tax systems in Vietnam.

Belay (2020) carried out a study to assess the influence of information technology (IT) on the efficiency of tax administration in Ethiopia, aiming to understand how the adoption of IT affects administrative operations and the broader performance of the tax system. The research utilised a mixed-methods approach, integrating quantitative data obtained through structured questionnaires with qualitative insights gathered from interviews conducted with tax authority personnel. Using statistical tools, the study analysed responses from a sample of tax administrators and taxpayers to evaluate the relationship between IT

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implementation and efficiency improvements. The findings revealed that IT integration significantly enhanced the accuracy, speed, and transparency of tax administration, reducing errors and minimising compliance costs for taxpayers.

Moreover, IT systems were found to streamline tax reporting and improve access to services, leading to greater taxpayer satisfaction and compliance. However, challenges such as limited technical skills, inadequate infrastructure, and frequent system downtimes were identified as key obstacles to realising the full potential of IT in tax administration. Belay concluded that investing in technological infrastructure, capacity-building programmes, and robust IT maintenance strategies is critical for optimising the efficiency of tax administration in Ethiopia, providing practical recommendations for policymakers to modernise the country's tax system.

Digital taxation systems are increasingly shaping tax compliance, with various factors such as trust, awareness, and infrastructure playing critical roles in their effectiveness. Al-Okaily (2024) and Meiryani et al. (2023) highlight how trust in government, digital literacy, and ease of use influence the adoption of digital tax platforms. Al-Okaily (2024) finds that trust in e-government services mediates digital taxation adoption, whereas Meiryani et al. (2023) emphasise that self-efficacy and digital registration significantly improve compliance, though digital literacy alone is insufficient without proper education. Similarly, Nartey (2023) and Bellon et al. (2022) demonstrate that perceptions of tax fairness and institutional pressures shape compliance, with Bellon et al. showing that VAT e-invoicing in

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Peru led to increased tax reporting, especially among previously non-compliant firms.

Brockmeyer and Sáenz Somarriba (2022) reinforce this by illustrating how Uruguay's mandatory electronic payment policy reduced tax evasion through enhanced transaction transparency. Despite these advancements, challenges remain. Le, Bui, and Nguyen (2021) and Belay (2020) highlight that infrastructure gaps, limited digital literacy, and technical issues hinder the full potential of electronic tax systems, particularly in rural areas. These findings suggest that while digital taxation strengthens compliance, governments must complement technological advancements with trust-building measures, taxpayer education, and improved digital accessibility to maximise their effectiveness.

Digital Literacy in Moderating the Relationship Between Digital Tax Systems' Effectiveness and Tax Compliance

Mwesige et al. (2024) explored the moderating role of technological self-efficacy (TSE) in the relationship between the use of financial technology (fintech) and digital financial inclusion (DFI) among female traders in rural Uganda. Employing a quantitative, explanatory, cross-sectional research design, the study collected data from 384 women operating in the Mbale Main Market through structured questionnaires. The data were analysed using hierarchical regression techniques alongside the Hayes PROCESS Macro Version 4.0. Based on the Technology Acceptance Model (TAM) and Social Construction of Technology (SCOT) theories, the study discovered that fintech usage considerably improves DFI, implying that women who actively use fintech services are more financially

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included than those who do not. Furthermore, TSE was positively associated with DFI, indicating that women who were more confident in utilising technology were more likely to use digital financial services. More importantly, TSE was found to be a significant moderator, amplifying the positive impact of fintech usage on DFI, suggesting that individuals with higher self-efficacy experience greater benefits from fintech adoption.

The findings emphasised the need for policymakers, financial institutions, and development organisations to promote fintech adoption through targeted digital literacy programmes, user-friendly fintech platforms, and supportive infrastructure to improve confidence and reduce barriers for rural women. However, the study acknowledged several limitations, including its cross-sectional nature, which prevents causal inferences, limited generalisability beyond rural Mbale, and potential social desirability bias in self-reported data. The study suggested that future research should adopt longitudinal designs, explore sociocultural factors influencing fintech adoption, and employ mixed-method approaches to deepen understanding of DFI determinants in Uganda and other developing economies.

Bekana (2024) examined the relationship between general literacy and tax revenue mobilisation across 46 African countries from 1996 to 2021, addressing the limited clarity in existing literature regarding how literacy levels influence taxation efforts. Using quantile regression and generalised least squares (GLS) estimation techniques, the study analysed the cross-country variations in taxation levels based on literacy achievements, measured through gross secondary school enrolment rates. The findings revealed a positive and significant relationship

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between general literacy and tax mobilisation, with a stronger effect on direct taxes than indirect taxes, suggesting that better-educated populations are more likely to understand and adhere to tax regulations. The study also found that the impact of literacy on taxation was greater in countries with higher existing tax revenue mobilisation, indicating that nations with stronger tax systems benefit more from literacy improvements.

Consistent with tax compliance behaviour theories such as economic deterrence, fiscal exchange, and political accountability, the research emphasised that taxpayer education plays a crucial role in fostering compliance and increasing government revenue. Furthermore, the study highlighted regional disparities in tax mobilisation, with Southern, Northern, and Western African countries performing better than their Eastern and Central African counterparts, reflecting differences in both literacy levels and tax system efficiency. The study concluded that improving literacy is key to enhancing tax compliance and revenue generation, recommending that African governments simultaneously invest in education and economic development to strengthen tax systems. Future research should explore longitudinal trends, country-specific literacy interventions, and qualitative insights into taxpayer behaviour to deepen understanding of the literacy-taxation nexus.

Kinuu (2023) investigated the impact of tax training on the relationship between tax modernisation activities and compliance among Nakuru County's small and medium-sized enterprises (SMEs). The study adopted an explanatory research design and surveyed 395 SMEs selected through simple random sampling from a registered business population of 32,272. Data were collected using pre-

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tested questionnaires and analysed through descriptive statistics and hierarchical regression models. The research was grounded in three theoretical frameworks: economic deterrence theory, transaction cost economics theory, and the theory of reasoned action.

It looked at how three digital tax instruments, Tax Invoice Management Systems (TIMS), electronic filing, and electronic payments, affected tax compliance. TIMS ($\beta = 0.286$, $p < 0.05$), e-filing ($\beta = 0.352$, $p < 0.05$), and e-payment systems ($\beta = 0.145$, $p < 0.05$) all significantly improved compliance, accounting for 33.4% of the variance. Also, tax training significantly modifies associations with TIMS ($\beta = 0.068$, $p < 0.05$), e-filing ($\beta = 0.053$, $p < 0.05$), and e-payment ($\beta = 0.455$, $p < 0.05$), increasing the explained variance to 43.2%. The study concluded that digital tax systems enhance SME compliance, with training acting as a catalyst for their effectiveness. It recommended the provision of basic training in record-keeping and tax processes to SME operators and suggested future research to compare these findings across counties to assess regional differences in compliance and training outcomes.

Meiryani et al. (2023) explored the key factors affecting tax compliance among individual taxpayers at the Kalideres Primary Tax Service Office in Indonesia, with particular focus on the roles of e-system modernisation, self-efficacy, and digital literacy. The study adopted a quantitative design and collected data from 100 respondents through structured questionnaires. The responses were analysed using multiple linear regression with SPSS version 23. Anchored in the Theory of Planned Behaviour (TPB), the research assessed how individual

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attitudes, social influences (subjective norms), and perceived behavioural control contribute to taxpayers' compliance decisions. The findings revealed that e-registration significantly enhances taxpayer compliance, as it simplifies tax identification and facilitates online systemisation, particularly following the COVID-19 pandemic. However, e-filing had no significant effect on compliance, suggesting that while awareness of electronic filing has increased, many taxpayers either remain unregistered or do not actively report their taxes. Additionally, self-efficacy positively influenced tax compliance, indicating that individuals with higher confidence in their ability to meet tax obligations were more likely to comply.

Conversely, digital literacy had no significant effect on tax compliance, suggesting that while taxpayers may be aware of digital tax systems, their lack of technical skills or insufficient government education programmes limits their ability to fully engage. The study concluded that simplifying tax registration and improving taxpayer self-efficacy are key drivers of compliance, whereas digital literacy alone is insufficient without adequate training and awareness initiatives. However, the study acknowledged limitations, including a small sample size, which restricts its generalisability, and suggested that future research incorporate moderating or intervening variables, use advanced statistical tools such as SmartPLS or AMOS, and explore different periods and tax policy changes to improve the robustness of findings.

Walter and Wilson (2023) investigated how computer literacy influences tax compliance among small and medium-sized enterprises (SMEs) operating within

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Harare's central business district, with a specific focus on electronic tax filing (e-filing) systems. The study employed a descriptive survey design and targeted a population of 13,000 SMEs, from which 389 participants were selected using stratified random sampling. Data were gathered through self-administered questionnaires and analysed using descriptive statistics with SPSS version 21.0. The findings showed a positive association between levels of computer literacy and tax compliance, indicating that improvements in computer proficiency correspond with higher compliance rates. The research highlighted that SMEs familiar with e-filing systems were more likely to fulfil their tax obligations, as they found the digital processes more accessible.

The authors recommended that the Zimbabwe Revenue Authority (ZIMRA) offer free computer literacy training at its offices, strengthen the security of e-filing platforms, and run awareness campaigns to foster trust in digital tax services. Additionally, the study proposed that ZIMRA adopt a more taxpayer-orientated approach by addressing issues of corruption, enhancing service quality, and introducing self-service options such as internet-enabled tax kiosks to support digital engagement. The researchers concluded that improving SMEs' digital competence could substantially raise voluntary compliance by mitigating the technical challenges associated with e-filing. They further suggested that future research could adopt longitudinal approaches to evaluate the long-term impact of digital literacy and the effectiveness of taxpayer education programmes.

Mohammed et al. (2022) explored the relationship between digital knowledge and tax compliance in developing countries, emphasising the growing

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role of digitisation in taxation. The study conducted a conceptual review of existing literature on tax knowledge and compliance, revealing mixed findings. While the majority of studies support the notion that tax knowledge positively influences compliance, some research suggests that knowledge alone is insufficient to drive compliance behaviour. The authors introduced a two-tier model of tax knowledge, distinguishing between basic tax knowledge and digital tax knowledge, arguing that both forms significantly impact compliance.

The study further highlighted that, as tax systems become increasingly digitised, taxpayers must possess digital competencies to effectively engage with e-tax platforms and fulfil tax obligations. The authors proposed an updated tax knowledge model that aligns with the current digital transformation trends in taxation, suggesting that digital knowledge is now a critical factor in compliance behaviour. The study recommended that future research should further investigate the direct impact of digital knowledge on tax compliance, particularly in developing economies where digital literacy levels vary widely. Policymakers were also encouraged to integrate digital education initiatives into tax compliance programmes to enhance taxpayer engagement in e-filing and digital tax reporting systems.

Purba et al. (2020) examined how the implementation of the e-filing system influenced tax compliance among individual taxpayers at KPP Pratama Jakarta Kramatjati, with a focus on whether internet knowledge moderated this relationship. Using a causal research design, the study surveyed individual taxpayers registered at the tax office, employing convenience sampling and

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analysing data through moderated regression analysis (MRA). The findings confirmed that the e-filing system has a positive and significant effect on taxpayer compliance, indicating that a well-implemented e-filing system enhances compliance by providing convenience, efficiency, and ease of tax return submission. Furthermore, internet knowledge was found to moderate this relationship, meaning that taxpayers with higher digital literacy benefited more from the e-filing system than those with limited internet skills.

The study emphasised that a lack of internet proficiency can hinder the effectiveness of e-filing, as taxpayers unable to navigate online platforms may struggle to comply, regardless of system efficiency. The authors recommended that simplifying e-filing procedures, expanding taxpayer education programmes, and increasing accessibility to digital tax resources would enhance compliance. However, the study acknowledged limitations, including its focus on a single tax office, reliance on individual taxpayers, and potential biases in self-reported questionnaire responses. Future research should expand the study to multiple provinces, increase the sample size, explore alternative research methods (such as experimental designs), and incorporate open-ended interviews to gain deeper insights into factors affecting taxpayer compliance.

Digital literacy, technological self-efficacy, and modernisation programmes are increasingly shaping financial inclusion and tax compliance, particularly among SMEs and individual taxpayers. Mwesige et al. (2024) highlight that women in rural Uganda benefit significantly from fintech adoption, especially when they possess higher confidence in using digital tools, reinforcing the importance of

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targeted digital literacy programmes. Similarly, Bekana (2024) finds that general literacy positively impacts tax revenue mobilisation across Africa, emphasising education as a key driver of compliance.

In Kenya, Kinuu (2023) demonstrates that tax training enhances the effectiveness of modernisation programmes, while Meiryani et al. (2023) and Walter and Wilson (2023) show that self-efficacy and computer literacy significantly influence tax compliance by making digital systems easier to navigate. However, Mohammed et al. (2022) and Purba et al. (2020) warn that while digital tax systems improve compliance, taxpayers must also develop the necessary digital skills to engage effectively. Challenges such as infrastructure gaps, digital literacy disparities, and resistance to new technologies persist, particularly in developing economies. These findings suggest that governments and financial institutions should prioritise comprehensive training programmes, user-friendly digital tax platforms, and increased accessibility to ensure that both fintech adoption and tax compliance efforts are inclusive and effective.

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Conceptual Framework

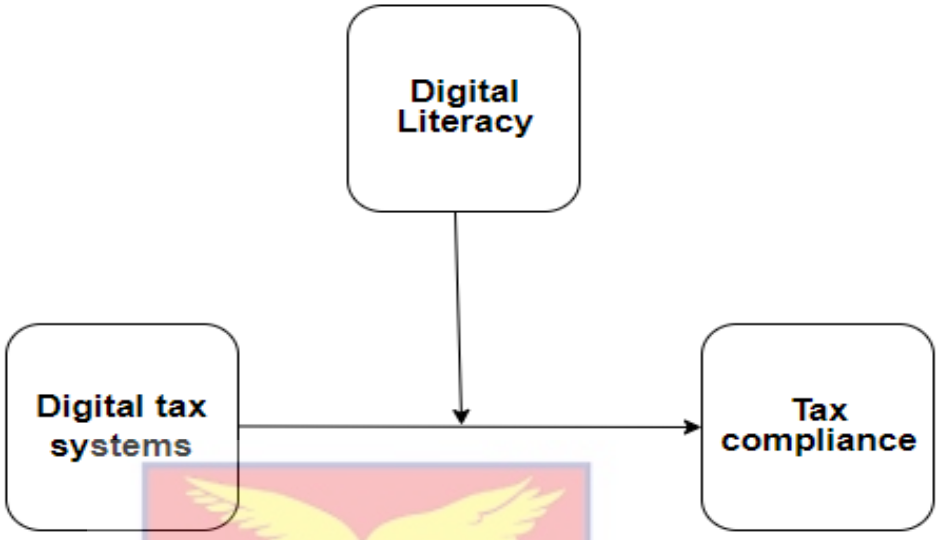


Figure 1: Conceptual Framework of the Study

Source: Author's Construct (2024)

The conceptual framework (see figure 1) highlights the critical role of digital literacy in improving the effectiveness of digital tax systems and encouraging tax compliance. It shows that when people understand and are comfortable using technology, they are more likely to comply with tax requirements. Digital tax systems, such as e-filing and online payment platforms, are designed to simplify tax processes and reduce administrative burdens. However, these systems rely heavily on the user's ability to navigate them. Without adequate digital skills, many taxpayers may find the systems confusing or inaccessible, as noted by Bunn et al. (2020) and Latif (2020). Tax compliance is influenced by the extent to which taxpayers can interact with digital systems. People with higher digital literacy are better equipped to understand and trust these platforms, which reduces errors and frustration. Research by Walter and Wilson (2023) demonstrates

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that digital literacy helps bridge the gap between taxpayers and the system, fostering trust and encouraging compliance.

Digital literacy plays a key role in this relationship by providing individuals with the skills to use technology efficiently. As Meiryani et al. (2023) suggest, educating taxpayers to improve their digital skills can make tax systems more inclusive and effective. The framework calls for efforts to improve digital literacy through taxpayer education and the creation of easy-to-use platforms. By prioritising these steps, tax authorities can enhance compliance and ensure that digital tax systems benefit everyone.

Chapter Summary

The literature review offered critical insights into the factors influencing tax compliance, particularly in the context of digital tax systems and digital literacy. Firstly, existing studies on digital tax compliance among small businesses in Ghana remain limited, with most research conducted in industrialised countries. These studies predominantly employed quantitative research designs, focusing on cross-sectional data and descriptive analyses. For example, researchers frequently used methods such as structured questionnaires and inferential statistics to analyse relationships between variables like tax compliance, digital literacy, and system adoption. However, limited attention has been given to the specific dynamics of small businesses in regions like Cape Coast, where digital literacy levels and infrastructural constraints may differ significantly.

Secondly, many studies were grounded in theoretical frameworks such as the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour

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(TPB). While these frameworks are effective for examining system adoption and behavioural intention, there is limited empirical evidence on how digital literacy moderates the association between the use of digital tax systems and compliance behaviours. The review revealed a significant research gap in addressing the contextual and practical challenges small businesses face, particularly in areas with limited access to digital resources or inadequate training programmes.

Also, the literature highlighted methodological gaps. Although quantitative approaches dominate this field, many studies failed to employ advanced statistical techniques, such as Structural Equation Modelling (SEM), to evaluate complex relationships and test mediating or moderating variables. Furthermore, few studies focused specifically on small businesses in Ghana, where unique tax compliance barriers, such as the informal nature of businesses and resource constraints, persist.

This chapter reviewed theoretical frameworks such as TAM and TPB, concepts like tax compliance and digital literacy, and empirical studies focusing on small businesses' engagement with digital tax systems. The review identified critical gaps, including the limited exploration of the moderating role of digital literacy and the lack of studies focused on small businesses in Cape Coast. Guided by these findings, the current study adopts a descriptive cross-sectional design and a quantitative research approach, using structured questionnaires and SEM to analyse the relationships between digital tax systems, digital literacy, and tax compliance. This approach ensures robust statistical analysis while addressing the methodological and contextual gaps identified in the literature.

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CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter presents the procedures and strategies employed to collect and analyse the data necessary for the study. At its core, methodology refers to the systematic process applied to address research questions (Creswell & Creswell, 2018). It encompasses the researcher's philosophical stance, the chosen research approach and design, as well as the steps taken to develop and respond to the research questions and hypotheses. Additionally, this chapter outlines the data collection methods and sampling techniques adopted to ensure the rigour, accuracy, and completeness of the investigation.

Philosophical Position and Research Paradigm

The word "paradigm" is derived from the Greek term *paradeigma*, which translates to "pattern". Kuhn (1962) introduced the concept to describe a shared conceptual structure among scientists that offers an organised method for problem-solving and analysis. In the context of research, a paradigm represents a philosophical foundation that shapes the researcher's approach to scientific inquiry, reflecting their fundamental beliefs about the nature of reality and the acquisition of knowledge (Collis & Hussey, 2014).

According to Saunders et al. (2007) and Panhwar et al. (2017), several major philosophies have influenced social science research over time, including positivism, critical realism, interpretivism, postmodernism, pragmatism, and post-positivism, which emerged as an extension of positivism.

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This research is grounded in a post-positivist paradigm and adopts a quantitative, empirical methodology to evaluate the efficacy of digital tax systems and their impact on tax compliance among SBs within the Cape Coast Metropolis. This philosophical stance strikes a balance between positivist and interpretivist traditions, acknowledging that while objective knowledge can be pursued through systematic measurement, it is inevitably shaped by human perceptions and contextual factors, thus recognising the inherent complexity and possible fallibility of scientific inquiry (Lao et al., 2018). Within this framework, the study employs rigorous quantitative methods to test hypotheses and derive insights while maintaining an awareness of potential limitations and biases that could affect the validity of the findings. This aligns with a critical realist perspective, which accepts that although empirical observations and measurements are vital, they are not flawless and ought to be comprehended cautiously.

Knowledge in this study is produced through empirical data collection and quantitative analysis, in accordance with post-positivist philosophy, while also taking into account the complex context of variables like tax compliance, digital literacy, and the effectiveness of the digital tax system (Tamminen & Poucher, 2020). The research seeks to offer explanations and generate predictions based on observable, measurable data, recognising that findings are temporary and dependent on revision based on recent proof (Maksimovic & Evtimov, 2023; Thorpe & Holt, 2015). The use of structured surveys and measurable constructs related to digital tax systems and digital literacy aligns seamlessly with this

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paradigm, combining methodological consistency with a critical evaluation of the outcomes.

Research Approach

Taherdoost (2022) identifies three primary research approaches widely used in social science and management research. The quantitative approach, the qualitative approach and the mixed methods approach, which integrates both quantitative and qualitative techniques, allow researchers to combine measurable data with contextual insights to achieve a more comprehensive understanding of the research problem. Each approach has specific applications, advantages, and limitations depending on the study objectives.

The study uses a quantitative research methodology, gathering numerical data through closed-ended questions that are essential to achieving the study's goals. This method is especially advantageous for performing comparative and statistical analyses, as it allows for the verification of data consistency and reliability through repeatable data collection processes. Quantitative methods are recognised for their ability to handle large datasets effectively, providing a flexible yet precise approach to data analysis (Creswell, 2014). Furthermore, this approach supports the establishment of clear patterns and relationships, which are essential for investigating the impact of digital literacy on tax compliance among SBs in the Cape Coast metropolis (Saunders et al., 2019). As noted by Pallant (2020), the structured nature of closed-ended questions ensures data consistency and allows for

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the generation of statistically significant findings, enhancing the reliability of the research's findings.

Research Design

The study used a descriptive cross-sectional research approach. Giving a detailed description of people, things, and circumstances is the aim of a descriptive research design (Best & Kahn, 2016). To collect thorough and accurate data that characterises a prevalent occurrence is the aim of descriptive study design. Among its advantages are its ability to generate robust responses from a diverse range of respondents, its ability to yield high-quality statistical data, and its increased confidence in posing targeted questions of interest (Kothari, 2004).

Data from a population at a certain time point is analysed in a descriptive cross-sectional study design (Cvetkovic-Vega et al., 2021). Participants in this kind of research are chosen based on many factors of interest. Researchers can examine numerous elements simultaneously, identify dominating factors in a population, and gain knowledge about what is happening in a real population by using descriptive cross-sectional research studies (Maier et al., 2023). This approach is also used to gather preliminary data to support future study and expectations or to make assumptions about future relationships. A cross-sectional study is typically quick and cheap, allows for the evaluation of multiple factors, and opens the door for more research (Hunziker & Blankenagel, 2024; Wang & Cheng, 2020; Spector, 2019). Because the study aimed to report certain findings and investigate correlations between variables, a descriptive approach was employed.

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Study Area

This study is situated in the CCM, the capital of Ghana's Central Region. Cape Coast is recognised as a key hub for education, cultural heritage, and economic activity. Geographically, it is bounded by the Komenda-Edina-Eguafo-Abirem (KEEA) District to the west, the Abura-Asebu-Kwamankese District to the east, and the Gulf of Guinea to the south. Located approximately 160 miles west of Accra, Cape Coast is an emerging urban area covering 122.4 square kilometres (Ghana Statistical Service, 2021). The metropolis hosts a significant concentration of SBs, which contribute substantially to the region's economic development.

These enterprises operate across multiple sectors, including retail, manufacturing, and services, and play an important role in job creation and revenue growth. As a growing commercial centre experiencing increasing digital integration, Cape Coast offers a suitable environment for examining the impact of digital tax systems on tax compliance. The expanding use of digital tools and the rising significance of digital literacy in the area make it an ideal context for exploring how such literacy shapes small businesses' capacity to meet tax obligations (Amoako et al., 2021). The dynamic nature of the local business landscape, coupled with the growing relevance of digital tax infrastructure, reinforces Cape Coast's suitability as the focus of this study.

Population

According to Creswell (2014), a population is the entire set of components from which researchers hope to make inferences. The unique entity being measured, acting as the analytical unit, is referred to as an element. According to

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Keller and Warrack (2003), a population is the set of people or things that are being investigated and from whom information is gathered. A population, according to Willie (2024), is the general group of people, things, or occurrences that have particular qualities of interest in common and include all possible data points pertinent to the research. Furthermore, according to Kothari (2008), a population is a whole group of people, things, or events that share observable characteristics. Small businesses that operate in the CCM make up the study's target population. These small businesses operate in a variety of areas, such as retail, food production, agro-processing, agriculture, and other small-scale businesses.

Despite extensive efforts to obtain the most recent population data for the study as of February 2025 from various institutional bodies, including the Ghana Revenue Authority, Cape Coast Metropolitan Assembly, Ghana Statistical Service, Ghana Enterprise Agency, and Regional Coordinating Council, both in-person enquiries and digital platform searches proved unsuccessful. Consequently, reference was made to records from the Registrar General's Department (2017). The challenge of maintaining accurate records in Ghana is well documented. According to Buame (1996), the nation's record-keeping procedures are frequently insufficient, which makes it challenging to account for the quantity and categorisation of small businesses. Previous academic research has also brought attention to the problem of inadequate record-keeping for Ghanaian small businesses (Buame, 1996; Wolf, 2004; Obeng, 2007). The fact that Ghana's most recent official industrial census was carried out in 1987 highlights the persistent

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gaps in data availability. Given this historical context, the difficulty in obtaining up-to-date population figures for this study is unsurprising.

Based on data from the Registrar General's Department (2017), there are 2,345 registered small businesses in the metropolis. This figure includes enterprises formally registered with the Metropolitan Council, for which detailed location and operational information is available, making data collection more efficient and manageable (Registrar General's Department, 2017).

Sampling Procedure

Sampling is the statistical act of determining a segment, or "sample", of a population of interest to observe and derive conclusions about the total population (Bhattacherjee, 2012). A representative sample is selected for examination since it is frequently impractical to investigate the complete population due to practical constraints like time and expense (Bhattacherjee, 2012). According to Kothari (2004), the selected sample must adequately and accurately reflect the characteristics of the larger population in a proportional manner. Accordingly, the sample size must be adequate to represent the total population while upholding the proportionality criterion.

In this investigation, the sample size was determined using Krejcie and Morgan's (1970) sample size table. According to the data, a population of 2,400 requires a sample size of 331 respondents. Given the study's population of 2,345, a sample size of 331 was deemed suitable. Respondents were chosen using both purposive and convenience sampling. Purposive sampling entails selecting individuals who can contribute the most relevant and meaningful data to the study.

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This approach is guided by the researcher's professional judgement or available resources (Teddlie & Yu, 2007). In this regard, purposive sampling is widely used in research to identify and select individuals with extensive knowledge on the subject matter (Palinkas et al., 2015).

Accordingly, managers and business owners were purposively selected for this study, as they possess critical insights necessary for addressing the research questions and hypotheses. Additionally, convenience sampling was used to select respondents based on their accessibility and willingness to participate in the study. Given the challenges associated with record-keeping and data availability in Ghana, as highlighted earlier, this approach was particularly useful in ensuring an adequate sample size. Consequently, all 331 respondents who were both accessible and interested in participating were included in the study, thereby enhancing the reliability of the data collected.

Data Collection Instruments

To accommodate the large sample size and ensure the anonymity desired by respondents, a questionnaire was utilised as the primary instrument for collecting data. Questionnaires are particularly suitable for survey research, as they provide respondents sufficient time to offer thoughtful responses (Kothari, 2004). Additionally, Kothari emphasised that large samples can be utilised, enhancing the reliability and dependability of the results. The use of a questionnaire also offers cost advantages, as it eliminates the need for direct interviews, thereby saving time, as well as financial and human resources. Furthermore, it ensures greater anonymity, as there is no direct interaction between the respondents and the

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researcher. However, a notable limitation is the inability to clarify questions if respondents encounter difficulties in understanding (Kumar, 1999).

Respondents were required to indicate their responses by selecting the appropriate level of agreement on a Likert scale. The questionnaire consisted of five sections: Section A, which captured demographic information; Section B, which focused on the effectiveness of the digital tax system; Section C, which assessed tax compliance; Section D, which evaluated digital literacy; and Section E, which addressed challenges and opportunities associated with adopting digital tax systems. The instrument for Section B, which measured the effectiveness of the digital tax system, was adapted from Davis (1986) and Daniel and Esther (2019) and comprised 15 items. Section C, containing 7 items, assessed tax compliance and was also adapted from Daniel and Esther (2019), Night and Bananuka (2020), and Gwro et al. (2016). Section D measured respondents' digital literacy levels, drawing on the instrument developed by Choi et al. (2023). Finally, Section E explored challenges and opportunities related to the adoption of digital tax systems, based on Muluken (2020). In total, the questionnaire included 45 items, developed based on insights from both conceptual and empirical literature. It served as a comprehensive tool for data collection, addressing the key areas of the study.

Pre-Testing of Instrument

A pilot study was conducted to improve the quality of the questionnaire and to evaluate its validity and reliability. According to Leedy and Ormrod (2005), conducting a pre-test prior to the main research aids in establishing the criterion and construct validity of the instrument. McMillan and Schumacher (2010) also

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emphasise the importance of pre-testing data collection tools before fieldwork to assess and refine individual items. Perneger et al. (2015) suggest that a pre-test sample should constitute at least 10% of the intended sample size for the main study. Similarly, Taherdoost (2016) indicates that a sample of 10 to 30 participants is suitable for pilot studies in educational and social science research, especially when the participants share characteristics with those of the main study. In line with this, the questionnaire was pre-tested in the Wassa Amenfi West Municipal area using a sample of 34 small businesses. This process was essential in refining the questionnaire by removing unclear or unnecessary items, improving clarity, and minimising ambiguity before the final data collection.

Validity and Reliability of Instrument

According to Taherdoost (2016), validity refers to the degree to which the outcomes of data analysis accurately represent the subject under investigation. It essentially reflects how effectively the items within a research instrument assess the intended constructs. Academic supervisors evaluated both the face and content validity of the surveys to determine validity, and their comments were used to enhance and improve the instrument. Taherdoost (2016) further describes reliability as the extent to which a measurement tool is free from significant errors and consistently produces stable results over time. An instrument is deemed reliable when it yields comparable outcomes upon repeated application. To test the internal consistency of the instrument, Cronbach's Alpha was employed. The analysis revealed that the reliability coefficients for all questionnaire constructs ranged from

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0.754 to 0.942, surpassing the 0.70 benchmark recommended by Hair et al. (2014), thereby confirming the instrument's suitability and reliability for this research.

Fieldwork Challenges

The data collection process was not without challenges. A major difficulty encountered was the unwillingness of some targeted businesses to complete the questionnaire. Several respondents excused themselves from participating entirely, while others requested to take the questionnaire home or asked for additional time to complete and return it later. Unfortunately, many of these questionnaires were either never returned or were only partially completed, rendering them unusable for analysis. At some business premises where questionnaires were administered on-site, certain respondents opted out midway, citing a lack of interest. In other cases, respondents filled out only portions of the questionnaire, leaving significant sections unanswered. This contributed to an increase in the number of incomplete and unusable responses.

Moreover, a number of participants exhibited reluctance or outright refusal to engage in any discussions related to taxation. They expressed strong dissatisfaction with successive governments and questioned the relevance and benefits of paying taxes. This resistance was particularly evident among individuals whose educational backgrounds were below the pre-tertiary level, as they appeared less inclined to engage with taxation issues. Additionally, despite reassurances regarding confidentiality, some respondents remained sceptical about the true purpose of the study. They harboured doubts about whether their responses, particularly those related to tax compliance and digital literacy, could truly remain

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anonymous, fearing potential repercussions from law enforcement or tax authorities. Despite these obstacles, a final total of 331 respondents completed and submitted their questionnaires, making the data collection process ultimately fruitful.

Data Collection Procedures

Prior to implementing the research tool, formal authorisation was secured from the Department of Accounting in the School of Business, College of Humanities and Legal Studies at the University of Cape Coast. An official letter of introduction was provided by the head of the department to present the study to small business owners and managers. During the primary data gathering phase, questionnaires were handed out directly to small business operators located in the Cape Coast Metropolis. The researcher firstly approached chosen businesses to outline the study's purpose and highlight the significance of the participants' feedback. To aid in this process, four well-trained research assistants were brought on board to help manage the distribution of the questionnaires. A direct, in-person method was utilised due to its effectiveness; as noted by Osuala (1982), this strategy allows the researcher to clarify any ambiguous items, ensuring that participants fully understand the questions and can give precise answers.

Data collection was spread over two weeks to ensure that all 331 questionnaires were distributed and retrieved. During visits to small businesses, owners or managers were given up to 15 minutes to complete the questionnaire, with an additional 5 minutes granted if needed. Research assistants worked alongside the researcher to collect completed questionnaires on-site and addressed

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any issues respondents encountered during the process. This methodical approach ensured that data collection was thorough and respectful of the participants' time, while also maintaining the integrity and reliability of the responses.

Data Processing and Analysis

Analysing and processing data entails turning unprocessed information gathered from surveys and other sources into insights that can be understood. For quantitative analysis, the questionnaire answers were collected, coded, and imported into Smart PLS 4 and SPSS version 26. Descriptive statistics were computed using SPSS, while inferential analyses were conducted with Smart PLS 4. The primary tools for data analysis included frequencies, percentages, and Structural Equation Modelling (SEM) through Smart PLS. Frequencies and percentages were used to analyse respondents' demographic characteristics, as these were appropriate for the categorical nature of the variables (nominal and ordinal).

The study tested two hypotheses using Structural Equation Modelling (SEM), selected for its robustness in analysing multivariate causal relationships. Specifically, Partial Least Squares (PLS)-SEM was employed due to its capacity to handle violations of multivariate normality and its minimal reliance on stringent distributional assumptions. PLS-SEM offers several advantages, such as effectively managing both reflective and formative indicators, addressing collinearity among independent latent variables, and avoiding improper solutions by eliminating factor indeterminacy. Additionally, it is resilient to noisy data and missing values, making it particularly suitable for this study. PLS-SEM integrates regression and factor

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analysis while allowing for the simultaneous modelling of relationships between latent variables. For the analytical requirements of the investigation, this skill was essential. Furthermore, PLS-SEM was deemed a suitable method for this research due to its effectiveness in handling smaller sample sizes, typically 200 or fewer observations (Haenlein & Kaplan, 2004; Henseler et al., 2009; Rönkkö & Evermann, 2013).

PLS-SEM was deemed the most appropriate tool for this research due to its growing adoption in social sciences for constructing and estimating complex path models involving latent variables and their interrelationships. Its flexibility in estimating intricate models, such as conditional process models and higher-order constructs (Sarstedt et al., 2019), made it particularly suitable for examining the moderating role of digital literacy in this study. Moreover, PLS-SEM's emphasis on maximising the explained variance in latent variables aligns with the causal-predictive paradigm underpinning this research, which aimed to evaluate the predictive power of the model based on established theoretical foundations (Chin et al., 2020). The method's capacity to effectively manage complex relationships within models and work with smaller sample sizes further solidified its selection as the ideal approach for investigating the antecedents and mediators of tax compliance.

Ethical Consideration

As highlighted by Saunders et al. (2007), social researchers must clearly articulate their intentions and demonstrate adherence to ethical standards when obtaining consent from participants. The University of Cape Coast's (UCC) ethical

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standards were strictly adhered to in this investigation. The research was initially approved by the Institutional Review Board after obtaining ethical clearance. Participants were assured of their anonymity and confidentiality, with explicit guarantees that their identities would remain undisclosed. All collected data were handled with strict confidentiality. The researcher emphasised participants' right to voluntarily decide whether to participate, ensuring they were fully informed of the ethical principles guiding the study. Additionally, the study maintained transparency about any potential risks, discomforts, or benefits, avoiding any form of misrepresentation to participants.

Chapter Summary

The techniques used to gather and examine the study's data are described in this chapter. To guarantee objective and quantifiable outcomes, a descriptive cross-sectional design was employed, bolstered by a quantitative methodology and the positivist worldview. The study focused on small businesses in Cape Coast, with 331 participants selected randomly from a population of 2,345. Data was gathered using structured questionnaires covering demographics, digital tax systems, tax compliance, and digital literacy. Statistical tools like SPSS and Smart PLS were used for analysis, with Structural Equation Modelling (SEM) employed to explore relationships. Ethical approval was obtained, and participants' confidentiality and consent were prioritised throughout.

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CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter highlights the key findings from the data analysis. The study sought to assess the effectiveness of digital tax systems, their impact on tax compliance among small enterprises in the Cape Coast Metropolis, and the moderating role of digital literacy. To achieve these goals, the chapter is divided into three sections. The first part describes the demographics of the participants. This is preceded by a detailed presentation and analysis of the findings in light of the study objectives. Finally, the chapter evaluates the measurement and structural models used to further the study's objectives.

Demographic Characteristics of Respondents

The study gathered key data from a total of 331 respondents through a survey. Table 1 outlines the demographic characteristics of the respondents, including their gender, age group, and educational background. Descriptive statistical tools, namely frequencies and percentages, together with a pie chart, were employed to analyse and present these demographic details.

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Table 1: Demographic Characteristics of Respondents

Variable	Options	Frequency	Percentage
Gender	Male	180	54.38%
	Female	151	45.62%
Age	Below 31 years	190	57.40%
	(31 – 40) years	65	19.64%
	(41 – 50) years	48	14.50%
	Above 50 years	28	8.46%
Level of Education	Basic Education	26	7.85%
	Secondary Education	135	40.79%
	Tertiary Education	148	44.71%
	Non-Formal Education	15	4.53%
	Informal Education	7	2.11%

Source: Field Survey (2025)

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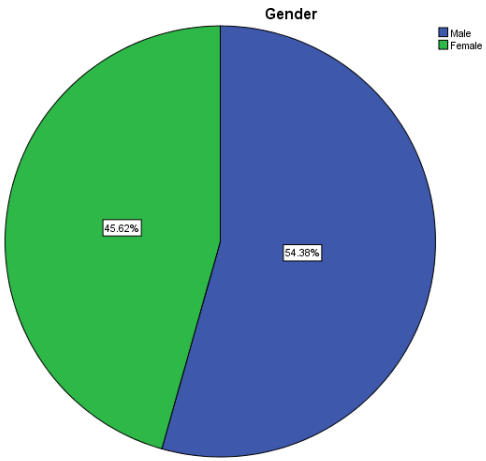


Figure 2: Gender

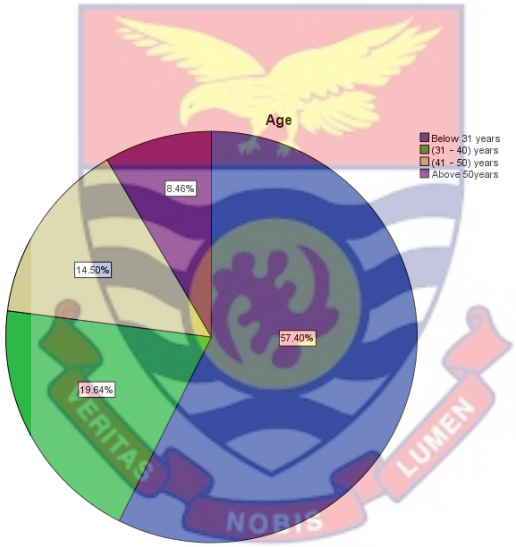


Figure 3: Age

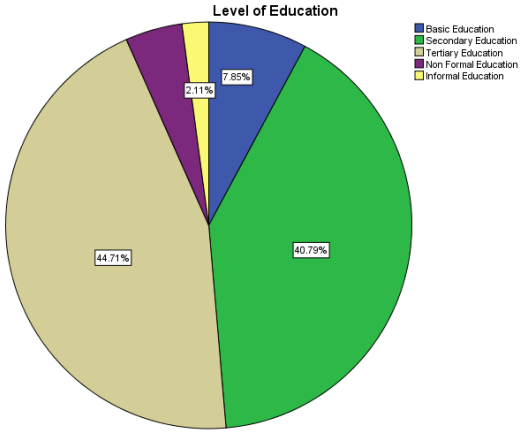


Figure 4: Level of Education

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The demographic characteristics of the 331 participants were presented in Table 1, with further visual illustrations provided in Figure 2 (Gender), Figure 3 (Age), and Figure 4 (Level of Education). As shown in Table 1 and Figure 2, males constituted a slight majority, representing 54.38%, while females accounted for 45.62%, indicating a relatively balanced gender distribution among small business owners in the CCM. With regard to age, Figure 3 and Table 1 reveal that the largest proportion of respondents (57.40%) were below 31 years, followed by those aged 31–40 years (19.64%), 41–50 years (14.50%), and above 50 years (8.46%), suggesting that the small business sector is dominated by younger individuals.

Educational background, as depicted in Figure 4 and also in Table 1, reveals that most of the respondents had attained tertiary education (44.71%) or secondary education (40.79%), with only a small percentage having basic (7.85%), non-formal (4.53%), or informal education (2.11%). This demographic profile indicates that most respondents are relatively young and educated, positioning them well for the adoption and use of digital tax systems and contributing meaningfully to the study's exploration of the role of digital literacy in tax compliance.

Pimentel Criteria: Likert Scale Interpretation

Respondents' views were assessed using a five-point Likert scale, where mean scores and standard deviations were interpreted in accordance with Pimentel's (2019) criteria. Specifically, mean values ranging from 1.00 to 1.79 indicated that respondents perceived the construct as not at all effective; scores between 1.80 and 2.59 denoted slightly effective; those within 2.60 to 3.39 reflected

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moderately effective; values from 3.40 to 4.19 signified effective; and mean scores between 4.20 and 5.00 represented very effective evaluations (Pimentel, 2019).

Presentation and Discussion of Results

Research Question 1: Effectiveness of Digital Tax Systems among Small Businesses in the Cape Coast Metropolis

The purpose of this research was to evaluate the effectiveness of digital tax systems among SBs in the CCM. To achieve this purpose, the following research question was posed: How effective are digital tax systems for SBs in the CCM? The study employed indicators from the TAM, specifically, Perceived Usefulness (PU), Ease of Use (EU), and Tax Awareness (TA), to measure the effectiveness of digital tax systems. These constructs were operationalised through a structured questionnaire, and data were collected from small business owners and representatives. The descriptive statistics for all original indicators used to measure these variables are presented in Table 2 below.

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Table 2: Effectiveness of Digital Tax Systems among Small Businesses in the Cape Coast Metropolis

DIGITAL TAX SYSTEM EFFECTIVENESS	Mean	SD
Using the digital tax system improves the quality of tax reports	3.86	1.00
Using the digital tax system enables us to timely meet our tax obligations	3.94	0.98
I preferred manual reporting and payment to digital taxing.	2.87	1.35
Using the digital tax system reduces errors when reporting tax	3.75	1.05
Overall, I find the digital tax system useful in my job	3.86	.92
I find it easy to get the digital tax system to do what I want it to do	3.67	1.04
Learning how to use the digital tax system is easy for me	3.54	1.06
Interacting with the digital tax system requires a lot of mental effort	3.34	1.18
I make errors frequently when I use the digital tax system	3.01	1.21
Overall, I find the digital tax system easy to use	3.66	1.02
The digital tax system is a popular method of reporting for tax filing	3.69	0.97
I have been trained in using the digital tax system	3.16	1.23
I will use the digital tax system if I get good knowledge of it	3.93	1.05
I use the GRA digital tax system-related site navigation	3.26	1.19
Tax officials regularly provide me with training and updates on new developments in the tax system	3.18	1.26
OVERALL MEAN	**3.51**	**0.57**

Source: Field Survey (2025)

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Table 2 shows the viewpoints of small business operators in the CCM regarding the effectiveness of digital tax systems. The responses provide insights into various aspects of system use, including usefulness, ease of use, and access to training or awareness.

Participants generally agreed that the digital tax system is effective. For instance, the use of the system was reported to enhance the quality of tax reports (Mean = 3.86, SD = 1.00), support timely fulfilment of tax obligations (Mean = 3.94, SD = 0.98), and reduce errors in tax reporting (Mean = 3.75, SD = 1.05). Furthermore, the statement that the system is useful in their work received a high average score (Mean = 3.86, SD = 0.92), reflecting its relevance to their tax-related responsibilities.

In contrast, the statement "I preferred manual reporting and payment to digital taxing" received a relatively lower score (Mean = 2.87, SD = 1.35), implying that most respondents lean toward digital systems over traditional manual methods, a further indication of the system's effectiveness.

With regard to ease of use, responses were fairly positive. Many found it easy to get the system to perform tasks as expected (Mean = 3.67, SD = 1.04) and did not consider learning to use it overly difficult (Mean = 3.54, SD = 1.06). However, some concerns emerged, such as the need for considerable mental effort to interact with the system (Mean = 3.34, SD = 1.18) and the frequency of errors made during its use (Mean = 3.01, SD = 1.21), suggesting that usability challenges persist.

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The level of awareness and training varied. While many respondents believed that digital tax systems are increasingly becoming the standard for filing tax returns (Mean = 3.69, SD = 0.97), their experiences with formal training were less favourable. Scores for receiving training on the use of the system (Mean = 3.16, SD = 1.23), navigating the GRA website (Mean = 3.26, SD = 1.19), and being updated regularly by tax officials (Mean = 3.18, SD = 1.26) indicate that more support may be needed in these areas. On a positive note, respondents expressed a strong willingness to use the system if they receive adequate knowledge and support (Mean = 3.93, SD = 1.05).

The overall mean score for all items related to the effectiveness of the digital tax system was 3.51 (SD = 0.57). This indicates a moderately high level of agreement among respondents concerning the system's overall effectiveness. While users generally viewed the digital tax system positively, the moderate rating also suggests that there is still room for improvement, particularly in areas such as system training, ease of use, and user support.

Discussion of Findings for Research Question 1: Effectiveness of Digital Tax Systems

The outcomes of the present study reveal that small business operators in the Cape Coast Metropolis generally perceive digital tax systems as effective, particularly in enhancing reporting accuracy, facilitating timely tax obligation fulfilment, and reducing errors in tax documentation. This is consistent with the findings of Abdi et al. (2024), who noted that digitalisation significantly improved turnover tax compliance among textile SMEs in Nairobi by simplifying processes

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and improving accuracy. Similarly, Pramudianti et al. (2023) reported that the use of QRIS technology enhanced tax collection by reducing administrative burdens and increasing transparency, echoing the Cape Coast respondents' belief that the system improves the quality of tax reports and supports timely filing.

Furthermore, the relatively low score for preferring manual reporting over digital tax systems implies a broad shift in preference towards digitisation, a trend also highlighted in Jumanne and Mrindoko (2022), where Tanzanian SMEs appreciated e-filing systems for reducing delays and errors. The favourable ratings in the Cape Coast study regarding the system's usefulness and ease of executing tasks are consistent with the findings of Baseka (2022), who emphasised that perceived ease of use and usefulness are key drivers of tax system adoption among Tanzanian SMEs.

Nonetheless, the study also exposed notable usability concerns. Respondents reported some mental effort and occasional errors during use, which resonates with the challenges identified by Mustamim et al. (2021), where limited familiarity with digital systems and a lack of technical support hindered full effectiveness. The Cape Coast data also reflect the limited training and inadequate updates from tax authorities, paralleling Otekunrin et al. (2021) and Mukuwa and Phiri (2020), who stressed that infrastructure limitations and low digital literacy are major barriers to effective system adoption in Nigeria and Zambia, respectively.

An encouraging result, however, was the strong willingness among respondents to continue using the system, provided they receive adequate knowledge and support. This aligns with the conclusions of Abdi et al. (2024) and

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Baseka (2022), both of whom recommended that governments provide training and affordable access to technology to improve system adoption and compliance.

Overall, while the Cape Coast findings reaffirm the growing effectiveness of digital tax systems in supporting tax compliance and efficiency among small businesses, they also underscore the need for systematic interventions. These include enhancing taxpayer training, improving user interface design, and strengthening communication between tax authorities and businesses to overcome remaining barriers. Such efforts would not only maximise the benefits of digital systems but also ensure broader acceptance and sustained compliance in the long term.

The findings from this study support the consensus in the literature that digital tax systems can significantly improve tax compliance, accuracy, and efficiency. However, the Cape Coast context also reveals some persistent challenges, especially in terms of usability and training. Addressing these challenges through enhanced taxpayer education, interface redesign, and better technical support can help unlock the full benefits of digital tax systems among SMEs in Ghana.

Research Question 2: Level of tax compliance among small businesses in the CCM

This section presents the findings on how well small business operators in the CCM comply with tax regulations. The data gathered focused on key aspects of compliance, such as the timeliness of filing tax returns, accuracy of declared

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income, consistency in tax payments, and adherence to legal obligations under Ghana's tax laws. Participants were asked to indicate their level of agreement with statements that reflect their tax compliance behaviours and practices. These responses offer valuable insight into the extent to which SBs in the metropolis meet their tax obligations and help identify areas that may require policy attention or support. The summary of responses is provided in Table 3.

Table 3: Level of Tax Compliance among Small Businesses in the Cape Coast Metropolis

LEVEL OF TAX COMPLIANCE	Mean	SD
Using the digital tax system improves tax compliance	3.77	0.95
The digital tax system enables us to file all taxable income	3.79	0.90
The digital tax system enables voluntary tax compliance	3.54	0.93
The digital tax system helps us avoid penalties and fines associated with delayed tax reporting	3.77	0.95
Interaction with a tax official is easier and better with the digital tax system	3.43	1.11
The digital tax system reduced substantial tax liability	3.65	0.97
The digital tax system encourages us to pay taxes regularly	3.77	1.05
OVERALL MEAN	**3.67**	**0.65**

Source: Field Survey (2025)

The findings presented in Table 3 share perspectives into the level of tax compliance among small businesses in the CCM, particularly in relation to the use of digital tax systems. The overall mean score of 3.67 with a standard deviation of

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0.65 indicates a relatively high level of tax compliance among small businesses in the Cape Coast Metropolis.

Respondents expressed strong agreement that the digital tax system supports the proper filing of all taxable income, with the greatest rating average score of 3.79 (SD = 0.90) recorded for this item. This suggests that many small business operators find the system effective in ensuring that all reportable income is captured accurately. Additionally, the statements "Using digital tax system improves tax compliance", "The digital tax system helps us avoid penalties and fines associated with delayed tax reporting", and "The digital tax system encourages us to pay taxes regularly" each received a mean score of 3.77, showing that users believe the system promotes timely filing, regular payment, and avoidance of penalties.

The digital tax system was also viewed as encouraging voluntary compliance (Mean = 3.54, SD = 0.93) and as reducing substantial tax liability (Mean = 3.65, SD = 0.97), indicating that businesses perceive it as promoting fairness and transparency in tax obligations. These results reflect a positive orientation toward the digital tax system as a tool that simplifies compliance and minimises the risk of financial penalties.

However, the statement "Interaction with tax officials is easier and better with the digital tax system" recorded the lowest mean score of 3.43 (SD = 1.11). While this still reflects a moderate level of agreement, it suggests that not all users find the system effective in facilitating communication with tax authorities. This

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may point to challenges such as limited digital literacy, inadequate user support, or inefficiencies in digital customer service.

Overall, the findings show that small business owners in the Cape Coast Metropolis perceive digital tax systems as useful in promoting compliance, especially in terms of accuracy, timeliness, and regular payment. Nonetheless, enhancing interaction with tax officials and providing more targeted support could further strengthen compliance efforts.

Discussion of Findings for Research Question 2: Level of tax compliance

The findings from the present study indicate a generally high level of tax compliance among SBs in the CCM, with respondents acknowledging that digital tax systems enhance the accuracy and timeliness of tax reporting. The high mean score for statements such as the system supporting proper filing of taxable income (Mean = 3.79) and encouraging regular tax payment (Mean = 3.77) underscores the perceived effectiveness of digital tools in streamlining tax-related processes. These observations align closely with Addo (2022), who found that SMEs with greater awareness and understanding of tax obligations tend to be more compliant, particularly when tax systems are perceived as fair and easy to use.

Similarly, the results are inconsistent with the work of Nyarkpoh et al. (2023), who highlighted that perceptions of fairness and transparency foster greater trust in tax institutions and drive voluntary compliance. In the Cape Coast context, the digital system appears to play a trust-building role by minimising errors and reducing penalties, thereby reinforcing the sense of procedural fairness among

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small businesses. This supports the Slippery Slope Framework described by Batrancea et al. (2022), which posits that both trust in tax authorities and the perceived power of those authorities contribute to increased compliance.

However, despite these positive indicators, the relatively lower mean score regarding ease of interaction with tax officials (Mean = 3.43) signals an area of concern. Limited communication or inadequate support channels can undermine the benefits of even the most efficient systems. This challenge mirrors findings from Rachmawan et al. (2020), who emphasised that procedural justice, including access to responsive tax support, is essential for maintaining taxpayer trust and compliance. Moreover, Nartey (2023) argued that the responsiveness of tax institutions and the perceived equity of their enforcement practices significantly influence SMEs' willingness to comply.

The findings also reflect broader patterns observed by Hassan et al. (2021), who noted that simplicity and perceived fairness are more critical to compliance behaviour than tax morale or institutional enforcement alone. In this regard, the Cape Coast results affirm that the digital system's ability to reduce the administrative burden and clarify tax processes plays a vital role in fostering voluntary compliance. Nevertheless, as in the studies by Carsamer and Abbam (2023) and Nyarkpoh et al. (2023), the underlying institutional trust remains a determinant factor, highlighting the need for improvements in user support and transparency from tax authorities.

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Structural Equation Model

Structural Equation Modelling (SEM) was employed to test Hypotheses 1 and 2, aligned with Objectives 3 and 4 of the study. SEM was selected for its competence to simultaneously assess the relationships between latent variables and examine both direct and moderating effects. Specifically, it was used to evaluate the impact of the digital tax system's effectiveness on tax compliance and the moderating role of digital literacy.

Preliminary Analysis

The present phase of the study focuses on analysing the nature and attributes of the latent variables. These underlying concepts cannot be directly observed but are identified through various measurable indicators. It offers a detailed evaluation of how these indicators effectively reflect and define the latent constructs under investigation. Additionally, the section explores the interactions and relationships among the latent variables, examining how they are linked and the extent to which they affect one another within the framework of the study. This thorough analysis enhances understanding of the model's internal structure and provides valuable insights into the interconnections between key theoretical components.

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Table 4: Descriptive Statistics of All Original Indicators

Name	Mean	Median	Standard deviation	Excess kurtosis	Skewness	P value
PU1	3.864	4.000	1.003	0.695	-0.988	0.000
PU2	3.937	4.000	0.958	1.344	-1.116	0.000
PU3	2.870	3.000	1.348	-1.238	0.030	0.000
PU4	3.749	4.000	1.046	0.341	-0.852	0.000
PU5	3.855	4.000	0.921	1.843	-1.174	0.000
EU1	3.674	4.000	1.041	0.499	-0.961	0.000
EU2	3.544	4.000	1.060	0.128	-0.795	0.000
EU3	3.335	4.000	1.173	-0.777	-0.383	0.000
EU4	3.009	3.000	1.205	-1.002	-0.080	0.000
EU5	3.659	4.000	1.020	0.600	-0.924	0.000
TA1	3.692	4.000	0.972	0.663	-0.778	0.000
TA2	3.157	3.000	1.253	-0.972	-0.300	0.000
TA3	3.934	4.000	1.044	1.205	-1.196	0.000
TA4	3.260	3.000	1.189	-0.765	-0.308	0.000
TA5	3.175	3.000	1.256	-0.989	-0.298	0.000
LTC1	3.770	4.000	0.953	1.159	-1.042	0.000
LTC2	3.792	4.000	0.897	0.063	-0.610	0.000
LTC3	3.538	4.000	0.927	0.319	-0.443	0.000
LTC4	3.773	4.000	0.949	0.687	-0.833	0.000

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LTC5	3.426	4.000	1.103	-0.229	-0.645	0.000
LTC6	3.647	4.000	0.970	-0.085	-0.498	0.000
LTC7	3.767	4.000	1.044	-0.116	-0.673	0.000
IC1	3.958	4.000	1.098	1.195	-1.290	0.000
IC2	4.042	4.000	1.082	0.929	-1.235	0.000
IC3	3.946	4.000	1.106	0.706	-1.157	0.000
IC4	3.931	4.000	1.123	0.386	-1.058	0.000
IC5	3.924	4.000	1.093	0.788	-1.134	0.000
CCM1	3.782	4.000	1.132	0.321	-0.982	0.000
CCM2	3.731	4.000	1.114	0.110	-0.875	0.000
CCM3	3.634	4.000	1.180	-0.208	-0.779	0.000
CCM4	3.559	4.000	1.186	-0.336	-0.719	0.000
SS1	4.088	4.000	1.020	1.088	-1.223	0.000
SS2	4.000	4.000	1.097	1.126	-1.271	0.000
SS3	3.764	4.000	1.121	-0.119	-0.768	0.000
SS4	3.683	4.000	1.137	-0.200	-0.730	0.000
C1	3.574	4.000	1.092	-0.074	-0.770	0.000
C2	3.991	4.000	0.944	1.085	-0.999	0.000
C3	3.650	4.000	0.988	0.125	-0.628	0.000
C4	3.492	4.000	1.109	-0.285	-0.636	0.000
C5	3.544	4.000	1.063	-0.101	-0.585	0.000
O1	3.846	4.000	0.963	1.204	-1.032	0.000

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O2	3.801	4.000	1.009	0.580	-0.887	0.000
O3	3.656	4.000	1.078	0.166	-0.821	0.000
O4	3.825	4.000	0.910	1.183	-0.977	0.000
O5	4.012	4.000	0.793	2.100	-1.009	0.000

Source: Field Survey (2025)

Notes: The p-values and test statistics referenced are based on the Cramér–von Mises test, which assesses the goodness of fit for the model. In this study, Perceived Usefulness (PU), Ease of Use (EU), and Tax Awareness (TA) are utilised as indicators for measuring the effectiveness of the digital tax system. The Level of Tax Compliance (LTC) represents the dependent outcome variable in the analysis. Additionally, Information Communication (IC), Content Creation and Management (CCM), and Safety and Security (SS) are employed as dimensions to assess digital literacy skills, which are hypothesised to moderate the relationship between digital tax system effectiveness and tax compliance. Furthermore, Challenges (C) and Opportunities (O) associated with the digital tax system are identified to provide contextual insights into the broader implementation environment of the digital tax system within the Cape Coast Metropolis.

Table 4 presents the descriptive statistics of the indicators used in assessing the effectiveness of the digital tax system and related constructs. The constructs examined include Perceived Usefulness (PU), Ease of Use (EU), Tax Awareness (TA), Level of Tax Compliance (LTC), Information Communication (IC), Content Creation and Management (CCM), Safety and Security (SS), Challenges (C), and Opportunities (O). Each construct was measured using multiple items, and the descriptive statistics – mean, median, standard deviation, skewness, excess kurtosis, and p-values – provide insights into respondent perceptions and data distribution.

Across all indicators, the mean values ranged from 2.870 (PU3) to 4.088 (SS1), indicating a generally favourable response pattern. Most indicators recorded a mean above 3.5, suggesting moderate to high agreement with the statements presented. The median values, on the other hand, were predominantly 4.000 across all items, which indicates that the central tendency of responses was skewed toward

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agreement or strong agreement. For instance, the mean for PU1 was 3.864 with a median of 4.000, while PU2 recorded an average of 3.937 and a median of 4.000, highlighting consistent respondent perception of perceived usefulness. Conversely, PU3, which had a notably lower mean of 2.870 and median of 3.000, reflects a relatively less favourable assessment for that specific item.

The standard deviation across items ranged from 0.793 (O5) to 1.348 (PU3), indicating varying levels of response dispersion. Items such as PU3, EU4, TA2, and TA5 showed higher standard deviations, suggesting more diverse views among respondents. Skewness values ranged between -1.290 (IC1) and -0.030 (PU3), with all indicators showing negative skewness, suggesting that responses leaned toward higher values on the Likert scale. This further supports the observation that most participants expressed positive sentiments towards the digital tax system and its related constructs. Excess kurtosis values were mixed; some items, such as O5 (2.100) and PU5 (1.843), showed high positive kurtosis, indicating peaked distributions, whereas others, like PU3 (-1.238) and EU4 (-1.002), showed flatter distributions.

The Cramér–von Mises test was utilised to evaluate the goodness of fit for each indicator's distribution, with all indicators returning a p-value of 0.000. This result implies statistically significant departures from normality, which is common in Likert-scale data. While the violation of normality assumptions warrants caution, the use of robust statistical techniques such as Partial Least Squares Structural Equation Modelling (PLS-SEM) accommodates such data characteristics effectively.

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In terms of theoretical structure, Perceived Usefulness (PU), Ease of Use (EU), and Tax Awareness (TA) serve as key predictors of the effectiveness of the digital tax system. The Level of Tax Compliance (LTC) is the main dependent variable that reflects respondents' behavioural outcomes. Digital literacy skills, measured through Information Communication (IC), Content Creation and Management (CCM), and Safety and Security (SS), are posited as moderating variables that may influence the strength of the relationship between digital tax system effectiveness and compliance levels. Additionally, constructs related to Challenges (C) and Opportunities (O) provide contextual understanding of the broader implementation landscape for the digital tax system in the CCM.

Table 5: Descriptions of Latent Variables

	Mean	Median	Standard deviation	Excess kurtosis	Skewness	p-value
DLS	0	0.177	1.000	1.422	-1.142	0
DTSE	0	0.101	1.000	1.207	-0.899	0
LTC	0	0.166	1.000	0.705	-0.495	0

Source: Field Survey (2025)

Notes: Where the p-value and test statistic are the Cramer-von Mises p-value and test statistic, respectively. Where DLS, DTSE, and LTC represent Digital Literacy Skills, Digital Tax System Effectiveness, and Level of Tax Compliance, respectively.

Table 5 provides the descriptive data for the three latent variables used in the study: Digital Literacy Skills (DLS), Digital Tax System Effectiveness (DTSE), and Level of Tax Compliance (LTC). These statistics highlight the distribution patterns and variability of responses gathered from small businesses in the Cape Coast Metropolis.

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For Digital Literacy Skills (DLS), the mean is 0 and the median is 0.177, indicating that while the overall distribution is centred, most respondents tend to rate themselves slightly above average in digital literacy. The skewness value of -1.142 shows a strong left skew, meaning more participants reported higher digital literacy. The SD of 1.000 denotes moderate variability in responses. The excess kurtosis of 1.422 suggests a leptokurtic distribution, implying that values are tightly clustered around the mean with some extreme cases. A p-value of 0 confirms the statistical significance of the distribution.

With regard to Digital Tax System Effectiveness (DTSE), the mean is 0 and the median is 0.101, again suggesting a slight lean towards favourable perceptions of the system. The skewness of -0.899 reflects a moderate left skew, indicating more respondents view the digital tax system as effective. The kurtosis value of 1.207 confirms a peaked distribution with limited extreme responses, while the standard deviation of 1.000 shows consistent variability. The p-value of 0 indicates that the distribution of responses is statistically significant.

For Level of Tax Compliance (LTC), the mean is also 0, and the median stands at 0.166, suggesting that most respondents report relatively good compliance levels. The skewness of -0.495 indicates a mild left skew, meaning a greater number of firms perceive themselves as compliant. The excess kurtosis of 0.705 reveals a moderately peaked distribution, while the standard deviation of 1.000 reflects average variability in compliance levels. The p-value of 0 further affirms that these differences are statistically significant.

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The descriptive statistics suggest that respondents generally report strong digital literacy, find the digital tax system effective, and demonstrate high levels of tax compliance. The significant p-values across all variables indicate that the observed patterns are not due to chance, validating their use in further structural modelling analysis.

Table 6: Correlation of Latent Variables

	DLS	DTSE	LTC
DLS	1	0.547	0.445
DTSE	0.547	1	0.651
LTC	0.445	0.651	1

Source**:** Field Survey (2025)

Notes: Where DLS, DTSE, and LTC represent Digital Literacy Skills, Digital Tax System Effectiveness, and Level of Tax Compliance, respectively.

Table 6 presents the correlation matrix for the study's key latent variables: Digital Literacy Skills (DLS), Digital Tax System Effectiveness (DTSE), and Level of Tax Compliance (LTC). This matrix helps to understand the strength and direction of linear relationships among these constructs as observed from the survey data. The strongest correlation is between DTSE and LTC, with a coefficient of 0.651, demonstrating a strong positive relationship. This suggests that as the effectiveness of the digital tax system improves, the level of tax compliance among respondents also increases. In practical terms, a more user-friendly, efficient, and accessible digital tax system likely promotes better compliance, as it simplifies the tax process and reduces the burden on taxpayers.

The next strongest relationship is between DLS and DTSE, with a correlation of 0.547, which also reflects a moderate to strong positive association.

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This means that individuals with higher digital literacy skills are more likely to perceive or experience the digital tax system as effective. This is consistent with expectations, as users who are more proficient with digital tools are better equipped to navigate and utilise online tax platforms efficiently.

Lastly, there is a moderate positive correlation between DLS and LTC, with a coefficient of 0.445. This implies that individuals with stronger digital literacy skills are more inclined to comply with tax obligations. While not as strong as the previous two relationships, it still indicates that digital competence plays a significant role in encouraging tax compliance, likely by reducing technical barriers and enhancing confidence in using digital systems.

Overall, the correlation results highlight that both digital literacy and the perceived effectiveness of the digital tax system are positively associated with tax compliance. This emphasises the importance of strengthening digital skills among taxpayers and enhancing the usability of digital tax platforms to improve compliance rates, particularly among small and micro-enterprises.

Reliability and Validity Analysis

Reliability plays a crucial role in research measurement and refers to the consistency and error-free nature of a measurement scale. According to Hair et al. (2019), reliability ensures that the measurement yields stable and dependable results. In this study, two primary indicators, Cronbach's Alpha (CA) and Composite Reliability (CR), were used to assess reliability. These indicators evaluate the internal consistency of the constructs under investigation. Hair et al. (2019) recommend a minimum Cronbach's alpha value of 0.7, which signifies that

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the items within a scale are cohesively measuring the same concept. Similarly, Shou et al. (2020) argue that composite reliability values should also reach or exceed 0.7 to confirm the trustworthiness of the constructs.

Alongside reliability, validity is a critical aspect of measurement, indicating how well a scale captures the concept it intends to measure. As noted by Sahoo and Vijayvargy (2020), ensuring validity is fundamental to the trustworthiness of a study's results. In this study, Table 7 shows that all constructs based on Cronbach's alpha, composite reliability, and RhoA surpassed the acceptable 0.70 threshold. These outcomes confirm that the constructs not only exhibit high reliability but also possess adequate validity, thereby strengthening the accuracy and trustworthiness of the study's findings.

Table 7 offers a detailed summary of the reliability and validity assessments for the three constructs examined in this study: Digital Tax System Effectiveness (DTSE), Level of Tax Compliance (LTC), and Digital Literacy Skills (DLS). All constructs demonstrated excellent internal consistency, with both Cronbach's alpha and composite reliability (rho_c) values exceeding the standard 0.7 benchmark. This implies that the measurement items are strongly correlated and reliably represent the underlying constructs. Furthermore, each construct's Average Variance Extracted (AVE) exceeded the recommended minimum of 0.5, indicating that a meaningful proportion of the indicator variance is explained by the construct. Additionally, the factor loadings of individual items were notably high, mostly surpassing the 0.7 threshold. These strong loadings affirm the convergent validity of the constructs, showing that the items accurately reflect their respective

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theoretical concepts. Overall, the evidence presented in Table 7 confirms the robustness of the study's measurement approach and adds credibility to the overall research design.

Table 7: Convergent Validity for the Final Model

Construct/ Indicator	Factor Loadings	VIF	Cronbach's Alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Digital Tax System Effectiveness			0.809	0.812	0.863	0.512
EU1	0.681	1.514				
EU5	0.721	1.546				
PU1	0.741	1.619				
PU2	0.751	1.697				
PU5	0.735	1.667				
TA1	0.658	1.405				
Level of Tax Compliance			0.751	0.760	0.833	0.501
LTC1	0.736	1.547				
LTC2	0.782	1.575				
LTC3	0.674	1.446				
LTC6	0.653	1.343				
LTC7	0.686	1.302				
Digital Literacy Skills			0.943	0.947	0.950	0.594
CCM1	0.846	3.426				
CCM2	0.829	2.987				
CCM3	0.772	2.361				

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CCM4	0.682	1.869
IC1	0.693	2.512
IC2	0.741	2.928
IC3	0.806	3.235
IC4	0.798	2.913
IC5	0.792	2.387
SS1	0.821	3.005
SS2	0.767	2.449
SS3	0.756	2.389
SS4	0.697	2.045

Source: Field Survey (2025)

Table 7 presents the results of the convergent validity assessment for the final model, focusing on three core constructs: Digital Tax System Effectiveness (DTSE), Level of Tax Compliance (LTC), and Digital Literacy Skills (DLS). Convergent validity is a key measure in construct validation, indicating whether a group of indicators effectively represents the underlying latent variable. This is typically confirmed through factor loadings, internal consistency reliability, and average variance extracted (AVE), among other indicators. The constructs in this study meet the standard criteria, providing evidence of good model quality.

Factor loadings, which show the strength of association between individual indicators and their respective constructs, were largely above the acceptable threshold of 0.70, though a few items ranged between 0.653 and 0.697. For instance, the DTSE construct included items such as PU1 (0.741) and TA1 (0.658), while LTC comprised LTC1 (0.736) and LTC6 (0.653). Although some indicators fall slightly below 0.7, these values are within acceptable limits in exploratory

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research and do not significantly weaken the model's validity. The Digital Literacy Skills construct demonstrated the highest factor loadings overall, with indicators like CCM1 (0.846), IC3 (0.806), and SS1 (0.821) indicating strong individual item reliability.

The Variance Inflation Factor (VIF) values for all indicators were below the conservative threshold of 5, indicating that multicollinearity is not a concern in the model. For instance, DTSE and LTC indicators showed relatively low VIFs (ranging from 1.302 to 1.697), confirming that the indicators are sufficiently distinct and not overly correlated with one another. While the DLS construct had comparatively higher VIFs, CCM1 (3.426) and IC3 (3.235), all values remain within the acceptable range, suggesting moderate but manageable multicollinearity.

Internal consistency was evaluated using Cronbach's Alpha and Composite Reliability (rho_a and rho_c). All constructs exceeded the 0.7 benchmark for both reliability measures, indicating strong internal consistency among the items. Digital Literacy Skills demonstrated the highest reliability ($\alpha = 0.943$, $\rho_a = 0.947$, $\rho_c = 0.950$), reflecting excellent cohesion among its indicators. Digital Tax System Effectiveness and Level of Tax Compliance also demonstrated satisfactory reliability, with Cronbach's alpha values of 0.809 and 0.751, respectively.

Additionally, all three constructs met the AVE threshold of 0.5, supporting their convergent validity. The AVE values ranged from 0.501 (LTC) to 0.594 (DLS), suggesting that over 50% of the variance in the observed indicators is explained by their respective constructs. These results affirm that the constructs adequately capture the variance of their indicators, further validating the measurement model.

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The findings in Table 7 confirm the convergent validity of all three latent constructs. Despite a few moderately low factor loadings and slightly elevated VIFs for some DLS indicators, the overall metrics' high reliability scores, acceptable VIFs, and AVE values demonstrate that the indicators consistently and reliably measure their respective constructs. This strengthens confidence in the measurement model's accuracy and robustness, forming a solid foundation for further structural analysis.



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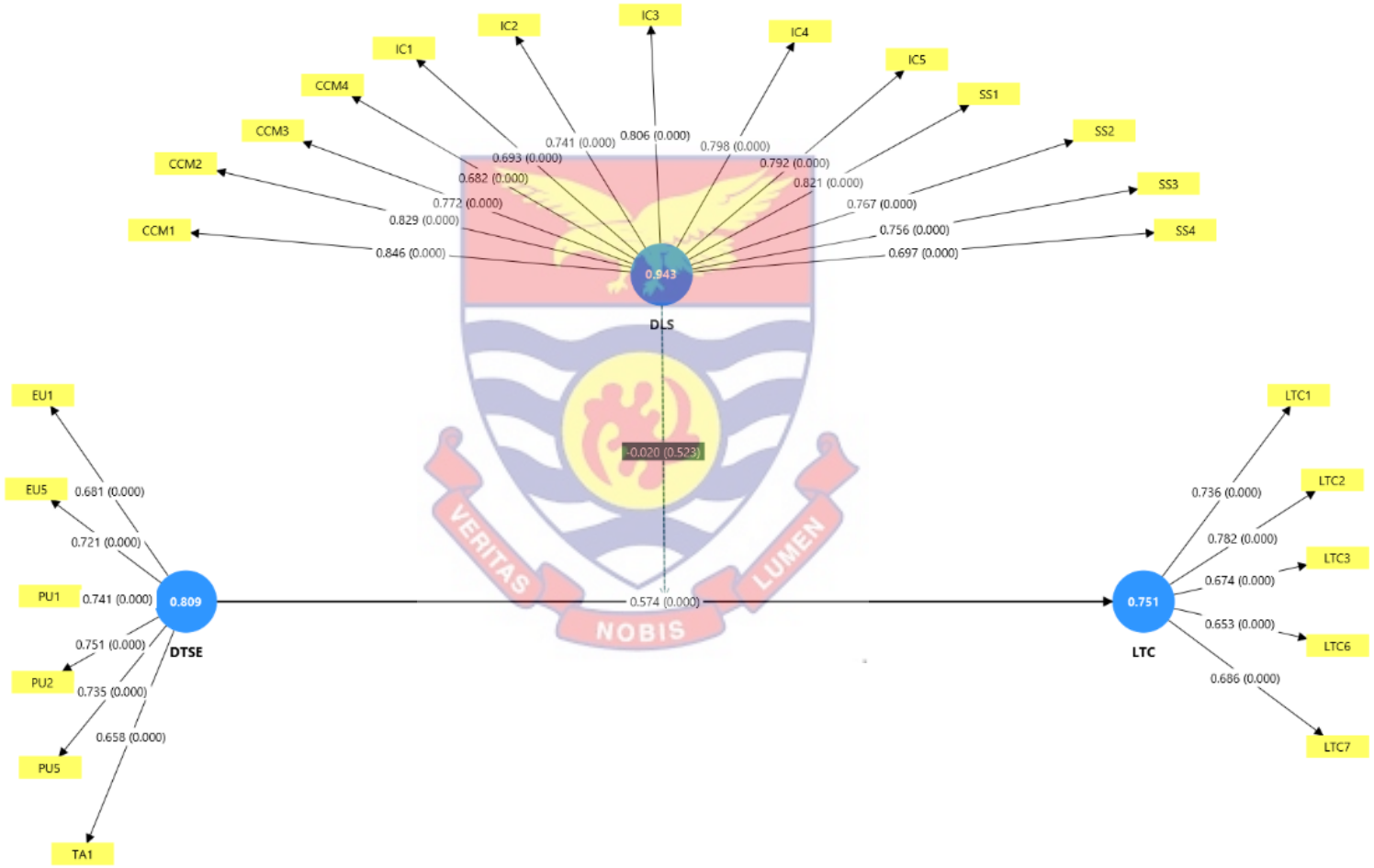


Figure 5: Final Model with Loadings
Source: SmartPLS 4.

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Discriminant validity was assessed using the Fornell-Larcker criterion to verify that each construct represents a distinct aspect of the data (Hair et al., 2017). This method compares the square root of each construct's Average Variance Extracted (AVE) with its correlations with other constructs (Fornell & Larcker, 1981). For discriminant validity to hold, a construct's square root of AVE must be greater than its highest correlation with any other construct. As illustrated in Table 8, the square roots of the AVEs for all constructs are higher than their respective inter-construct correlations, confirming that each construct is sufficiently distinct. This outcome affirms that the model demonstrates strong discriminant validity across the assessed dimensions.

Table 8: Discriminant Validity (Fornell–Larcker Criteria)

	DLS	DTSE	LTC
DLS	**0.771**		
DTSE	0.547	**0.715**	
LTC	0.445	0.651	**0.708**

Source: Field Survey (2025)

Notes: Where DLS, DTSE, and LTC represent Digital Literacy Skills, Digital Tax System Effectiveness, and Level of Tax Compliance, respectively.

Table 8 presents the assessment of discriminant validity using the Fornell–Larcker criterion, which is essential for evaluating the uniqueness and distinctiveness of constructs within the structural equation model. Every latent variable is guaranteed to measure a concept that differs from other conceptions in the model, both theoretically and experimentally, via discriminant validity. This is critical for confirming that the constructs do not significantly overlap and that each

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variable explains a unique portion of the variance in the dataset. When the square root of each construct's Average Variance Extracted (AVE) is higher than its maximum correlation with any other construct, discriminant validity is demonstrated, per the Fornell–Larcker criterion. (Fornell & Larcker, 1981; Hair et al., 2017). Whether each construct shares more variance with its indicators than with other constructs in the model is shown by this comparison.

In Table 8, the diagonal values represent the square roots of the AVEs for each construct: Digital Literacy Skills (DLS), Digital Tax System Effectiveness (DTSE), and Level of Tax Compliance (LTC), while the off-diagonal values show the inter-construct correlations. A close examination reveals that the square root of the AVE for each construct exceeds its respective correlations with the other constructs. For instance, the square root of the AVE for DLS is higher than its correlations with DTSE and LTC, indicating that DLS is empirically distinct and measures a unique construct. Similarly, DTSE demonstrates adequate discriminant validity, as its square root of AVE is greater than its correlations with DLS and LTC. The same pattern is observed for LTC, which further confirms its conceptual independence.

This assessment confirms that all three constructs: Digital Literacy Skills, Digital Tax System Effectiveness, and Level of Tax Compliance, are sufficiently distinct from one another. This supports the structural integrity of the measurement model and enhances the reliability of interpretations drawn from the data. Establishing discriminant validity is crucial for ensuring that each construct

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accurately represents a separate theoretical domain, ultimately contributing to the validity and robustness of the study's findings.

Table 9: Heterotrait - Monotrait Ratio (HTMT)

	DLS	DTSE	LTC
DLS			
DTSE	0.632		
LTC	0.517	0.816	

Source: Field Survey (2025)

Notes: Where DLS, DTSE, and LTC represent Digital Literacy Skills, Digital Tax System Effectiveness, and Level of Tax Compliance, respectively.

The Fornell-Larcker criterion has certain shortcomings, especially in situations where the differences between indicator loadings are minimal. Even when these differences are more pronounced, their effectiveness in identifying discriminant validity can still be limited (Voorhees et al., 2016). To overcome these limitations, Henseler et al. (2015) introduced the Heterotrait-Monotrait (HTMT) ratio of correlations as an alternative method. According to their recommendation, discriminant validity is confirmed when the HTMT value for a construct is below 0.850. As shown in Table 9, all HTMT values fall well below this threshold, indicating that discriminant validity has been satisfactorily established among the constructs.

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Table 10: Cross Loadings

	DLS	DTSE	LTC
CCM1	**0.846**	0.455	0.406
CCM2	**0.829**	0.394	0.426
CCM3	**0.772**	0.382	0.315
CCM4	**0.682**	0.335	0.321
IC1	**0.693**	0.427	0.295
IC2	**0.741**	0.446	0.260
IC3	**0.806**	0.476	0.342
IC4	**0.798**	0.449	0.329
IC5	**0.792**	0.480	0.368
SS1	**0.821**	0.463	0.353
SS2	**0.767**	0.382	0.283
SS3	**0.756**	0.393	0.351
SS4	**0.697**	0.404	0.349
EU1	0.413	**0.681**	0.380
EU5	0.467	**0.721**	0.460
PU1	0.399	**0.741**	0.511
PU2	0.346	**0.751**	0.481
PU5	0.333	**0.735**	0.490
TA1	0.403	**0.658**	0.455
LTC1	0.302	0.450	**0.736**
LTC2	0.338	0.538	**0.782**
LTC3	0.250	0.382	**0.674**
LTC6	0.314	0.374	**0.653**
LTC7	0.356	0.521	**0.686**

Source: Field Survey (2025)

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Table 10 presents the cross-loadings for each indicator across the three constructs: Digital Literacy Skills (DLS), Digital Tax System Effectiveness (DTSE), and Level of Tax Compliance (LTC) to assess discriminant validity within the framework of Structural Equation Modelling (SEM). Cross loadings provide an important measure to verify that each item loads highest on its respective latent construct compared to all others, thereby affirming that the items are measuring distinct and separate dimensions. As a general rule, an item should show a significantly higher loading on its own construct than on others, indicating that it contributes meaningfully and uniquely to its intended concept.

The indicators associated with Digital Literacy Skills (DLS), namely CCM1 through CCM4, IC1 through IC5, and SS1 through SS4, consistently display the highest loadings on the DLS construct compared to DTSE and LTC. For example, CCM1 loads at 0.846 on DLS but only 0.455 and 0.406 on DTSE and LTC, respectively, confirming its alignment with the DLS construct. Similarly, IC3 and SS1 show high loadings on DLS (0.806 and 0.821, respectively), but much lower correlations with the other two constructs, reinforcing the discriminant validity of the DLS indicators.

For the Digital Tax System Effectiveness (DTSE) construct, indicators such as EU1, EU5, PU1, PU2, PU5, and TA1 exhibit their highest loadings on DTSE. PU2, for instance, has a strong loading of 0.751 on DTSE, compared to 0.346 on DLS and 0.481 on LTC. This pattern is consistent across all DTSE items, indicating that they are distinctly measuring the DTSE construct without significant overlap with DLS or LTC.

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Similarly, the indicators for Level of Tax Compliance (LTC), LTC1 through LTC7, show their highest loadings on LTC and notably lower values on the other constructs. For instance, LTC2 loads at 0.782 on LTC but only 0.338 and 0.538 on DLS and DTSE, respectively. This confirms that LTC indicators are conceptually aligned with the tax compliance construct and are not confounded by the digital literacy or system effectiveness measures.

The cross-loadings confirm strong discriminant validity across all constructs. Each indicator loads more strongly on its designated construct than on any other, indicating that DLS, DTSE, and LTC are empirically and conceptually distinct. This enhances the validity and reliability of the measurement model and supports its suitability for further structural analysis.

Hypothesis Testing

The structural model was assessed to obtain the path coefficient results. In this study, a resampling bootstrap technique was employed to derive the original beta (β) values and corresponding T-statistics using the PLS-SEM method. A total of 5,000 bootstrap samples were generated during the data analysis process, following the recommendation of Hair et al. (2012). The path coefficients and p-values for the two hypotheses are presented in Table 11 and Figure 4.

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Table 11: Hypothesis Testing Results

Path Analysis	Coeff.	Standard Deviation	T Statistics	P Values	Decision
H1					
DTSE -> LTC	0.574	0.047	12.245	0.000	Support
DLS -> LTC	0.118	0.056	2.106	0.035	Support
H2					
DLS x DTSE -> LTC	-0.020	0.032	0.638	0.523	Reject

Source: Field Survey (2025)

Notes: Where DLS, DTSE, and LTC represent Digital Literacy Skills, Digital Tax System Effectiveness, and Level of Tax Compliance, respectively.

Direct Path Analysis

The findings of the hypothesis testing, as shown in Table 10, assess both the direct and moderating effects among Digital Literacy Skills (DLS), Digital Tax System Effectiveness (DTSE), and Level of Tax Compliance (LTC). These relationships were examined by employing path coefficients, standard deviations, T-statistics, and p-values obtained through structural equation modelling techniques.

The first hypothesis (H1) proposed a direct positive relationship between Digital Tax System Effectiveness (DTSE) and the Level of Tax Compliance (LTC). The analysis revealed a path coefficient of 0.574, indicating a strong positive effect. With a T-statistic of 12.245 and a p-value of 0.000, the relationship is highly significant. This suggests that improvements in the effectiveness of digital tax systems significantly enhance the compliance levels of small businesses. In other words, when digital tax systems are perceived as efficient, transparent, and user-friendly, taxpayers are more likely to fulfil their tax obligations.

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Similarly, the direct relationship between digital literacy skills (DLS) and tax compliance (LTC) is also supported, with a path coefficient of 0.118, a standard deviation of 0.056, a t-statistic of 2.106, and a p-value of 0.035. Though the effect size is smaller than that of DTSE, the significance indicates that digital literacy among small business owners has a meaningful influence on their compliance behaviour. This means that equipping taxpayers with the skills needed to use digital tools is essential for encouraging proper tax practices.

The second hypothesis (H2) examined the moderating role of Digital Literacy Skills (DLS) on the relationship between DTSE and LTC. However, the path coefficient for the interaction effect (DLS × DTSE → LTC) was -0.020, with a T-statistic of 0.638 and a p-value of 0.523, indicating no statistically significant effect. This leads to the rejection of H2. The result implies that digital literacy does not significantly strengthen or weaken the impact of the digital tax system's effectiveness on tax compliance. While DLS independently influences tax-compliance behaviours, it does not play a meaningful moderating role in this particular relationship.

The findings suggest that both digital literacy and digital tax system effectiveness are vital for promoting tax compliance among small businesses. However, their combined influence does not yield additional synergistic benefits, suggesting the need to address them as independent strategic areas when designing interventions to boost compliance.

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Discussion of Result

Hypothesis 1 (H1): DTSE → LTC

The first hypothesis (H1) posited that the effectiveness of the digital tax system (DTSE) significantly influences the LTC among small businesses in the CCM. The results support this hypothesis with a path coefficient of 0.574, a T-statistic of 12.245, and a p-value of 0.000, indicating a strong, positive, and statistically significant relationship.

These findings align with earlier studies, such as Al-Okaily (2024), who highlighted that perceived usefulness, ease of use, and trust in digital taxation systems significantly enhance compliance when users have positive experiences with the system. Similarly, Bellon et al. (2022) and Brockmeyer and Sáenz Somarriba (2025) observed improved compliance in Peru and Uruguay, respectively, due to enhanced visibility, automation, and reduced administrative burdens introduced by digital tax reforms.

The results suggest that when small businesses perceive the digital tax system as user-friendly, trustworthy, and efficient, they are more likely to fulfil their tax obligations. The system's ability to simplify filing procedures, automate submissions, and minimise in-person contact with tax authorities likely boosts user confidence, streamlines compliance processes, and mitigates evasion. This also supports the notion that technological modernisation, if well-implemented, fosters trust and enhances voluntary tax compliance.

Hypothesis 2 (H2): DLS × DTSE → LTC

The second hypothesis (H2) investigated whether DLS moderates the association between DTSE and tax compliance (LTC) among small business

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taxpayers in the CCM. The findings revealed a statistically significant positive relationship between DLS and LTC ($\beta = 0.118$, $p = 0.035$), although the effect size was modest. This outcome suggests that small businesses that possess better digital competencies are more likely to comply with tax obligations. However, the statistical findings from the PLS-SEM analysis also revealed a non-significant moderating effect, with a path coefficient of -0.020, a T-statistic of 0.638, and a p-value of 0.523. This finding suggests that digital literacy has no meaningful effect on the strength or direction of the relationship between the efficacy of digital tax systems and tax compliance.

The positive relation between DLS and LTC aligns with the findings of several previous studies. For instance, Walter and Wilson (2023) concluded that SMEs with higher computer literacy levels were more likely to comply with tax requirements, especially via electronic filing systems. Similarly, Kinuu (2023) found that tax training, which is closely linked to digital skills, enhanced the effectiveness of digital tax tools like TIMS and e-filing systems in improving compliance among SMEs in Kenya. These parallels reinforce the idea that digital literacy is a critical enabler of compliance behaviour, particularly as tax systems become increasingly digitised.

Interestingly, whereas earlier research, such as Purba et al. (2020) and Mwesige et al. (2024), showed that digital literacy or related constructs like internet knowledge and technological self-efficacy significantly moderated the effectiveness of digital tools on outcomes like tax compliance or financial inclusion, the current study found no substantial moderating effect. This divergence

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may be due to contextual differences, such as variations in technological infrastructure, user training, or the digital maturity of the tax systems. It suggests that while digital literacy independently promotes compliance, its influence may be neutralised when the system is already highly intuitive or when other barriers, like a lack of technical support, undermine its potential moderating impact.

Moreover, this finding resonates with Meiryani et al. (2023), who observed that although digital literacy is important, it is often insufficient on its own to drive compliance. Their study suggested that without adequate government-led training and user support, digital literacy may not significantly translate into effective use of tax systems. In this regard, the current study underscores that while digital literacy contributes to compliance, it may need to be coupled with other enabling factors such as regular training programmes, robust system usability, and proactive user support to have a more amplified effect on the interaction between digital tax system effectiveness and compliance.

The field context in the Cape Coast Metropolis further substantiates these interpretations. A notable portion of small business operators possess varied levels of formal education, with many relying on intermediaries such as accountants or agents to navigate tax obligations. This reliance potentially limits their direct engagement with digital tax platforms, thereby weakening the effect of their personal digital literacy skills on compliance outcomes. Additionally, several contextual constraints, such as technical difficulties in accessing reliable digital services, scepticism regarding the intent of the research, and the general absence of structured taxpayer education initiatives, may have diminished the role of digital

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literacy as a meaningful moderator. Beyond these operational barriers, deeply rooted attitudinal and cultural perceptions about taxation persist. Many taxpayers express dissatisfaction with the tangible benefits derived from taxes paid, questioning the visible return on their financial contributions to government revenue. This perceived disconnect between taxation and public service delivery may further reduce intrinsic motivation to comply, regardless of one's digital competence. Consequently, in this environment, digital literacy alone may be insufficient to enhance the effectiveness of digital tax systems, as compliance decisions are shaped not only by technical capability but also by trust, perceived value, and socio-political expectations.

The study confirms that enhancing digital literacy among small business operators positively influences their tax compliance behaviour. However, contrary to some earlier studies, digital literacy did not significantly moderate the effectiveness of the digital tax system in improving compliance. These results highlight the importance of focusing on digital literacy as a standalone compliance strategy while also addressing complementary factors like user training, system accessibility, and support mechanisms to unlock its full potential in fostering tax compliance in a digital era.

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Table 12: Challenges and Opportunities of Digital Tax System

	Mean	SD
The digital tax payment system requires additional effort to enter the data than the manual system	3.57	1.09
Poor intranet connection affects the digital tax payment system	3.99	0.95
The security system built into the digital tax payment system is strong enough to protect our business account	3.65	0.99
I do not have any problem with using the digital tax payment system	3.49	1.11
The awareness creation program is not sufficient to improve compliance	3.54	1.06
The digital tax payment system makes work simple compared to the manual system	3.85	0.96
The digital tax payment system reduces corruption	3.80	1.01
Data loss is less likely in the digital tax payment system than in the manual system.	3.66	1.08
The digital tax payment system reduces errors	3.82	0.91
The digital tax payment system increases reliability	4.01	0.79

Source: Field Survey (2025)

Discussion: Opportunities and Challenges of the Digital Tax System

Although not part of the core objectives of this study, provisions were made to explore the perceived challenges and opportunities associated with the digital tax system (CADTS and OADTS) among small businesses in the CCM. Table 12 presents the responses gathered in this regard, based on a set of 10 items measured on a 5-point Likert scale.

The findings reveal a generally positive perception of the digital tax system's potential, particularly in terms of efficiency, accuracy, and reliability. The item "Digital-tax payment system increases reliability" recorded the highest

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average score of 4.01 (SD = 0.79), indicating that participants strongly agree that the system enhances the reliability of tax-related processes. This was closely followed by "Poor intranet connection affects digital-tax payment system", with a mean of 3.99 (SD = 0.95), highlighting a notable infrastructure-related challenge that could hinder the seamless operation of digital tax platforms.

Participants also concurred that the digital tax system decreases errors (M = 3.82, SD = 0.91) and curbs corruption (M = 3.80, SD = 1.01), highlighting its potential to enhance transparency and accountability in tax administration. Likewise, the statement "The digital tax payment system simplifies tasks compared to the manual system" achieved a high mean of 3.85 (SD = 0.96), indicating that users typically perceive the system as user-friendly and more effective than conventional methods.

Nonetheless, several challenges persist. The statement "The digital tax payment system necessitates more effort for data entry compared to the manual system" received an average score of 3.57 (SD = 1.09), indicating a moderate level of concern regarding usability or familiarity. Furthermore, participants appeared to be relatively indifferent about "I do not experience any issues with using the digital tax payment system" (M = 3.49, SD = 1.11), suggesting varying degrees of comfort or experience among users. The response to "The awareness creation program is inadequate for enhancing compliance" (M = 3.54, SD = 1.06) points to a potential deficiency in taxpayer education and outreach initiatives, which may hinder the successful adoption of the system.

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Ultimately, the digital tax system was viewed positively in relation to data protection and error reduction, with statements like "The security framework integrated into the digital tax payment system is sufficiently robust to safeguard our business account" (M = 3.65, SD = 0.99) and "The likelihood of data loss is lower in the digital tax payment system compared to manual methods" (M = 3.66, SD = 1.08) receiving encouraging feedback.

Respondents acknowledge key opportunities offered by digital tax systems, particularly increased reliability, reduced errors, and improved transparency. They also identify significant challenges such as connectivity issues, insufficient awareness programmes, and some usability concerns. These insights underscore the need for infrastructure improvements, taxpayer training, and continuous system enhancements to enhance the benefits of digital tax systems among small businesses in CCM.

Chapter Summary

This chapter presented and discussed the research findings in line with the study's specific objectives. It began with an overview of the respondents' background characteristics and proceeded with a comprehensive analysis of each objective using both SPSS and Structural Equation Modelling (SEM). The following chapter summarises the key findings from the analysis and makes recommendations based on the study's results.

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CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter begins by reviewing the study's objectives and the research methodology used to obtain and analyse data to address the research questions and hypotheses regarding the effectiveness of digital tax systems, tax compliance levels, and the moderating role of digital literacy among small businesses. It then gives a discussion of the important findings for each study objective. These findings lay the groundwork for drawing conclusions and making recommendations to help drive policy development and practical solutions. The chapter finishes with suggestions for future research.

Summary of the Study

The study investigated the relationship between the effectiveness of digital tax systems and tax compliance among SBs in the Cape Coast Metropolis of Ghana, with a focus on the moderating role of digital literacy. The specific research questions guiding the study included:

1. How effective is the digital tax system among SBs in CCM?
2. What is the level of tax compliance among SBs in CCM?

The following hypotheses were formulated:

Research Hypothesis

H1: There is a statistically significant effect of the effectiveness of digital tax systems on tax compliance among SBs in the CCM.

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H2: Digital literacy statistically moderates the relationship between the effectiveness of digital tax systems and tax compliance among SBs in the CCM.

The study was underpinned by the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB). These theories provided a framework for explaining how perceived usefulness, behavioural intentions, and digital skills influence the adoption of digital tax platforms and voluntary tax compliance.

The study was guided by the post-positivist paradigm and utilised a quantitative research approach, employing a descriptive cross-sectional survey design. A combination of purposive and convenience sampling methods was utilised to select 331 small business owners and managers from the Cape Coast Metropolis.

Data were collected using a structured questionnaire developed from validated instruments. Section B, which measured digital tax system effectiveness, was adapted from Davis (1986) and Daniel & Esther (2019). Tax compliance (Section C) was based on items from Night & Bananuka (2020) and Gwro et al. (2016), while digital literacy (Section D) drew from Choi et al. (2023). Section E assessed challenges and opportunities in digital tax adoption, using items adapted from Muluken (2020). A pilot test with 34 small businesses ensured reliability and clarity of the instrument. Cronbach's Alpha values ranged from 0.754 to 0.942, confirming the instrument's internal consistency.

Descriptive statistics, including means, frequencies, and percentages, were calculated using SPSS Version 26. SEM was performed with SmartPLS Version 4.

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The PLS-SEM approach was selected due to its effectiveness in managing complex models, small sample sizes, and data that do not follow a multivariate normal distribution.

Summary of Key Findings

This study aimed to examine the effectiveness of the digital tax system and the level of tax compliance among small businesses in the Cape Coast Metropolis, with further investigation into the relationship between the two and the moderating role of digital literacy skills.

Firstly, the study found that small business operators in the CCM generally perceive the digital tax system as effective. Respondents agreed that the system improves reporting accuracy, supports timely filing, and simplifies the fulfilment of tax obligations. The average mean indicates a moderately high level of satisfaction, although certain usability challenges and gaps in training and awareness persist.

Secondly, the results showed a relatively high level of tax compliance among SBs. Respondents believed that the digital tax system facilitates regular tax payment, minimises the risk of penalties, and promotes voluntary compliance. However, communication with tax officials through the digital platform was rated comparatively lower, indicating room for improvement in digital customer support.

Also, hypothesis testing revealed a significant and positive direct relationship between the effectiveness of the digital tax system and the level of tax compliance. This suggests that improving the functionality, transparency, and user-

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friendliness of the digital tax system leads to improved compliance behaviours among small businesses. Also, the findings revealed a statistically significant positive relationship between DLS and LTC. In contrast, the moderating role of digital literacy was found to be statistically insignificant, indicating that digital skills do not significantly alter the strength of the relationship between digital tax system effectiveness and tax compliance in this context.

Finally, although not part of the study's core objectives, the study explored the perceived opportunities and challenges associated with the digital tax system. Participants acknowledged key benefits such as increased reliability, reduced errors and corruption, and improved efficiency compared to manual systems. However, they also highlighted significant constraints, including poor internet connectivity, insufficient awareness programmes, and the additional effort required to navigate the system.

Conclusions

Firstly, consistent with objective 1, the study concludes that the digital tax system is generally perceived by small business operators in the Cape Coast Metropolis as effective. Respondents recognised its value in improving the accuracy of tax reports, enabling the timely fulfilment of tax obligations, and minimising errors. The findings underscore the system's practical usefulness, particularly when it functions reliably and is complemented by a user-friendly interface.

The study also concludes that the level of tax compliance among small businesses is relatively high. The digital platform encourages the proper filing of

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taxable income, regular tax payments, and avoidance of penalties, all of which contribute to voluntary compliance.

Furthermore, the study confirms a strong and statistically significant direct relationship between the effectiveness of the digital tax system and the level of tax compliance. This finding implies that efforts to enhance the transparency, reliability, and user experience of the digital tax system will likely yield substantial improvements in compliance behaviours among small businesses. The digital platform's ability to simplify tax procedures and reduce the burden of in-person interactions with tax authorities proves instrumental in encouraging voluntary compliance.

Additionally, the study also concludes that digital literacy skills have a statistically significant and positive influence on the level of tax compliance among small business operators. This suggests that as the digital literacy of business owners improves, their ability and willingness to comply with tax obligations through digital platforms also increases.

Conversely, the study concludes that digital literacy skills do not significantly moderate the relationship between the effectiveness of digital tax systems and tax compliance. While digital literacy may independently contribute to a user's ability to navigate the system, it does not significantly strengthen or weaken the system's impact on compliance. This suggests that broader factors, such as structured tax education, ongoing technical support, and trust in the system, may play more influential roles in shaping compliance behaviours than general digital skills alone.

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Lastly, while not a core objective, the study reveals both opportunities and challenges associated with the digital tax system. Respondents recognised several advantages, such as increased reliability, reduced corruption, and better protection of data compared to manual systems. However, infrastructure limitations, particularly poor internet connectivity and insufficient awareness campaigns, remain significant barriers. These challenges indicate that while the digital tax system holds promise for transforming tax administration, sustained investment in digital infrastructure and capacity-building efforts is essential to unlock its full potential for small businesses in the CCM.

Recommendations

To improve the effectiveness and adoption of the digital tax system among small businesses in the CCM, the Ghana Revenue Authority (GRA) should intensify training and capacity-building initiatives. These programmes should be designed to equip taxpayers with practical skills to use digital platforms, understand tax obligations, and confidently navigate the system. Emphasis should be placed on both general digital literacy and tax-specific processes, such as filing returns, verifying records, and generating receipts. These interventions will help address usability concerns, especially for less tech-savvy users, and promote voluntary tax compliance.

The GRA and its technology partners should improve the system's interface to make it more user-friendly, less cognitively demanding, and more accessible to users with varying educational backgrounds. Providing intuitive navigation, simplified data entry processes, and clear instructions in both English and local

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languages will reduce frustration and enhance user experience. Additionally, embedding prompts and real-time feedback within the system can reduce user errors and increase confidence in digital tax administration.

Given the strong and statistically significant relationship between the effectiveness of the digital tax system and the level of tax compliance, the Ghana Revenue Authority (GRA) should prioritise system optimisation. This includes ensuring system stability, reducing downtimes, and improving the speed of transactions. A more intuitive and user-friendly interface should be developed to simplify filing procedures, enhance accessibility, and reduce user frustration. These improvements will directly influence voluntary compliance among small business operators.

Public awareness and outreach must also be expanded to improve understanding of the benefits and use of digital tax platforms. Mass education efforts should utilise local radio, community outreach events, mobile messaging, and collaboration with trade associations to reach small businesses across all literacy levels.

Another crucial recommendation is the strengthening of digital infrastructure and support services. Internet connectivity challenges were highlighted as a major barrier to seamless interaction with the digital tax system. The government, through public-private partnerships, should invest in upgrading internet services in commercial zones and underserved areas. Alongside this, the GRA should ensure that taxpayer support is readily available through digital channels, including live chat, hotlines, and virtual help desks.

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Lastly, the GRA should focus on building trust and ensuring data security. Respondents appreciated the system's potential for improving reliability and reducing corruption, but concerns remain regarding digital safety and data protection. Regular updates on security features, user privacy assurances, and strong encryption protocols should be emphasised in all taxpayer communications.

Suggestions for Further Studies

Firstly, future studies could expand the geographical scope to include other districts or regions in Ghana. Comparing results across urban and rural settings or across different administrative regions would help uncover regional disparities in digital tax adoption and compliance behaviour and offer a more comprehensive national perspective.

Secondly, researchers may consider adopting a mixed-methods approach by incorporating qualitative techniques such as interviews or focus group discussions. This would enable deeper exploration of taxpayer attitudes, motivations, and challenges, particularly among individuals who may be reluctant to disclose sensitive tax-related information in survey formats.

Thirdly, further research could explore the role of intermediaries, such as tax consultants or agents, in the digital tax compliance process.

Fourth, it would be useful for future studies to examine other potential moderating or mediating variables, such as trust in government, perceived fairness of the tax system, or taxpayer attitudes.

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Lastly, longitudinal studies that track taxpayer behaviour over time would be valuable for assessing the sustained impact of digital tax systems and training interventions. Such studies could provide insights into how taxpayers' experiences and compliance levels evolve with continued exposure to the system and as technological improvements are made.



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APPENDIX A

QUESTIONNAIRE

UNIVERSITY OF CAPE COAST

COLLEGE OF HUMANITIES AND LEGAL STUDIES

SCHOOL OF BUSINESS

DEPARTMENT OF ACCOUNTING

Dear Respondent,

"I am a student at the University of Cape Coast, Department of Accounting, conducting research on **'Digital Tax System and Tax Compliance Among Small Businesses in the Cape Coast Metropolis: Role of Digital Literacy.'** I would greatly appreciate it if you could take some time to complete this questionnaire. Please be assured that the information sought through this questionnaire is solely for academic research purposes. All responses, opinions, and views provided will be treated with the utmost confidentiality and will NOT, under any circumstance, be disclosed to any third party."

Section A: Demographic Data

1. Gender:

   A. Male [ ] B. Female [ ]

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2. Age

A. Below 31 years [ ] B. (31 – 40)years [ ] C. (41 – 50)years [ ]

D. Above 50years [ ]

3. Level of Education

A. Basic Education [ ] B. Secondary Education [ ]

C. Tertiary Education[ ]

D. Non-Formal Education [ ] E. Informal Education [ ]

Section B: Effectiveness of digital tax system

To what extent do you agree or disagree with the following statements regarding the "effectiveness of the digital tax system"? Please indicate your responses using the following scale: 1 – Strongly Disagree **(SD)**, 2 – Disagree **(D)**, 3 – Neutral **(N)**, 4 – Agree **(A)**, 5 – Strongly Agree **(SA).**

S/N	STATEMENT	SD	D	N	A	SA
PU1	Using digital tax system improves quality tax report					
PU2	Using digital tax system enables us to meet tax obligation timely					
PU3	I preferred manual reporting and payment than digital-taxing					
PU4	Using digital-tax system reduce errors when reporting tax					
PU5	Overall, I find the digital tax system useful in my job					

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EU1	I find it easy to get the digital tax system to do what I want it to do					
EU2	Learning how to use digital-tax system is easy for me					
EU3	Interacting with digital tax system requires a lot of mental efforts					
EU4	I make errors frequently when I use digital tax system					
EU5	Overall, I find the digital tax system easy to use					
TA1	Digital tax system is being a popular method of reporting tax filing					
TA2	I have been trained about using digital tax system					
TA3	I will use digital tax system if I get good knowledge of it					
TA4	I use GRA digital-tax system related site navigation					
TA5	Tax officials regularly provide me with training and updates on new developments in the tax system.					

Section C: Level of Tax Compliance

To what extent do you agree or disagree with the following statements regarding the "level of tax compliance"? Please indicate your responses using the following scale: 1 – Strongly Disagree (SD), 2 – Disagree (D), 3 – Neutral (N), 4 – Agree (A), 5 – Strongly Agree (SA).

S/N	STATEMENT	SD	D	N	A	SA

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LTC1	Using digital tax system improves tax compliance					
LTC2	Digital-tax system enables us to file all taxable income					
LTC3	Digital-tax system enables voluntary tax compliance					
LTC4	The digital-tax system helps us avoid penalties and fines associated with delayed tax reporting					
LTC5	Interaction with tax official is easier and better with digital tax system					
LTC6	Digital-tax system reduced substantial tax liability					
LCT7	Digital-tax system encourages us to pay taxes regularly					

Section D: Digital Literacy Level

Please indicate your responses using the following scale: 1 – Strongly Disagree (SD), 2 – Disagree (D), 3 – Neutral (N), 4 – Agree (A), 5 – Strongly Agree (SA).

S/N	STATEMENT	SD	D	N	A	SA
IC1	I am able find information I need on the Internet					
IC2	I am able to transfer documents, photos, or video files from one device to another					
IC3	I am able to Save Internet documents, photos, or video files I find					

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IC4	I am able to exchange documents, photos, or video files via an email					
IC5	I find it easy to comment on others' posts					
CCM1	I am able to create a document using digital devices					
CCM2	I am able to convert document formats using digital devices					
CCM3	I am able to edit and post documents, photos, or videos created by someone else					
CCM4	I can independently troubleshoot issues related to device/app operation					
SS1	I can set device passwords for logging in/out					
SS2	I can delete files stored on my device					
SS3	I can block spam or phishing attempts on the Internet					
SS4	I know how to ask help when encountering issues during devices or app installation or operation					

Section E: Challenges and Opportunities of Digital Tax System

Please indicate your responses using the following scale: 1 – Strongly Disagree (SD), 2 – Disagree (D), 3 – Neutral (N), 4 – Agree (A), 5 – Strongly Agree (SA).

S/N	STATEMENT	SD	D	N	A	SA

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C1	Digital-tax payment system requires additional effort to enter the data than manual system					
C2	Poor intranet connection affects digital-tax payment system					
C3	The security system built into the digital-tax payment system is strong enough to protect our business account					
C4	I do **not** have any problem with using the digital tax payment system					
C5	The awareness creation program is **not** sufficient to improve compliance					
O1	Digital-tax payment system makes work simple compared to the manual system					
O2	Digital-tax payment system reduce corruption					
O3	Data loss is less likely in digital-tax payment system than manual					
O4	Digital-tax payment system reduces errors					
O5	Digital-tax payment system increases reliability					

End of Survey.

Thank You!

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APPENDIX B

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
INSTITUTIONAL REVIEW BOARD SECRETARIAT
TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: IRB/C3/V1/25/0017
YOUR REF:
OMB NO: 0990-0271
IORG #: IORG0011497

24TH JUNE, 2025

Mr. Clement Owusu
Department of Accounting
University of Cape Coast

Dear Mr. Owusu,
ETHICAL CLEARANCE – ID (UCCIRB/CHLS/2025/018)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted Provisional Approval for the implementation of your study titled **Digital Tax System and Tax Compliance Among Small and Micro-Enterprises in the Cape Coast Metropolis: Role of Digital Literacy.** This approval is valid from **24th June, 2025 to 23rd June, 2026.** You may apply for a renewal of ethical approval if the study lasts for more than 12 months.

Please note that any modification to the project must first receive renewal clearance from the UCCIRB before its implementation. You are required to submit a periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us about this protocol.

Yours faithfully,

Kofi F. Amuquandoh
Ag. Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST

Prof. Fiifi Amoako Johnson
Chairperson

CHAIRPERSON
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST

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APPENDIX C

LETTER OF INTRODUCTION

UNIVERSITY OF CAPE COAST
COLLEGE OF HUMANITIES AND LEGAL STUDIES
SCHOOL OF BUSINESS
DEPARTMENT OF ACCOUNTING

Telephone: 0312292655
E-mail: dact@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our ref:

Your ref:

Date: 27th June, 2025

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF INTRODUCTION

Mr. Clement Owusu is a Master of Commerce (Accounting) student at the Department of Accounting, University of Cape Coast. As part of the programme of study, he is required to present a research report on "**Digital Tax System and Tax Compliance among Small Businesses in the Cape Coast Metropolis: Role of Digital Literacy**".

The study seeks to examine the impact of digital tax systems on tax compliance among small businesses in the Cape Coast Metropolis and evaluate the moderating role of digital literacy in this relationship.

We would be grateful if you could offer him the assistance needed to enable him proceed with the research.

Please for further information on the research, you can contact the supervisor with the following details:
Email: earhin@ucc.edu.gh
Phone Number: 0242209828

Thank you.

Yours faithfully

Dr. Emmanuel Yaw Arhin
SUPERVISOR

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