

# **Article Title: Transforming Tax Compliance in Africa: Compliance design by the Ghana Revenue Authority**

## **Presenting Author**

Rev. Ammishaddai Owusu-Amoah (Ph.D)

Ghana Revenue Authority

P. O. Box 2202, Osu, Accra

+233244665257

[AMMISH.OWUSU-AMOAH@GRA.GOV.GH](mailto:AMMISH.OWUSU-AMOAH@GRA.GOV.GH)

## **Co-Author**

Michael Gyasi

Ghana Revenue Authority

P. O. Box 2202, Osu, Accra

+233 244847329

[MICHAEL.GYASI@GRA.GOV.GH](mailto:MICHAEL.GYASI@GRA.GOV.GH)

**Abstract:** As Africa grapples with the dual challenges of economic development and effective public revenue generation, tax compliance emerges as a significant barrier, particularly due to administrative inefficiencies, opacity, and limited taxpayer engagement. This study examines the implementation of "Compliance by Design" (CbD) within the Ghana Revenue Authority as a strategic response to these challenges. By embedding compliance mechanisms directly into tax administration systems, CbD seeks to improve efficiency, transparency, and voluntary compliance. Utilizing primary data from the Ghana Revenue Authority, this paper provides an empirical evaluation of CbD's impact on tax processes and compliance rates. The findings suggest that CbD significantly enhances tax administration, supporting broader economic stability and governance in Ghana.

Keywords: Compliance by Design, tax compliance, Ghana Revenue Authority, administrative efficiency, taxpayer engagement.

JEL Codes

H26 - Tax Evasion and Avoidance

H25 - Business Taxes and Subsidies including sales and value-added (VAT)

O17 - Formal and Informal Sectors; Shadow Economy; Institutional Arrangements

O23 - Fiscal and Monetary Policy in Development

**Acknowledgements:** I extend my deepest gratitude to God for His constant grace throughout this research journey. Special thanks to my co-author, Mr. Michael Gyasi, for his pivotal role in data collection and analysis. I also appreciate the Tax Analysis, Revenue Forecasting and Statistics Unit for their exemplary support and collaboration. Further thanks to Mr. Felix Ghartey from the GRA Research Unit and Professor William K.B Insaadoo from the University of Cape Coast Economics Department, whose insightful contributions and mentorship greatly enhanced this study. My heartfelt thanks to everyone involved for their belief in and support for this project.

## **1.0 Introduction**

Tax compliance in Africa faces significant hurdles due to factors like corruption, inadequate resources, and evolving international taxation challenges. The African Tax Administration Forum (ATAF) highlights these issues, emphasizing the need for governance improvements and innovative solutions to adapt to globalisation and technological advances.

Many African countries' tax systems, including Ghana struggle to meet the demands imposed by global integration and technological progress. To enhance these systems, innovative, context-specific reforms that incorporate digital technologies are crucial. These reforms aim to attract voluntary compliance and reduce the costs associated with tax monitoring and enforcement.

In Ghana, the concept of "Compliance by Design" has been pivotal. This approach integrates compliance into the very fabric of the tax system through strategic use of technology and data. Notable implementations by the Ghana Revenue Authority (GRA) include the introduction of taxpayer identification numbers (TINs), the requirement of Tax Clearance Certificates for some social contracts and transactions, presumptive taxation, and an integrated tax administration system. These measures exemplify how tailored technological solutions can streamline tax processes and enhance compliance.

The shift towards "Compliance by Design" in Ghana illustrates a broader trend across Africa, where digitalisation and context-specific technological innovations are transforming tax administration, making systems more efficient and compliant.

### **1.1 Problem Statement**

In Africa, tax authorities continuously grapple with the herculean task of enforcing tax compliance amongst citizens, facing numerous challenges in the process. Specifically, the GRA is no stranger to these ubiquitous challenges, as it embarks on the taxing journey of enforcing compliance amongst its tax base.

#### **1.1.1 Challenges facing Tax Authorities**

Several specific challenges confront tax authorities in Africa, particularly the GRA. One of the most significant barriers is the large informal sector, which makes the tax base elusive and challenging to track. Informal businesses often operate in cash, making

transactions difficult to trace and tax (Joshi, Prichard, & Heady, 2014, [<https://www.wider.unu.edu/publication/taxing-informal-economy>]). This situation is exacerbated by low literacy levels, which further impede the understanding and compliance with complex tax codes resulting in low tax-to-GDP ratios and tax gaps in the various tax types.

Another challenge lies in corruption and weak governance structures affecting tax administration effectiveness. In a study conducted by Fjeldstad & Heggstad (2012, [<https://open.cmi.no/cmi-xmlui/handle/11250/2474787>]), it was revealed that corruption within tax administration could significantly impact revenue collection negatively. Moreover, weak institutional capacities and resource limitations impose constraints on the successful implementation of tax policies.

Adding to these challenges is the rampant tax evasion and aggressive tax planning by multinational corporations operating in Africa. This places undue pressure on domestic resource mobilisation strategies, hindering public service delivery and diluting trust in the taxation system (Cobham & Janský, 2018, [<https://journals.sagepub.com/doi/10.1177/0020852317748337>]).

### **1.1.2 The Gap in Current Measures and the Potential for Compliance by Design**

Despite these grave challenges, the current corrective measures, remedial policies, and initiatives instituted by tax authorities, including the GRA, rarely break the cycle of non-compliance. Limited access to data, rudimentary tax tracking systems, and inefficiencies in the administration of penalties are potent factors leading to this gap in tax compliance measures.

On the flip side of this conundrum, the burgeoning concept of 'Compliance by Design' has emerged as potential panacea, with enormous potential to revolutionise tax compliance in the African context. This approach offers a proactive outcome rather than the conventional reactive measures relied upon by tax authorities (OECD, 2017). [<https://www.oecd.org/tax/administration/Compliance-by-Design.pdf>]).

In essence, 'Compliance by Design' is an approach that envisages and builds compliance processes and systems upfront rather than imposing them retrospectively. By its design, this system should preempt areas of non-compliance and devise compliance mechanisms as part of the foundational structure rather than as an afterthought.

For GRA, compliance by design particularly involves initiatives such as simplification of tax procedures, deepening digitalisation, engraining tax compliance schemes in socio-economic transactions/benefits, and creating robust systems that encourage voluntary compliance. By integrating technology and leveraging data analytics, the GRA should lead in harnessing the power of compliance by design, thus tightening the noose on elusive tax evaders and widening the tax nets

In the face of the identified challenges and gaps in the current tax compliance measures, the adoption and implementation of 'compliance by design' appear to hold considerable promise for the GRA and, certainly, for other tax authorities in Africa. As digital technology advances and literacy rates improve across the continent, the immense potential of 'Compliance by Design' should in no way be underestimated in revolutionising tax compliance in Africa, heralding a new dawn in how tax authorities, including the GRA, engage their respective tax bases.

## **1.2 Purpose of Study**

### **1.2.1 Exploration of Compliance by Design within the Ghana Revenue Authority**

Compliance by design signifies designing systems in a manner that discourages non-compliance and encourages voluntary compliance through built-in systems that facilitate such behaviour. The Ghana Revenue Authority employs this model, executing systems that renders tax compliance some degree of convenience and natural for taxpayers

In recent years, the tax authority has invested heavily in the digitisation and sophistication of its tax systems as part of this strategy. This contribution to improving digital financial inclusion has enabled efficient tax collection and simpler processes for individuals and businesses. ("Digitalisation of Tax Administration in Ghana", <https://www.brookings.edu/blog/africa-in-focus/2019/09/13/digital-governance-getting-a-jump-start-on-the-future-in-ghana/>).

### **1.2.3 Significance of Transforming Tax Compliance in Africa**

Transforming tax compliance in Africa holds critical importance due to its potential to enhance economic stability and governance. Improved tax compliance systems can significantly boost domestic revenue, reducing reliance on foreign aid and enabling governments to invest more in public services and infrastructure. By modernising tax

systems, African nations can harness the benefits below of globalisation and digital advancements, ensuring a broader and more equitable tax base.

### **Economic Independence**

Enhanced compliance leads to increased revenue collection, providing governments with the financial autonomy needed to fund development projects independently. This shift is crucial for sustainable growth and reduced dependence on external financial support.

### **Governance and Transparency**

Modern tax systems promote transparency and reduce opportunities for corruption and tax evasion. This not only improves revenue collection but also fosters trust between taxpayers and government institutions, strengthening the social contract.

### **Equitable growth**

By ensuring that all economic sectors contribute fairly to the national coffers, effective tax compliance supports equitable economic growth. This includes bringing the informal sector into the formal economy, thus widening the tax net and sharing the tax burden more evenly.

### **Adaptation to Global Standards**

As international tax standards evolve, Africa must keep pace to protect its tax bases from erosion and profit shifting by multinational corporations. Adapting to these standards through compliance reforms can protect and maximize domestic revenues.

The push to revolutionize tax compliance, therefore, is not just about increasing revenue; it's about creating a more transparent, equitable, and sustainable economic future for Africa. As such, it is an essential step toward achieving broader economic goals and enhancing the quality of life for its citizens.

## **1.3 Research Questions**

This study, rising from the statement of the research problem, seeks to propose and analyse the exploration of Compliance by Design in the Ghana Revenue Authority in a quest to revolutionising Tax Compliance in Africa to corroborate that, an incorporation of Compliance by Design has optimised GRA's efforts to increase taxpayer trust and confidence while ensuring system-wide robustness, ultimately providing a sustainable

solution for bolstering revenue collection. The study particularly responds to the following questions:

- i. How has Compliance by Design been implemented by the GRA?
- ii. What influences the effectiveness of this approach in advancing tax compliance?

#### **1.4 Research Objectives**

The main objectives therefore are:

- a. To examine the current implementation of Compliance by Design in the Ghana Revenue Authority
- b. To identify the key factors influencing the effectiveness of Compliance by Design in tax compliance
- c. To assess the impact of Compliance by Design on efficiency, transparency, and accuracy in tax processes within the GRA

#### **1.5 Hypothesis Testing**

- i. ***Hypothesis 1: The successful integration of Compliance by Design will lead to increased efficiency in the GRA's tax administration.***

The notion that the integration of a Compliance by Design module can result in increased efficiency in the GRA's tax administration initiates an exploration of cause-effect relationships. For the hypothesis to be confirmed, it must be demonstrated that the implementation of Compliance by Design within GRA's operations has unequivocally led to higher efficiency levels.

Potential sources of evidence shall include an analysis of the GRA's public reports before and after adopting Compliance by Design. Statistical data reflecting changes in efficiency, such as shortened processing times, improved taxpayer compliance rates, or reduced error rates, can lend credibility to this hypothesis.

- ii. ***Hypothesis 2: Compliance by Design will significantly contribute to the modernization of the GRA's tax systems.***

The contention that Compliance by Design can make a significant contribution towards the modernisation of the GRA's tax systems can be tested via a comparative analysis. Analysing how other Revenue Authorities have transformed their tax systems following the integration of Compliance by Design can serve as an auxiliary reference point for examining its relevance to the GRA (OECD, 2017). By comparing the modernisation

rates of similar institutions that have not integrated Compliance by Design, one could assess whether its implementation accelerates the modernisation process (Hashimzade, Nigar, Michael, Dr., Hindriks, Jean. 2013). [Hashimzade, Nigar, Michael, Dr., Hindriks, Jean. (2013). Handbook of the Economics of Taxation. North-Holland.]. Indeed, if the GRA archives a higher modernisation rate post-Compliance by Design integration compared to other institutions retaining traditional tax systems, then this hypothesis can be affirmed (Makin, John. 2001).

[Makin, John. (2001). The New World of Taxes: A Roadmap to the Trump and Ryan plans. AEI Press. [<http://www.aei.org>]][www.aei.org](http://www.aei.org)

Corroborating the above hypotheses therefore could transform Ghana's tax administration field, making 'Compliance by Design' a recognised module in the country's taxation landscape. The substantiation of such hypotheses would unarguably validate Compliance by Design as a progressive and transformative module for not just the GRA but for taxation bodies globally, promoting a more efficient and modern taxation system.

In totality, the derivation of a modern taxation system via the integration of Compliance by Design looks promising. While empirical evidence seems supportive, further studies should be carried out, analyzing this integrated module's long-term effects on the GRA's tax administration.



## **2.0 Review of Related Literature**

### **2.1 Historical Perspectives on Tax Compliance in Africa**

Tax compliance in Africa has evolved from pre-colonial voluntary contributions based on societal roles to modern-day challenges shaped by colonial legacies and governance issues. Scholars like Fjeldstad & Moore (2008) highlight the persistent struggle with tax compliance exacerbated by factors like corruption, complex tax systems, and lack of public trust. Understanding this historical context is crucial for developing effective tax systems that are fair, context-specific, and promote voluntary compliance.

### **2.2 Innovative Tax Compliance Strategies Globally**

Globally, tax compliance strategies have incorporated both traditional enforcement methods and modern technological solutions such as:

- **Quantitative and Behavioural Approaches:** Advanced data analytics are used to improve compliance, with entities like the IRS utilizing robust systems to predict non-compliance behaviors (Philips, 2018; US Internal Revenue Service, 2019).
- **Direct Intervention:** Audits and targeted enforcement remain fundamental, with risk-based approaches being implemented by HM Revenue and Customs (European Commission, 2018).
- **Digital Solutions:** Online platforms like Brazil's e-CAC enhance voluntary compliance, while technologies like blockchain offer new avenues for compliance and auditing (OECD, 2019; Spain, 2020).

### **2.3 Compliance by Design: Conceptual Framework**

Compliance by Design (CbD) integrates regulatory requirements directly into the design phase of business processes to ensure ongoing compliance and minimize risks. Originating from Privacy by Design principles, CbD involves several stages from regulatory input to operational implementation and continuous regulatory assurance. Despite its potential to streamline compliance, challenges such as resource intensity and balancing regulatory demands with customer needs persist (Hamann, Hsieh, Liu, & Xu, 2021).

### **2.4 Technological Advancements in Modern Tax Administration**

Technological advancements have transformed tax administration, introducing automation, e-governance, and AI to enhance efficiency and taxpayer services.

Innovations like automatic data-mining and AI-driven predictive analytics have revolutionized audit processes and compliance strategies, though they also introduce challenges such as the need for enhanced cybersecurity (Jensen & Brock, 2020).

This literature ultimately emphasises a significant evolution in tax compliance strategies, from historical practices to modern digital approaches. The integration of Compliance by Design and technological innovations represents a forward-thinking framework to address the complexities of modern tax administration effectively. These advancements not only simplify compliance and enhance efficiency but also ensure that systems are adaptable to ongoing regulatory changes

### **3.0 Methodology**

#### **3.1 Research Design**

This study employed a mixed-methods research design, integrating both quantitative and qualitative approaches to comprehensively analyze the impact of Compliance by Design on the operations of the Ghana Revenue Authority (GRA). This methodology was pivotal in examining the multifaceted effects of CbD, combining statistical data with detailed contextual insights (Trochim, 2006; de Vaus, 2001).

#### **3.2 Data Collection**

Data were collected through in-depth interviews with key stakeholders, including GRA officials, policymakers, and industry experts. These interviews provided critical insights into the development and operational challenges of CbD in Ghana. Participants included notable figures such as the First Deputy Governor of the Bank of Ghana who serves as technical person on the Board of GRA, the Commissioner for Domestic Taxes, and various tax practitioners, whose perspectives were invaluable to this paper.

##### **3.2.1 Conducting Interviews**

The interviews were structured with open-ended questions to delve deep into the respondents' perceptions of CbD, its implementation strategies, and the anticipated challenges. This method facilitated a rich exploration of the nuances in implementing CbD within Ghana's tax system. A comprehensive questionnaire was therefore distributed to 2885 individuals, with 2500 responding, indicating strong engagement on compliance by design themes.

##### **3.2.2 Data Analysis**

The quantitative data collected were analyzed using Microsoft excel and Python to ensure rigorous statistical analysis and to handle the complex datasets effectively. This analysis included the application of data analytics techniques to discern patterns and trends that inform the efficacy and impact of CbD on tax compliance rates.

##### **Analysis Techniques included:**

- a. Correlation Analysis:** Heatmap visualizations of data relationships offered invaluable insights for policy decisions, illustrating strong correlations (Urdu, 2010).

- b. Regression Analysis:** Linear models predicted future compliance rates, crucial for proactive policy formulation (Gunavathi & Premalatha, 2015).
- c. Trend Visualisation:** Plotting filing and payment rates over time highlighted longitudinal trends, essential for strategic planning (Chua, 2020).

### **3.3 Results**

The analysis revealed significant findings on the effectiveness of CbD in enhancing tax compliance and streamlining tax administration processes. Statistical results underscored the benefits and challenges of CbD, with Python providing the computational power needed to manage, analyze, and interpret large datasets effectively.

### **3.4 Conclusion**

The employed methodology enabled a detailed examination of CbD's transformative potential on Ghana's tax administration. The insights gained from this research offer a foundational understanding that can guide further implementation strategies and adjustments to optimize CbD's integration into tax systems, not just in Ghana but in similar contexts globally.

## **4.0 Results/Findings**

This section analyzes the GRA's implementation of the Compliance by Design approach, designed to enhance tax compliance effectively. This innovative strategy integrates compliance requirements into system architecture, making compliance the default condition and reducing individual taxpayers' burden. Through targeted analysis, this section addresses the questions below and later, the hypotheses:

1. How has compliance by Design been implemented by the GRA?
2. What factors influence the effectiveness of this strategy in advancing tax compliance?

The implementation of Compliance by Design at the GRA exemplifies a proactive effort to ensure tax compliance through system design, thereby automatically fostering compliant behaviours. Factors influencing the effectiveness of this strategy include system design, taxpayer education, and GRA's enforcement and monitoring efforts, alongside institutional capacity, tax policies, and the socio-economic environment.

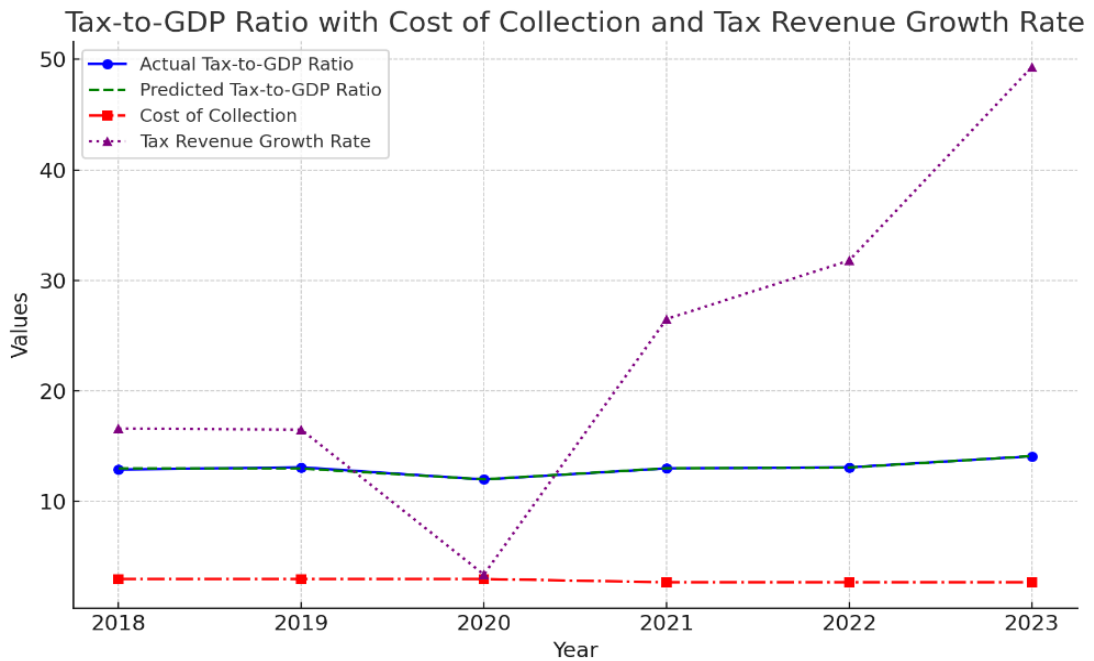
Empirical data reveals that these factors not only drive procedural dynamics aimed at optimizing compliance and minimizing costs but also induce significant behavioural shifts among taxpayers towards voluntary compliance. The effectiveness of the strategy is further evidenced by improved revenue outcomes and a reduction in tax evasion, highlighting the operational success of Compliance by Design and its broader impact on regulatory effectiveness and policy.

### **4.1 Presentation of Data - Appendix**

#### **4.1.1 Enhanced Efficiency and Revenue Growth**

The implementation of Compliance by Design (CbD) has significantly transformed tax administration by embedding regulatory requirements directly into system designs, thereby fostering a more compliant and efficient tax environment. As evident from Figure 4.1, there has been a notable reduction in the cost of tax collection, decreasing from 3% to 2.7% of total revenue from 2018 to 2023. This 10% improvement in efficiency reflects the effectiveness of streamlined tax processes and enhanced compliance mechanisms integral to CbD.

Simultaneously, the tax revenue growth rate has impressively surged from 16.6% in 2018 to 49.35% in 2023, accompanied by an increase in the tax-to-GDP ratio from 12.9% to 14.1%. These improvements underscore the success of CbD in expanding the tax base and aligning it more closely with economic growth, with tax buoyancy maintaining a steady average of 1.07. Such metrics indicate that CbD not only enhances administrative efficiency but also contributes substantially to fiscal sustainability.



**Figure: 4.1: Tax-to-GDP Ratio with Cost of Collection and Tax Revenue Growth Rate**

(Source: TARFS, GRA)

#### 4.1.1.1 Regression Model

$$\text{Tax-to-GDP Ratio} = \beta_0 + \beta_1 \times \text{TaxRev.Growth Rate} + \beta_2 \times \text{Cost of Collection} + \beta_3 \times \text{Tax Buoyancy} + \epsilon$$

Where:

- $\beta_0, \beta_1, \beta_2, \beta_3$  are coefficients to be determined through regression analysis.
- $\epsilon$  is the error term

#### Regression Analysis (Ordinary Least Square Regression Results)

```

=====
Dep. Variable:  Tax-to-GDP Ratio  R-squared:          0.990
Model:          OLS  Adj. R-squared:        0.975
Method:        Least Squares  F-statistic:       67.19
Date:          Mon, 29 Apr 2024  Prob (F-statistic):    0.0147
Time:          01:37:18  Log-Likelihood:     8.3198
No. Observations:  6  AIC:                -8.640
Df Residuals:     2  BIC:                -9.473
Df Model:         3
Covariance Type:  nonrobust
=====

```

```

=====
              coef  std err      t  P>|t|  [0.025  0.975]
-----
const          4.8381   1.568    3.086  0.091  -1.907  11.583
Tax Rev. Growth Rate  0.0530   0.006    9.486  0.011   0.029  0.077
Cost of collection   2.2958   0.507    4.526  0.046   0.113  4.478
Tax Buoyancy        0.3553   0.143    2.477  0.132  -0.262  0.973
=====

```

```

=====
Omnibus:          nan  Durbin-Watson:        2.679
Prob(Omnibus):    nan  Jarque-Bera (JB):      0.098
Skew:             0.297  Prob(JB):              0.952
Kurtosis:         2.802  Cond. No.              1.08e+03
=====

```

This model summary helps us understand the strength and reliability of the findings regarding the impact of various factors on the Tax-to-GDP Ratio. The high R-squared value means our model explains most of the variability in the Tax-to-GDP Ratio very well. Each predictor's significance is supported by low p-values, indicating that changes in these factors are likely to result in significant changes in the tax ratio. This analysis confirms the effectiveness of Compliance by Design in improving tax administration efficiency.

#### **4.1.2 Broadening Compliance through Legislative Support**

Table 4.1 further highlights the impact of legislative measures on tax compliance rates. Following the enactment of Ghana's Revenue Administrative Act (Act 915) in 2017, there has been a significant improvement in compliance rates for major tax types including Corporate Income Tax (CIT), Personal Income Tax (PAYE), Value Added Tax (VAT), and Self-Employment (S/E) tax. Compliance rates have grown steadily from 58.01% in 2017 to 71.14% in 2023, maintaining an average of 70.25%. The provisions of the Act, which mandate the acquisition of tax clearance certificates and tax identification numbers as prerequisites for accessing certain social contracts, have evidently played a pivotal role in bolstering compliance.



**Table 4.1 Compliance Statistics**

<b>Year</b>	<b>Total Registration PAYE</b>	<b>Total Registration CIT</b>	<b>Total Registration S/E</b>	<b>Total Registration VAT</b>	<b>Total Payment PAYE</b>	<b>Total Payment CIT</b>	<b>Total Payment S/E</b>	<b>Total Payment VAT</b>	<b>Compliance Rate (%)</b>
2014	23035	25708	42702	33837	66.19	25.91	32.27	50.04	43.79
2015	24712	27810	42108	35603	64.24	25.38	31.74	57.64	43.44
2016	27426	29301	43415	36813	66.71	34.04	38.27	56.1	46.19
2017	29305	32625	45391	37665	69.9	33.45	42.38	65.12	49.39
2018	32739	37602	47949	38841	62.1846	40.2173	50.4084	67.732	58.01
2019	35228	41168	52474	40543	73.5	43.7883	66.12	66.82	69.42
2020	37918	44189	52691	42288	76.23	47.48	63.12	65.48	71.62
2021	42924	47505	58953	43664	82.3	48.14	46.11	63.85	68.56
2022	45585	53206	68365	48939	79.69	31.09	43.13	64.2	64.29
2023	49299	54151	68600	59204	77.61	48.12	53.36	75.27	71.14

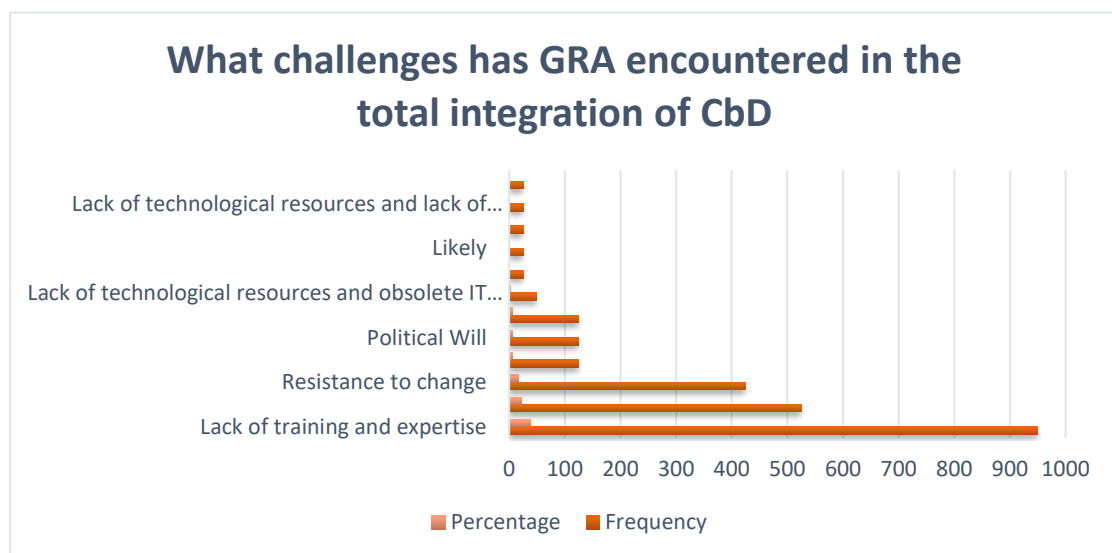
Source: TARFS, GRA

### 4.1.3 Implications for Policy and Practice

The integration of CbD, supported by robust legislative frameworks like the Revenue Administrative Act 915, minimizes non-compliance and simplifies the taxation process, thus enhancing taxpayer trust and satisfaction. This approach not only reduces administrative costs but also establishes a more productive tax environment. Such a model serves as a beacon for other nations within the continent, illustrating how proactive compliance measures can transform tax administration, boosting both efficiency and effectiveness. The success of CbD in Ghana could inspire similar initiatives across other jurisdictions, aiming to harmonize tax compliance with technological advancements and legislative support.

### 4.2 Survey Results

Responses from the 2500 respondents suggest that, integrating an online filing/payment system has significantly enhanced transparency and accuracy in tax administration. A comprehensive survey shows that 84% of respondents endorse the effectiveness of GRA's CbD approach, affirming its success in modernizing tax practices as presented in the figures below. Furthermore, 79% of respondents confirm that CbD has improved compliance, and 81% agree on its successful integration into GRA's framework.

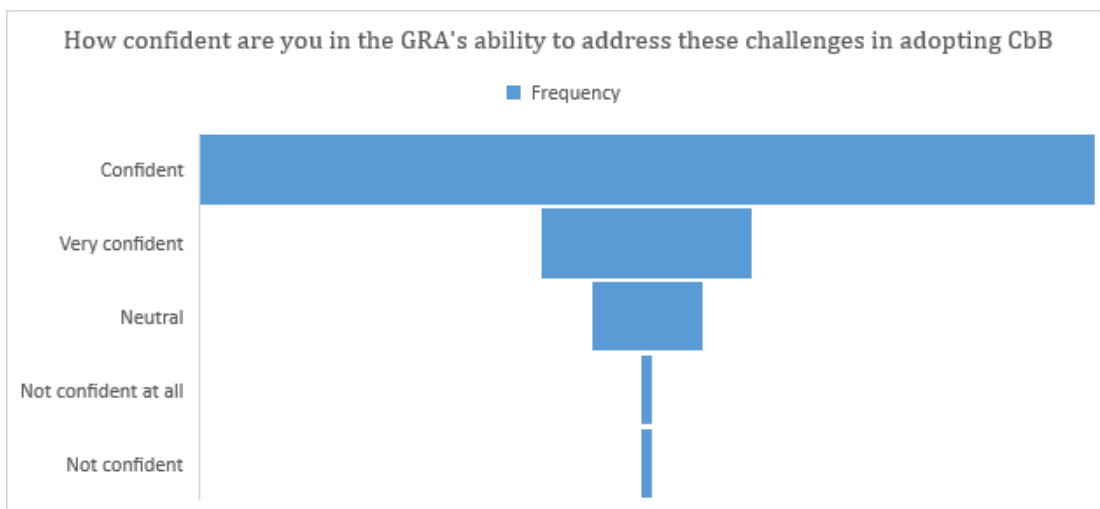


**Figure 4.2 Challenges encountered in embracing CbD**

(Source: Field Survey, April 2024)

Despite these advancements, challenges such as political will, resistance to change, and training deficiencies persist. However, the overall response remains optimistic about overcoming these hurdles and continuing to refine the tax system. This positive

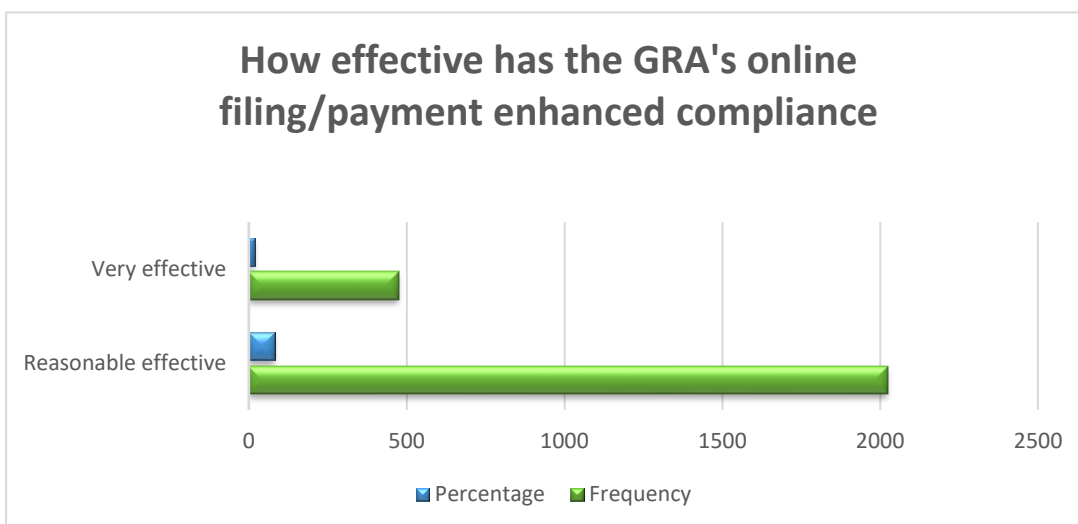
reception not only underscores the transformative impact of CbD on GRA but also sets a precedent for other revenue authorities globally.



**Figure 4.3: Confidence in addressing CbD challenges**

((Source: Field Survey, April 2024))

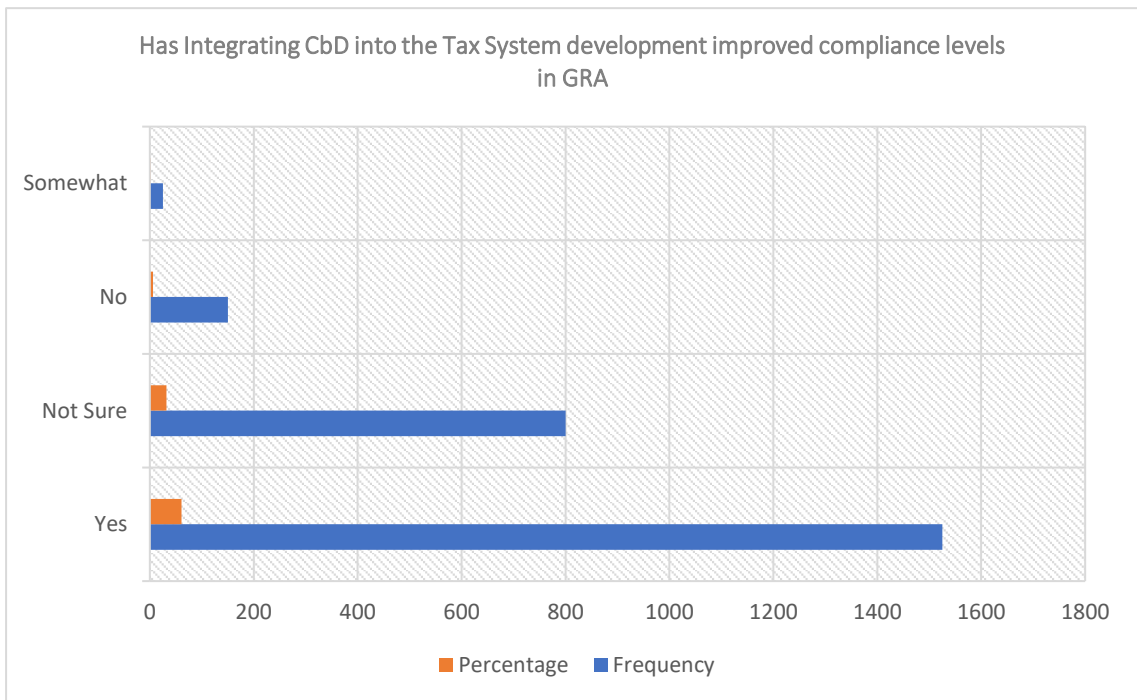
The digitalized solutions have been viewed as a promising solution for improving the tax collection methods (Sohel Azad, 2015). In this vein, 81% of the respondents declared the online filing/payment systems as reasonably effective, while 19% marked it as very effective as shown in figure 4.2. This underscores the effectiveness of CbD in transforming the digital tax landscape, thereby enhancing taxpayer compliance and engagement.



**Figure 4.4: Effectiveness of online filing/paying**

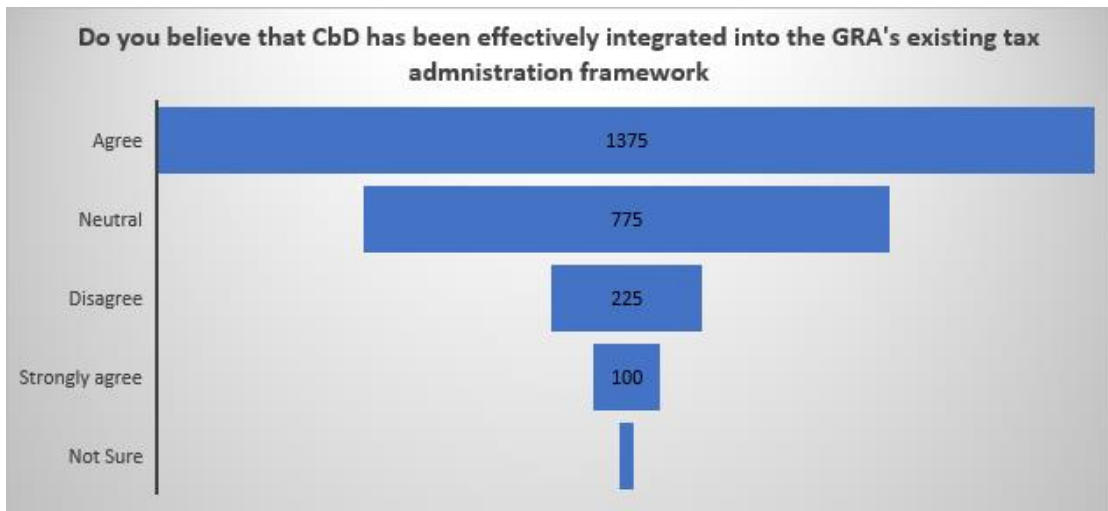
((Source: Field Survey, April 2024))

Tax compliance fundamentally hinges upon taxpayers' convenience, comprehensibility of tax laws, and trust in the tax administration (Alm and McClelland, 2012 [4]). Here, 61% of respondents intimated that integrating CbD into the tax system has improved compliance levels within the GRA. This signifies that more GRA taxpayers have found it easier to comply with tax norms since the implementation of CbD, strengthening the government's revenue base.



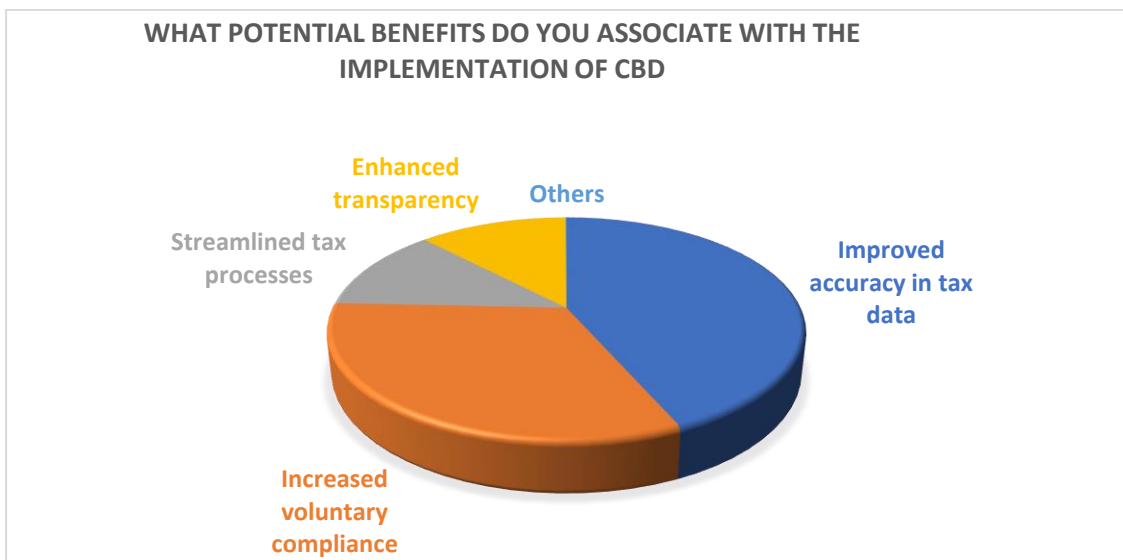
**Figure 4.5: How respondents view CbD integrations has increased compliance levels**

The integration process into the GRA's existing tax administration framework was another crucial aspect worth examining. In this context, 55% of respondents agreed that CbD has been effectively integrated into GRA's existing tax administration framework, with 4% firmly supporting this view. The remaining 31% were neutral or unsure. This could suggest that the GRA has been significantly successful in this integration process, facilitating a more streamlined and structured tax system (Slemrod, 2016).



**Figure 4.6: Affirmation of effective integration of Cbd**

((Source: Field Survey, April 2024)



**Figure 4.7: Potential benefits associated with Cbd**

### 4.3 Outputs of Research Questions

#### 4.3.1 Research Question 1: How has compliance by Design been implemented by the GRA?

The implementation of Cbd by the GRA represents a strategic move to embed compliance within the tax system, thereby simplifying the compliance process for taxpayers. This strategy has significantly boosted filing compliance to 67.84%, demonstrating its effectiveness in making tax filing easier. However, payment compliance has lagged behind, recorded at 59.0%. This gap between filing and payment

rates suggests that while taxpayers are engaging with the system to file, they are not doing so at the same rate when it comes to making payments. The difference highlights the need for further enhancements in how payments are processed and tracked. Technological improvements have successfully increased filing compliance, but similar innovations are needed for payment systems to ensure both aspects of tax compliance are equally facilitated. Overall, while CbD has improved aspects of the tax system, focusing equally on both filing and payment processes is essential for its full effectiveness.

#### **4.3.2 Research Question 2: What factors influence the effectiveness of this strategy in advancing tax compliance?**

This study explores the impact of technological advancements on tax compliance, specifically looking at how digitalization of tax processes—filing, payment, and registration—affects compliance rates. The analysis uses statistical tools like correlation and regression to examine these relationships. Results show a positive correlation between technologically simplified filing procedures and improved compliance, highlighting technology's crucial role in enhancing the efficiency of the tax system. The regression analysis further indicates that technological enhancements in filing significantly increase compliance rates, emphasizing the importance of digital access, streamlined procedures, and improved user experiences. The ease of digital tax processes also helps in reducing errors and fraud, thereby advancing compliance. These findings suggest that online CbD initiatives that make filing straightforward are directly beneficial in boosting compliance rates.

#### **4.4. Further Observations**

##### **4.4.1 Overview of implemented strategies – Online Services**

At first glance, it's clear that the GRA has significantly improved its administrative functions through technology, notably with the introduction of iTaPS and the Ghana.GOV platform. These tools have streamlined the filing and payment processes, enhancing ease of business and boosting tax compliance as detailed in table 1. Additionally, extending tax payment services to commercial banks has decentralized tax collection, greatly improving convenience and contributing to a tax-to-GDP ratio increase from 13.1 in 2022 to 14.1 in 2023.

The GRA has also digitized applications for tax reliefs and clearances, enhancing taxpayer engagement and compliance. However, challenges persist, including difficulties for those unfamiliar with technology and vulnerabilities like receipt forgery and money laundering in bank payments. These issues underline the need for ongoing adjustments in the GRA's strategies to ensure effective compliance and address potential drawbacks.

#### **4.4.2 Other Mandates and Implications for Taxpayers Compliance under the Ghana Revenue Administration Act, 2016 (Act 915)**

##### **4.4.2.1 Requirements of Taxpayer Identification Number (TIN)**

It is established also that in recent years, the Ghana Revenue Authority has made significant changes to align its operations with international tax practices. One of these profound modifications is encapsulated in the First Schedule of the Revenue Administration Act, 2016 Act 915). This adjustment mandates individuals and enterprises to register with the GRA or display evidence of tax payments before specific public services can be granted or provided.

Among the key services demanding a Taxpayer registration, i.e. obtaining Tax Identification Number (TIN) include the Immigration and Passport Service, the Driver and Vehicle Licensing Authority, the Registrar General's Department, Withholding Tax-Persons, banks, insurance companies, the Controller and Accountant General's Department, manufacturing businesses among others. The introduction of this tax requirement has had profound implications on civil and commercial activities. This initiative fosters fiscal discipline, promotes a culture of compliance, and propels Ghana closer to achieving a self-sustaining economy. Quantitatively, it has increased the number of registered taxpayers tremendously in the below table

##### **4.4.2.2 Requirement of a Tax Clearance Certificate**

The GRA utilizes Tax Clearance Certificates as a critical compliance tool across various sectors. This certificate is mandatory for activities such as large-scale importation, customs clearance, and licensing under the Customs Act, 2015, embedding compliance within essential business and trade operations.

***Key applications include:***

1. *Importation:* Importers must secure a Tax Clearance Certificate to ensure tax law compliance during goods importation.
2. *Customs and Licensing:* The certificate streamlines customs clearing and is essential for obtaining licenses under the Customs Act, enhancing transparency in customs operations.
3. *Real Estate:* The Lands Commission requires these certificates for property transactions, promoting legal ownership and compliance.
4. *Public Procurement:* Government procurement processes mandate a certificate to reinforce regulatory adherence.
5. *Professional Licensing:* Various professional bodies demand the certificate for license renewals, integrating tax compliance into professional standards.
6. *Vehicle Licensing:* The Driver and Vehicle Licensing Authority requires proof of emission tax payments for vehicle road-worthiness certifications, linking tax compliance to vehicle regulation.

In essence, the widespread requirement for Tax Clearance Certificates exemplifies Ghana's commitment to 'compliance by design,' effectively fostering compliance and deterring legal and economic violations across multiple sectors.

#### **4.5 Factors Influencing the Effectiveness of Compliance by Design Implementation the GRA**

Several factors contribute to the effectiveness of Compliance by Design's implementation, including the technological infrastructure and adaptability to existing tax systems as well as stakeholder collaboration as outlined below.

##### **4.5.1 Technological Infrastructure**

According to the GRA, technological infrastructure plays a significant role in bolstering the implementation of CbD in the GRA. Initiatives such as the Total Revenue Integrated Processing Systems (trips<sup>TM</sup>), Integrated Customs Management System (ICUMS), Ghana Integrated Tax Management and Information System (GITMIS) have been instrumental in promoting adherence to tax regulations (GRA, 2020). Technological advancements like this facilitate easy monitoring, tracing and real-time tax calculation, notably enhancing the efficiency of CbD. However, challenges stemming from frequent



technological disruptions and a lack of requisite IT expertise often undermine the overall efficiency.

#### **4.5.2 Adaptability to Existing Tax Systems:**

Seamless integration into existing tax systems is critical for the successful deployment of CbD. The GRA has made strides over the years to streamline its tax systems and create an environment conducive for a smooth transition to CbD. However, resistance from tax administrators, coupled with the complexity of existing tax systems, prove to be a barrier (Richardson, 2006).

#### **4.5.3 Stakeholder Collaboration:**

CbD's success greatly depends on stakeholder collaboration. It is important for state and non-state actors to work in concert to champion the new compliance initiative. Lack of stakeholder collaboration, including resistance from the public, can hinder the effectiveness of implementing CbD. Garnering public support through effective communication about the benefits of CbD can aid in its smooth integration (Alm, Martinez-Vazquez, & McClellan, 2016) [4].

In conclusion, the presented factors – technological infrastructure, adaptability, and stakeholder collaboration – form the foundation on which the successful implementation of CbD in the GRA rests. Addressing these hurdles demands concerted effort amongst all stakeholders towards achieving a fully implemented and efficient Compliance by Design system in the Ghana Revenue Authority.

### **4.6 The Impact of Compliance by Design on Efficiency, Transparency, and Accuracy**

#### **4.6.1 Efficiency Improvements**

The adoption of CbD has transformed and automated tax processes within the GRA, leading to significant efficiency gains. By digitalizing operations, the GRA has minimized human errors and expedited services such as taxpayer registration and tax refunds. This transformation has reduced administrative burdens and optimized tax collection.

#### **4.6.2 Transparency and Accuracy**

CbD principles have significantly enhanced the transparency of the GRA's operations. The clear, automated procedures reduce opportunities for corruption and malpractice, improving the GRA's public image and boosting taxpayer confidence. Additionally, the accuracy of tax processes has improved, with systematic programming ensuring precise tax law application and reducing errors in tax computations. Automated systems also enhance the tracking of tax payments, decreasing the likelihood of evasion.

#### **4.6.3 Strategic Impact and Future Outlook**

The integration of CbD into the GRA's functions not only improves day-to-day operations but also sets a benchmark for tax administration in Africa. The shift towards an automated, transparent tax system underscores the potential of technology to revolutionize tax administration, paving the way for future economic advancements in Ghana and setting a precedent for other nations.

*Therefore*, the pioneering implementation of CbD by the GRA marks a significant advancement in tax administration, highlighting the critical role of technology in enhancing efficiency, transparency, and accuracy. This shift towards digitalization is indicative of a global trend and represents a substantial forward leap for the GRA and its stakeholders.

### **4.7 Further Exploring the Impact of CbD on GRA's Tax Administration through the Hypotheses**

As tax administration continues to evolve, GRA has focused on integrating Compliance by Design (into its systems, hypothesizing that it could significantly improve administrative efficiency and modernization.

#### **4.7.1 Hypothesis Testing**

- Hypothesis 1 (H<sub>1</sub>): Proposed that CbD would accelerate the efficiency of GRA's tax administration. Testing using Chi-Square yielded a chi-square statistic of 1898.87 and a p-value of 0.0, strongly supporting the hypothesis by indicating a significant increase in efficiency with the integration of CbD.
- Hypothesis 2 (H<sub>2</sub>): Asserted that CbD would enhance the modernization of GRA's tax systems. The test results showed a chi-square statistic of 3013.26 and a p-value of 0.0, confirming a significant relationship between CbD implementation and modernization efforts.

The findings advocate strongly for the adoption of CbD in revamping tax administration in Ghana. By embedding compliance requirements directly within system designs, CbD creates a self-regulating environment that boosts both efficiency and modernization of tax systems. Future research should explore additional benefits of CbD, potentially in cost-effectiveness and sustainability across various administrative functions.

## **5.0 Conclusion and Recommendations**

### **5.1 Tax Compliance and Economic Efficiency**

Tax compliance critically influences the efficiency of revenue collection, particularly in developing countries. The GRA's adoption of Compliance by Design has facilitated a profound transformation in tax compliance, integrating technology and regulatory frameworks to enhance efficiency and compliance levels (KPMG, 2020).

### **5.2 Effective Integration of CbD**

The GRA has effectively embedded compliance requirements into its operational processes, automating essential procedures which minimize manual errors and streamline tax collection efforts. This strategic integration not only enhances compliance but also improves overall operational efficiency, setting a model for other tax authorities in Africa.

### **5.3 Legislative Impact: Revenue Administrative Act, 2016 (Act 915)**

Act 915 has been pivotal in enhancing compliance among taxpayers by providing clarity and predictability in tax obligations (Tax Justice Network, 2019). However, the application of the Tax Clearance Certificate (TCC) under Act 915 reveals inconsistencies that could be addressed to further enhance compliance efficiency. The broad applicability of the Tax Identification Number (TIN) compared to the more restrictive use of the TCC suggests an area for legislative refinement to improve the system's effectiveness and fairness.

### **5.4 Strategic Recommendations**

- a. **Tax Education and Awareness:** Increasing tax education initiatives can clarify tax obligations and dispel misconceptions, fostering a culture of tax compliance among the citizenry (OECD, 2021).
- b. **Enhanced Monitoring and Enforcement:** Strengthening the GRA's capabilities to monitor and enforce tax laws will deter evasion and fraud, crucial for sustaining compliance improvements.
- c. **Technological Enhancements:** Ongoing technological upgrades, such as automating tax filing and payment processes, are essential for simplifying compliance and encouraging voluntary adherence by making compliance less burdensome.

- d. Legislative Refinements: Revising legislation to enhance the functionality and applicability of the TCC and evolve the TIN can significantly bolster tax compliance (Otu et al., 2020).
- e. Feedback Mechanisms: Implementing structured feedback mechanisms can improve transparency and accountability between taxpayers and the GRA, further enhancing compliance.

## **5.5 Conclusion**

Achieving optimal tax compliance is crucial for Ghana's economic sustainability. The successful integration of Compliance by Design within GRA's systems has shown significant promise in enhancing compliance. To fully realize its potential, however, it requires a multi-faceted approach that includes continuous awareness, advanced technology, legislative refinements, and robust monitoring. Transforming tax compliance in Africa demands consistent and comprehensive interventions that address the entire fiscal landscape, aiming for a resilient and efficient tax system that can serve as a benchmark for other nations.

## References

- Cobham, A., & Janský, P. (2018). Global tax databases: A comparison of their suitability for quantifying tax evasion and avoidance. *Public Administration*, 96(2), 368-383. <https://doi.org/10.1177/0020852317748337>
- Fjeldstad, O.-H., & Heggstad, K. (2012). Building taxpayer culture in Mozambique, Tanzania and Zambia: Achievements, challenges and policy recommendations. Chr. Michelsen Institute (CMI Report). <https://open.cmi.no/cmi-xmlui/handle/11250/2474787>
- Joshi, A., Prichard, W., & Heady, C. (2014). Taxing the informal economy: Challenges, possibilities and remaining questions. UNU-WIDER Working Paper. <https://www.wider.unu.edu/publication/taxing-informal-economy>
- OECD. (2017). Compliance by Design. Organisation for Economic Co-operation and Development. <https://www.oecd.org/tax/administration/Compliance-by-Design.pdf>

## Appendix

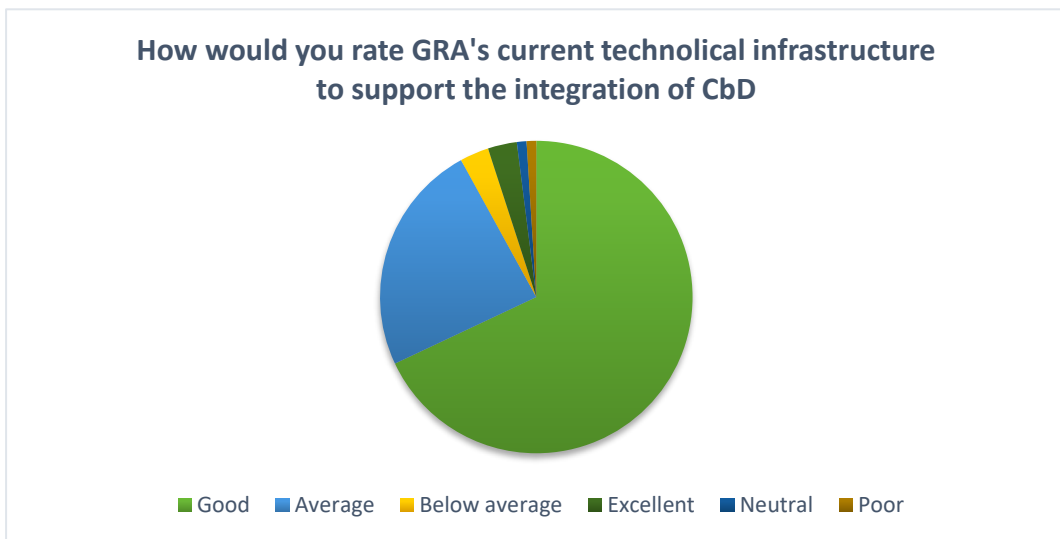


Figure 7.1 Affirmation of GRA's current technology infrastructure  
(Source: Field Survey, April 2024)

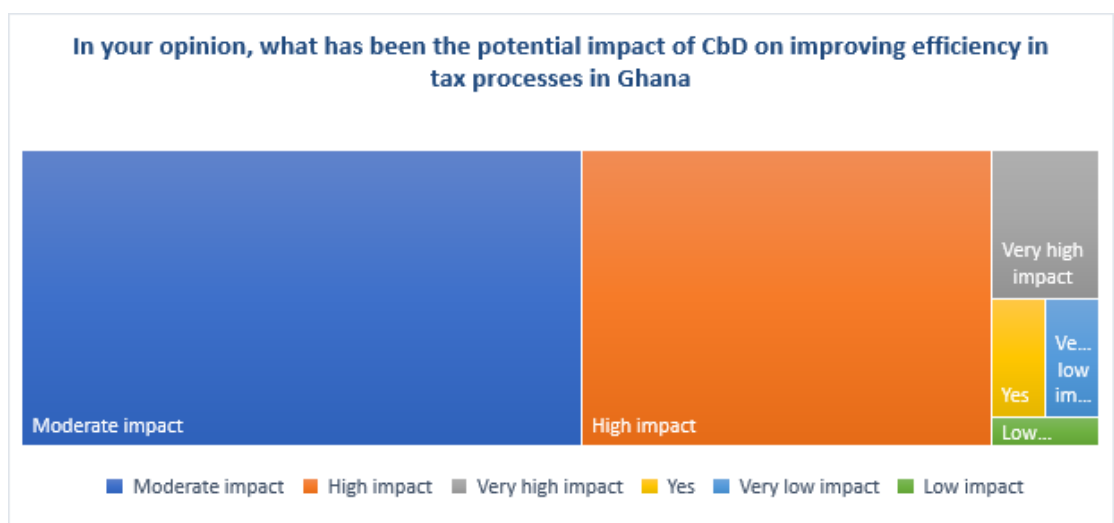


Figure 7.2 Potential impact of Cbd (Source: Field Survey, April 2024)

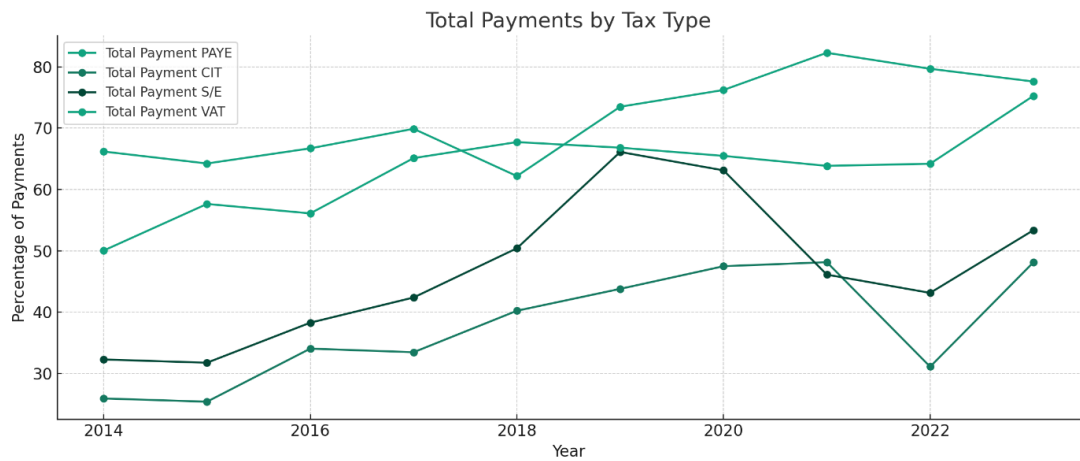
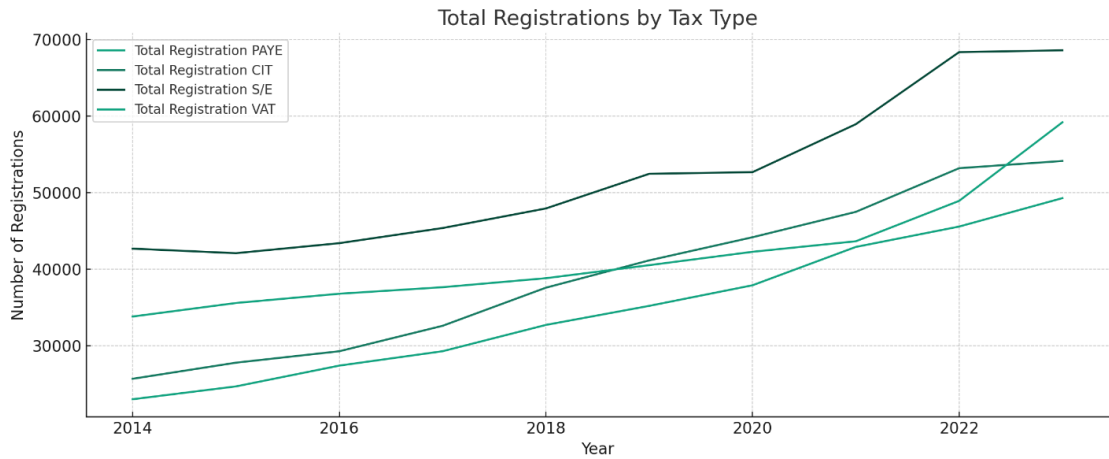


Figure 7.3 (Total registration and Payments by Tax Stamp)

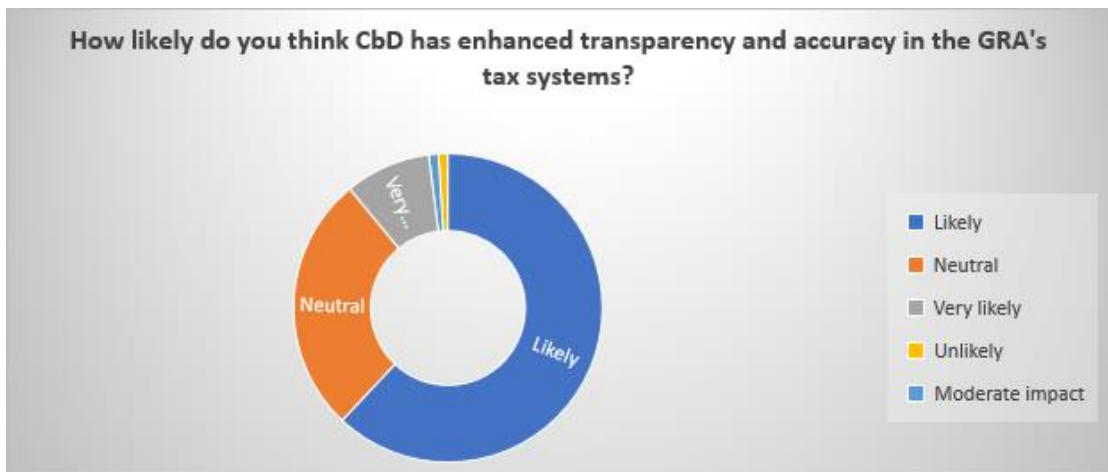
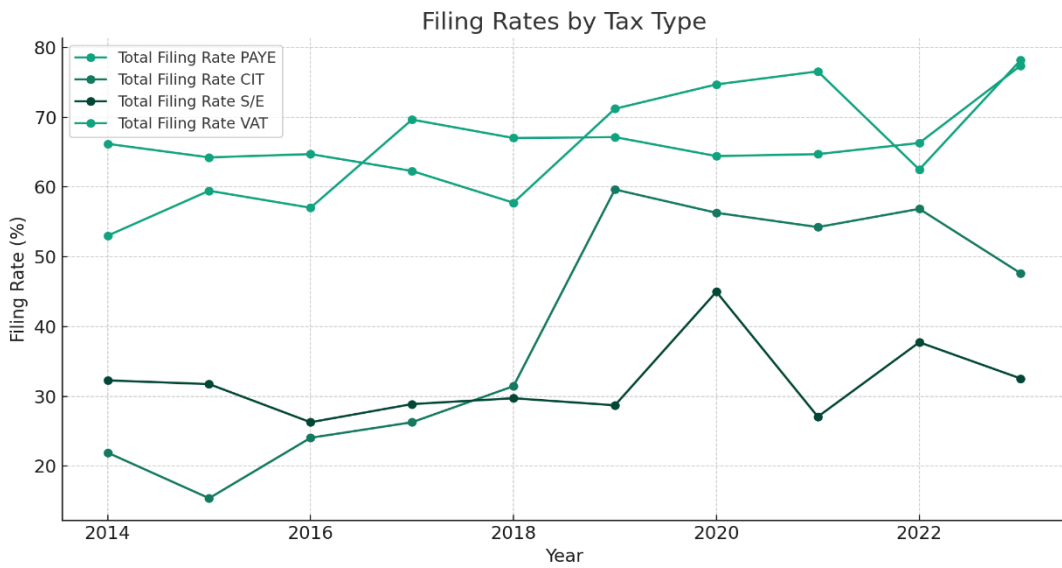
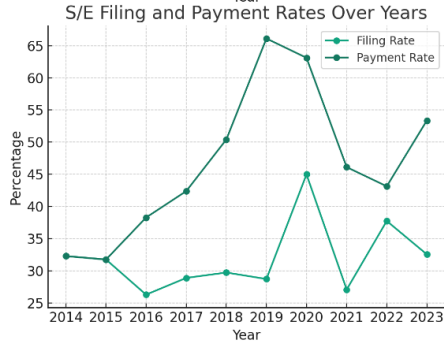
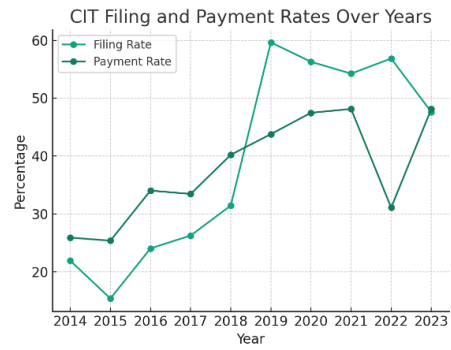
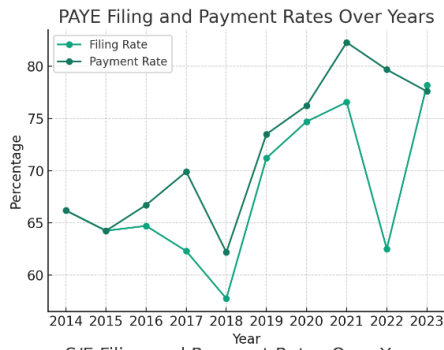
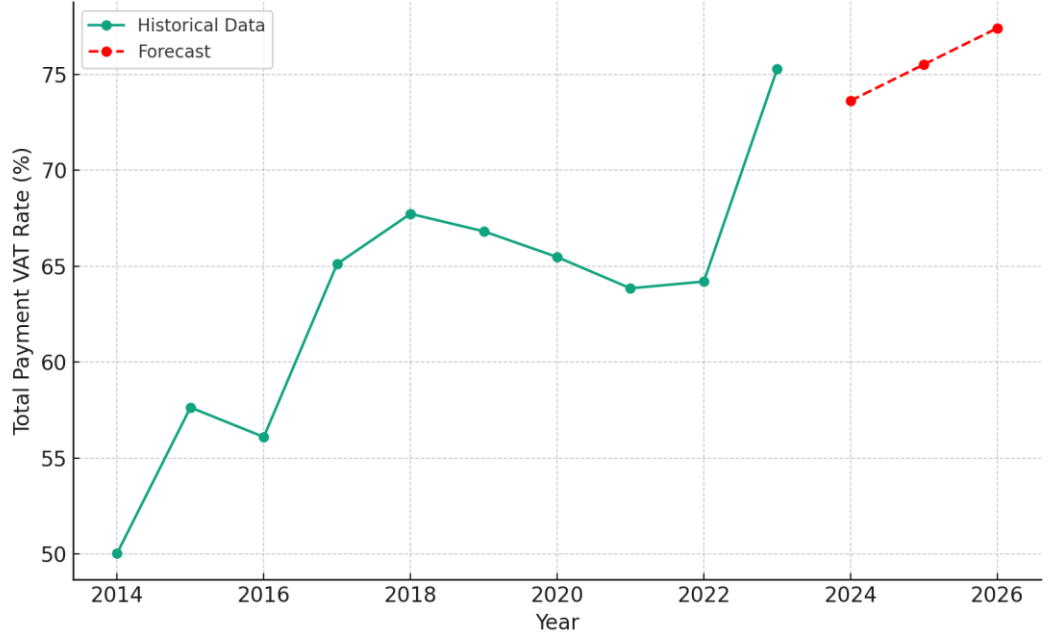


Figure 7.4 (Cbd's enhancement of transparency and Accuracy Survey Results)

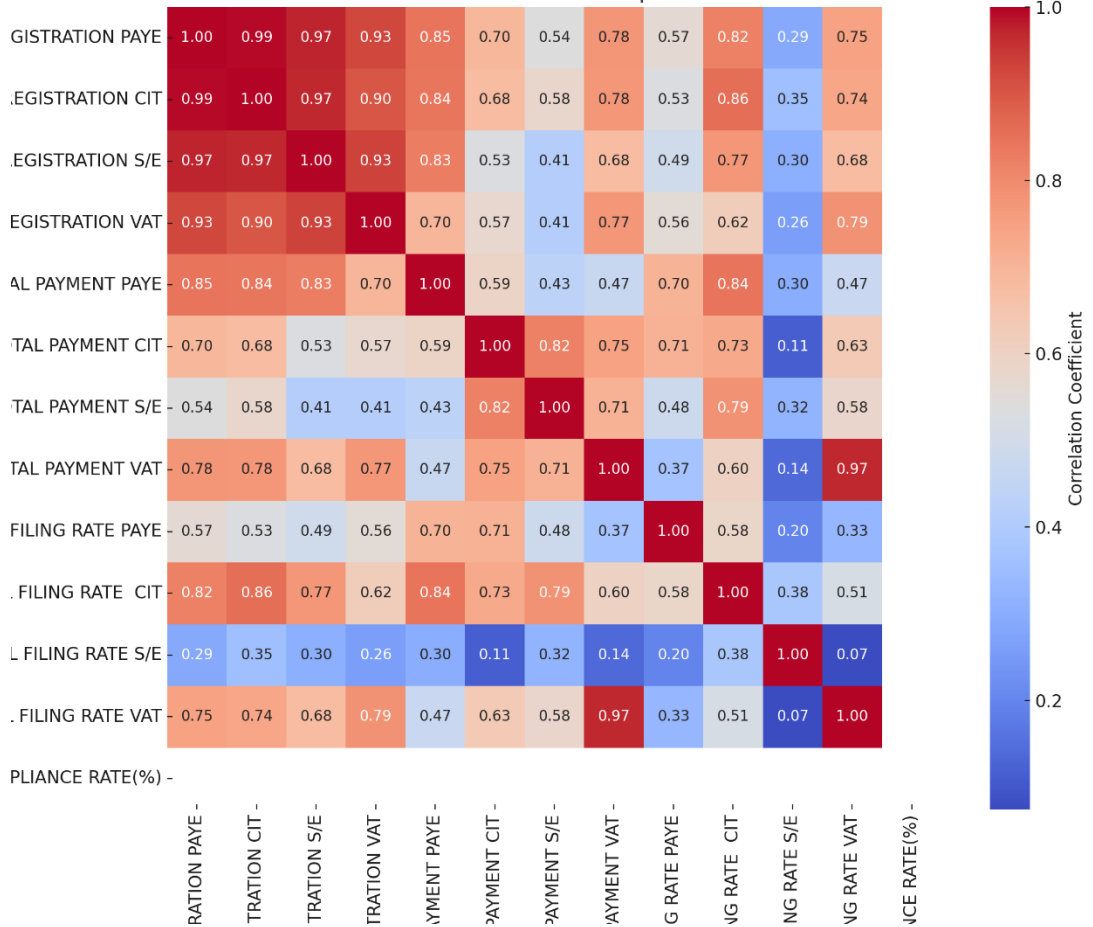




### Forecast of Total Payment VAT Rates



### Correlation Matrix of Tax Compliance Metrics



Forecast of Total Payment VAT Rates

