Linkage between Crude Oil, Gold, INR-USD Reference Rate and Sensex amidst Covid-19 Pandemic: A Cointegration and Causality Analysis

James Daniel Chindengwike¹

ARTICLE INFORMATION	ABSTRACT
<i>Key words:</i> Tax Digitization Tax payers Voluntary Compliance Medium sized tax payers Tanzania	The objective of the study is to assess the influence of tax digitalization on taxpayers' voluntary compliance among medium-sized taxpayers in Tanzania by employing the relevant economic theories guiding the study. The study employs a mixed research approach, survey research design, which was conducted through interviews with 150 taxpayers in Tanzania. The analysis of the logistic regression model will involve a Cronbach's coefficient test for reliability of the scale and a comprehensive literature review for validity of the content. The results of the research reveal that voluntary tax compliance is directly affected by tax digitalization. So, the government must reinforce the examination of tax payments, tax declarations, and tax repayments of companies. Moreover,

1. Introduction

Tax compliance is stagnant a problematic in many nations, as seen by low tax compliance levels and tax ratios (Misra, 2019). Tax compliance is an important gauge of tax responses, and it is vital to understand tax compliance behavior in that country before working on normative tax design. The economic deterrent theory of taxpayer compliance behavior has to be re-examined in compliance research (Das-Gupta, 2014). Tax digitization, along with widespread technological adoption, has been a critical component of tax management transformation in many emerging nations (Bellon et al., 2022); hence, the Theory of Economic Growth in the Digital Economy will be cited. However, due to the digital disruption of the fourth manufacturing rebellion, technology has become an inseparable tool across all economic sectors; thus, tax digitalization emerges as one of the economic determinants of voluntarv tax compliance in the current digital economy (Gangodawilage, Madurapperuma, & Aluthge, 2021). Developing countries confront significant challenges in raising tax revenues to support their budgets (Malik & Yunus, 2019). Tax evasion costs the economy money, slowing growth and restricting the government's ability to deliver

the study concluded that voluntary tax compliance has a significant impact on increased government revenue.

¹Assistant Lecturer, Faculty of Commerce and Business Studies, Finance, Accounting and Economics Department, St. John's University of Tanzania, Dodoma, Tanzania, Email Address: chindengwikejames@gmail.com

appropriate products and services to the people (Nurwanah, Sutrisino, Rosidi, & Roekhudin, 2018). Furthermore, tax evasion is one of the key challenges that developing nations have faced (Taing & Chang, 2021).

As a result, policymakers must identify the root causes of tax evasion in order to implement changes and mitigate the harmful impacts of evasion throughout the world (Bani-Khalid, Alshirah, & Alshirah, 2022). This entails comprehending and defining the causative variables underlying tax compliance, as indicated by the majority of researchers' interests during the last decades (Malik & Yunus, 2019) and (Bani-Khalid, Alshirah, & Alshirah, 2022). Tax compliance at the company level has not been fully studied, despite the fact that corporations collect the majority of the bulk of taxes in countries, with firms accounting for a considerable number of tax (Nurwanah, Sutrisino, evaders Rosidi, & Roekhudin, 2018). According to current trends in developing countries, more than 40% of company taxpayers fail to record their income, resulting in a dependency on indirect taxes for government revenue (Saeed, Zubair, & Khan, 2020). Furthermore, the grounds for both direct and indirect taxes remain limited (Hassan, Naeem, & Gulzar, 2021), because tax compliance is still the result of general fairness in society.

Since few studies on tax compliance have been showed in underdeveloped countries such as Tanzania, see (Chindengwike & Kira, 2022). Nonetheless, tax evasion continues to be a substantial impediment to increased tax revenue mobilization. Individuals may continue fail to comply with tax legislation even if they are fined for breaking tax regulations (Tahir, Yusuf, & Hamad, 2022). Medium taxpayers often employ aggressive tax planning methods to decrease their tax liabilities; this is typically achieved through tax evasion and tax avoidance measures, which have recently grown in popularity and sophistication (Zahor, 2019). There has been little focus on company taxpayers' tax compliance, although it is obvious that corporate tax evasion may have a significant impact on Tanzania's overall tax income (Mahangila, 2016).

Payment of taxes without force is very important in making it easier to collect taxes. Tanzania is among

the developing countries that use taxes as the main source to finance the budget. TRA is an institution associated with collecting taxes; and to make it easier to collect taxes, they have introduced various systems that help to collect taxes easily. Despite establishing these systems, the payment of taxes without force has not been successful, especially for small taxpayers (Presumptive Taxpayers). Currently, TRA is not doing well in this area, especially for small taxpayers (presumptive taxpayers). Considering that small taxpayers live in remote and scattered areas, they need to be able to generate a control number (Rental tax) and other services using a normal mobile phone but they cannot do that. Established systems have made voluntary tax compliance easier for large and medium taxpayers. But small taxpayers (Presumptive taxpayers) are still going through a challenge with voluntary taxpayer's big compliance, especially in three areas. e-payment and VFD; Tax compliance in Tanzania still is greater problem that leads the country to lose the revenue. Although some initiatives done but still the tax compliance level is low (Zahor, 2019). As part of its obligations, TRA has recently been able to issue tax assessments, conduct effective tax audits, collect taxes, speed up the tax dispute resolution process, provide professional training to its officials and stakeholders, provide feedback on tax evasion information, and adapt digital mechanisms in the tax administration system with the goal of increasing levels of voluntary tax compliance by all categories of taxpayers (CAG, 2021); even strengthening the incentives for voluntary tax compliance. The purpose of the study is to assess the influence of tax digitalization on taxpayers' voluntary compliance among taxpayers in Tanzania.

1.1. Objectives of the Study

- i. To examine the influence of electronic registration on taxpayers' voluntary compliance among taxpayers in Tanzania
- ii. To examine the influence of electronic declaration on taxpayers' voluntary compliance among taxpayers in Tanzania
- iii. To examine the influence of electronic filling on taxpayers' voluntary compliance among taxpayers in Tanzania
- iv. To examine the influence of electronic payment on taxpayers' voluntary

v. compliance among taxpayers in Tanzania

1.2. Research Questions

- i. What is influence of electronic registration on taxpayers' voluntary compliance among taxpayers in Tanzania?
- ii. What is the influence of electronic declaration on taxpayers' voluntary compliance among taxpayers in Tanzania?
- iii. What is the influence of electronic filling on taxpayers' voluntary compliance among taxpayers in Tanzania?
- iv. What is the influence of electronic payment on taxpayers' voluntary compliance among taxpayers in Tanzania?

2. Literature Review

Theory of economic growth in the era of digital economy; this idea was pioneered by Qu, Simes, & O'Mahony (2016). It states that fiscal policy is used to control the economy by mobilizing internal resources and spending on public goods and services (Sarker & Ahmed, 2023). Digitalization has the potential to transform how governments implement tax reforms by cutting tax collection costs, improving administrative efficiency and compliance, and fostering tax policy innovation (Ngowi, Kalinga, & Mvungi, 2021). However, other researchers alternate the theory of economic growth in the digital economy with the Unified Theory of Acceptance and Use of Technology because it also advocates for tax authorities to adapt technology in order to influence voluntary tax compliance among taxpayers (Gangodawilage, Madurapperuma, & Aluthge, 2021). The former, however, is more economic in nature, while the latter is more of a social philosophy.

Tahir *et al.* (2022) investigated the influence of economic determinants on tax compliance among SMEs in Zanzibar. The study was based on economic deterrence theory and used a quantitative research methodology with a sample of 336 SMEs using a simple random sampling technique. The data gathered via questionnaire survey was analyzed using a multiple regression model. The findings revealed that government services had a major contribution to tax compliance in Zanzibar, whereas tax burden correlated inversely with tax compliance, and detection and punishment had no significant impact.

Tax digitalization refers simply to the incorporation of hardware and software in the form of computer devices that are strongly connected to the internet on tax administration systems and revenue mobilization methods (Olbert & Spengel, 2017). Along with the broad deployment of technology, this has been a fundamental component of tax administration modernization in many developing countries (Bellon et al., 2022). Tax digitization also raises questions about the distinctions between taxing physical and virtual corporate operations. These discussions have collided with several levels of tax policy, including consumption and business tax policies (Bunn, Asen, & Enache, 2020).

Gangodawilage et al. (2021) investigated how entrepreneurs' compliance decisions in the digital economy are influenced by the use of technology in taxation. The study conducted qualitative research using phenomenological inquiry, and it discovered that the tax authority's trust in the technology it uses, as well as its power in the digital economy, establish a technology-driven tax system, effect tax compliance, and bread confirmatory compliance as a new compliance approach. Furthermore, while digitization and automation of the tax system in Bangladesh are still in their early phases, according to research by Sarker & Ahmed (2023), the measures have a substantial influence on strengthening good governance in income tax administration. This study looked into the role of government digital changes.

3. Research Methodology

The study employs a mixed research approach, survey research design, which was conducted through interviews with 150 taxpayers in Tanzania. The research population consists of individuals working as directors, deputy directors, chief accountants, tax accountants, and financial managers in Tanzanian corporate entities classified as substantial taxpayers. These individuals were chosen because their employment in their organizations requires tax accounting, tax payments, tax return filing, and other tax compliance obligations. Purposive sampling was employed to acquire responses from the targeted persons to the defined research questions for this study.

A statistical method for probability sampling was utilized based on the survey study design that used logistic regression data analysis. The sample size was calculated from the population. The population of the study is 240 taxpayers. The sample size may be estimated using Taro Yamane's (1967) formula, using a 95% confidence level.

$$n = \frac{N}{1 + N(e)^2}$$

Where, n - is the Sample Size Required N - is the Number of People in the Population (240)

ne Population (240)
e – is an Allowable Error (5%)

$$n = \frac{240}{1 + 240(0.05)^2}$$

$$n = \frac{240}{1 + 240(0.05)^2} \quad n = 150$$

Therefore, the number of sample size is 150 persons. In order to get reliable of data, researcher proposes to increase the sample size to 150 respondents.

3.1. Model Specification

The analysis of the logistic regression model will involve a Cronbach's coefficient test for reliability of the scale and a comprehensive literature review for validity of the content.

Because the binary outcome variables fail several linear regression model assumptions, such as heteroskedasticity and non-normality, the logit function can be used in this study:

$$\ln (Odds Ratio) = \log \left(\frac{Success}{Failure}\right) = \log \left(\frac{Yi=1}{Yi=0}\right) = \beta' + Xi\beta \dots \dots \dots (i)$$

where,

Yi = 1 – Taxpayer *i* complies voluntarily (success) Yi = 0 – Taxpayer *i* complies involuntarily (failure) Xi – a column vector of explanatory variables β - a column vector of parameters (coefficients) to be estimated

 β ' - the intercept term

ln – is the natural logarithms

The equation (i) above shows that the natural logarithmic form of odds ratio depends on observed explanatory variables.

The equation (*i*) above can also be expressed as follows:

where,

P(Yi = 1) – is the probability of voluntary tax compliance behaviour

1 - P(Yi = 1) – is the probability of involuntary tax compliance behaviour. The stochastic version of equation (*ii*) above, can be formulated by adding disturbance error term, *Ui* as follows:

$$ln\left(\frac{P(Yi=1)}{P(Yi=0)}\right) = ln\left(\frac{P(Yi=1)}{1-P(Yi=1)}\right)$$
$$= \beta' + Xi\beta$$
$$+ Ui \dots \dots \dots \dots (iii)$$

where,

Ui is a stochastic error term that reflects all unobservable features of voluntary tax compliance; and this model indicates that odds ratios are impacted by variables that are not included in the equation as well as other factors that are not included in the equation.

We may make a logistic function by rearranging the exponential (antilogarithmic) sides of equation (iii) as follows:

The aforementioned equation (iii) can be experimentally stated as follows.

$$\begin{pmatrix} P(Yi = 1) \\ 1 - P(Yi = 1) \end{pmatrix} = e^{x(\beta' + Xi\beta + Ui)}$$
$$P(Yi = 1) = (1 - P(Yi = 1))e^{x(\beta' + Xi\beta + Ui)}$$

$$P(Yi = 1)$$

= $\frac{e^{x(\beta' + Xi\beta + Ui)}}{1 + e^{x(\beta' + Xi\beta + Ui)}}$(iv)

The preceding equation (iv) explains how the chance of having a positive voluntary compliance attitude is affected by observable external factors. As the underlying model follows the logistic distribution, this probability is positive and confined between 0 and

The predicted probability of positive voluntary tax compliance attitude therefore can be expressed as:

3.2. Data reliability and validity

Before data analysis the researcher used Cronbach's Alpha to measure internal consistency of the data and all variables shows that the variables are greater than 70%. The study used pilot study before data collection in order to ensure data validity.

3.3. Data Availability statement

The data is available for corresponding author; anyone can request through email of corresponding author.

4. Results and Discussion

Cronbach's alpha was utilized to assess the internal reliability of the data gathering mechanism. This is intended to establish how sets of variables are linked (World Bank Group, 2021). Table 4.1 depicts the resulting implications. According to the results, all of the variables had Cronbach Alpha better than 0.7, indicating that the research is reliable in conveying the revision.

4.1. Binary Logistic Regression Model to Show the Influence of tax digitalization on taxpayers' voluntary compliance among medium-sized taxpayers in Tanzania

The binary logistic regression model on Influence of tax digitalization on taxpayers' voluntary compliance among medium-sized taxpayers in Tanzania indicating that the electronic registration statistically has positive significance with on voluntary tax compliance among corporate large taxpayers since P-Value is less than 0.05 (which is 0.030). Also the findings indicated that electronic registration can have explained on voluntary tax compliance among corporate large taxpayers by 24.649, also electronic registration can influence voluntary tax compliance among corporate large taxpayers by 1.412 based on beta. The findings also indicated that electronic filing statistically has significance with voluntary positive tax compliance among corporate large taxpayers since P-Value is less than 0.05 (which is 0.020).

Also the findings indicated that electronic filing can have explained on voluntary tax compliance among corporate large taxpayers by 24.649 also electronic filing can influence voluntary tax compliance among corporate large taxpayers by 1.412 based on beta. Also the findings indicated that electronic filing can have explained on voluntary tax compliance among corporate large taxpayers by 4.685, also electronic filing can influence voluntary tax compliance among corporate large taxpayers by 0.381 based on beta. The findings also indicated that the electronic declaration statistically has positive significance with on voluntary tax compliance among corporate large taxpayers since P-Value is less than 0.05 (which is 0.015). Also the findings indicated that electronic declaration can have explained on voluntary tax compliance among corporate large taxpayers by 4,685 also electronic declarations can influence voluntary tax compliance among corporate large taxpayers by 0.381 based on beta.

The findings also indicated that the electronic payment statistically has positive significance with on voluntary tax compliance among corporate large taxpayers since P-Value is less than 0.05 (which is 0.012). Also, the findings indicated that electronic payment can have explained on voluntary tax compliance among corporate large taxpayers by 4.222 also electronic payments can influence voluntary tax compliance among corporate large taxpayers by 0.211 based on beta. This

This finding supported by who said that the tax digitalization has positive relationship with on

Table 3.1Measurement of the Variables

Variables	Dimensions	Measurement	Sources				
Tax digitalization	- Electronic registration	5 point likert scale	Adapted from				
	- Electronic filing		(Bellon, et al., 2022)				
	- Electronic declaration	– Electronic declaration					
	- Electronic payment						
Voluntary	– Timely filing of returns	 Timely filing of returns 5 point likert scale 					
tax compliance	- Timely tax payment		Zaqeba & Al-				
	– Usage of EFDs	– Usage of EFDs					
	- Correct declaration						
	– Tax registration						

Source: Researcher, 2023

Table 4.1 Shows the Cronbach's Alpha of the Variables in this Study

S/N	Variable	Cronbach's Alpha (α)	Number of Item (N)
1.	Tax digitalization	0.712	4
4.	Tax compliance	0780	3

Table 4.2

Binary Logistic Regression Model to Show the Impact of Tax Digitalization on Voluntary Tax Compliance among medium-sized taxpayers Taxpayers in Tanzania

Items	β	S.E.	Wald	DF	Sig.	$Exp(\beta)$
Electronic registration	2.131	0.620	14.291	1	0.030	22.859
Electronic filing	1.412	0.428	11.651	1	0.020	24.649
Electronic declaration	0.381	0.934	7.024	1	0.015	4.685
electronic payment	0.211	0.134	7.324	1	0.012	4.22
Constant	-4.908	2.870	7.789	1	0.000	0.008

Dependent Variable (0=Yes, 1= No).

Source: Research Findings (2024)

Table 4.3

Binary	Logistic	Regression	Model	Summary	for	Tax digitalizatio	n
					-		

Step	-2 Log	Cox & Snell R	Nagelker R	
	Likelihood	Square	Square	
1	32.216	0.262	0.452	

voluntary tax compliance among corporate large taxpayers in Tanzania (World Bank Group, 2021).

4.2. Binary Logistic Regression Model Summary for Tax digitalization

Based on -2 log likelihood TRA can reduce the tax compliance problem by 32.216% and based on Cox and Snell R square can reduce tax compliance problem by 26.2% and based on Nagelker R Square can reduce tax compliance problem by 45.2%. This finding supported by different schorals who said that the Tax digitalization influence voluntary tax compliance among medium-sized taxpayers in Tanzania.

5. Conclusion and Recommendations

The study showed that the tax digitalization under electronic registration statistically has positive significance on voluntary tax compliance among medium-sized taxpayers in Tanzania. The study showed that the electronic filing statistically has positive significance on voluntary tax compliance among medium-sized taxpayers in Tanzania, also study indicated that the electronic declaration statistically has positive significance with on voluntary tax compliance among medium-sized taxpayers in Tanzania. Study indicated that the electronic payment statistically has positive significance with on voluntary tax compliance among medium-sized taxpayers in Tanzania.

The government through TRA should invest on tax digitalization by upgrading the electronic tax administration system that can meet the taxpayers needs and wants so as to stimulate the voluntary tax compliance. The electronic tax administration system should be simple to use and convenience for both tax payers and tax officers, also the parliament should formulate the friendly tax laws and regulation on tax digitalization that can attract the taxpayer to comply voluntary.

The study's findings will aid policymakers in understanding the economic aspects influencing voluntary tax compliance among Tanzania's large taxpayers. As a result, the findings may contribute in the development of measures to improve Tanzania's voluntary tax compliance. The study will help TRA administration and staffs understand the duties and tasks in order to enhance revenue collection through increased voluntary tax compliance. The management will be able to identify the most effective strategies for attractive voluntary taxpayer's compliance in Tanzania. The research will serve as a jumping-off point for other academics doing tax compliance research to examine numerous elements influencing voluntary tax compliance

From the research findings, a study an economic approach on determinants of voluntary tax compliance in Tanzania: corporate medium taxpayers' perspectives, will be conducted in future research.

List of Abbreviations

CAG- Controller and Auditor General TRA- Tanzania Revenue Authority SMEs- Small and Medium Enterprises

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