Assessing the Influence of Taxpayer Services on Value Added Tax Compliance among Small and Medium Enterprises in Zanzibar

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ABSTRACT

Recent years have seen SMEs' tax compliance become a major challenge. Many SMEs in developing countries struggle with VAT compliance, despite their important economic contributions. However, the factors that affect SMEs' VAT compliance in Zanzibar are understudied, leaving a major information vacuum that must be filled. To fill this information vacuum, this work investigates extensively by utilizing a cross-sectional research design. This technique enabled the collection of 400 SMEs data, whereas the logit model and propensity score matching were used for data analyses. The logit model results reveal that simplified tax systems, computerized tax payments, tax audits, and taxpayer services improve VAT compliance. Providing tax audits to SMEs in Zanzibar annually increases VAT tax compliance by 11%, while tax knowledge increases the chance of SMEs complying with VAT tax by 10 percent. Conversely, secondary and university education lowered compliance. University education decreases the probability of SMEs complying with VAT tax by 57%. An investigation of matching propensity scores showed that VAT compliance hurt SMB income. Compliant SMEs lost money due to electronic tax payments and IT tax management systems. In contrast, non-compliant SMEs reported higher incomes after adopting EFDs. Research outcomes lend to the sustainable growth and development of small and medium-sized enterprises (SMEs) in Zanzibar. They also reinforce the government's efforts at revenue mobilization in a way that enhances economic stability. It is recommended that governments should simplify tax systems, provide clear guidelines in local languages, and implement categorization based on size and turnover.

Keywords: Developing Countries, SMEs, Taxation, Tax Compliance

I. INTRODUCTION

Tax gathering processes in Tanzania were in the past manual, leading to several issues. Some of these entailed delays, inefficient record-keeping, and subpar tax collection rates (Dimoso and Andrew, 2021; Fumbwe et al., 2021). These obstacles impeded the government's capacity to fulfill budgetary targets, as stated by Fjeldstad and Katera (2017). To deal with these shortfalls, Tanzania enforced the Local Government Revenue Collection and Information Systems (LGRCIS). This computerized tax collection system was established to improve local council tax and revenue gathering methods, expanding its reach to different zones in Tanzania (Kitole et al., 2024). The incorporation of Geographic Information Systems (GIS) into tax collection strategies assures improved efficiency. Further, GIS aids in undertakings such as invoicing, discovering qualified taxpayers, producing demand notes, and issuing receipts. Likewise, it helps in noticing defaulters as well as enabling electronic payments through a joint payment gateway, as posited by Mbegu and Komba (2018).

Apart from LGRCIS and GIS, the Tanzanian government inaugurated Electronic Payment Gateway Systems (GePGs) in 2017. This was intended to foster the collection of taxes and minimize revenue leakage. As observed by Kisanga et al. (2021), this initiative merged ministries, agencies, parastatal organizations, and departments. In total, it linked 234 government bodies, including entire councils, by May 2018. GePGs oversaw an electronic Revenue Collection System (eRCS), which accounts for, assesses, and gathers revenue, guiding it to government accounts. This happens without human intervention, according to Fjeldstad and Heggestad (2018). This computerized technique settled many issues connected to calculating online payment revenue within the Zanzibar Revenue Authority (ZRA),

as opined by the authors. Conversely, in spite of these technological breakthroughs, the Zanzibar Revenue Authority (ZRA) has labored to realize its tax collection targets. ZRA was set to reach a tax revenue equivalent to 20% of the GDP in 2019, even though it fell short. This was illustrated by the government getting 14.2% of GDP in tax revenue, leveling tax collection rates in Mozambique (15.4%) and Zambia (15%) (Kisanga et al., 2021).

The problem of low tax compliance is worrying policymakers in most developing economies. This is because it limits the government's capacity to collect revenue for development and recurrent expenditures (Togler, 2003). Increased government revenue enables the provision of additional services to enhance citizens' quality of life. One approach to improving tax compliance is through taxpayer education, which empowers taxpayers with knowledge of tax laws and practices. This necessitates the training of revenue department specialists who can disseminate information through various channels such as newspapers, television, radio, the internet, seminars, and direct assistance at service desks. This multi-modal approach ensures that taxpayers have access to crucial information (Fjeldstad and Ranker, 2003). Research (Brandt, 2018; Tetiana & Sayko, 2021; Elineema et al., 2021; Dziedziech et al., 2022) has shown that taxpayer education fosters understanding, information-sharing, collaboration, and voluntary tax compliance, ultimately boosting government revenue and expanding the tax base (Berlina et al., 2023; Fjeldstad & Ranker, 2003). Moreover, higher levels of education may lead to higher compliance rates, as individuals with more education tend to have a better understanding of their tax obligations and the consequences of tax evasion. However, the impact of education on tax compliance varies across countries, as highlighted by Albert & Fadjarenie (2022) and Appah (2023).

Despite numerous efforts, tax revenues in Tanzania continue to fall short of expectations, even with a significant number of registered and non-registered organizations and individuals with tax responsibilities. This revenue deficit poses a significant impediment to economic growth (Cobham, 2005). In Zanzibar, the informal sector, particularly small and medium enterprises (SMEs), faces challenges in complying with tax laws, resulting in substantial losses in government revenue. Research intends to investigate how computerized payment processes, e-filing, and taxpayer education influence VAT compliance and revenue in the town of Zanzibar.

A number of stakeholders involved in tax collection schemes have the perception that applying online tax payment processes and e-filing, in addition to taxpayer education, ought to enhance tax revenue and cut budget shortfalls. However, empirical results seem to contradict this understanding (Kessy, 2019; Kitole and Utouh, 2023; Daniel et al., 2019; Masunga et al., 2020; John et al., 2021). Therefore, the central question that arises is why the government is unable to meet its budgetary revenue targets despite the provision of taxpayer services aimed at enhancing VAT compliance. This study seeks to address this fundamental question and fill the existing research gap by focusing on the tax collection process in the Zanzibar local tax region.

II. METHODOLOGY

2.1 Data and Methodology

A cross-sectional survey technique was employed to estimate the frequency of a specific behavior among a community (Rashmi & Kataria, 2022). Similarly, Strang (2015) and Angie (2023) noted that employing a cross-sectional survey methodology allows concurrent investigation of variables' exposure as well as findings within a research population. In this regard, it gives worthy insights into a specific geographic area within a specified duration (Rashmi & Kataria, 2022). The research is undertaken in Zanzibar, specifically in a metropolitan district found in the Zanzibar Urban West Zone of Tanzania. The compass coordinates of Zanzibar in the Mjini Magharibi region are approximately located at a latitude of -6.16540° South and a longitude of 39.01419° East. The geographical scope of this region covers around 230 square kilometers, according to the 2022 census data. The population density is around 594 inhabitants per square kilometer in this zone. Choosing the urban district is practical, taking into account resource limitations. This is because it allows the advantage of being near a broad category of taxpayers, covering small, medium, and big taxpayers who present themselves for services at the urban district headquarters.

Purposive sampling is an approach used in research to conveniently identify respondents who are equipped with predetermined features that align with the method established for the study. The use of this sampling technique offers the researcher the choice of being able to choose a sample that holds the necessary information. This is to conveniently respond to the research queries and achieve the unique goals of the research (Andrade, 2021; Esra, 2019). A probability sampling approach using a specific sampling formula is expected to be employed in identifying a sample comprising 400 small and medium enterprises (SMEs) from the Zanzibar zone. In addition, research will incorporate 20 crucial informants from the ZRA, thus generating a cumulative sample size of 420.

Technically, the main sample of the study is obtained by using the following formula (Creswell, 2014).

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

Whereby:

n = Represents the sample size selected, N = This represents the study population in which the researcher has identified as 30,902, from Zanzibar, e = This represents the confidence level in which for this study, a standard confidence level of 5% will be used

$$n = \frac{302}{1 + 30902(0.05)^2}$$

$$n = \frac{302}{1 + 302\ (0.0025)}$$

$$n = \frac{302}{1015.755} = 400$$

2.2 Analytical modeling

The objective of the study was to examine the determinants of taxpayer services on VAT compliance among SMEs in Zanzibar. Given that compliance represents a binary decision, it can be estimated through two statistical models: the logit model, which utilizes the cumulative logistic distribution function, and the probit model, which employs the cumulative normal distribution function. However, for this study, the logistic regression model will be chosen as the preferred method over the probit model, and there are several reasons for this choice.

According to research conducted by Gujarat and Porter (2009), the probability of compliance for Small and Medium-Sized Enterprises (SMEs) can be determined using the following equation: then the cumulative logistic distribution function can be expressed as:

$$P_i = E(Y = 1|X_i) = \frac{1}{1 + e^{-z}})$$

Where Z =$\beta_0 + \beta_1 X_i$. Thus, the previous equation can further be modified to; -

$$P_i = \frac{e^z}{1 + e^z}$$

Given that the probability of comply is represented by P_i , the probability of not comply is given by (1 – P_i) which is given by the following equation: -

$$1 - P_i = \frac{1}{1 + e^z}$$

Dividing the previous two equations gives the odds ratio ($P_i/(1 - P_i)$ which is given as; -

$$\frac{P_i}{1 - P_i} = \frac{\frac{e^z}{1+e^z}}{\frac{1}{1+e^z}} = e^z$$

By applying the natural logarithm to both left- and right-hand sides of equation to aid estimation of the model, the equation translates into new equations which were used to estimate the effects of SMEs tax compliance.

$$ln\left[\frac{P_i}{1 - P_i}\right] = z = \beta_0 + X_i'\beta_i + \mu_i$$

Whereby z is a binary indicator for comply taking the value of 1 if the ZRA comply IN paying tax and a value of 0 if not comply, x_i is a bundle of tax level and SMEs characteristics (SMEs size SMEs age, sex of SMEs owner, education level of SMEs owner, and location of SMEs) and institutional factors affecting SMEs in tax compliance including, access to services and extension service from ZRA. To aid a more meaningful interpretation, the partial derivative (marginal effect) of the likelihood that the dependent variable equals to 1 with respect to explanatory variable was estimated as in hereunder equation.

$$\frac{\partial L\ (X_i'\beta_i)}{\partial X_{ik}} = \frac{e^{X_i'\beta}}{1 + e^{X_i'\beta}} * \beta_k$$

Where L is the cumulative logit distribution function. Having estimated the effects of taxpayer services on VAT compliance among SMEs in Zanzibar.

2.3 Effects of VAT compliance on SMEs Revenues in Zanzibar

The study employed Propensity score matching (PSM) given that there might be several models that can be used to assess effects including endogenous switch regression model, Inverse probability weighted regression adjustment (IPWRA). One of the major reasons as to why this study calls for PSM and no other variables is that it

considers for self-selection bias based on observable characteristics hence address for counterfactual situation. The procedure of doing propensity score matching (PSM) encompasses five fundamental stages, as delineated by (Caliendo et al. 2005).

The first step in the analysis involves the estimation of propensity scores, The second step involves the selection of an appropriate matching algorithm, The third step involves examining the overlap or common support between different variables or factors, fourth step is to evaluate the Degree of Matching Quality and Estimate the Effectiveness, and the last fifth step in the process involves doing a sensitivity analysis.

But before undertaking these five major steps of conducting PSM there are some Basics that must be well informed with or else it would result into various problem during estimation process. Roy-Rubin model**:** Inference on the influence of rehabilitation on an individual's outcome entails speculating on how this individual would have done if he had not gotten the treatment. The prospective result approach or Roy-Rubin model (Kitole et al. 2024) is the basic framework in assessment analysis for formalizing this topic. Individuals, treatment, and prospective results are the core pillars of this concept. If person i receives treatment, the treatment indicator $D_i$equals one; otherwise, it equals zero. The possible outcomes are then specified as $D_iY_i$for each person $i$where$i = 1$, N, and N represents the whole population. The treatment effect for a person is written as follows:

$$T_i=Y_i(1)– Y_i(0)$$

The basic assessment difficulty emerges when only one of the alternative outcomes for everyone I is witnessed. The unobserved consequence is referred to as the counterfactual outcome. As a result, measuring the individual treatment impact $T_i$is impossible, and one must instead focus on (population) average treatment effects.

Parameter of interest**:** The 'average treatment impact on the treated' is the parameter that has attracted the greatest attention in the evaluation literature (ATT), this can be described as

$$\lambda AT_T\text{=E }(\tfrac{\text{T}}{D}\text{=1) =E }(\tfrac{Y_1}{D=1})\text{-E (E }(\tfrac{Y_0}{D=1})$$

Using the mean result of untreated people $E\ [Y\ (0)\ |D\ =\ 0]$ is typically not a good idea in non-experimental research since the components that decide the treatment decision most likely also determine the outcome variable of interest. Thus, even in the absence of treatment, the results of people in the treatment and comparison groups would differ, resulting in a 'self-selection bias.

$$\text{E }(\tfrac{Y_1}{D=1})\text{-E }(\tfrac{Y_0}{D=1})=\lambda AT_T\text{+E }(\tfrac{Y0}{D}\text{=1)- E(E }(\tfrac{Y_0}{D=0})$$

The discrepancy between the left side of equation above and $\lambda AT_T$is referred to as the "self-selection bias.

$$\text{E }(\tfrac{Y0}{D}\text{=1)- E (E }(\tfrac{Y_0}{D=0})\text{=0}$$

In non-experimental investigations, some identifying assumptions must be used to answer the section issue presented in equation above. Thus, another measure of importance is the 'average treatment effect' (ATE), which is defined as

$$\lambda AT_T\text{E} = \text{E}\left(\text{Y (1)} - \text{Y (0)}\right)$$

Conditional Independence Assumption**:** One alternative identification method is to presume, given a set of observable variables X that are unaffected by treatment, that probable outcomes are unaffected by treatment assignment.

$$\text{Y (0), Y (1)II }\frac{D}{X}, X$$

This indicates that selection is exclusively based on observable qualities, and that the researcher observes all variables that impact treatment assignment and prospective consequences at the same time. Clearly, this is a significant assumption that must be supported by the data quality available. Rosenbaum and Rubin (1983) propose using so-called balancing scores to cope with this dimensionality problem. They demonstrate that, if possible, outcomes are unaffected by treatment conditional on variables X, they are similarly unaffected by therapy conditional on a balancing score $b.(X)$. One such balancing score is the propensity score $P\ (D\ \frac{1}{X}\ =\ P(X)$, which is the likelihood for an individual to engage in a treatment given his observable variables X such that for our case is for an SMEs to comply with tax.

Common Support: Aside from independence, the condition of shared support or overlap is also required. It eliminates the anomaly of $D's$ complete predictability given X:

$$(Overlap)\ 0\ <\ P\ (D\ =\ \frac{1}{X})\ <\ 1$$

This assures that people who have the same X values have a good chance of being both comply and not-comply.

Estimation Strategy: Given the Conditional independence assumption CIA's position and assuming that there is overlap between both groups, that is adopters and non-adopters of post-harvest management technologies.

$$T=\frac{EP(X)}{D=1}[E\ \{\frac{Y1}{D}=1, P(X)]-E\ (\frac{Y0}{D}=0, P(X)]$$

The PSM estimator is just the mean difference in outcomes over common support, correctly weighted by the Assessors to credit propensity score distribution. Based on this high-level overview of the matching estimator in the general assessment framework, the steps can now be adhered to. Moreover, other variables used in the study are shown in Table 1.

Table 1

Description of Variables and Measurement

Variables	Descriptions	Measurement	Expected sign
Tax system	Set of taxes in force ZRA	1.Simple tax system 0.Complex tax system	+/-
Taxpayer services	Total number of taxpayers assisted either on telephone or walk in	1.Tax registration 2. Tax education 3. Tax refund	+/-
VAT-Tax compliance	Taxpayers' obedience to tax laws to ensure correct tax obligations are fulfilled at the right time	1.Comply 0.Do not comply	
Tax audit	Number of audited taxpayers annually	1.If taxpayer audited annually 0.Taxpayer not audited	+/-
Electronic tax payment	Number of taxpayers paid by electronic system	1.Taxpayers pay electronically 0.Do not pay electronically	+/-
Information technology	Total number of taxpayers assisted on system	1.Taxpayer use VFMS 0.Do not use VFMS	+/-
Adoption of EFDs machine	Number of taxpayers who are using EFDs machine	1.Taxpayer use EFDs machine 0.Do not use EFDs machine	+/-
Tax knowledge	Level of understanding about taxpayer obligation	1.Taxpayer has knowledge 0. Taxpayer has No knowledge	+/-
SMEs revenue	Amount of revenue an SMEs obtain at the end of the year.	Continuous	+/-
Capital	Amount of capital that owner used to start his/her business.	Continuous	+/-
Firms age	Years of working of the SMEs	Continuous	+/-

III. FINDINGS & DISCUSSIONS

3.1 Results

3.2 Descriptive statistics

Table 2 shows a cross tabulation of SMEs those who use VFMS and VAT tax compliance status, finding show that 221 SMEs they were not use VFMS. Result shows the SMEs using VFMS and VAT tax compliance status that 103 SMEs who use VFMS comply to tax system and 111 SMEs who not using VFMS they comply to tax system in Zanzibar compared to the SMEs who were not using VFMS. Also, results show that they were about 76 SMEs who use VFMS they were not comply to tax and only about 110 SMEs who were not use VFMS they were not comply to VAT tax system.

Table 2
VAT Tax Compliance and Use of Information Technology

	Use of information technology		
Tax compliance	Not using VFMS	Using VFMS	Total
Not comply	110	76	186
Comply	111	103	214
Total	221	179	400

Table 3 displays a cross-tabulation of SMEs categorized according to their use of the tax audit system and their compliance status with the value-added tax (VAT). The results of the study reveal that among the 286 small and medium-sized enterprises (SMEs) that do not utilize the tax audit system, 70 of them demonstrate adherence to the value-added tax (VAT) tax system, while 44 SMEs exhibit non-compliance with the VAT tax system in the region of Zanzibar. In contrast, within the sample of 114 SMEs utilizing the tax audit system, approximately 144 SMEs demonstrate compliance with VAT tax regulations, whereas only around 142 SMEs exhibit non-compliance with VAT tax regulations.

Table 3
VAT Tax Compliance and Tax Audit

	Tax auditing		
Tax compliance	**Not Audited**	**Audited**	**Total**
Not comply	142	44	186
Comply	144	70	214
Total	286	114	400

The summary statistics presented in Table 4 provide valuable insights into several key aspects of SMEs in Zanzibar. Firstly, it is evident that the average age of SME heads in this study is approximately 47 years. This statistic reflects the diversity among SME leaders, with the youngest head being 20 years old and the eldest reaching the age of 95. Significant differences in age hint diverse experiences and backgrounds among persons directing these enterprises.

Progressing to allocation of capital, the data demonstrate that SMEs in Zanzibar have a mean capital investment of around 4.6 million Tanzanian shillings. It is important to note that this mean covers a spectrum, with some SMEs beginning with 1 million shillings while others pride in possessing an enviable 9 million shillings in starting capital. This discrepancy in capitalization levels highlights the varying financial capacities of SMEs in the region. When examining annual revenue, the statistics show that the average yearly income for these enterprises is around 2 million Tanzanian shillings. Again, there is considerable diversity in revenue generation, with the lowest recorded annual revenue at 5 million shillings and the highest reported at 9.7 million shillings. These variations in revenue emphasize the disparities in business performance among SMEs in Zanzibar.

Table 4
Summary Statistics

Variable	**Observations**	**Mean**	**Min**	**Max**
Capital	400	4.66E+07	1.00E+07	9.00E+08
SMEs owner Age	400	47.46	20	95
SMEs revenue	400	2.19E+08	5.00E+07	9.72E+08
Firm age	400	5.1775	1	25

3.2.1 Determinant of Taxpayer Services on VAT Compliance among SMEs in Zanzibar

Table 5 presents the result for the determinant of taxpayer services on VAT compliance among SMEs in Zanzibar. The table shows two columns with different models the first column presents the results of the logit model chosen to be estimated for the result and secondly presents the marginal effects model after logit. The study estimated all the two model because one logit model is the suggested model of the study and marginal effects after logit estimation is the one which is better off in estimating the actual effects of the variables on the dependent's variable, because it shows the magnitudes and direction of the variables. Therefore, the interpretations of the results in this study will base on the marginal effects coefficients.

Table 5

Determinant of Taxpayer Services on VAT Compliance among SMEs in Zanzibar

	(1)	(2)
Variables	Logit model	Marginal effects
Tax system	0.460**	0.103156**
	(0.22)	(0.048183)
Electronic tax payment	0.436**	0.097827**
	(0.217)	(0.048068)
Tax audit	0.496**	0.11131**
	(0.244)	(0.053804)
Information_tech0logy	0.245	0.054931
	(0.216)	(0.048175)
Use of EFD machine	0.464**	0.104029**
	(0.22)	(0.04826)
Tax Knowledge	0.480**	0.107678**
	(0.234)	(0.051303)
Capital	4.70E-09	1.05E-09
	(3.48E-09)	(7.79E-10)
Age	0.00149	0.000335
	(0.0068)	(0.001525)
Primary education	-1.128	-0.1202
	(0.694)	(0.063426)
Secondary education	-2.203***	-0.30367***
	(0.622)	(0.059583)
University education	-3.575***	-0.57529***
	(0.583)	(0.05051)
Firm age	0.0179	0.004003
	(0.023)	(0.005149)
Taxpayer services	1.045***	0.234389***
	(0.125)	(0.031316)
Constant	-1.143	
	(0.839)	
Observations	400	

Standard errors in parentheses

** p<0.1 ** p<0.05 *** p<0.001"*

Results from Table 5 shows that tax audit is one of the important determinants of the tax compliance from SMEs in Zanzibar from the table results it shows that tax audit it is significant and positive related to tax compliance among SMEs in Zanzibar, therefore having tax audit to SMEs in Zanzibar annually increases the VAT tax compliance by 11% compared to SMEs who they don't receive or do tax audit annually. Use of EFD machine is the one of the important determinants of the tax compliance from SMEs in Zanzibar from the table results it shows that Use of EFD machine it is significant and positive related to tax compliance among SMEs in Zanzibar, therefore having EFD machine to SMEs in Zanzibar increases the VAT tax compliance by 10% compared to SMEs who they don't Use EFD machine.

But also, tax knowledge is positive and significant affecting the VAT tax compliance, this implies that having tax knowledge increases the chance of SMEs to comply with VAT tax by 10 percent compared to not having tax knowledge to SMEs, this may be due to the facts that having tax knowledge it facilitate the SMEs to know the reason why they are paying tax and to know the importance of paying tax to the government, therefore tax knowledge is the one of the important factor that facilitate the tax compliance in an easy way without any force from the government to SMEs and therefore SMEs comply to tax because they have the k knowledge of why they are paying tax. Secondary education has a negative and significantly effects on the tax compliance means having SMEs owner with secondary education decreases the probability SMEs to comply with VAT tax by 30% compared to SMEs owner who has no

formal education. But also, having SMEs owner with university education decreases the probability SMEs to comply with VAT tax by 57% compared to SMEs owner who has no formal education.

Taxpayer services is positive and significant affecting the VAT tax compliance, this implies that receiving the taxpayer services increases the chance of SMEs to comply with VAT tax by 23 percent compared to not receiving the taxpayer services this may be due to the facts that once the SMEs receive the taxpayer services increases the confidence of paying tax compared when the MSEs they did not receive any taxpayer services.

4.2.2 Effects of VAT Compliance on SMEs Revenues in Zanzibar

The Propensity Score Matching (PSM) estimate was obtained in this work by utilizing the socioeconomic status of individual SMEs to produce matched observational pairs of respondents who exhibited similar features. The matching method encompassed subject matter experts (SMEs) who adhered to VAT tax regulations (treatment cases) and those who did not adhere to VAT tax regulations (controls).

The matching procedure was performed using individual propensity scores for treatment, which were computed as the estimated likelihood of adhering to the VAT tax. The propensity scores were determined by the utilization of logistic regression, wherein compliance to VAT tax was considered as the dependent variable and a range of predictors were included as independent variables.

The propensity score, also inferred as a probability, determines the probability that a specific participant would follow VAT tax guidelines (who can be put to the treatment group). Current investigation pointed that the mean likelihood of following VAT tax within the treatment segment was assessed to be 32.43 percent. This shows that, on average, there was a 32.43 percent likelihood that a specific respondent in the treatment category would agree to the VAT tax, as demonstrated by the propensity score model.

The use of propensity scores and subsequent matching enabled establishment of comparable categories of small and medium enterprises (SMEs) in the research. This assured that the treatment and control segments had identical characteristics, apart for their compliance status with VAT tax. This approach helps in minimizing bias during the approximation of the treatment effect. At the same time, while evaluating the effect of VAT tax compliance on the small and medium enterprises (SMEs) revenue.

Table 6

The Propensity Score for Entire Group Accessing Credit

Variable	Mean	Std. Dev.	Min	Max
Propensity score matching	0.323271	0.231491	0.010341	0.904962

Table 6 above illustrates a comprehensive summary of the results derived from dissimilar matching designs in forecasting the Average Treatment Effect on the Treated (ATT). Outcomes derived from the Nearest Neighbor Matching (NNM) analysis signal that there is no statistically significant impact on the revenue of Small and Medium Enterprises (SMEs), when they obey VAT tax, as posited by the participants. Nonetheless, results deducted from the execution of Radius Matching (RM) disclosed a statistically significant contrary impact on the revenue of SMEs when they obeyed VAT tax directives.

Table 7

Average Treatment Effects: Propensity Score Matching

Outcome variable	**Matching algorithm**	**Abiding to VAT tax**	**Disregard to VAT tax**	**ATT**	**t**
Revenue	Nearest neighboring	214182		-0.627	-0.891
	Radius matching	214	182	-0.575	-2.003

Research outcomes stress the importance of considering local features and settings in evaluating the effect of tax compliance on small and medium enterprises (SMEs) revenue. Legislation of tax can precede to dissimilar results in diverse zones or populations. This illustrates the grandness of doing elaborate and setting-specific research in the taxation domain.

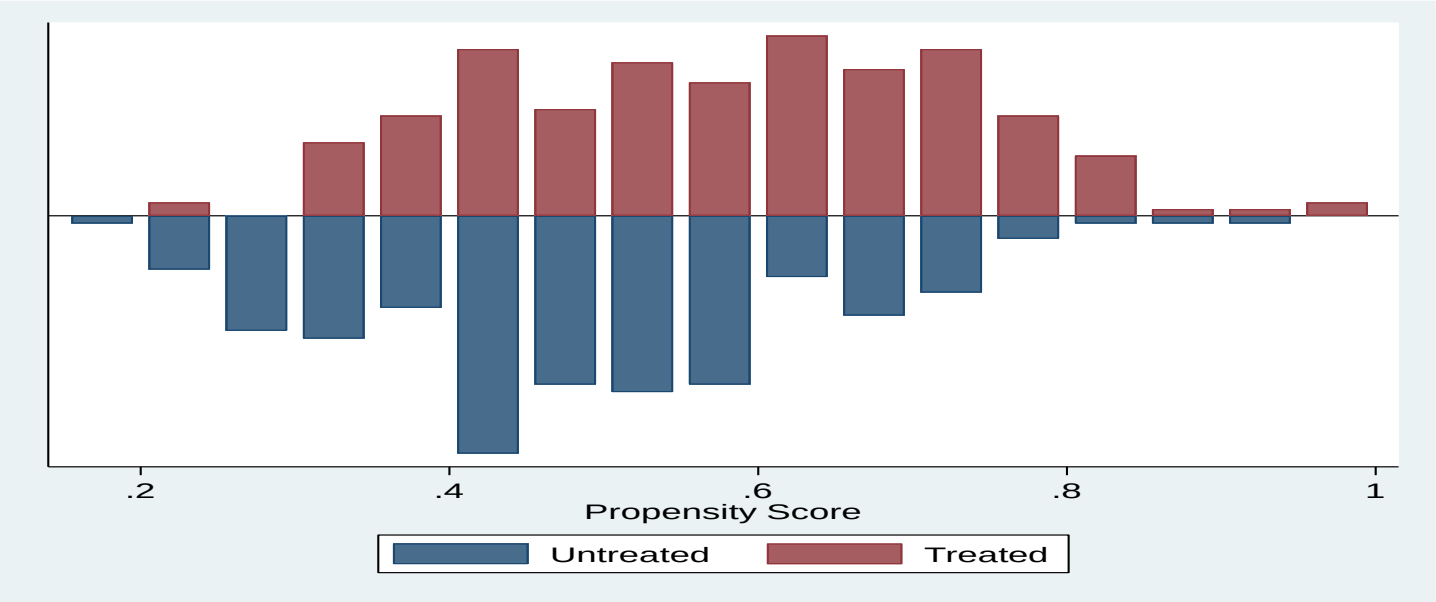

Figure 1
The Matching Quality Test
Estimation for Distribution Propensity Score and Common Support Propensity Scores

Scholars employed the Balancing Property Test to calculate the propensity scores. This ascertained the establishment of a comparison category with identical notable features that were distributed evenly across quintiles. This was in both treatment segment (SMEs complying with VAT tax) and the control group (SMEs not obeying VAT tax). This approach assists in ascertaining that the groups being compared had same visible features.

Along with the Balancing Property Test, a sensitivity analysis was carried out to determine the reliability and stability of the findings deduced from the diverse matching approaches employed. This analysis functions to formalize the cohesiveness and dependability of the results across different techniques. To get adequate balance between the comparison categories, a histogram illustrating the estimated propensity figures for SMEs was used. This was for those who agreed with VAT tax and others that failed to comply with VAT tax was produced and laid out in Figure 1. The graph is segmented into two parts: the upper half illustrates the dispersion of propensity scores for SMEs that comply with VAT tax. At the same time, the lower half shows the dispersion of propensity scores for SMEs that fail to comply with VAT tax. The graph put up offers grounds that the common support prerequisite has been observed, hinting a considerable level of duplication in the propensity score distributions of the two groups.

Incorporating the common support aspect is a fundamental portion within propensity score matching. This status assures that the comparison is undertaken entirely among persons or entities having comparable characteristics. By sticking to this aspect, research is bolstered in terms of its rigor and its capability to produce significant results.

Table 8

Propensity Scores Corresponding Regression Outcomes Displaying the Effects of VAT Compliance on Revenues of SMEs in Zanzibar.

Variables	Regression OLS (1)	Regression OLS (2)
	Revenue (1)	Revenue (0)
Tax system	0.455 (-1.022)	0.114 (-0.0897)
Online tax payment	-1.879** (-0.939)	-0.0102 (-0.0918)
Tax audit	0.812 (-1.028)	-0.0188 (-0.0975)
Information technology	-2.012** (-1.011)	-0.0289 (-0.0902)
Adoption EFDs Machine	0.255 (-1.0740	0.207** (-0.090)
Taxpayer services	-0.291 (-0.392)	-0.0682 (-0.0534)
Constant	17.72 (-1.505)	19.08 (-0.163)
Observations	214	186

Standard errors in parentheses

**** p<0.1*** ***** p<0.05*** ****** p<0.01***

Outcomes point that accepting electronic tax payment schemes has a statistically significant and detrimental impact on income of SMEs'. Explicitly, following with value-added tax (VAT) guidelines through computerized tax payment processes contributes to a 18 percent drop in revenue for SMEs. This hints that while electronic tax payment is time saving and aboveboard, it may end in revenue cut for SMEs. Even so, it's crucial to mention that this drop could be linked to SMEs effecting their VAT commitment more efficaciously, contributing to reduced attempts at evading tax therefore minimal revenue loss.

Additionally, research discovers using Visual Fiscal Management System (VFMS) has a considerable and opposite impact on SMEs' income. SMEs that are needed to follow VAT regulations feel a considerable 20 percent revenue cut when employing VFMS. This finding could be explicated by VFMS's stern observance of VAT remittances, depriving SMEs ways of outsmarting tax. Thus, research hints that embracing VFMS leads to revenue cuts for SMEs as compared to when they are not utilizing this fiscal management process.

In the same vein, research evaluates the impact of VAT compliance on revenue for SMEs that have failed to follow VAT guidelines. Findings point that employing Electronic Fiscal Devices (EFD) machines has a notable positive outcome on revenue for non-compliant SMEs in Zanzibar. Explicitly, adopting EFD machines leads to more revenue of 20 thousand units for SMEs that have not complied with VAT guidelines. This proposes that EFD machines are vital in expanding revenue for non-compliant SMEs. This arises by ascertaining more precise and transparent tax records.

4.2 Discussions

In influencing VAT tax compliance, the tax system is pointed out as a significant factor. The positive effect demonstrates that SMEs working under an easy tax system are 10% more likely to agree with VAT tax in comparison to those coping with a complicated tax system. This is in agreement with a past research conducted by Garcia-Rodriguez et al. (2022). The authors stressed the purpose of a clear and aboveboard tax process in encouraging taxpayer compliance. An easy and elaborate tax system curbs confusion and makes it simpler for SMEs to comprehend and stick their tax duties.

Paying tax electronically comes forth as another powerful determinant of VAT compliance among SMEs. The positive attribute hints that SMEs employing computerized tax payment processes are more than 9% likely to agree with VAT tax than those employing physical methods of payment. This result concurs with Li and Wang (2019) study which illustrated the convenience and efficiency of online tax payment in minimizing tax evasion and expanding rates of compliance. Electronic systems are efficient and improve the process of payment, curtailing loopholes for evading

tax. Tax audit is established as a vital factor influencing positively VAT tax compliance among SMEs (Garcia and Brown (2018), SMEs which are exposed to tax audits on a yearly basis are 11% more likely to comply with VAT tax than those who fail to audit regularly. This stresses the value of supervision and enforcement in enhancing tax compliance. This is in agreement with studies like that undertaken by Saez and Zucman (2020). Tax audits are crucial as they prevent tax evasion. As a result, they encourage SMEs to pay taxes honestly to escape penalties, fines and legal consequences.

Employing Electronic Fiscal Devices (EFD) machines also comes forth as a valuable deciding element in VAT tax compliance. SMEs using EFD machines display a 10% higher chance of complying with VAT tax than those who fail to employ this technology. Outcomes are in alignment with Chen et al. (2019) study, which stressed the part of EFD machines in improving clarity and minimizing chances for tax evasion. EFD machines offer an automated and reliable means of collecting tax, curbing under-reporting or evasion loopholes.

Tax knowledge is another substantial factor that positively influences VAT tax compliance. SMEs that understand better matters to do with tax legislation and requirements are 10% more likely to comply with VAT tax. This conclusion underscores the need for taxpayer education and awareness initiatives, which is similar with Kisanga et al. (2021) outcomes. When SMEs understand the reasons and advantages of paying taxes, they are more likely to do it freely, without force.

At the same time, research emphasizes the value of taxpayer services in encouraging SMEs to comply with VAT tax laws. Getting taxpayer services boosts compliance by 23 percent, demonstrating the beneficial effects of tax authorities' help and direction. Outcome is consistent with research by Garcia and Brown (2018), which highlights the contribution of taxpayer services to improving taxpayer comprehension and compliance intentions.

The research study finds that Zanzibar's VAT-compliant SMEs' revenues are negatively impacted by electronic tax payment methods. This is in agreement with research by Johnson et al. (2021), which pointed out that digital tax payment systems can cut net revenues for firms by reducing tax evasion and increasing transparency. Similarly, Garcia and Brown (2018) pointed out that because electronic tax payment systems track and report tax transactions efficiently, they can have a substantial influence on firm revenues. According to these outcomes, computerized tax payment techniques may result in lower net revenues for SMEs even while they encourage tax compliance.

This research establishes a substantial and negative correlation between the income of Zanzibar's VAT-compliant SMEs and their usage of VFMS. This aligns with a study by Martinez and Garcia (2018), who found that while sophisticated tax management systems, like VFMS, might increase tax collections, they can also decrease reported corporate revenues. Because of VFMS's strict supervision, underreporting may be discouraged, which would lower net revenues. This supports the finding of the Zanzibar research, which found that SMEs' revenues may suffer as a result of VAT compliance via VFMS.

It's worthwhile to note that the study discovers that using Electronic Fiscal Devices (EFD) devices increases revenues for SMEs who do not pay VAT. Outcome is consistent with study by Esra (2019), which emphasized the possible advantages of using EFD machines for revenue enhancement and tax compliance. EFD machines encourage non-compliant SMEs to engage in formal economic activity by allowing real-time tax reporting and lowering the possibility of tax evasion. The increase in income highlights how successful EFD machines are in enforcing tax laws (Kessy, 2019; Theodory and Kitole, 2024; John et al.,2021).

It's key to remember that the Zanzibar research setting can have an impact on the findings. The different effects of tax compliance measures on revenues, for example, may be elaborated by Zanzibar's particular economic conditions, the presence of informal economic activity, and the varying levels of technology preparedness among SMEs. When evaluating the outcomes, these settings considerations should be taken into account since they may restrict the direct comparison of the findings with research undertaken in various countries.

Also, conclusions of the research on how VAT compliance affects Zanzibar's SMEs' income streams are consistent with other studies on the deployment of VFMS and electronic tax payment systems. Nonetheless, a noteworthy outcome is the enhancement of non-compliant SMEs' earnings due to the deployment of EFD machines. These parallels point the intricate connection between tax compliance practices and the financial findings of SMEs, highlighting the significance of setting-specific regulations and initiatives.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusion

Several crucial findings are deduced from the analysis done for this study, which throws light on the complex dynamics pertaining to taxpayer services, VAT compliance, and the earnings of SMEs in Zanzibar. Outcomes add to the body of knowledge already in existence and provide crucial information to regional policymakers, tax agencies, and SME stakeholders.

To begin with, it is apparent that taxpayer services e.g. tax education and registration are vital in aiding Zanzibar's SMEs comply with the law. The tax authorities' attempts to interact and engage with and support SMEs in meeting their tax mandate are seen in the substantial percentage of SMEs that reported getting these services. A portion of SMEs do, nonetheless, still opine that there are hindrances to getting these services, which emphasizes the necessity of better outreach and communication strategies to guarantee more involvement.

Likewise, there are a number of elements that influence SMEs' compliance with VAT laws. It was shown that a more basic tax code and electronic tax payment options had a favorable impact on compliance rates. This stresses the need of digitizing and simplifying tax procedures. On the other hand, there was a different influence seen in the educational background of SME owners. Lesser compliance rates were seen among SME owners with postsecondary and university degrees, indicating the need for specialized training initiatives to improve tax awareness in these populations. In the same vein, it has been established that tax audits and the deployment of Electronic Fiscal Devices (EFDs) are useful instruments for encouraging compliance, highlighting the importance of these measures in the enforcement of tax laws.

Research also established the intricate connection between SMEs' income and VAT compliance. Reduced income for compliant SMEs was linked to the use of the Visual Fiscal Management System (VFMS) and electronic tax payment systems. These restrictions appear to have a cost, which might lower the net income retained by SMEs even while they encourage compliance. On the flip-side, it seemed that the use of EFD devices increased income creation for SMEs that were not paying VAT. This hints that even for SMEs who are not in compliance, these gadgets help boost income.

In every aspect, research advances our knowledge of the ways in which Zanzibar's SMEs' financial health is impacted by taxpayer services, compliance factors, and VAT compliance. Beyond the confines of academia, these outcomes have practical consequences for tax authorities and policymakers that want to assist SMEs in a fast changing economic environment. So as to foster SME growth and economic development in Zanzibar, it will be crucial to create tax policies that strike a balance between revenue implications and compliance incentives, attend to the unique demands of various SME groups, and maximize taxpayer services.

5.2 Recommendations

In a nutshell, current research recommends more research on the complex interactions that exist between taxpayer services, compliance, and SME results in the Zanzibar setting. It emphasizes the necessity of flexible tax laws that empower SMEs, encourage voluntary compliance, and reduce unexpected effects on their earnings. Zanzibar can fully utilize the potential of its SME sector and support long-term, sustainable economic growth and development by acknowledging these obstacles.

It is recommended that governments should take steps to streamline their tax systems in order to make them less complicated and make it easier for small and medium-sized businesses (SMEs) to understand and comply with tax laws. Therefore, in order to eliminate uncertainty and encourage voluntary compliance, it is advised that comprehensive assessments of the tax system be carried out, and that the adoption of flat or simplified tax rates be considered. It is advised that tax guidelines be provided to subject matter experts (SMEs) in their native tongues, guaranteeing that the data is comprehensible and easy to read. Furthermore, to simplify tax obligations, a clear tax categorization system that groups companies based on their size, turnover, and industry is suggested to be put into place. Global incidences e.g. the adoption of flat tax systems in nations like Estonia and Latvia, provide as excellent examples of the beneficial effects of streamlining tax structures on compliance. These tactics have boosted tax collections while also successfully reducing the compliance burden that small and medium-sized businesses (SMEs) must bear.

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