

The Effect of Value Added Tax on Corporate Cash Flow in Ghana

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Abstract

This study investigated whether there is a relationship between value added tax (VAT) and corporate cash flow. In order to conduct the study, corporate entities registered with the Large Tax Payer Unit (LTU) of the Ghana Revenue Authority (GRA) were selected, and data from January 1, 2009, through December 31, 2011, were analyzed. The purpose of this study was to establish if there is a statistically significant relationship between VAT and corporate cash flow. Apart from providing empirical evidence of VAT effect on corporate cash flow, the study was expected to establish the major tax and corporate policy implications to decision makers. This will aid governments in making a choice between VAT and corporate tax—as sufficient literature on the effect of corporate income tax (CIT) on organizational cash flow already exists. The findings clearly suggested that there is a statistically significant difference in cash flow patterns between organizations that pay VAT and entities that do not pay VAT. The study further established that, apart from sales, all other selected independent variables had a negative relationship with VAT. However, the findings contradicted the assertion that the VAT burden is fully borne by only the final consumer.

Keywords: accounts payable, accounts receivable, cash flow, corporate income tax, sales, value added tax

1. Introduction

Resources required for funding government expenditure in developing countries are considered woefully inadequate in recent times due to inconsistent inflows of funds from external sources (International Monetary Fund, 2011). According to Muriithi and Moyi (2003), many developing countries in Africa opted for domestic revenue generation methods mainly through taxes as a remedy to reducing overreliance on external funding of government expenditure. However, any policy decisions that emphasize either corporate tax or VAT must be guided by public finance theory. Public finance theory requires careful evaluation of possible tax schemes in order to ensure that selected schemes are neutral and capable of raking in the highest revenue with no distortionary effect (Sharma, 2005). Sufficient literature suggests that cash is the lifeblood of business organizations and that corporate tax imposition adversely distorts the cash flow of affected firms (Crum, 1985). Whereas academicians, including Moomau, Dowd, and Bull (2011), have suggested reforms to remove corporate cash flow distortions created by the CIT system, others are recommending the adoption of VAT to replace it. Cronin, Lin, Power, and Cooper (2013), for example, called on national governments to replace CIT with VAT. The reason given by Moomau et al. is that, unlike CIT, VAT burden is ultimately borne by individual consumers and not business entities.

Whereas an inverse relationship was found between CIT and corporate cash flow (Tyran & Sausgruber, 2002), no such conclusions have been established between VAT and corporate cash flow. For this reason, it is argued that policy decisions on choice between CIT and VAT regarding their respective contributions toward private sector development must fully incorporate the cash flow neutrality effect. However, there is no extensive effort to establish the effect of VAT on corporate cash flow in developing countries such as Ghana. An earlier effort in this field by Murphy (1991) was not only confined to developed economies, such as that of the United States, but also limited in application as data used were based purely on projected cash flows. Therefore, the true relationship between VAT and corporate cash flow is yet to be established by researchers. The existing research gap thus provided an opportunity for this study to establish the effect of VAT on the cash flow position of businesses in Ghana. The conclusions from this study are expected to aid government officials in making a fair assessment of the policy implications of VAT and CIT on business cash flows if government is to better induce private sector participation in public businesses. The findings may justify the continuous commitment of the Ghana government's scarce human and financial resources to the adoption and implementation of VAT over the

years.

2. Literature Review

The main objective of every government is to maximize the welfare of its citizenry. Studies have shown that governments often try to achieve this objective by providing basic infrastructure, reducing the general poverty level, and addressing climate changes. According to Muriithi and Moyi (2003) and confirmed by Kefela (2009), most governments in developing countries have been under constant attack by the media to provide basic infrastructure, education, and social needs so as to improve the welfare of the people. Until recent times, most developing countries depended heavily on funding from foreign donors and other external sources to execute budgetary activities. However, inflows of funds from foreign sources to developing countries are unreliable, for different reasons. For example, the sharp decline of inflows of grants and credits to developing countries from bilateral and multinational institutions in the early 2000s has been blamed on global crises in the developed world (Gupta & Tareq, 2008; International Monetary Fund, 2011). As a result, most governments in less-developed countries resorted to imposition of domestic taxes aimed at not only improving the revenue base but also reducing overreliance on external sources of funding (Crum, 1985). In order to accomplish this desired result, most governments resorted to CIT (Koppenjan & Enserink, 2009).

Interestingly, CIT is being criticized for its distortionary effects on corporate cash flows (Moomau et al., 2011). Also, Watrin and Ullmann (2008) and Cronin et al. (2013), in separate studies, noted that the burden associated with VAT is ultimately borne by individuals, not corporate entities, and recommended that CIT be replaced with VAT. VAT is a multistage tax levied on the percentage of value added to goods sold or services at various stages of import, production, and distribution (Aizenman & Jinjarak, 2009; Zayanderoodi, 2010). It is regarded as a prominent tool to government revenue mobilization efforts as it is able to avoid the cascading effect usually associated with turnover tax administration (Le, 2003). As Le (2003) noted, the addition, subtraction, and invoice-based credit methods are three main approaches to calculating VAT liability. However due to practical difficulties, the addition and subtraction methods are rarely used (Schultz, Sullivan, & Gould, 2011). It is for this reason that VAT policy advisers prefer the invoice-based credit method. For example, Le found that the invoice-based credit approach makes it difficult to evade tax as each taxpayer is required by law to retain copies of invoices to qualify for a refund of input VAT.

Those who advocate for the replacement of CIT with VAT argue that such a move will boost corporate cash flows and will enhance firms' contributions to the government's effort in economic growth and development. Koppenjan and Enserink (2009) posited that joint contributions from the public and private sectors constitute an essential ingredient to the attainment of most governments' developmental agendas in modern times. However, businesses are able to contribute meaningfully to government developmental agendas if they are profitable and supported by the needed cash. Scherr (1989) identified strong cash flow levels as the most significant factor influencing corporate level of profitability. Deloof (2003) observed a significant and direct relationship between corporate cash and profitability across Belgian firms. Siddiquee and Khan (2008) concluded that firms that ensure effective management of cash and other elements of working capital are placed in a counter-cyclical move to build competitive advantage. Cote and Latham (1999) argued that a firm's cash flow position is significantly influenced by how efficiently its receivables, inventory, and accounts payable are managed. The bankruptcy of W. T. Grant, a nationwide chain of department stores, was also blamed on deficit cash flow resulting from inefficient handling of elements of working capital (Largay & Stickney, 1980). It can be deduced from the foregoing arguments that the success of every business entity is largely dependent on the efficient and effective management of the elements of its working capital.

However, a high percentage of credit sales account for working capital challenges facing many firms in the world. It has been argued that untimely debt collection is a major reason for cash flow challenges confronting many firms today (Quayyum, 2012; Telmoudi, Ziadi, & Noubbigh, 2010). Gill, Biger, and Mathur (2010) claimed that intense competition has forced many firms to adopt generous trade credit policies, resulting in high-percentage sales. VAT-paying institutions must, however, remit net VAT within the statutory time period. This implies that VAT-paying institutions must either face a penalty or borrow money to settle VAT so as to avoid said penalty. In other words, firms must generate sufficient cash to liquidate maturing debt obligations.

The findings from previous studies proved the importance of revenue to governments' development agendas and how different countries have tried to raise the required revenue to accomplish this objective. The current study explored whether there is indeed no significant cash flow effect on corporate entities in developing countries, such as Ghana, as VAT is introduced. The main research question therefore was,

- Has the imposition of VAT affected the cash flow of corporate entities in Ghana?

This question was answered by investigating the following subquestion:

- Apart from increases in administrative costs of compliance, does imposition of VAT alter the cash flow of corporate entities?

The research question was answered based on the following research hypotheses:

- H01: VAT does not significantly change the cash flow pattern of corporate entities.
- Ha1: VAT significantly changes the cash flow pattern of corporate entities.

3. Research Method

The study used only the corporate entities registered with the LTU of the GRA. The corporate entities represent all five major sectors of the economy: agriculture, mining and petroleum, service, financial institutions, and manufacturing. All entities registered between January 1, 2009, and December 31, 2011, were included in the study. According to Witt and Lautenbacher (2003), firms registered with the LTU account for about 90% of corporate tax of government of Ghana. If 90% of corporate tax revenue is derived from registered firms in the LTU and it is argued that VAT was introduced to broaden the government revenue base, then there is every justification to rely on the LTU data for this study.

The study adopted the quota sampling technique to apportion observational units from different sectors as the sectors were unequal in terms of number and firm size. A convenience sampling method was subsequently used to call observational units into the sample as the registered firms were predetermined by the GRA. The most current data available for firms in the five main industry groupings for the three years were considered because the political and economic environment in Ghana has been stable over the last two decades. In order for firms to be part of the sample, they had to have existed since January 1, 2009, the beginning of the government's 2009 fiscal year. In addition, each firm's complete data for 2009, 2010, and 2011 had to be available. The procedure adopted is consistent with that used by Talebnia, Valipour, and Askari (2012) in their statistical study.

The justification for this technique is that Talebnia et al. (2012) grouped their sample into pharmaceutical companies and chemical industry companies listed on the Tehran Stock Exchange from 2002 to 2010. According to Talebnia et al., a firm was included if it had been accepted by the Tehran Stock Exchange as of 2002, the firm's data were available, its fiscal year end coincided with the last month of the solar year in Iran, and the firm had not changed its fiscal year during the research period. Given that all firms for the present study had their fiscal year ending starting January 1 and ending December 31, it was justifiable and convenient to adopt the criteria outlined in Talebnia et al. for this study.

VAT amount paid represented the dependent variable in this study. The predictor variables were accounts receivable, accounts payable, industry, and sales. Smith, Webber, and Cerf (1973), in their seminal work, established accounts payable, accounts receivable, and percentage increase in sales value as major predictor variables influencing the cash flow positions of business entities. Additionally, the list of individual firms' sector classification was obtained from the LTU. Each firm and its data is then classified according to the preexisting industrial classification. These firms were also regrouped into two groups: VAT-paying entities and non-VAT-paying entities. An overview of the data used in the analysis is provided in Table 1.

Table 1. *Excerpts of the Data Used in the Analysis (From LTU of GRA, 2009–2011)*

Obs	Industry	VAT	VAT amt.*			
			Sales*		Accts. rec.*	Accts. pay.*
1	Agriculture	No	765,525,539		47,955,440	42,322,606
2	Agriculture	No			90,248	827,718
3	Agriculture	Yes	16,185,587	1,675,359	1,156	1,317
4	Agriculture	No	9,128,738		136,931	45,644
5	Agriculture	No	98,982,458		7,927	1,108,882
6	Mining and petroleum	Yes	762,845,300	15,035,472	74,596	142,053
7	Mining and petroleum	Yes	93,439,800	357,641	17,468,000	6,993,000
8	Mining and petroleum	Yes	188,693,498	2,959,714	22,775	75,086
9	Mining and petroleum	Yes	0	1,097,567	16,004,320	14,621,165
10	Mining and petroleum	Yes	4,472,000	150,595	7,690	2,533
11	Mining and petroleum	Yes	18,925,050	920,783	1,743,165	928,767
156	Financial institution	No	42,037,964		19,822,407	123,139,207
157	Financial institution	No	374,234		200,720	31,4725
158	Financial institution	No	7,633,000		18,516	857
159	Financial institution	No	4,540,492		836,503	1,396,464
160	Financial institution	No	6,965,078		5,560,005	3,092,156
161	Financial institution	No	2,576,413		1,462,889	181,296
162	Financial institution	No	831,928		59,722	6,593,080
163	Financial institution	No	61,822,729		657,231,411	902,213,882
164	Financial institution	No	101,593		321,143	619,455

Note. From LTU of GRA (2009, 2010, and 2011).

*Amounts are presented in Ghana cedis.

Statistical and graphical tools in SPSS, Minitab, and Microsoft Excel were primarily used to analyze and present the results in the study. The tools consist of tables and histograms, and correlation and regression analysis.

In analyzing the nature and extent of the relationship, correlation and regression techniques were used to conduct the tests. Whereas the Pearson product–moment correlation coefficient (r) was used to measure linear association between the variables, a multiple regression model was used to determine how the dependent variable y was related to the independent variables. A value of r near -1 or +1 signifies a linear relationship, and a value close to zero indicates that the linear association between the variables is weak. Also, a value close to 1 shows a strong relationship. In interpreting the quantity r , r^2 represents the proportion of the total variation in the values of the dependent variable that can be explained by a linear relationship with the values of the independent variables. The multiple regression model developed and used for this study is expressed as

$$y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon, \quad (1)$$

where β_0 , β_1 , β_2 , β_3 , and β_4 are unknown parameters that were estimated. VAT amount represents the dependent variable for this study, represented in this model as y . The predictor variables were represented as follows:

- X_1 = Industry.
- X_2 = Sales Amount.
- X_3 = Accounts Receivable.
- X_4 = Accounts Payable.
- ϵ = Error Term.

In Equation 1, it was assumed that VAT has some form of relationship between X_1 , X_2 , X_3 , and X_4 . VAT, therefore, was the dependent variable whose values were determined in the model. It also was assumed that the random term ϵ is normally distributed with a constant variance and a mean of zero. However, a preliminary

investigation conducted on the data points using a scatter diagram revealed instability and assumption violations. The data were transformed using linear logarithmic transformation based on recommendations made by Vogt (2007). Hence, the model was transformed before fitting. In doing so, Equation 1 was transformed as follows:

$$\begin{aligned}\log y &= b_0 + b_1 X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + \epsilon \\ w &= b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + e.\end{aligned}\quad (2)$$

The transformed model, Equation 2, was estimated by using least square estimation. Consider the case for the general linear regression model:

$$w_i = b_0 + b_1 x_{1i} + b_2 x_{2i} + b_3 x_{3i} + \dots + b_k x_{ki} + e_i. \quad (3)$$

To obtain the estimates of $b_0, b_1, b_2 \dots b_k$, the equation was minimized:

$$SSE = \sum_{i=1}^n e_i^2 = \sum_{i=1}^n (w_i - b_0 - b_1 x_{1i} - b_2 x_{2i} - b_3 x_{3i} - \dots - b_k x_{ki}) \quad (4)$$

Differentiating SSE, in turn, with respect to $b_0, b_1, b_2 \dots b_k$ and equating to zero will generate a set of $k + 1$ normal equations for Equation 3 as follows:

$$\begin{aligned}nb_0 + b_1 \sum_{i=1}^n x_{1i} + b_2 \sum_{i=1}^n x_{2i} + \dots + b_k \sum_{i=1}^n x_{ki} &= \sum_{i=1}^n w_i \\ b_0 \sum_{i=1}^n x_{1i} + b_1 \sum_{i=1}^n x_{1i}^2 + b_2 \sum_{i=1}^n x_{1i} x_{2i} + \dots + b_k \sum_{i=1}^n x_{1i} x_{ki} &= \sum_{i=1}^n x_{1i} w_i \\ \vdots & \vdots \\ b_0 \sum_{i=1}^n x_{ki} + b_1 \sum_{i=1}^n x_{ki} x_{2i} + b_2 \sum_{i=1}^n x_{ki} x_{2i} + \dots + b_k \sum_{i=1}^n x_{ki}^2 &= \sum_{i=1}^n x_{ki} w_i\end{aligned}\quad (5)$$

These equations, then, solved for $b_0, b_1, b_2 \dots b_k$ by using the method of solving systems of linear equations. A Minitab statistical package was employed to estimate the model parameters.

3.1 Test of Significance of the Regression Model

For the regression model in Equation 3, the following hypotheses were tested:

- $H_{01}: b_0 = b_1 = b_2 \dots = b_k = 0.$
- $H_{a1}: \text{Not all } b_i = 0, \text{ where } i = 0, 1, 2 \dots k.$

Conclusions were drawn based on information in the analysis of variance (ANOVA) tables. If the p value of the F statistic computed is less than the significance level (α), then the researcher rejects H_{01} and concludes that the model is adequate and can be used for prediction. The test statistic for the F is defined as MSR / MSE , where MSR is the mean square regression and MSE is the mean square error. This has the F distribution with k and $n - k - 1$ degrees of freedom when H_0 is true.

3.2 Test of Significance of the Parameter Estimates

In conducting the test of significance of the parameter estimates, the researcher tested the null hypothesis: $H_{01}: b_1 = 0$ against $H_{a1}: \text{not all } b_1 = 0$. The test statistic is represented as follows:

$$t = \frac{\hat{b}_i - b_i^*}{S.E(b_i)}$$

This equation has the t distribution with $n - k$ degrees of freedom, where:

- $\hat{b}_i =$ least square estimates of the b_i .
- $b_i^* =$ hypothesized value of the b_i .
- $se(\hat{b}_i) =$ standard error of \hat{b}_i .

- n = sample size.
- k = total number of estimated parameters.

In this test, the researcher rejects H_{01} when the p value of the t statistic is less than α , the significance level. The Minitab statistical package was employed to conduct this test.

4. Results and Discussion

A total of 629 firms were registered as taxpayers with the LTU between January 1, 2009, and December 31, 2011. Of these firms, only 594 met the selection criteria for this study and were thus included for data analysis. The breakdown of firms according to industry groupings included 14 agriculture, 145 manufacturing, 52 mining and petroleum, 208 services, and 175 financial institutions. Each firm belongs to an industrial grouping that either pays VAT or pays no VAT. Of the 629 firms, 181 were non-VAT-paying institutions and 413 were VAT-paying institutions.

4.1 Correlation between the Variables

Pearson correlation was used to establish the extent of relationship between the variables under study: VAT paid, accounts receivable, accounts payable, and sales amount. Table 2 presents the Pearson correlation values that describe the nature of the relationship between the variables: logVat amount, log of sales, log of accounts payable, and log of accounts receivable. From this table, one can see that there was a fairly strong relationship between VAT and sales. A Pearson correlation value of 0.57 and a p value of 0.00 signify a significant relationship. The implication is that as sales increase, VAT amount paid to revenue agencies increases, and vice versa. In other words, the relationship between corporate annual sales value and VAT revenue paid to the government coffers was moderately strong and direct.

Table 2. *Pearson Correlation*

Variable	log_cisales	log_vat	log_acctr
log_vat	0.57		
	0.00		
log_acctr	0.25	-0.09	
	0.00	0.09	
log_acctp	0.23	-0.09	0.82
	0.00	0.07	0.00

On the other hand, there was no significant linear relationship between VAT and accounts receivable ($r = -0.09$, $p = 0.09$). An r value very close to zero means that there is an insignificant and inverse relationship between VAT and accounts receivable. Similarly, there exists insignificant linearity between VAT and accounts payable ($r = -0.09$, $p = 0.07$).

It is interesting to note, however, that there was a strong and significant direct relationship between accounts receivable and accounts payable. Given that this pair had a correlation value of 0.82 with a p value of 0.00, the implication is that as a company's accounts receivable is on the increase, its outstanding financial commitments also increase, and vice versa.

Figure 1 depicts a scatterplot of the variables. The scatterplot of values between accounts payable and accounts receivable is much more clustered at the center line compared to that of VAT values and sales values. The scatterplot of values between VAT and accounts payable, and VAT and accounts receivable, depicted almost the same pattern. The scatterplots therefore confirm the nature of a relationship between variables, which was established by Pearson correlation (see Table 2).

The observation from the previous analysis is that Pearson correlation suits and can be used to predict the relationship between dependent and independent variables. However, in order to determine whether the imposition of VAT alters the cash flow pattern of corporate entities, the relationship between VAT paid, representing the dependent variable, and sales values, accounts payable, accounts receivable, and industry characteristics, representing the independent variables, was examined using the multiple regression model.

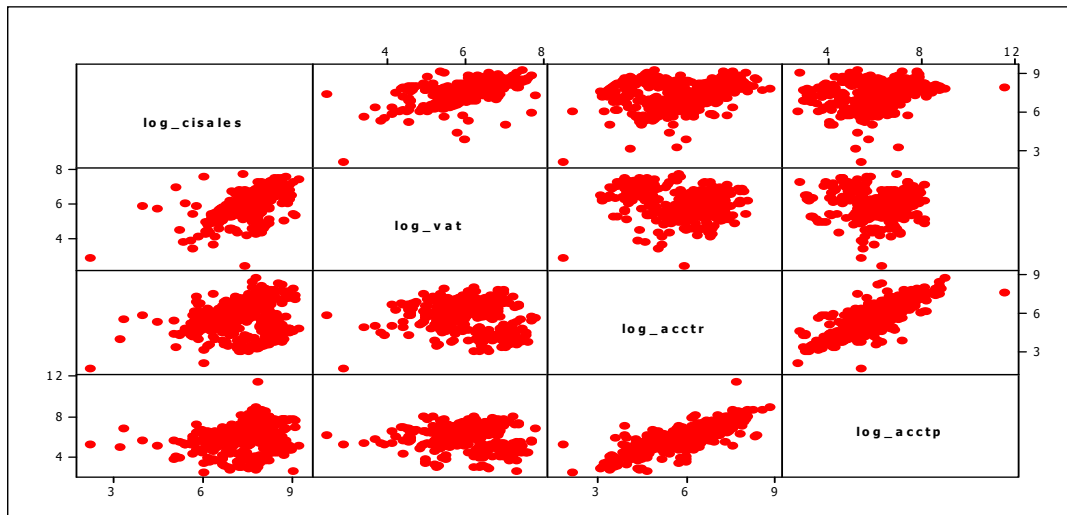


Figure 1. Scatterplots of the variables under study

4.2 Results of the Regression Analysis

The multiple regression technique was employed in the analysis of the relationship between VAT cash flow and the independent variables. The Minitab statistical package was employed to determine whether the imposition of VAT significantly changes the cash flow pattern of corporate entities in Ghana. The first run regression analysis for the model, stated in Equation 2, was estimated using the Minitab statistical package as follows:

$$\log_vat = 2.66 - 0.15 \text{ industry_c} + 0.60 \log_cisales - 0.11 \log_acctr - 0.01 \log_acctp$$

where

- \log_vat = VAT cash flow, in Ghana cedis.
- industry_c = coefficients of industry, in Ghana cedis.
- $\log_cisales$ = sales, in Ghana cedis.
- \log_acctr = accounts receivable, in Ghana cedis.
- \log_acctp = accounts payable, in Ghana cedis.

Except for the log of accounts payable with $p = 0.80$, all of the parameter estimates in the model were found to be statistically significant as their p values were less than the significance level of 0.05. Also, apart from log of sales, which indicated a direct relationship with a high t value, all the independent variables in the model showed a negative relationship with log of VAT. This implies that a 0.60-unit increase in log of sales will result in a 1-unit increase in log of VAT. On the contrary, a 0.11-unit decrease in log of accounts receivable will result in a 1-unit increase in log of VAT. Similar to log of accounts receivable, a 0.15-unit decrease in the coefficients of industry results in a 1-unit increase in log of VAT.

4.2.1 First Run Regression Analysis Results

The regression analysis first run results for \log_vat versus industry_c , $\log_cisales$, \log_acctr , and \log_acctp are displayed in Tables 3 and 4.

Table 3. Test of VAT effect on sales, industry type, accounts receivable, and accounts payable

Predictor	Coefficient	SE coefficient	T	p
Constant	2.66	0.34	7.73	0.00
industry_c	-0.15	0.04	-4.12	0.00
logcisales	0.60	0.04	14.55	0.00
log_acctr	-0.11	0.06	-2.02	0.04
log_acctp	-0.01	0.06	-0.25	0.80

Note. S = 0.63. R² = 38.20%. R²(adj.) = 37.50%. PRESS = 149.21. R²(pred.) = 36.10%.

Table 4. ANOVA: Interaction between VAT on sales, industry type, accounts receivable, and accounts payable

Source	df	SS	MS	F	P
Regression	4	89.16	22.29	55.59	0.00
Residual error	360	144.36	0.40		
Total	364	233.51			

The regression analysis results showed that log of accounts payable was found to be not statistically significant, and because its inclusion will not affect the adequacy of the model for prediction, it was dropped from the model. An *F* value of 55.59 with a *p* value of 0.00 from the first run regression analysis results confirmed the statistical significance of the model. Also in this first run analysis, an *r*² of 38.2% explained the variations in the log of VAT amounts caused by the independent variables.

4.2.2 Second Run Regression Analysis Results

In this section, the reestimation of the regression model was done by excluding accounts payable as it considered to be not statistically significant. The exclusion of accounts payable from the reestimation of the regression model provided sharper and better parameter estimates of the model. The second run regression analysis results (as provided in Tables 5 and 6) for log_vat versus industry_c, log_cisales, and log_acctr equation were as follows:

$$\log_vat = 2.63 - 0.15 \text{ industry_c} + 0.60 \text{ log_cisales} - 0.12 \text{ log_acctr}$$

Table 5. Test of VAT effect on sales, industry type, and accounts receivable

Predictor	Coefficient	SE coefficient	T	P
Constant	2.64	0.33	7.90	0.00
industry_c	-0.15	0.04	-4.13	0.00
log_cisales	0.60	0.04	14.59	0.00
log_acctr	-0.12	0.03	-4.01	0.00

Note. S = 0.63. R² = 38.20%. R²(adj.) = 37.7%. PRESS = 148.35.

R²(pred.) = 36.47%. Durbin-Watson statistic = 1.60.

Table 6. ANOVA: Interaction between VAT and sales, industry type, and accounts receivable

Source	df	SS	MS	F	P
Regression	3	89.13	29.71	74.29	0.00
Residual error	361	144.38	0.40		
Lack of fit	360	144.25	0.40	3.08	0.43
Pure error	1	0.13	0.13		
Total	364	233.51			

From the second run regression analysis results, an *F* value of 74.29 with a *p* value of 0.00 confirmed the statistical significance of this regression model. Additionally, the *r*² of 38.2% in this second run analysis further explained the variations in the log of VAT amounts caused by the independent variables of accounts receivable and sales amount.

4.2.3 Conclusion from the F Test

For testing the significance of the regression model, the following hypothesis was tested: $H_0: b_0 = b_1 = b_2 \dots = b_k = 0$ against $H_a: \text{not all } b_i = 0, \text{ where } i = 0, 1, 2 \dots k$. The implication of the model is that there is no statistically significant difference in cash flow pattern between businesses that pay VAT and those that do not pay VAT. The result from the analysis showed that the p value for the test statistic of F ratio computed was 0.00. As the p value was less than the 0.05 significance level, the researcher rejected the null hypothesis and concluded that there is a statistically significant difference in cash flow pattern between corporate entities that pay VAT and those that do not pay VAT, at the 95% significance level.

In conclusion, the model was adequate and therefore suitable for prediction given that the final estimated model fully satisfied all the important assumptions underlying a multiple regression model. The normal probability plot of the histogram and the residuals in Figures 2 and 3, respectively, further confirmed the adequacy of the model as the errors were normally distributed with a mean of zero and a constant variance. Finally, the researcher was unable to conclude that there is serial correlation of the errors in the model, as a Durbin–Watson value of 1.60 indicates inconclusiveness. There is therefore no multicollinearity among the independent variables.

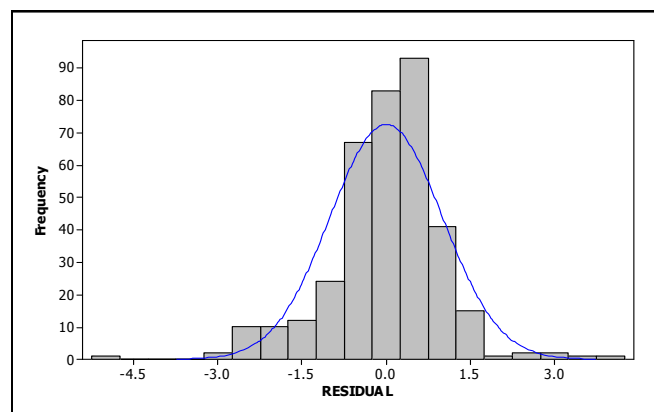


Figure 2. Histogram of standardized residuals

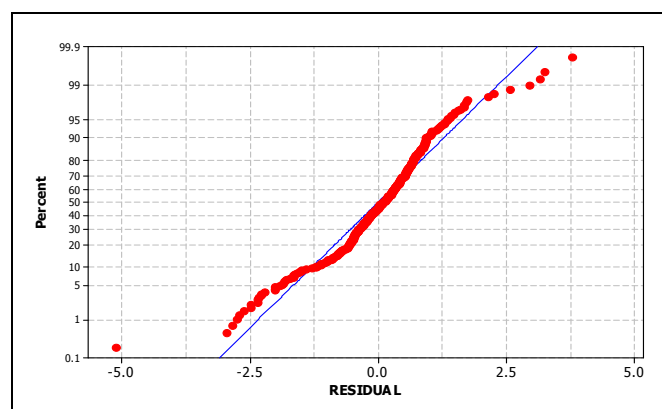


Figure 3. Probability plots of residuals

5. Conclusion and Recommendations

This study revealed that Ghanaian business entities are not immune to effects of VAT on their cash flows. The findings clearly suggested that there is a statistically significant difference in cash flow patterns between businesses that pay VAT and businesses that do not pay VAT. The study further established that, apart from sales, all other selected independent variables have a negative relationship with VAT. This study provided empirical evidence of the VAT effect on corporate cash flow. This result was consistent with the research findings established in this field in the developed world by Murphy (1991). It also confirmed Murphy's assertion that tax neutrality comparisons between CIT and VAT have been incomplete given that cash flow effect has been

ignored completely by economists. However, the findings from this study contradicted one general assumption by VAT proponents: that VAT is tax-neutral and does not distort the cash flow patterns of businesses. This study suggests that corporate entities' cash flows resulting from operating activities could be diminished due to VAT remittance. Given that VAT remittance is a cash flow variable that is controlled by the government agency (GRA), and not the firm, care must be taken to ensure that VAT policies do not have detrimental effects on businesses, so as to encourage private sector participation in government activities.

6. Limitations

The study considered only data of firms registered with the LTU of the GRA. Due to insufficient data for nonlisted firms, firms not registered with the LTU were not considered. Also, this study did not cover the effect of VAT on corporate cash flow across different sectors of the Ghanaian economy as the regression analysis technique adopted for this study was not suitable for carrying out such a study. The independent variables considered for this study were limited to sales, accounts payable, and accounts receivable, even though other factors might have some influence on corporate cash flow.

7. Recommendations for Further Research

The current study can serve as a base for conducting further research on the effect of VAT on corporate cash flow across different industrial sectors of the Ghanaian economy. Such research is expected to enhance government decisions regarding the appropriate VAT rate to apply to various industries without diminishing cash flow of firms.

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