

IMPACT OF ELECTRONIC TAX REGISTERS ON VALUE ADDED TAX COMPLIANCE: A STUDY OF PRIVATE BUSINESS FIRMS

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ABSTRACT

The purpose of this study was to assess the impact of use of Electronic Tax Registers (ETRs) on Value Added Tax (VAT) compliance among private business firms in Kisumu city, Kenya. A sample of 233 private firms was selected from a population of 590 private firms using stratified sampling technique. The data was gathered by use of questionnaires and analysed by use of correlation and descriptive statistics. Empirical results reveals that effective and regular use of ETR has a significant impact on the Value Added Tax (VAT) compliance ($R=0.622$, $p<0.05$), frequency of inspection of businesses by tax authorities has a slight impact on VAT compliance ($R=0.15$, $p<0.05$) while sales had insignificant negative relationship with VAT compliance ($R=-0.077$, $p>0.005$). Based on the research findings the study concludes that use of ETR has a significant impact on VAT compliance in Kenya.

Keywords: value added tax, electronic tax registers, private business firms in Kenya

INTRODUCTION

Background of the Study

Value Added Tax, (VAT) on consumer expenditure was introduced in Kenya in 1990 in order to replace sales tax, which had been in operation since 1973. It was introduced as a measure to increase government

revenue through expansion of tax base, which hitherto was confined to income tax and sales tax. VAT is levied on consumption of taxable goods and services supplied in Kenya or imported into Kenya. Registered persons acting as agents of government of Kenya collect VAT at designated points and then submit to the Kenya Revenue Authority (KRA) (Simiyu 2003). Previous empirical study conducted by Moyi and Ronge (2006), indicates that VAT contribution is estimated to an average of 5.4% of GDP between the year of its introduction (1990) and the year 2005. The average of total tax contribution to GDP for the same period was 19.8%. This clearly indicates that in Kenya, VAT contributes substantially to the growth of the economy.

An other study conducted by Waris et al, (2009) reveals that despite the importance of VAT in the national budget, the period between the year 2000-2003 showed that VAT had the highest share of total tax (above 30%). However, VAT contribution trend declined to total taxes collected from the year 2003 onwards as given in table 1 which captures the composition of various taxes to total taxes in Kenya (1996-2008). This trend is worrying and calls for intervention reforms. Kenya revenue Authority (KRA) has since introduced several reforms in its revenue collection system including the introduction of Electronic Tax Registers.

ETRs were first introduced to Kenya in 2004, through a gazette notice no. 47 issued in October 22, 2004. According to this notice, ETR or printer is defined as any device approved by the government to record and issue fiscal data of goods and services (KRA 2004). Today, the law makes it mandatory for businesses registered for VAT to issue tax invoices and/or cash sale receipts which must be ETR generated or supported by ETR receipts.

The VAT act Cap 476 (Laws of Kenya), requires that once a tax payer is registered, should always display VAT certificate, issue ETR generated receipts, declare correct returns and submit returns on time. Failure to adhere to these requirements attracts heavy fines and penalties. However, businesses with turnover of less than five million per annum are under no obligation to register for VAT and as such, are not legally compelled to use ETRs. For those businesses with turnover below the required VAT threshold, KRA has introduced a new tax called turnover tax (TOT) by a Finance Act 2007, through the provision of income tax Act, cap 470 which came into effect from 1st January 2008. This tax is based on gross sales and is chargeable at the rate of 3% of gross turnover.

Electronic tax registers were introduced to help KRA establish the amount of VAT payable without requiring necessarily requiring the traders to provide records for crosschecking. There was concern that thousands of traders were undervaluing their sales in order to evade tax. The success of ETR machines in Kenya was questioned during its initial stages of implementation. According to Kathuri (2006), the gadgets had failed in 21 countries including Tanzania. There was also fear that accurate records could not be kept with the devices because there is no provision for return of goods and services.

Based on the above premises, the present study was designed to assess the impact of use of Electronic Tax Registers (ETRs) on Value Added Tax (VAT) collection among private business firms in Kisumu city, Kenya. The study was guided by following specific objectives:

1. To investigate the relationship between the use of electronic tax registers and VAT compliance rates in Kisumu city.
2. To assess the extent to which income levels of private business firms affects the VAT compliance.
3. To determine whether or not frequency of inspection by the officials of revenue department (KRA) impacts on VAT compliance.

Conceptual Framework

The literature on tax compliance points out, the size of income of tax payer, knowledge of tax due, frequency of audit, probability of detection by tax authorities and severity of punishment if caught as some of the important determinants of tax compliance model. Tax compliance can therefore be increased if control measures are put in place to detect non compliers and punitive measures instigated. The use of ETR serves two purposes in this model: automatically generating knowledge of tax due, and acting as a control compliance control measure. According to Ritsema et al (2003), tax compliance decision depends on income level of an individual taxpayer, inspection (audit) by tax authorities and deterrent measures put in place. This theoretical framework has been adapted for this study since other determinants of compliance such as severity of punishment are uniform for all taxpayers. The use of ETR is likely to go hand in hand with inspection. Sales level has been included as a proxy for income. The model variables interrelationship can be conceptualized as shown in figure 1.

RESEARCH METHODOLOGY

This study adopted a survey research design. The research design was preferred for the study since it allowed the researcher to collect a large amount of data from a sizeable population in a highly economical way. According to Saunders, et al (2007) this research strategy allows collection of data through questionnaires administered to a sample. Data collected by this design can be used to suggest possible reasons for particular relationships between variables and produce models for these relationships.

This research design was therefore relevant for the study as it also enabled the researcher to take control over the research process. The target population of this study was medium and large scale business private firms operating within Kisumu city and registered for VAT purposes. The study population comprised of a total of 590 private business firms drawn from the Kisumu municipal council registered as firms active as at 31st December, 2008. Out of a total of 590 firms, 233 firms were selected a using stratified sampling technique.

Data was gathered by use of self-administered questionnaires. The questionnaire was divided into three sections: general Information, determinants of VAT compliance and impact of electronic tax registers on collection of VAT. Business related information was requested. This included, among other things, main business activity, number of staff employed, the year the business was first registered for VAT and questions, penalties for late payment of VAT and the number of times the business had been inspected by the tax authorities. Most of the perceptual responses were captured in a five-point-Likert scale. This was preferred because Likert scale is able to deal with the conceptual nature of the subject area with large number of items and difficulties in eliciting specific information from the respondents (Singh and Smith, 2006). Direct observation methodology also helped in cross-checking the respondents' answers. Businessmen were also informally interviewed to provide information on their views on the use of ETR, inspection and income and VAT compliance. This was aimed at further enhancing the consistency on their responses on the subsequent questionnaires. A combination of techniques was utilized during the data analysis stage. VAT compliance was measured on a five-point Likert scale consistent with the dimensions suggested by Adams and Webley (2001) and Webley *et al* (2002). VAT compliance model adopted by the study is summarized below:

$$\text{VAT compliance} = X_0 + X_1 + X_2 + X_3 + \alpha \quad [\text{Equation 1}]$$

Where,

| | | |
|----------|---|--|
| X_0 | = | Constant |
| X_1 | = | Sales level (income of taxpayer) |
| X_2 | = | Audit/Frequency of inspection |
| X_3 | = | Control measures, knowledge of tax due (use of ETR) |
| α | = | Error term. |

EMPIRICAL RESULTS OF THE STUDY

Electronic Tax Returns and Value Added Tax Compliance

The average use of ETR was captured in three questions in the questionnaire which were arranged in five point scale. Further, VAT compliance was also measured on a five point scale, with seven selected questions. Figure 1 depicts the relationship between the average use of Electronic Tax Registers and the average VAT compliance levels. The figure indicates that there is a positive relationship between the use of ETR and VAT compliance by the respondents. However, this does not reveal the cause and effect of the relationship between the variables. The trend depicted by figure 2 is in agreement with the results of correlation as shown by the output presented in table 2. The correlation coefficient was found to be substantial and significant at 95% confidence level ($R=0.622$, $p<0.01$). This indicates that the use of Electronic Tax Registers has a significant correlation with VAT compliance. This result was consistent with the responses from the perceptual question where respondents were asked whether, they thought adoption of ETR was effective enough to curb VAT noncompliance. The majority of the respondents ($N=67$) 52.8% (score 4 and 5 on the scale) agreed that ETR helped in reducing non compliance to a great extent. Twenty-four (24%) of the respondents were indifferent as they took middle ground response (score 3 on the scale)

Income and VAT Compliance

Figure 3 shows the results of VAT compliance at different sales/turnover levels of the participating firms. Figure 3 also shows that the businesses which reported low sales per year (below 25 million shillings) had high VAT compliance compared to businesses reporting average sales of 25-100 million shillings per year. The figure also indicates that businesses reporting turnover above 100 million shillings had the highest VAT compliance levels (average of 4.33 on compliance scale). Figure 3 also indicates that VAT compliance is lowest (average 3.13 on scale among businesses reporting medium scale sales (between 25 million and 50 million shillings per annum). Within this sales range, the figure indicates a negative relationship between sales and VAT compliance.

The impact of sales volume on VAT compliance was also investigated by perceptual questions aiming at eliciting respondents views on the role of volume of sales on VAT compliance. These responses are summarized in table 3. Table 3 indicates that on average, increase in the taxpayers income leads to low compliance by the respondents. The majority of respondents (104 respondents representing 83.2% of all respondents) agreed (score 4 and 5 on the scale) that increase in sales volume leads to poor tax compliance. Thirteen respondents (10.4%) were unsure whether changes in income had any effect on their compliance decision. Only 6.4% of the respondents disagreed (score 1 and 2 on the scale) that increase in sales would reduce tax compliance. Increase in sales implies increase in VAT payable by the businessmen. Therefore the second perceptual question which required the respondents to state whether the amount of VAT payable would influence their compliance decision was meant to support the first question. Majority of the respondents (52.2%) agreed that increase in VAT payable would reduce their tendency to comply. When asked whether, size of business would affect their compliance decision, the majority of the respondents

disagreed. 16.8% of the respondents disagreed that increase in size of business would reduce tax compliance while 27.2% agreed while 35.2% were unsure as they took the middle ground score. Only 20.05% agreed (score 4 and 5 on the scale). When the respondents were asked whether they thought small businesses making little sales could easily comply, the average compliance score was 3.04. This means that on average, the respondents were just slightly in agreement with the statement.

Frequency of inspection and VAT Compliance

Table 4 shows the frequencies of inspection by tax authorities of the respondent's businesses in the last five years and the average compliance levels. Table 4 also shows that, most respondents' businesses were inspected by KRA at most quarterly per annum. The majority of the businesses (43.2%) said they were inspected once per annum, thirty-five (28%) of the respondents said they their businesses were inspected twice per year, 12.8% of the respondents said their over the past five years, their businesses have been audited less than once per annum on average. The remaining 16% said their premises were inspected by the KRA officials at least three times per year, in the last five years. Most respondents whose businesses reported more frequent inspection were drawn from medium and large scale retail outlets. The table also indicates that businesses which were most frequently inspected had high VAT compliance (monthly inspection, average compliance 4.50, compared to average compliance of 2.90 for businesses inspected less than once per annum). Respondents from large businesses generally consented that frequency of inspection have little impact on VAT compliance.

The respondents were also asked whether they thought the inspection by the income tax department were effective in checking VAT non compliance. Figure 4 summarizes the responses. Further analysis of the responses of this perceptual question revealed that a substantial number of respondents (58% businessmen) agree that inspection acts as deterrent on non compliance (score 4-5) on the scale. While some (22%) believed that frequent inspection will motivate them not to comply (score 1-2). The remaining 20% took the middle ground. There was a strong consensus that inspectors are good at detecting errors in the VAT returns 79% agreeing. In order to address the specific objectives regression analysis was run using SPSS version 12. The correlation results are shown in table 5 and the coefficients of regression are shown in table 6. Table 5 shows that there was a slight negative relationship between VAT compliance and sales ($R=-0.077$, $p>0.01$). On the other hand, the Pearson's correlation coefficient for between VAT compliance and frequency of inspection is $R=0.15$ which indicates a slight positive correlation. However, there is a significant positive relationship between use of ETR and VAT compliance ($R=0.622$, $p<0.01$). It was also necessary to check the possibility of presence of multicollinearity between predictors. From the correlation matrix, there are no substantial correlations between the predictors. The highest correlation between predictors alone (ignore VAT compliance) is the correlation between the use of ETR and frequency of inspection ($R= 0.305$, $p=0.247$). This correlation is insignificant and besides, the coefficient is small. According to (Field, 2005), where the correlation between predictors is ($R<0.9$) there is an indication that the predictors are measuring different things, implying that there is no Collinearity.

Table 6 shows the unique contribution of each variable to the explaining of the independent variable. This is shown by the beta values under the standardized coefficients column. Standardized coefficients assess the contribution of each variable towards the prediction of the dependent variable. This is because these values have been converted in the same scale to enable comparison. The largest beta value is 0.679 which is for ETR use. This means that this variable makes the strongest contribution to explaining the VAT compliance. This value is also shown to be statistically significant contribution to the equation (significance, p value less than 0.05). The rest of the variables (sales level and inspection) seem to have insignificant contribution. The

overall equation as suggested in the theoretical framework (Equation 1) can be read from the unstandardized coefficients column in table 6 as follows:

$$VAT\ Compliance = 2.20 - 0.013X_1 + 0.129X_2 + 0.553X_3 + E$$

[Equation 2]

This means that in a scale of 5, even without the three variables under study, the compliance is expected to stand at 2.20 (Y-intercept). In equation 4.1., X_1 is the coefficient for sales level, X_2 is the coefficient for inspection and X_3 is the coefficient for use of ETR whereas E stands for the error term. Table 7 summarizes the regression model. It shows the overall contribution of the variables to the dependent variable (VAT compliance). R shows the value of correlation coefficient while R^2 shows how much of the variability of the dependent variable is explained by the predictors. Table 7 shows that the overall correlation coefficient, $R=0.649$. It also shows that the value of $R^2=0.421$. This indicates that the overall model accounts for 42.1% of the VAT compliance.

Table 7 also shows that the value of adjusted $R^2=0.346$. The value of adjusted R^2 gives some idea of how well the model generalizes the population. The difference between adjusted R^2 and R-square for the final model is 0.075 which is too small. This shrinkage means that if the model were derived from the entire population rather than a sample, it would account approximately 0.75% less variance in outcome. Field (2005) suggests that where this shrinkage is less than 0.5, then it shows that the validity of the model is very good. The shrinkage for this study is far below this threshold indicating that the validity of the model is unquestionable.

CONCLUSION

The first and main objective of the study was to find out the impact of electronic tax registers on VAT compliance among private firms in Kisumu city, Kenya. This was achieved by testing the hypothesis that the use of electronic tax registers has a positive relationship with VAT compliance.

H₁ There is a positive relationship between the use of electronic tax registers and VAT compliance in Kisumu city, Kenya.

H₁ Accepted.

This hypothesis was accepted as shown by positive beta value on the correlation results ($R=0.622$, $p > 0.01$). Based on this finding, it can be concluded that use of ETR has a significant impact on VAT compliance in Kenya.

The second objective sought to identify the relationship between income levels of the firms and VAT compliance. To address this objective, the following hypothesis was tested:

H₂ There is a direct negative relationship between income levels of private firms in Kisumu city and VAT compliance.

H₂ Rejected.

This hypothesis was rejected as the correlation between the two variables was found to be insignificant at 95% level of confidence (beta = -0.77, $p > 0.05$). Further analysis was performed to check compliance levels at different income levels among the participating firms. The study revealed that VAT compliance levels were lower among taxpayers in middle level sales category (sh. 5 to 100 million shillings per year). On the other hand, the study revealed that large organizations are highly VAT compliant. Similarly, compliance was also found to be good at the lowest sales level firms. The study therefore concluded that mid-sized businesses reporting average sales (5-100 million shillings per year) have higher chances of not complying as compared to businesses in other categories of income.

The third objective of the study was to assess the impact frequency of inspection of businesses by tax authorities on VAT compliance. This was ascertained by testing the following hypothesis:

H₃ Frequency of inspection by the revenue department (KRA) has significant relationship with VAT compliance among private business firms in Kisumu city, Kenya.

H₃ Accepted.

This hypothesis was accepted as the correlation results indicated a slight but significant positive relationship between VAT compliance and frequency of inspection by tax authorities. ($R= 0.15$, $p<0.05$). Further analysis of perceptual responses revealed that the respondents from large businesses generally consented that frequency of inspection have little impact on VAT compliance. Most of these businesses were observed to be effective users of ETR gadgets and have incorporated them in their internal controls. From these finding, the study concluded that inspection of businesses by tax authorizes is an important determinant of VAT compliance.

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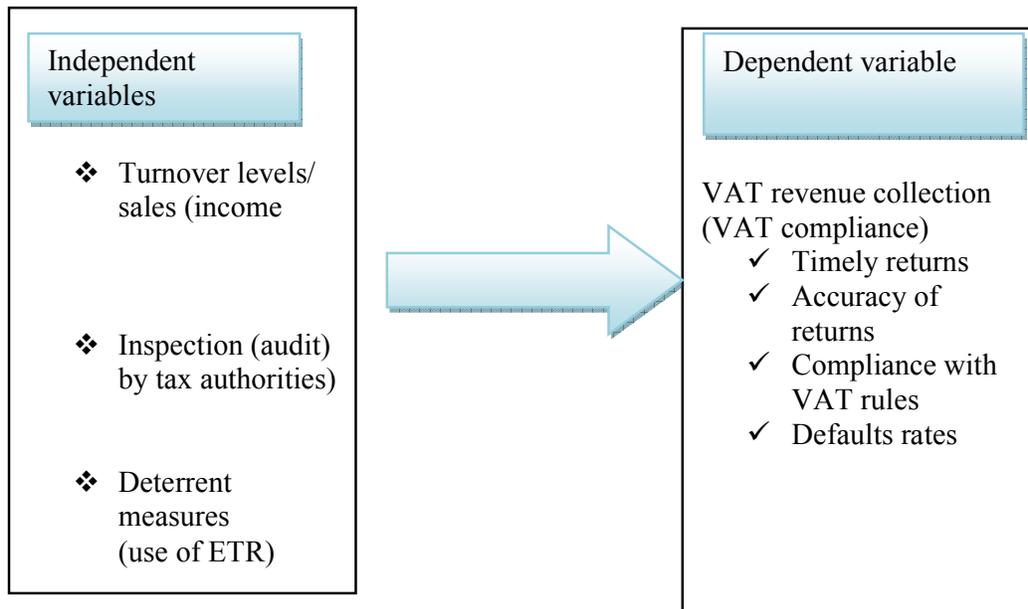
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LIST OF FIGURES

Figure 1: Model variables



Source: Ritsema, et al (2003), Adams and Webley, (2001) Modified to suit our Study.

Figure 2: Use of ETR and VAT Compliance

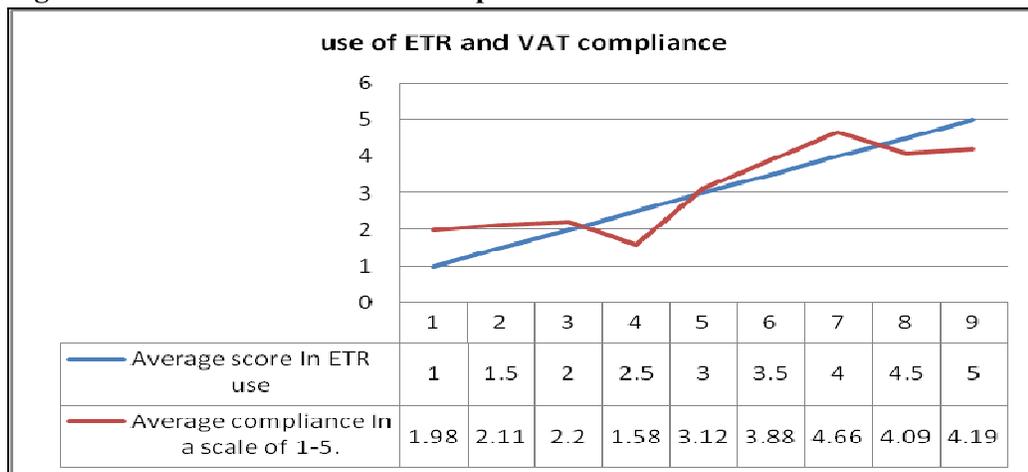


Figure 3: Sales level and VAT compliance (series 1)

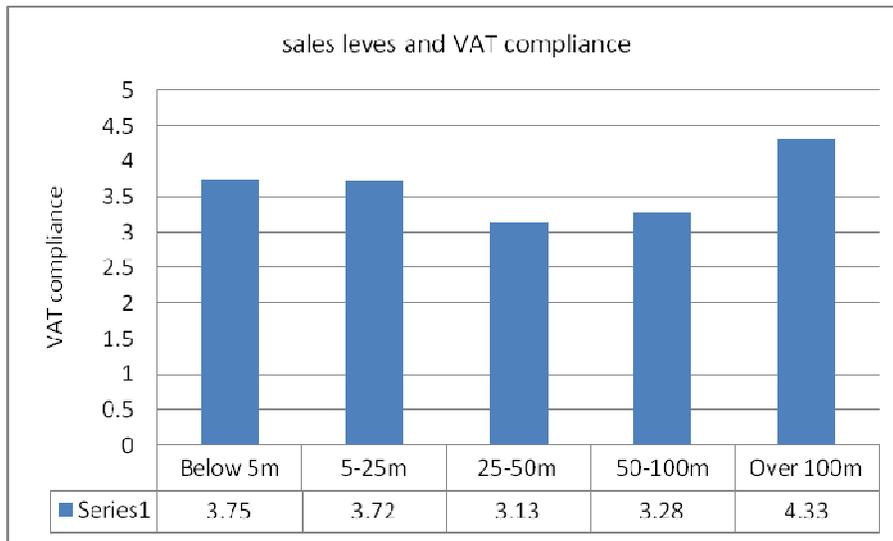
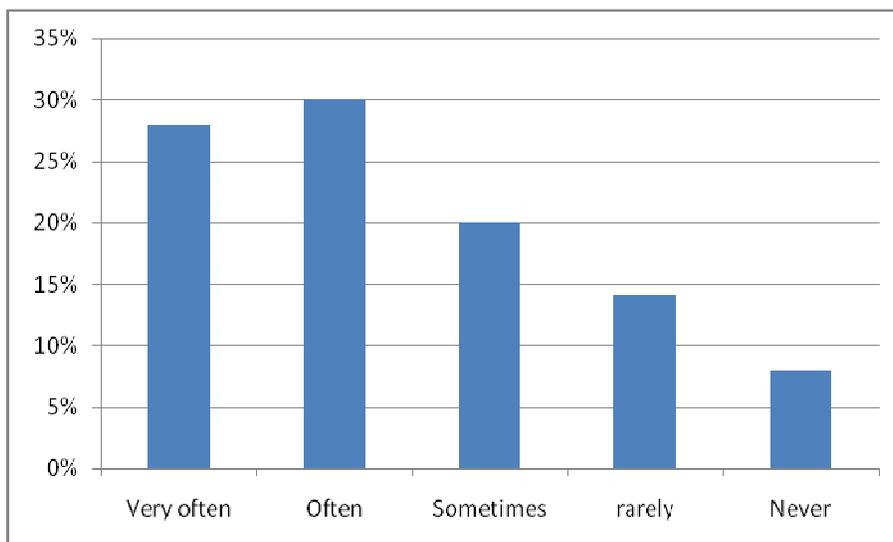


Figure 4: Respondents' perception on the effect of inspection on VAT compliance



LIST OF TABLES

Table 1: Composition of Various Taxes to Total Taxes in Kenya (1996-2008)

| YEAR | VAT | Income Tax | Exercise Duty | Import Duty | Others | Total |
|---------|--------|------------|---------------|-------------|--------|--------|
| 1996 | 23.33% | 37.92% | 18.75% | 17.92% | 2.08% | 100.0% |
| 1997 | 23.21% | 37.55% | 19.41% | 18.57% | 1.27% | 100.0% |
| 1998 | 25.00% | 35.71% | 18.30% | 18.30% | 2.68% | 100.0% |
| 1999 | 26.07% | 34.12% | 18.01% | 18.01% | 3.79% | 100.0% |
| 2000 | 30.59% | 32.35% | 17.06% | 17.65% | 2.35% | 100.0% |
| 2001 | 31.45% | 34.59% | 19.50% | 13.21% | 1.26% | 100.0% |
| 2002 | 30.11% | 35.48% | 22.58% | 10.22% | 1.61% | 100.0% |
| 2003 | 29.05% | 34.64% | 23.46% | 10.61% | 2.23% | 100.0% |
| 2004 | 29.70% | 36.97% | 21.21% | 10.30% | 1.82% | 100.0% |
| 2005 | 26.54% | 38.86% | 18.48% | 8.53% | 7.58% | 100.0% |
| 2006/7 | 29.46% | 36.38% | 17.60% | 8.56% | 0.08 | 100.0% |
| 2007/8 | 28.91% | 32.38% | 16.25% | 8.46% | 0.14 | 100.0% |
| Average | 27.79% | 35.58% | 19.22% | 13.36% | 4.06% | 100.0% |

Source: Moyi and Ronge, (2006) and Waris et al, (2009).

Table 2: Correlation results (95% significance level).

| Variable | 1 | 2 | 3 | 4 |
|-----------------|---------------|---------------|--------------|--------------|
| VAT compliance* | 1.000 (.000) | | | |
| 2.Sales level | -0.077 (.351) | 1.000 (.000) | | |
| 3.Inspection | 0.15 (0.003) | -0.197 (.247) | 1.000 (.000) | |
| 4.ETR use | 0.622 (0.000) | -0.138 (.305) | 0.061 (.470) | 1.000 (.000) |

*Dependent variable: VAT compliance

Table 3: Respondents' perception on the impact of sales level of their businesses on their compliance decision

| <i>Statement</i> | | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>N</i> | <i>Mean</i> |
|--|---|----------|----------|----------|----------|----------|----------|-------------|
| Increase in sales volume leads to poor compliance to VAT | N | 2 | 6 | 13 | 82 | 22 | 12 | 3.94 |
| | % | (1.6%) | (4.8%) | (10.4%) | (65.6%) | (17.6%) | 5 | |
| The more the VAT payable the lesser the tendency to comply | N | 3 | 13 | 45 | 54 | 10 | 12 | 3.44 |
| | % | (2.4%) | (10.4%) | (36%) | (43.2%) | (8%) | 5 | |
| Increase in size of business leads to poor compliance to VAT. | N | 2 | 34 | 44 | 18 | 7 | 12 | 2.62 |
| | % | (1.6%) | (27.2%) | (35.2%) | (14.4%) | (5.6%) | 4 | 5 |
| Small businesses with small sales find it easy to comply to VAT. | N | 23 | 25 | 18 | 42 | 17 | 12 | 3.04 |
| | % | (18.4%) | (20%) | (14.4%) | (33.6%) | (13.6%) | 5 | |

Note: 1=strongly disagree, 5=strongly agree. Figures in brackets indicate the percentage of respondents for each score

Source: Research data, 2009.

Table 4: Frequency of inspection and VAT Compliance

| | <i>Frequency of inspection</i> | <i>Frequency (N)</i> | <i>Percentage (%)</i> | <i>Average compliance</i> |
|---|--------------------------------|----------------------|-----------------------|---------------------------|
| 1 | <1 p.a | 16 | 12.8 | 2.90 |
| 2 | Once p.a | 54 | 43.2 | 3.39 |
| 3 | Semi-annually | 35 | 28.0 | 2.83 |
| 4 | Quarterly | 15 | 12.0 | 3.76 |
| 5 | Monthly | 05 | 04.0 | 4.50 |
| | Total | 125 | 100.0 | 5.00 |

Source: Field survey, 2010.

Table 5: Correlation results (95% significance level).

| Variable | 1 | 2 | 3 | 4 |
|-----------------|----------|----------|----------|----------|
| VAT compliance* | 1.00 | (.000) | | |
| 2.Sales level | -0.077 | (.351) | 1.000 | (.000) |
| 3.Inspection | 0.15 | (0.003) | -0.197 | (.247) |
| 4.ETR use | 0.622 | (0.000) | 0.138 | (.305) |
| | | | 0.061 | (.470) |
| | | | | 1.00 |
| | | | | (.000) |

*Dependent variable: VAT compliance (figures in parenthesis indicate the p-values)

Table 6: Coefficients and Collinearity statistics

| | Unstandardized Coefficients | | Standardized Coefficients | F | Sig. | 95% Confidence Interval for B | | Collinearity Statistics | |
|-------------------|-----------------------------|------------|---------------------------|--------|------|-------------------------------|-------------|-------------------------|-------|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound | Tolerance | VIF |
| Constant* | 2.120 | .673 | | 3.150 | .004 | .728 | 3.512 | | |
| Sales | -.013 | .097 | -.022 | -.136 | .893 | -.213 | .187 | .955 | 1.048 |
| Inspection | .129 | .111 | -.196 | -1.163 | .257 | -.359 | .101 | .883 | 1.133 |
| Use of ETR | .553 | .136 | .679 | 4.063 | .000 | .272 | .835 | .901 | 1.110 |

*Dependent Variable: VAT compliance.

Source: Research data

Table 7: Model Summary

| R | R ² | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---------|----------------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
| | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| .649(a) | .421 | .346 | .652976 | .421 | 29.32 | 3 | 122 | .000 |

Predictors: (Constant), Average ETR use, Sales level, frequency of Inspection