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EFFECTS OF FOREIGN EXCHANGE RATE ON FOREIGN TRADE IN FINANCIAL PERFORMANCE OF THE AGRICULTURAL SECTOR IN KENYA

A CASE STUDY OF VIPINGO SISAL ESTATE

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ABSTRACT

The desire of every firm is to maximize its profits among other objectives. Exchange rate which is one of the variables that affect the profitability of a firm especially the ones that deal with foreign trade, if not well managed can render a firm to major shocks of profit deterioration. Instability in Exchange rate can influence longer-term decisions by affecting the volume of exports and imports, the allocation of investment and government sales and procurement policies. In medium term, it can affect the balance of payments and the level of economic activity, while in the short run local consumers and the local trader can be affected. The purpose of the study was to investigate the effects of Exchange rates on foreign trade in financial performance in agriculture sector majoring on Sisal production and export in Kilifi. The researcher used descriptive research design in collecting the data from respondents. In alignment with the research design Vipingo Sisal Estate was chosen since Sisal is a major agricultural export in Kenya. The population of the study, management staff of Vipingo Sisal Estate, was stratified into tactical, technical and operation level staff so as to give equal opportunity of being selected from the entire population. Primary data was collected using questionnaires and secondary sources such as published journals, articles among other reference material through desk search techniques. Analysis involved qualitative and quantitative analysis. From the findings of this study and the summary, the study concludes that the financial performance of Vipingo Sisal Estate is affected by foreign exchange rate. The study also concludes that cost influence manager's choice of the types of hedging techniques and foreign exchange rate affect the cash flows in the business operations. The study further concludes that an increase in the variance of the permanent (transitory) component in the

exchange rate process leads to greater (lesser) variability in the growth rate of the firm's profits. This study therefore recommends that in order to achieve better financial performance, Vipingo Sisal Estate should use vigorous strategies to hedge against accounting or translation exposure and the economic exposure.

Background to the study

Exchange rate is a vital microeconomic variable and backbone of Trade. A variation of exchange rate plays an important role in determination of balance of trade. Volatile exchange rate slows down the process of trade, destabilizes the capital movements, and shatters the investor's confidence to invest in a country with high exchange rate volatility which in turn slows the process of growth.

The exchange rate regime determines the ability of the economy to effectively respond and adjust to exogenous shocks. Besides the exchange rate movement influence exports and imports of goods and services which are key macroeconomic variable for these reasons it is necessary to have an appropriate model of the exchange rate that reflect the underlying economic factors. In Kenya exchange rate regimes have evolved along the general macroeconomic policies adopted since independence. Kenya economy in the 1960's and 1970's was predominantly characterized by controls in virtually all sectors. There were controls on domestic prices, foreign exchange transactions, interest rates and import licensing, among others.

In the 1990's liberalization was intensified in both financial and goods markets. Prices in the goods markets were decontrolled, interest rates were gradually relaxed. In fact the exchange rate regime operated under a dual system in 1992 since there was an official exchange rate and a market rate. The latter operated on the basis of foreign exchange bearer certificate which could be purchased at the official exchange rate from Central Bank in foreign exchange and then marketed as any other paper asset (Ndungi et al 1999).

Statistics show that the Kenya shilling weakened against major world currencies in the fiscal year 2010/11. It depreciated against the US dollar by 10 percent between June 2010 and June 2011 to exchange at an average of Ksh 89.05 per US dollar in June 2011 compared with Ksh 81.02 per US dollar in June 2010. The Kenya shilling real exchange rate has gone through

several phases since its liberalization in 1993. The shilling real exchange rate depreciated by 21 percent in January 1995 to October 1999 followed by a period of relative stability in October 1999 to December 2004.

Vipingo Sisal Estate

The largest Sisal fibre producer in Africa, the REA Vipingo Group is a well established agricultural business, headquartered in Nairobi, Kenya. The company is listed on the Nairobi Stock Exchange (NSE) and owns and operates a flourishing sisal business, whose activities include: cultivation, manufacture, spinning and export of sisal fibre and sisal products. The REA Vipingo group companies are well capitalised, with a strong equity base and sound management. They include sisal estates in Kenya and Tanzania, a spinning mill in Tanga, Tanzania, and warehouses in the ports of Mombasa, Kenya and Tanga, Tanzania. With a sisal fibre production of over 19,000 tonnes per annum the company is, by far, the largest sisal fibre producer in Africa. Other than some fibre that is used in the group's sisal spinning mill in Tanzania, all fibre produced is exported. The group employs over 3,000 people, most of whom are housed on the estates which also have medical facilities for the employees and their dependants, as well as schools and other amenities.

The company, REA Vipingo Plantations Limited, was incorporated in Kenya on 1st February 1995 for the purpose of amalgamating and developing the principal East African sisal interest of the Albers and REA groups under the ownership of a single company. The company was subsequently listed in 1996 on the Nairobi Stock Exchange. Since listing on the Nairobi Stock Exchange (NSE) in 1996, the company has developed rapidly from an annual sisal fibre production of 11,000 tonnes to over 19,000 tonnes today. Turnover has increased from Kshs. 537million in 1996 to Kshs. 2.57 billion today. The group does all its own export shipping through dedicated and professionally managed export operations in the port cities of Mombasa, Kenya and Tanga, Tanzania. In both locations the group has its own warehouse and office facilities.

Statement of the Problem

As explained in the first IMF (1984) study, exchange rates can in principle influence trade in many ways. Real exchange rates, which are the relative prices of tradable to non-tradable

products, have a potentially strong impact on the incentive to allocate resources (capital and labour for example) between the sectors producing tradable and non-tradable goods. Real exchange rates are also a measure of real competitiveness, as they capture the relative prices, costs, and productivity of one particular country vis-à-vis the rest of the world (Auboin & Ruta, 2011). The desire of every firm is to maximize its profits among other objectives. Exchange rate which is one of the variables that affect the profitability of a firm especially the ones that deal with foreign trade, if not well managed can render a firm to major shocks of profit deterioration (Mohsen & Hegerty, 2008). Instability in Exchange rate can influence longer-term decisions by affecting the volume of exports and imports, the allocation of investment and government sales and procurement policies. In medium term, it can affect the balance of payments and the level of economic activity, while in the short run local consumers and the local trader can be affected (Mohsen & Hanafiah, 2011).

The biggest devaluation of exchange rates was in the period 1990-1994, and it is mirrored by a jump in the parallel market premium. The real interest rate, while mostly positive, was relatively low until recent years. Exports lacked dynamism, leading to a chronic balance of payments deficit. This was reflected in the rapid growth of external debt. Perhaps the most significant growth detracting element was the chronic fiscal deficit. This created widespread financial uncertainty, which is reflected in the declining rates of savings and investment. During the analyzed period, Kenya received large inflows of foreign assistance. The result was a significant decline in the rate of economic growth. Viewed in broader terms, Kenya's economy has not performed at anywhere near its potential (Malcolm et al., 2000).

Real exchange rate is an active source of discussions in Kenya, where exports performance has improved since 2002, but continues to fall short of the ambitions of the vision 2030. The level of the Kenya shilling exchange rate continues to be determined by the forces of demand and supply in the foreign exchange market. Questions have arisen in the policy arena and in the public domain in most cases revolving around the possible reasons for persistent appreciation of the shilling real exchange rate against key currencies. Empirical studies on the Kenyan economy explaining the impact of shocks to real exchange rate movements are scanty (Kiptui & Kipyegon, 2008). Pollin and Heintz (2007) have recently called for a reassessment of monetary policy with a view to achieving a more depreciated shilling. Kenya adopted a unified and flexible

exchange rate in the early 1990s, as part of a market-based reform program designed to improve the investment environment and spur economic growth according to Ndung'u, (2008). Kristinek's (2009) study in North America on the impact of exchange rate did not cover the agricultural sector but majored in other sectors like cattle industry, most research cover the effect of exchange rate in general. This study will seek to fill the existing knowledge gap by focusing on the agricultural sector in Kenya and specifically Sisal production. This study seeks to bring light on the risk involved on fluctuation of exchange rate and how firm can mitigate the risk mainly in agriculture sector majoring in Sisal production in Kilifi.

Specific Objectives

- i. To determine the effect of foreign exchange rate on profitability.
- ii. To determine the impact of foreign exchange rate on cash flows.
- iii. To identify the nature of foreign exchange risk exposure faced by firms.
- iv. To ascertain the foreign exchange risk management practices employed by firms.

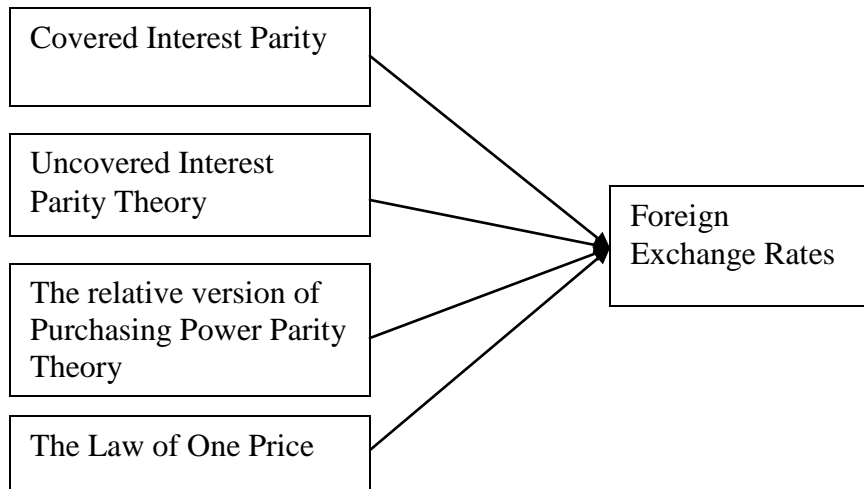
Scope of the Study

This research was limited to the effects of exchange rate on agricultural sector majoring on Sisal growing in Kilifi County, Kenya. The main focus of this study was Vpingo Sisal Estate whose employees were the key subjects. Data was specifically collected from employees of the management grouped into tactical, technical and operation level. These were considered as major respondents of the study. The aim was to collect data from the respondents with a view to determining the effects of exchange rates on foreign trade in financial performance in agriculture sector majoring on Sisal production and export in Kilifi County.

LITERATURE REVIEW

Theoretical Framework

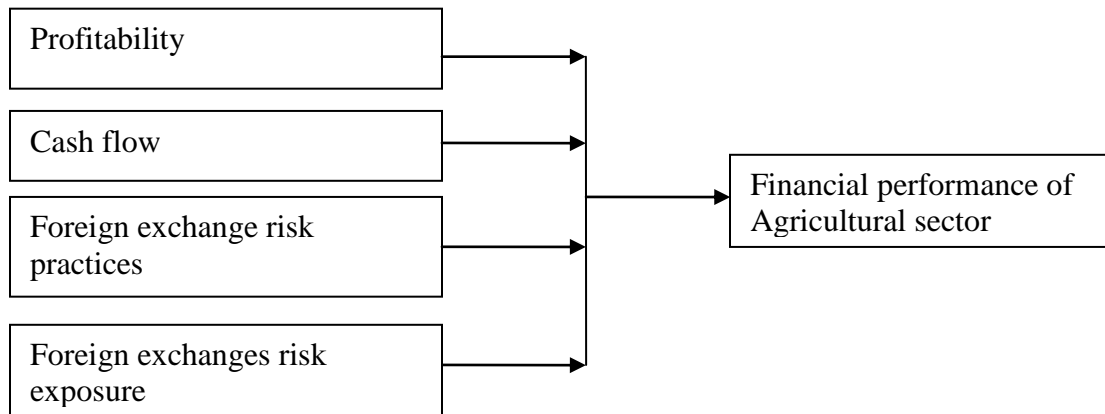
In trying to explain the fluctuations in exchange rates, several theories have been advanced that link between domestic and foreign inflation, interest rate and exchange rates. These are: the law of one price, the relative version of purchasing power parity, uncovered interest parity theory and covered interest parity theory



Theoretical Framework

Conceptual Framework

Conceptual framework is the explanation of how independent and dependent variables in the study interact (Kothari, 2006). In this study, the framework presupposes that Financial performance is the dependent variable, and is influenced by four independent variables namely, profitability, cash flow, foreign exchange risk practices and Foreign exchanges risk exposure.



Empirical Review

Measurement and Management of Foreign Exchange Rate Exposure

According to Madura (1995) firms are exposed to three types of exposure namely: Accounting or translation exposure, transaction exposure and economic exposure. Levi (1983) asserts that the concept of accounting exposures arises from the need to translate accounts that are denominated in foreign currencies into home currency of the reporting entity. Most commonly, the problem arises when an enterprise has foreign affiliates keeping books in the respective local currency. For purposes of the consolidation these accounts must be translated into the reporting currency of the parent company and a decision must be made as to exchange rate that is to be used for translation of various account balances (Logue, 1977). Methods of Measuring Translation Exposure include Current / Non-current method, Monetary /Non Monetary method and Temporal method.

Foreign Exchange Risk Management Practices

Foreign exchange risk can be managed in various ways. This section discusses techniques used for hedging against risk. Hedging can also be defined as “all actions taken to change the exposed positions of a company in one currency or in multiple currencies” (Prindl, 1976). According to Clark et al. (1993), hedging refers to the technique of making offsetting commitments in order to minimize the impact of unfavorable potential outcomes. The manager’s choice of the different types of hedging techniques may, however, be influenced by costs, taxes, effects on accounting conventions and regulation. The different types of hedging techniques are discussed below.

Payment Netting - This system is used in international transactions by involves reducing fund transfers between entities to only a netted amount. It requires a firm to have a centralized organization of its cash management. There are basically two forms of payments netting. These include bilateral and multilateral netting.

Prepayment - This method of payment requires the importer to pay the exporter in full before shipment is made (Hill, 2001). Payment is usually made in the form of international wire transfer to the exporter’s bank account or foreign bank draft. This method affords the supplier the

greatest degree of protection and it is normally requested if the trading currency has high exchange rate fluctuations.

Leading and lagging – A lead strategy involves attempting to collect foreign currency receivables early when a foreign currency is expected to depreciate and paying foreign currency payables before they are due when a currency is expected to appreciate. A lag strategy involves delaying collection of foreign currency receivables if that currency is expected to appreciate and delaying payables if the currency is expected to depreciate (Hill, 2001).

Hedging with derivatives - Hedging includes all acts aimed at reducing uncertainty about future (unknown) price movements in a commodity, financial security or foreign currency.

Forward and futures contracts - A forward contract involves a commitment to trade a specified item at a specified price at a future date. It is a contract made today for delivery of an asset at a pre-specified time in the future at a price agreed upon today. No money changes hands until the expiry time.

Currency Options - A currency option gives the right, but not the obligation to buy or sell a specific currency at a specific price within a specific period of time.

Currency Swaps - A typical currency swap is an agreement between two parties to exchange two currencies at the spot or current exchange rate, with the agreement that they will reverse the exchange rate that prevailed at the time of the initial exchange (Tygerson, 1993).

Price Adjustment - Some companies manage foreign exchange risks by adjusting prices; this is practiced by Ghanaian firms who adjust prices to reflect change in import pricing resulting from currency fluctuation Abor, (2005).

Leland (1998) says that the floating exchange rate system adopted in the 1990`s was expected to have a several advantages in Kenya. First it would allow a more continuous adjustment of exchange rate to shift in the demand for and supply of foreign exchange currencies. Secondly, it would equilibrate the demand and supply of foreign exchange changing the nominal exchange rate rather than the levels of reserves. Thirdly, it would allow Kenya the freedom to pursue its own monetary policy without having to be concerned about balance of payment effects thus the country would have an independent monetary system. Fourthly, under the floating system, external imbalances would be repeated in exchange rate movements instead of reserve movements.

Omagwa (2005) on his study on hedging practices by foreign owned commercial banks in Kenya found out that most hedging practices were influenced by the banks views on the currency market fundamentals. The practices included: forecasting, speculating and taking individual positions in the currency market with the aim of making financial gains, carrying out training programme on financial risk management and use of specific financial instruments to hedge against foreign exchange risk. Most banks carried out regular and systematic assessment of the exposure measurement strategies and their exchange risk management policies in general. A number of banks made use of accounting, transaction and economic exposure measurement strategies: matching, risk sharing, diversification and selective hedging strategies were extensively used by most banks.

Foreign Exchange Rate and Cash Flows

Cash flows are inflows and outflows of cash and cash equivalents. Cash comprises cash on hand and demand deposits. Cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value. Nelson, Moffitt and Affleck-Graves (2005) paper estimated the foreign exchange rate exposure of nonfinancial firms on the basis of stock prices and corporate cash flows. The results show that several firms were significantly exposed to at least one of the foreign exchange rates and significant exposures are more frequent at longer horizons. The percentage of firms for which stock price and earnings exposures are significantly different is relatively low, though it increases with time horizon. Overall, the impact of exchange rate risk on stock prices and cash flows is similar and determined by a related set of economic factors (Kim, Mathur & Nam, 2006).

Foreign Exchange Rate and Profitability

The purpose of the foreign exchange market 'Forex' is to assist international trade and investment. The foreign exchange market allows businesses to convert one currency to another foreign currency. Murphy (1999) did an investigation on the effects of permanent and transitory components of the exchange rate on firms' profitability under imperfect information. His study showed that the variances of these components of the exchange rate process will have indeterminate effects on the firm's growth rate of profits, but will have predictable effects on its volatility. According to Summers and Summers (1996), an increase in the variance of the

permanent (transitory) component in the exchange rate process leads to greater (lesser) variability in the growth rate of the firm's profits, thus establishing that the source of exchange rate volatility matters in analyzing its effects.

Taylor, Mark and Allen, Helen (2002) also indicated that an appreciating exchange rate generates an exchange rate loss, while a depreciating exchange rate generates an exchange rate profit. Murphy (1999) also states that the foreign exchange market is unique because of trading volume results in market liquidity and low margins of relative profit compared with other markets of fixed income. To hedge every exposure means removing any chance that the market may move beneficially for the company, whilst its competitors may still enjoy the benefits of these price movements, in doing so the cash flows are at risk as competitors may lower selling prices and hence the profit margin is reduced because of diminished revenues as a direct result of hedging (Madura 1995).

RESEARCH METHODOLOGY

Research Design

The study adopted a descriptive research design. The design was preferred because it is concerned with answering questions such as who, how what, which, when and how much Cooper and Schindler (2001). A descriptive study is designed to ensure complete description of the situation, making sure that there is minimum bias in the collection of data and to reduce error in interpreting the data collected (Boyd 1989). Cooper and Schindler (2003) summarizes the essentials of research design as an activity and time based plan; always based on the research question; guides the selection of sources and types of information; a framework for specifying the relationship among the study variables and outlines the procedures for every research activity.

Population

The population of the study was from Vpingo Sisal estate in Kilifi County. In alignment with the research design Vipingo Sisal Estate was chosen since Sisal is a major agricultural export in Kenya and stand for other agricultural products. The target group was the management staff: tactical, technical and operation level staff. These were the groups that were best suited and

capable of giving the required information by the study by answering the questionnaire effectively. The total population was 30 respondents with 5 in tactical level, 10 in the technical level and 15 in the operation level.

Sampling and Sampling Procedure

The study used simple stratified sampling procedure to select that represent the entire population.

Data collection

Data was collected from the primary and secondary sources. The primary data was used due to its nearness to the truth and ease for control over errors (Copper & Schindler 2003). Secondary data was also sourced to supplement the primary data. This was collected from the relevant sources which include reports and data on exchange rates.

Data analysis

This involved qualitative and quantitative analysis. The data collected by use of various instrument was first thoroughly edited and checked for completeness and comprehensibility. The edited data was summarized and coded for easy classification in order to facilitate tabulation. Inferential statistics through the use of Multiple Linear Regression model was employed to establish the significance of the independent variables on the dependent variable. The findings will be presented using tables and charts. The following multiple regression model was applied

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where;

Y= Financial performance in the agricultural sector (Dependent Variable)

a = Constant

$\beta_1, \beta_2, \beta_3, \beta_4$, = coefficients

X_1 = profitability (Independent Variable)

X_2 = cash flows (Independent Variable)

X_3 = risk exposure (Independent Variable)

X_4 = risk management practices (Independent Variable)

e = error term

Linear Regression Model on Effects of Exchange Rates on Foreign Trade in Financial Performance in the Agricultural Sector

The study further carried out regression analysis to establish the statistical significance relationship between the independent variables notably, X_1 = profitability, X_2 = cash flows, X_3 = risk exposure, X_4 = risk management practices and dependent variables (Y) financial performance in the agricultural sector. According to Green & Salkind (2003) regression analysis is a statistics process of estimating the relationship between variables. Regression analysis helps in generating equation that describes the statistics relationship between one or more predictor variables and the response variable. The regression analysis results were presented using regression model summary table, Analysis Of Variance (ANOVA) table and beta coefficients table. The model used for the regression analysis was expressed in the general form as given below:

$$Y = a + B_1 * X_1 + B_2 * X_2 + B_3 * X_3 + B_4 * X_4 + B_5 * X_5 + e$$

For this model, the relationship between the dependent variable and independent variables, and the results of testing significance of the model were also respectively interpreted. In interpreting the results of multiple regression analysis, the three major elements considered were: the coefficient of multiple determinations, the standard error of estimate and the regression coefficients. R squared was used to check how well the model fitted the data. R squared is the proportion of variation in the dependent variable explained by the regression model.

From the findings of the study it shows that the regression model coefficient of determination (R^2) is 0.901 and R is 0.949 at 0.05 significance level. This is an indication that the four independent variables notably; profitability, cash flows, risk exposure and risk management practices were significant in contributing to financial performance. The coefficient of determination indicated that 94.9% of the variation on financial performance is influenced by independent variables (X_1) profitability, (X_2) cash flows, (X_3) risk exposure and (X_4) risk management practices. This implies that there exists a strong positive relationship between independent variables and financial performance. The remaining 6.1% of the variation on financial performance can be explained by other variables not included in the model. This shows that the model has a good fit since the value is above 75%. This concurred with Graham (2002) that (R^2) is always between 0 and 100%: 0% indicates that the model explains none of the

variability of the response data around its mean and 100% indicates that the model explains all the variability of the response data around its mean. In general, the higher the (R^2) the better the model fits the data.

Regression Model Summary

Model	R	R Square
1	.949	.901

Predictors: (Constant), X_1 , X_2 , X_3 , X_4

The study further used one way Analysis of Variance (ANOVA) in order to test the significance of the overall regression model. Green & Salkind (2003) posits that one way Analysis of Variance helps in determining the significant relationship between the research variables. Table 4.13 hence shows the regression and residual (or error) sums of squares. The variance of the residuals (or errors) is the value of the mean square which is 2.280. The predictors X_1 , X_2 , X_3 and X_4 represent the independent variables notably; (X_1) profitability, (X_2) cash flows, (X_3) risk exposure and (X_4) risk management practices affecting financial performance of the Agricultural sector.

The table below presents the results of ANOVA test which reveal that all the independent variables notably; (X_1) profitability, (X_2) cash flows, (X_3) risk exposure and (X_4) risk management practices have a significance influence on financial performance of the Agricultural sector. Since the P value is actual 0.00 which is less than 5% level of significance. Table 4.5 also indicates that the high value of F (84.353) with significant level of 0.00 is large enough to conclude that all the independent variables significantly influence financial performance of the Agricultural sector.

Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	P-Value.
1	Regression	9.119	4	2.280	84.351	.000
	Residual	1.000	37	.027		
	Total	10.119	41			

a. Predictors: (Constant), X_1 , X_2 , X_3 , X_4

b. Dependent Variable: Y

The table below presents the results of the test of beta coefficients which indicates that the significant relationship between independent variables notably; (X₁) profitability, (X₂) cash flows, (X₃) risk exposure and (X₄) risk management practices and dependent variables Y= financial performance of the Agricultural sector. As presented in table 4.14, (X₁) profitability coefficient of 0.898 was found to be positive at significant level of 0.001 and this indicates that profitability has a positive influence on financial performance. (X₂) cash flows coefficient of 0.544 was found to be positive at significant level of 0.004 and this indicates that cash flow has a positive influence on financial performance. (X₃) risk exposure coefficient of 0.644 was found to be positive at significant level of 0.003 and this indicates that risk exposure has a positive influence on financial performance. (X₄) risk management practices coefficient of 0.787 was found to be positive at significant level of 0.002 and this indicates that risk management practices has a positive influence on financial performance of the Agricultural sector. This clearly demonstrates that all the independent variables significantly influenced financial performance of the Agricultural sector but the relative importance of each independent variable was different. However, since the significance values were less than 0.005, all the coefficients were significant and thus the regression equation was;

$$Y = 217 + 898X_1 + 544X_2 + 644X_3 + 787X_4 + X_5 + e$$

Coefficients

	B- Coefficients	Std. Error	Sig F
(Constant)	0.217	.211	.005
X ₁	0.898	.184	.001
X ₄	0.787	.184	.002
X ₃	0.644	.170	.003
X ₂	0.544	.168	.004

Dependent Variable Y

The regression model above has established that taking all the independent variables into account notably; (X₁) profitability, (X₂) cash flows, (X₃) risk exposure and (X₄) risk management practices constant at Zero influences financial performance of the Agricultural sector (0.217). The results presented also shows that taking all other independent variables at zero, a unit increase in profitability leads to a 0.898 increase in financial performance of the Agricultural

sector; a unit increase in cash flows leads to 0.544 increase in financial performance of the Agricultural sector; a unit increase in risk exposure leads to 0.644 increase in financial performance of the Agricultural sector and a unit increase in risk management practices leads to 0.787 increase in financial performance of the Agricultural sector. Inferences can therefore be made that profitability followed by risk management practices, risk exposure and cash flows influences financial performance of the Agricultural sector. The study therefore concluded that through improvement of profitability, cash flows, risk exposure and risk management practices, financial performance would be increased.

Conclusion

From the findings of this study and the summary, the study concludes that the financial performance of Vipingo Sisal Estate is affected by foreign exchange rate. Vipingo Sisal Estate is mostly affected by accounting or translation exposure and the economic exposure of the farm is assessed by applying regression analysis to historical cash flow and exchange rate date. The study also concludes that cost influence manager's choice of the types of hedging techniques. Translation exposure at the farm is managed by exposure netting and the foreign exchange risk management practices mostly applied by the farm were payments netting.

The study also concludes that foreign exchange rate affect the cash flows in the business operations, farm's present value of future cash flows is influenced by exchange rate fluctuations and the foreign exchange rate affects the firm's operations, the study further concludes that exchange rate changes affect cash and cash equivalents held or due in a foreign currency.

The study further concludes that an increase in the variance of the permanent (transitory) component in the exchange rate process leads to greater (lesser) variability in the growth rate of the firm's profits and that appreciating exchange rate generates an exchange rate loss. The study finally concludes that an increase in the variance of the permanent (transitory) component in the exchange rate process leads to lesser variability in the growth rate of the firm's profits and that the appreciating exchange rate has generated an exchange rate loss for the farm over the years.

Recommendations

This study therefore recommends that in order to achieve better financial performance, Vipingo Sisal Estate should use vigorous strategies to hedge against accounting or translation exposure

and the economic exposure. The study also recommends that the management at the farm should consider more factors other than cost like taxes and regulations when choosing the type of hedging techniques to use. The farm should also consider combining application of regression analysis to historical cash flow and exchange rate data and carrying out sensitivity of earning to exchange rate in assessing the economic exposure of the farm in order to come up with a more conclusive position.

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