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EFFECT OF FOREIGN EXCHANGE EXPOSURE ON A FIRM'S FINANCIAL PERFORMANCE: A CASE OF LISTED COMPANIES IN RWANDA

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Abstract: **Modern finance and economics has been concerned with the effects of changes in exchange rates on returns and cash flow of corporations. After the collapse of the Bretton Woods System in the mid-1970s, most corporations throughout the world viewed exchange rates as significant risk factor. This is especially the case in those industries that have been subject to substantial globalization. Firms who transact in foreign currencies in the course of carrying out their businesses inevitably get exposure to foreign exchange rate risk. Firms are increasingly operating across borders; exporting and importing raw materials and finished goods, employing foreign capital, people and processes and controlling their resources globally–thus the importance of currency fluctuations. Exchange rate risk can be broadly defined as the risk that a company's financial performance will be affected by exchange rate movements. Measuring and managing exchange rate risk exposure is critical in reducing a firm's vulnerability from major exchange rate movements, which could adversely affect profit margins and the value of net assets. The purpose of this study was to evaluate the effect of exchange rate exposure on a company's financial performance through a survey of listed companies in the Rwanda Stock Exchange that covered the period of 3 years 2012 to 2015. The research adopted descriptive research design which involved the use of both qualitative and quantitative data. A census approach was used on the eight firms listed in Rwanda stock exchange. The research utilized questionnaires for data collection comprising of structured questions. Data was collected from primary and secondary sources. Primary source was from senior managers in finance using questionnaires. Both descriptive and inferential research methods was used to analyze data collected. Descriptive statistics included frequencies, percentages, measure of central tendency, range, variance and standard deviations. Inferential statistic included correlation analysis. While analytical tool to be used included Statistical Packages for Social sciences version 21 (SPSS) and presented using charts and tables. From the findings the study found that listed firms financial performance is affected by the foreign exchange rates movements. Use the income statement and the owner 's equity account to record foreign exchange differences. The study further concluded that unrealized foreign exchange gains/losses had an effect on the Net Income of listed companies as it was posted to either income statement or owners' equity. The study therefore concludes that foreign exchange affects the company's financial performance through, imports and accounts payables and export sales and accounts receivables thus with the net effect on the Net Income of multinational companies through the income statement or the owners' equity reserves. From the findings of this research, the study recommends that firms listed in the Rwanda Stock Exchange should explore avenues to enhance capacities within firms for managing foreign currency risk. Future researcher may conduct further studies and identify other macro-economic factors that significantly affect a firm's financial performance.**

Keywords: **Transaction based foreign exchange exposure, Financial performance, financial performance of listed firms in Rwanda.**

1. INTRODUCTION

1.1 Background:

Since the breakdown of the Bretton Wood's fixed-parity system in the early 1970s, the volatility of exchange rates and its associated risks have become an increasingly important component of international financial management. Standard economic analysis implies that exchange rate movements affect both the cash flow of a firm's operations and the value of a firm. The wide currency fluctuations experienced during the last few decades heightened the interest in the potential vulnerability of multinational firms to foreign exchange rate risk, and this issue has spawned a considerable amount of research. From a theoretical perspective, it is a generally held view that exchange rate fluctuations are an important source of macroeconomic uncertainty. They should thus have a significant impact on firm value, regardless of whether the firm is domestically or internationally oriented (Marston, 2011).

As the nature of business becomes international, many firms are exposed to the risk of fluctuating exchange rates. Changes in exchange rates may, according to Eun and Resnick (2010), affect the settlement of contracts, cash flows, and the firm valuation as measured by share prices. It is thus important for financial managers to know the firm's foreign currency exposure and properly manage the exposure. By doing so, managers can stabilize the firm's cash flows and enhance the firm's value. While many managers understand the effects of random exchange rate changes on the dollar value of their firm's assets and liabilities denominated in foreign currencies, they often do not fully understand the effects of volatile exchange rates on operating cash flows. As the economy becomes increasingly globalized, more firms are subject to international competition. Fluctuating exchange rates can seriously alter the relative competitive positions of such firms in domestic and foreign markets, affecting their operating cash flows (Eun & Resnick, 2010).

As defined by Eiteman, Stonehill and Moffert (2010), foreign exchange exposure is a measure of the potential for a firm's profitability, net cash flows and market value to change because of a change in exchange rates. An important task of the financial manager is to measure foreign exchange exposure and to manage it so as to maximize the profitability, cash flows, and market value of the firm. These three components, profits, cash flows and market value – are the key financial elements of how the relative success or failure of a firm is viewed. The reported earnings of any publicly traded company are fundamental to the market's opinion of that company (Copeland, 2010). Formally, operating exposure can be defined as 'the extent to which the firm's operating cash flows would be affected by random changes in exchange rates' (Eun & Resnick, 2010). Since these transactions are in the future and the price is not set, it is changes in the real exchange rates (relative competitiveness) that generate the gains or losses in future cash flows. The effects of operating exposure are more important for the financial position of the firm than the effects of transaction exposure. However, unlike transaction exposure, which is easily identified (directly from looking at the transaction contracts), operating exposure is somewhat subjective: it depends on assessing the impact of exchange-rate changes on transactions into which the firm has not yet entered. To determine operating exposure, it is necessary to measure the change in the expected future cash flows of the firm in response to changes in the exchange rate.

A firm's operating exposure, according to Pringle and Connolly (2013) is determined by (1) the structure of the markets in which the firm sources its inputs such as labor and materials, and sells its products, and (2) the firm's ability to mitigate the effect of exchange rates by adjusting its markets, product mix, and sourcing. Since prices have not been set for future transactions, operating exposure depends not on changes in nominal exchange rates, but on changes in real exchange rates. As with transaction exposure, operating exposure should only be a function of unexpected changes in the real exchange rate as expected changes should be incorporated into current expectations about future firm's performance (i.e. current market valuation). However, under relative PPP the expected change in the real exchange rate is zero. Under absolute PPP, the change in the exchange rate is determined by its movement back toward the assumed equilibrium. Unless there is large sudden devaluation, this typically happens slowly. However, to the extent that deviations from PPP are expected to cause real exchange rate changes over the medium term, the firm should incorporate these expectations into its pricing, production, and location decisions and should be prepared for such movements.

The size and sign of a firm's operating exposure will be a function of several factors: the activities in which it participates (such as exporting, importing, foreign investments etc.), the nature of the competition it faces (such as a perfectly competitive output market or an oligopolistic output market where firms have some market power), and the structure of the markets for its factors of production.

The movement in the price of shares at the stock market most of the times has been an issue of concern to market players. The change in the price of shares of quoted firms are said to be due to change in certain fundamental factors, this include the financial performance (measured by dividend paid by the firm, the earning made by the firm etc.) and the macroeconomic variables (such as interest rate ruling, inflation rate etc).

Adler and Dumas (2014) point out that we cannot automatically interpret significant correlations between stocks and exchange rates as evidence of a causal effect. Stock prices and exchange rates are determined jointly and are partly affected by the same common shocks to the economy. Hence, no causal relationship can be established. Naturally; the relationship between endogenous variables such as stock prices and exchange rates depend on the nature of the shocks affecting the economy. Exposure may just be reflecting the simultaneous impact of monetary factors on exchange rates and stock prices.

Exchange rate movement in Rwanda has been variable with periods of rapid depreciation of the domestic currency Rwanda francs, which adversely affect the Rwandan economy. Even though studies have been conducted on the exchange rate regimes and the implications for macroeconomic management as well as managing foreign exchange risk (Abor, 2015), very little has been done on the study of the firm's exposure to exchange risk in Rwanda. It is in this context that this research seeks to study and evaluate the effects (if any) that variations in the exchange rate has in the financial performance of the selected listed companies in the Rwanda Stock Exchange. Exchange rate fluctuations affect operating cash flows and firm value through translation, transaction, and economic effects of exchange rate risk exposure. (Choi & Prasad, 2015).

The researcher identified no studies done in Rwanda on the foreign exchange risk; but in East Africa Chepkairor (2009) did a study on an assessment of the impact of foreign exchange fluctuations on projects partly funded through foreign currency denominated loans, Kurgat (2008) conducted an empirical study of spot market efficiency on Kenya's foreign exchange bureaus, Cherutoi (2009) did a study on extent of commercial banks' exposure to foreign exchange risk and Chiira (2009) conducted a survey of foreign exchange risk management practices by oil companies in Kenya. In Tanzania, the researcher identified as Mussa (2011) did a study on a survey of foreign currency risk awareness and management practices in Tanzania, a research study supported by a grant from the Investment Climate and Business Environment Research Fund, and jointly funded by Trust Africa and IDRC.

According to the researcher 's relevant literature review, there is no evidence of local study in

Rwanda conducted on the effect of foreign exchange exposure on a firm 's financial performance on selected listed companies in the RSE. This study sought to fill the existing research gap by conducting a study on the effect of foreign exchange exposure on a firm 's financial performance on selected listed companies in Rwanda.

1.2 Statement of the Problem:

Most countries, Rwanda included, operate a system of floating foreign exchange rates in their economies. Saunders and Cornett (2008), observed that under the system of floating exchange rates, investors have experienced significant volatility in earnings as a result of relative fluctuations in foreign exchange rates. According to Charles (2008), changes in exchange rate can influence a firm's current and future expected cash flows and ultimately, stock prices.

There has been a sharp increase in foreign investment in Rwanda. Exchange rate fluctuation in Rwanda has been variable with periods of rapid depreciation of the domestic currency Rwanda francs, which has the potential to adversely affect the financial performance of listed companies in Rwanda stock exchange. Even though studies have been conducted on the exchange rate regimes and the implications for macroeconomic management as well as managing foreign exchange risk (Abor, 2015), very little, if any, has been done on the study of the foreign exchanges rates and how it effects the financial performance of the eight listed firms in the Rwanda Stock Exchange.

Onyancha (2011), did a study on the impact of foreign exchange gains and losses in the financial performance of international Non-governmental organizations in Kenya. The study used a survey research design. His findings showed that exchange rate risk can reduce project quality. Also, exchange rate movements have an impact on financial performance of NGOs. Huge foreign exchange loss reduces asset quality. Irene (2011), did a study on the relationship between foreign exchange and financial performance of Airlines in Kenya whose objective was to establish the relationship between foreign exchange and financial performance of Kenya Airways. She used a case study design. From her findings, there is a negative relationship between foreign exchange risk and financial performance. Currency fluctuations impact on prices hence negative impact on revenues and expenses denominated in foreign currency

This research is, therefore, motivated by concerns about the increased foreign exchange risk faced by firms and the lack of research into the foreign exchange exposure of listed firms operating in Rwanda. This study, thus, seeks to answer the question; what is the effect of foreign exchange exposure on financial performance of the listed companies in Rwanda?

1.3 Objectives of the study:

The general objective of the study was to assess the effect of foreign exchange exposure on the financial performance of listed firms in Rwanda. To achieve this the study determined the effect of the transaction based foreign exchange exposure on the financial performance of listed firms in Rwanda.

2. CONCEPTUAL FRAMEWORK

In this study the dependent variable is the financial performance of a firm while the independent variables are the various types of foreign exchange exposure risks firm faces.

Independent Variable		Dependent Variable
Transaction exposure • Revenue/foreign receivables • Purchases/foreign payable • Cash flows	→	**Financial performance** • Return on assets • Return on Equity • Earnings per share

2.1 Transaction exposure risk:

Empirical research indicates that volatile exchange rates affect the revenue and profits of both multinational and local corporations (Muller & Verschoor 2016). Because of the prevalence of outsourcing activities to foreign countries, corporations incur costs in foreign currency (e.g. wages, taxes and material) and it is important for corporate financial managers to be aware of the

extent of this exposure (Abor 2015). Furthermore, corporations not involved in foreign exchange trades or outsourcing activities are also exposed to the fluctuating exchange rates through competition with multinational organizations, foreign competitors, and macroeconomic conditions. Therefore, many local and multinational organizations find their income statements and business performance affected by fluctuating exchange rates, in spite of their having only indirect financial exposure (Parsley & Popper 2016).

A change in prices, the cost of final goods, the cost of raw material, labor costs or the costs of input or output and other substitute goods due to fluctuating exchange rates may have an adverse effect on the competitive position of a local or domestic firm with no international and foreign activities. Theory and empirical work in financial economics suggests that the exposure of a firm to changing exchange rates depends on the type of product and the nature of the competitive environment in which the firm operates (Bradley & Moles 2011). The general concept of exposure is the level of impact on the net worth of a firm due to fluctuating exchange rates (El-Masry 2009).

3. TARGET POPULATION

Target population in statistics is the specific population about which information is desired. According to Ngechu (2014), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. The target population for this study was all the 8 listed companies in the Rwanda Stock of Exchange. A census study approach will be employed. The respondents in this target population comprised of 48 (fourty eight) individuals from the eight listed companies at the Rwanda Stock Exchange. The 48 (fourty eight) individuals were employees in the department of finance/treasury at the headquarters of each of the selected companies.

3.1 Data Analysis:

The main objective of any statistical investigation is to determine relationships that make it feasible to predict one or more variables in terms of other variables. The collected data was examined and checked for completeness and comprehensibility. The data was then summarized, coded and tabulated by using Microsoft Excel and the Statistical

Package for Social Sciences (SPSS version 21). Descriptive statistics such as the mean, standard deviation and frequency distribution was used to analyze the data. Pearson Correlation was used in order to find a correlation between foreign exchange exposure and the financial performance of each of the listed firms in the Rwanda stock exchange.

The data obtained was also subjected to a regression analysis so as to establish the effect of foreign exchange exposure on financial performance. Foreign exchange rate was included as independent variable and yearly financial performance as the dependent variable to the constant linear regression model

$$r_t = c + \rho\pi_t + \varepsilon_t$$

Where:

r_tIs the financial performance in a year t?

C is the constant term,

π_tIs the logarithmic difference of foreign exchange in a year t and

ε_tIs the error term

The researcher will also carry out a f-test at 95% confidence level in order to establish the significance of the independent variable in explaining the changes in the dependent variable.

4. TRANSACTIONAL BASED FOREIGN EXCHANGE EXPOSURE

The study sought to determine the annual total purchases to arrive to import purchases for the last 3 years from 2012 to 2015.

Table 1: Total and Import Purchases

	Total Purchases “Rwf”		Import Purchases “Rwf”		Import to Annual Purchases %		Average % growth of Imports	
Description	Min	Max	Min	Max	Min	Max	Min	Max
Purchases	700M	29B	140M	10.15B	15%	75%	10%	50%

From the findings shown by Table 1, the total purchases of the firm ranged between Rwanda Francs 700 million to 29 billion with an import range of 140 million to 10.15 billion Rwanda Francs. On the percentage of the annual import purchases compared to total purchases, the study found that the percentage of import purchases ranged between 15% to 75% with a range of growth of 10% to 50% an indication that the firms listed in the Rwanda Stock Exchange are prone to foreign exchange risk by the reason of the paying foreign currency.

Table 2: t-statistics for annual growth in imports

						95% Confidence Interval of the Difference	
	t	Df	Sig. (2-tailed)	Mean Difference	Standard Deviation	Lower	Upper
% change in annual imports	9.221	30	0.000	16.77419	10.128	13.0591	20.4893

Where t is the t-value and Df is the degree of freedom showing the number of annual import growth values in the final calculation of a statistic that are free to vary.

The study sought to determine the annual total purchases to derive annual import purchases for the last 3 years. From the findings the study revealed that there was 10% to 50% growth in the annual import purchases in the last decade from 2001 to 2010. The mean growth rate in imports for firms listed in the RSE was found to be 16.77419. The standard deviation was high at 10.12821 an indication that there was high variance in the growth of imports between the listed firms. The t-value was found to be statistically significant at 9.221 as their significance value was less than 0.05 meaning the probability that the means of the two populations are not the same as illustrated in Table 2. T-tests are statistical tests that are used to determine whether there are significant differences between two groups. According to Welch's t-test, these tests are often referred to as "unpaired" or "independent samples" t-tests, as they are typically applied when the data underlying the two samples being compared are non-overlapping

4.1 Currency invoiced by suppliers:

The study further sought to determine the foreign currencies are your importations denominated among the respondents.

Table 3: Currency invoiced by suppliers

Currency	**Frequency**	**Per cent**
Rwf	40	100.0
US	40	100.0
Euro	36	90.0
GBP	28	70.0
Japanese Yen	16	40.0
Ugx	40	100.0
Others	8	20.0

On the currency used by the suppliers to invoice the firm listed in the Rwanda Stock Exchange, the study found by virtue of Table 4.12 that majority of the firms are invoiced using Rwanda francs, US dollar and Uganda Shillings as shown by 100. Those who uses Euros are shown by 90%, Sterling pound as shown by 77% and Japanese yen as shown by 16% while other currencies just accounts 20%. This shows that Rwanda Francs, US dollar, Euro, Uganda Shillings, Sterling pound and Japanese yen were the most currency used to invoice firms listed in the Rwanda Stock Exchange by their suppliers. The study sought to determine the extent of usage of foreign exchange currencies on import purchases and accounts payables and the impacts they have on the future payments to the foreign suppliers invoiced in foreign currency.

4.1.1 Currency used in recording purchases and accounts payable:

The study further sought to determine the Currency used in recording purchases and accounts payable denominated among the respondents.

Table 4: Currency used in recording purchases and accounts payable

Currency	**Frequency**	**Per cent**
Rwf	40	100.0
US	40	100.0
Euro	40	100.0
GBP	28	70.0
Japanese Yen	16	40.0
Others	8	20.0

From the findings used in recording of purchases and accounts payable as depicted by Table 4.13, the study revealed that the firms listed in the Rwanda Stock Exchange used the following currencies to record purchases and accounts payable. They include Rwanda Francs, US dollar and Euro as shown by 100% in each case, GBP as shown by 70%, Japanese yen as shown by 40% and others like South African rand as shown by 20%.

5. CONCLUSIONS

The main purpose of this research is to study the effect of foreign exchange exposure on the financial performance of listed companies in the RSE. From the findings the study found that firms listed in the Rwanda Stock Exchange use income statement and owners' equity account to record foreign exchange differences. The study thus conclude that unrealized foreign exchange gains/losses had an effect on the Net Income of multinational companies as it was posted to either income statement or owners 'equity reserves. The study also found that there had been significant percentage change in imports for firms listed in the Rwanda Stock Exchange; the study thus concludes that use of foreign exchange has an effect on import costs and accounts payables with the net effect on the Net Income of multinational companies. The study also found that there were significant changes in the annual exports by firms listed in the Rwanda Stock Exchange for the last 5 years. The study examined the interest rate risk of listed firms on the Rwanda Stock Exchange to exchange rate risk for the period January 2012 to December 2015. The findings of the study are that, all the major hard currencies of international transaction are sources of foreign exchange risk to listed firms on the Rwanda Stock Exchange. The US dollar turned out to be the most dominant source of exchange rate risk at both the firm and sector levels. In general, most listed firms on the Rwanda Stock Exchange are significantly exposed to foreign exchange risk emanating from all the major hard currencies of international trade, namely, the US dollar, the Sterling pound, the Euro and the Japanese Yen.

5.1 Recommendations:

From the findings of this research, the study recommends that firms listed in the Rwanda Stock Exchange should explore avenues to enhance capacities within firms for managing foreign currency risk. They should explore the route of continued education for those in workplaces through short term training that should be very practical oriented, this could involve professional organizations for finance specialists, bankers, accountants and consultants. Such training should ideally be out of site because of the need to meet participants from diverse businesses and orientations for training and assessment to avoid internal interruptions. These trainings should not only cover foreign currency risk alone but rather could be preceded by introductory contents on the import-export trade and the practical market challenges facing the industries. As found out in this study, the exchange rate risk faced by firms forms a significant component of their risk profile. It is therefore imperative that listed firms and generally all firms in Rwanda with and without international operations effectively manage their risk to minimize their foreign exchange rate risk. In an increasingly globalizing economy, domestic corporations, their suppliers, and their customers are not insulated from the effects of international economic cycles, currency movements, and global competition. However, the foreign exchange rate risk of domestic companies has not been fully investigated in prior literature a good suggestion worth of future research.

5.2 Areas for further research:

This study sought to investigate the effect of foreign exchange rates on the financial performance of listed companies in the RSE. Foreign exchange rates can be a major stumbling block for the financial performance and investment in small and developing economies. The RSE being an important institution in any economy and for a country to experience growth, the forex market should be efficient. Future researcher may conduct further studies and identify other macro-economic factors that significantly affect a firm's financial performance. Therefore, further study should focus on macro-economic factors such as: interest rate, money supply, monetary policy, fiscal policy and industrial production. Further studies on persistence of news on foreign exchange rates will be useful to companies in making rational foreign exchange decisions and aid the regulator in policy formulation.

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