EFFECTS OF FOREIGN CURRENCY RISK ON OPERATIONAL COSTS AT KENYA POWER AND LIGHTING COMPANY LIMITED

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI.

2013

DECLARATION

This research project is my original work and has not been presented to any other institution or university.

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This research project has been submitted for examination with our approval as the university supervisors.

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DEDICATION

I dedicate this project to my wife Esther, Son Ian and daughters Joy and Gloria for being understanding and the encouragement during the pursuit of the MBA. I also dedicate this project to the faculty of business and administration at the University of Nairobi for being a strong pillar stone throughout my MBA course. I have been deeply humbled by the knowledge acquired and support accorded to me during my studies at the university.

ACKNOWLEDGEMENT

I wish to thank The Almighty God for His grace and favor upon me all this while. I wish to express my gratitude to my supervisor, Dr. Sifunjo Kisaka for his professional guidance and motivation that enabled me compiles this project. I also extend gratitude to my family for their unending support throughout my education.

ABSTRACT

The study was on the effects of foreign currency risk on operational cost at Kenya Power and Lighting Limited. The operational costs of running power utilities are affected by among others the costs of inputs/equipments denominated in foreign currencies, the changes in interest rates, the level of business and economic growth outlook.

A descriptive case study design was used as only one firm (Kenya Power) was researched on. The population of the study was all 8 state corporations under the ministry of energy and petroleum. No sampling was necessary and therefore, the study took Kenya Power as the unit of analysis. The study used both primary and secondary data. The primary data was collected from the senior staff from Finance and Planning departments. Secondary data was collected to represent the three exposures together with operational costs. Regression analysis was conducted using the secondary data only. Primary data was only for collaboration purposes.

The results reveal that economic exposure was the only statistically significant variable in explaining operational costs in Kenya Power and Lighting Company Limited. The other variables that are the transaction exposure and interest exposure are not statistically significant variables in explaining or predicting the level of operational costs. A rise in economic exposure therefore leads to a rise in operational exposure. This is justified because economic exposure is highly correlated or connected to both transactional costs exposure and interest rate exposure.

Specifically, it was concluded that economic exposure was significant in explaining operations costs. This was the case as commodity / fuel costs which were taken to be a proxy of economic exposure are highly influenced by the interest rates and also by the foreign exchange fluctuations. However, it was concluded that individually, interest exposures and foreign exchange exposure were not significant determinants of operational costs.

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CHAPTER ONE

INTRODUCTION

1.1   Background of the study

Foreign exchange risk (also known as exchange rate risk or currency risk) is a financial risk posed by an exposure to unanticipated changes in the exchange rate between two currencies. Investors and multinational businesses exporting or importing goods and services or making foreign investments throughout the global economy are faced with an exchange rate risk which can have severe financial consequences if not managed appropriately. Currency risk is the unexpected changes in foreign currency values and their adverse consequences for individuals and organizations which operate at the international level. This emanates from the fact that foreign exchange rate fluctuates and the extent of the fluctuations may impact negatively on the parties involved. The extent of foreign exchange risk is a function of the magnitude of potential exchange rate changes and the size and duration of the foreign currency exposure (Shapiro, 2003).

An exchange rate between two currencies is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country's currency in terms of another currency. It is also describe as the relative price of one national currency expressed in terms of another. Alternatively, it is the ratio of exchange for two currencies and may be viewed as being determined by the interplay of supply and demand in foreign exchange markets. Further, exchange rate can be termed as a conversion factor, a multiplier or a ratio, depending on the direction of conversion.

The exchange rate simply expresses a national currency's quotation in respect to foreign ones. For example, if one US dollar is worth seventy Kenya shillings, then the exchange rate of dollar is seventy Kenya shillings (Betts and Devereux, 2000).

According to Jorion (1990) exchange-rate exposure is related to the fraction of total sales made overseas by US multinationals. Although he does admit that exchange rate risk appears to be diversifiable, he points to implications for asset-pricing tests. If exposure could be priced in an arbitrage pricing framework, firms could affect their cost of capital by hedging. Choi and Prasad (1995) posit that the exchange risk sensitivity of firms will depend on their operating profiles, financial strategies, and other firm-specific variables. It is intuitive that the cash flow sensitivity of a firm to exchange rates should depend on the nature of a firm's activities, such as the extent to which it imports/exports, its involvement in foreign operations, the currency denomination of its competition, and the competitiveness of its input and output markets.

The operational costs of running power utilities are affected by among others the costs of inputs/ equipments denominated in foreign currencies, the changes in interest rates , the level of business and economic growth outlook etc.

1.1.1 Foreign Currency Risk

The foreign exchange risks of a portfolio, whether it be a securities portfolio or the general portfolio of activities of the Multinational Enterprise, are reduced through international diversification. The construction of internationally diversified portfolios is both the same as and different from creating a traditional domestic portfolio. Internationally diversified portfolios are the same in principle because the investor is

attempting to combine assets that are less than perfectly correlated, reducing the total risk of the portfolio. In addition, by adding assets outside the home market, assets that previously were not available to be averaged into the portfolio's expected returns and risks, the investor has now tapped into a larger pool of potential investments.

According to Jorion (1990) Organizations exposed to foreign exchange risk have three options. First, they can choose to do nothing about their exposure and accept the consequences of variations in currency values or the possibility that their government may impose restrictions on the availability or transfer of foreign currency. This is not a recommended path. Second, they can "hedge" against their exposure. For example, they can purchase a financial instrument that will protect the organization against the consequences of those adverse movements in foreign exchange rates. Finally, they can partially hedge against the risks, or limit their hard currency exposure to set levels.

Investors rely upon five commonly-used methods to mitigate currency risk: forward contracts, future contracts, currency options, currency swaps, and back-to-back loans.

Forward Contract **-** A contract that obligates you to buy or sell a currency at a fixed rate on a specified future date. By linking this date to the date of your currency payment and/or purchase, you in effect lock in the exchange rate you want and eliminate the risk of future volatility. Contracts cannot be transferred.

Futures Contract **-** An exchange traded agreement to buy or sell a particular type and grade of commodity for delivery at an agreed upon place and time in the future. Futures contracts are transferable between parties.

Currency Options **-** A contract for a fee (premium + commission), sold by one party to another that offers the buyer the right, but not the obligation, to buy or sell a specified amount of one currency for a specified amount in another at an agreed-upon price during a certain period of time or on a specific date.

Currency Swaps **-** An agreement by two companies to exchange specified amounts of currency now and to reverse the exchange at some point in the future. A currency swap may not have an initial exchange, in which case it would involve one or more payments during the life of the swap, plus a final exchange.

Back-to-Back Loans **-** A loan where two companies in different countries borrow offsetting amounts in each other's currency. The purpose of this transaction is to hedge against currency fluctuations.

Back-to-back loans are infrequently used today but were common when stiff exchange controls made very expensive to take an investor's home currency and convert it into the needed currency.

1.1.2 Operational Costs

Operational costs are the routine costs of running a business. While these vary based upon the type of business, many basic types of operational costs exist that a business must consider when budgeting. Some of these operational costs are fixed, meaning that each cost is identical from month to month, such as rent. However, other operational costs are variable and may go up or down from month to month, such as

utilities. Costs of operation consist of fuel costs for isolated electricity generating, operations and maintenance (excluding the cost of redrilling or stimulation, which are assumed in capital cost calculations), interest on loans and principal repayments, taxes, and depreciation etc. In addition, shareholder returns on equity, are counted when a project is commercial, as opposed to experimental (Choi and Prasad, 1995).

A majority of the inputs and machinery used in Kenya Power are sourced outside Kenya. As a result, Kenya Power conducts transactions in various currencies, which increases the company exposure to fluctuations in foreign currency exchange rates relative to the Kenyan Shilling. Some of Kenya Power revenues and expenses generally are derived from sales using thermal generation and operations in foreign currencies, and these revenues and expenses could be affected by currency fluctuations, including amounts recorded in foreign currencies and translated into Kenya shillings.

The operating and maintenance costs of providing power transmission and distribution services and to improve power reliability and general efficiency accounts for over 50% of total costs. For Kenya Power, operational costs costs include the cost of generation fuel, purchase of transformers and accessories, conductors, loan repayments etc.

1.1.3   Effects of Foreign Currency Risk on Operational Cost

Eiteman et al (2001) define transaction exposure as a measure of change in the value of outstanding financial obligations which are incurred prior to a change in exchange rates but are not due to be settled until after exchange rates change. Miller and Reuer (1998) infer that a firm's exposure to foreign exchange movements increases

with the ratio of exports to total corporate sales. This is attributed to the firm's position in foreign currency. (Miller and Reuer, 1998) As the firm's home currency appreciates, the value of receivables denominated in other currencies will fall. The relationship between export sales intensity and economic exposure considers both the value of receivables and the effect on foreign exchange rate movements on future sales. It is a widely accepted economic principle that a firm in a country with an appreciating currency has a cost disadvantage relative to firms in countries with stable or declining currency values. (Miller and Reur, 1998) Transaction exposure is the effect of unexpected changes in the nominal exchange rate on the cash flows associated with assets and liabilities. Therefore, transaction exposure can also arise from purchasing or selling on credit in a foreign currency, borrowing or lending in a foreign currency, and owning assets or liabilities denominated in a foreign currency.

Operating exposure is also called economic exposure, competitive exposure, or strategic exposure. It measures the change in the present value of the firm, which results from any change in future operating cash flows caused by unexpected changes in exchange rates. Real assets are affected through exchange rate movements, through effects on aggregate demand or the cost of traded inputs. Operating exposure is the effect of unexpected changes in the exchange rate on cash flows associated with a firm's real assets and liabilities. (Pantzalis et al, 2001) Operating exposure stems from unexpected changes on the firm's input costs and output prices. For example, if costs are incurred in the local currency but sales are earned in the foreign currency, depreciation in the local currency will increase profits. Also, if both costs and profits are in a foreign currency, depreciation of the local currency will increase profits.

Pantzalis et al (2001) point out that transaction exposure can be easily hedged using currency derivatives, but that operational hedges are significant determinants of exchange rate risk, as measured by the "breadth" and "depth" dimensions of the multinational corporation's foreign subsidiary network. According to Pantzalis et al (2001) a firm's ability to construct operational hedges effectively reduces exposure to currency risk for firms with either positive or negative exposures. Operational hedges are best suited to manage the impact of exchange rate changes on the firm's competitive position across markets and products. Operating flexibility is the ability to shift factors of production across borders and to transfer resources within a network to take advantage of exchange-rate movements. (Pantzalis et al, 2001) They found that the impact of the firm's ability to construct operational hedges effectively reduces exposure to currency risk for firms with either positive or negative exposures.

In summary, when a firm`s home currency depreciates, imports and payables become more expensive while exports and receivables become cheaper. When the home currency appreciates, imports and payables become cheaper while exports and receivables become more expensive. Unfavorable exchange rate changes increases a firm`s operational costs thus reducing the net profits and vice versa.

1.1.4   Kenya Power and Lighting Company Limited

Kenya Power is a limited liability company which transmits, distributes and retails electricity to customers throughout Kenya and is listed at the Nairobi Stock Exchange (NSE). Kenya Power is committed to providing high quality customer service by efficiently transmitting and distributing high quality electricity that is safe, adequate and reliable at cost effective tariffs. The Board, Management and staff of

Kenya Power are committed to effective implementation and continual improvement of the Quality Management System that complies with ISO 9001:2008 in order to consistently meet its customers and other stakeholder's requirements and expectations.

Kenya power aims at powering people for better lives through provision of world class power that delights its customers. It serves about 2,000,000 customers. It had a turnover of over 95 billion shillings from various business units during the year ended 30th June 2012. The company is majorly divided into four business regions with a mix of 8 business functions.

Kenya Power has a staff complement of over 11,000 employees. It recruits and aims at retaining highly motivated professional staff in order to meet its corporate goals. Great importance is attached to ensuring that employees have requisite competencies to perform their work and also realize their potential through regular staff training and other development programmes. On the job training is the foundation upon which all other training must depend, and it acknowledges the role its experienced employees play in training their colleagues.

1.2   Research Problem

Exchange risk causes unanticipated foreign exchange rate changes which tend to have an impact on the value of the firm. Foreign currency risk ought to be a matter of importance for any sizeable firm. Managers in these firms, as a minimum, need to be aware of the existence of such risk. An understanding of techniques which can be employed to minimize foreign currency risk, consequently, becomes a necessity. The

challenge is that such risk may affect the operational cost and the sustainability of a business.

Kenya Power and Lightning Ltd is faced with foreign currency risk primarily because of its trading in foreign currency (imports and exports) and also in recognizing assets and liabilities denominated in foreign currency. The problem of this study is that the foreign currency risk in Kenya power has been increasing as results of growth of business and the rising demand of foreign currency in transactions. The problem is further compounded by the fact that Kenya power passes the cost of foreign currency exposure to the consumers. This further implies that the need to recognize the impact of foreign currency risk on operational costs and also to the customer is lost. The problem of rising foreign currency risk that feeds into power costs has been noted by policy makers, industrial sector and domestic customers.

Local studies in Kenya done by Ngari (2012) was on foreign exchange exposure on firms listed in the Nairobi Stock Exchange. The study found out that foreign exchange exposure can be minimized where firms have been able to match their foreign currency revenues and costs leaving them with little net exposure. Wekesa (2012) conducted a study on relationship between foreign exchange risk management and profitability of airlines in Kenya and found out that the airlines fully hedged using forwards, futures and money contracts but they partially hedged options and swaps but failed to link foreign currency risk to operational costs. Wanyonyi (2011) conducted a survey of the Foreign Exchange Risk Management Practices of Kenyan Based Subsidiaries Of Multinational Corporations but failed to link foreign currency risk to operational costs. These previous studies have dwelt so much on foreign exchange risks

management in general without linking these practices with the organization performance. None of these studies have focused on the energy sector which domiciles all excitement of changes. As a result of this research gap, the study sought to fill the existing void by answering the question: What are the effects of foreign exchange risks on the operational costs at Kenya Power& Lighting Company Ltd and how can the risks is mitigated?

1.3   Objectives of the Study

The objective of this study is to investigate the effects of foreign currency risk on operational cost at Kenya Power and Lighting Company Limited.

Specifically the study will investigate how transaction exposure, economic exposure and interest rate exposure affects the operational cost at Kenya Power and lighting company

Limited and whether there is a direct relationship between the 3 exposures and the operational costs.

1.4   Importance of the study

The study would be of benefit to the following;

Decision makers at the various levels of management will get to know the impact of the currency risk on the operational costs and the importance of having a policy on foreign currency risks management practices as a key enabler of developing economic perspective. For instance, the managers responsible for strategies may use the findings to formulate effective monitoring and control systems to mitigate challenges for FX transactions.

Academics and business researchers will be able to borrow from the findings of this research to support literary citations as well as develop themes for further research. The findings will contribute to professional extension of existing knowledge in FX risks management practices by helping to understand the current challenges for adopting these strategies or practices and their effects on service business performance.

Other parastatals in the energy sector may find the study findings useful since they are also exposed to foreign currency risks. They may use the findings from this research to aid them in implementing their organizational FX risks exposure management practices. The findings will also enable the management to understand how FX- rate movements affect the transactions of FX risks management practices in the firm's performance.

CHAPTER TWO

LITERATURE REVIEW

2.1   Introduction

In this chapter, section 2.2 provided a brief overview of the theoretical literature with section 2.3 presenting the empirical literature. Section 2.4 presented a review of local research on the chosen topic while section 2.5 presented an overall summary of the chapter. It is by no means comprehensive – rather, it is intended to simply highlight key findings.

2.2   Review of Theories

There are a number of academic studies on foreign exchange risk management practices. Especially, they can be broadly categorized into three groups. The first group are theoretical papers addressing the issue of relevance or otherwise of currency management (Shapiro and Rutenberg 1976)' Logue and Oldfield (1977); Jacque (1981); and Dufey and Srinivasulu (1983). Arguments in favor of the relevance of currency risk management are based on purchasing power parity theory, the capital asset pricing model, the Modigliani-Miller theorem and the efficient market hypothesis. On the other hand, imperfections in the capital market are used to argue for the relevance of foreign exchange risk management practices.

Most of these empirical studies also found, to a varying extent, that firms do manage their currency risk. Akrom (1974) observed that the control of foreign exchange activities was essential for a rational and consistent approach to controlling the foreign exchange exposure of the firm. Exchange rate movements affect expected

future cash flows, and therefore the value, of large multinationals, small exporters (importers) and import competitors, by changing the home currency value of foreign revenues (costs) and the terms of competition. In light of this, it is surprising that previous research in the area (Jorion, 1990), Amihud (1993) and Bodnar and Gentry (2000) finds that US multinationals, exporters, and manufacturing industries are significantly affected by exchange rate movements.

2.2.1 Portfolio theory

Portfolio theory of investment tries to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. Although Portfolio Theory is widely used in practice in the financial industry and several of its creators won a Nobel Prize for the theory, in recent years the basic Portfolio Theory have been widely challenged by fields such as behavioral economics (Marckowitz, 1952)

Portfolio Theory is a mathematical formulation of the concept of diversification in investing, with the aim of selecting a collection of investment assets that has collectively lower risk than any individual asset. That this is possible can be seen intuitively because different types of assets often change in value in opposite ways. For example, when prices in the stock market fall, prices in the bond market often increase, and vice versa. A collection of both types of assets can therefore have lower overall risk than either each individually. But diversification lowers risk even if assets' returns are not negatively correlated and indeed, even if they are positively correlated (Markowitz, 1952).

Portfolio Theory was developed in the 1950s through the early 1970s and was considered an important advance in the mathematical modeling of finance. Since then, many theoretical and practical criticisms have been leveled against it. These include the fact that financial returns do not follow a Gaussian distribution or any symmetric distribution, even for those correlations between asset classes.(Micheal, Sproul, 1998).

Portfolio theory is useful to this study as it illustrates the need to manage foreign currency risk and interest rate risk. Specifically, it advocates for the creation of portfolio of assets. This asset could be the different currency. A portfolio manager who wants to manage the currency risk may need to invest in different currency as this would hedge against in any fluctuations. Portfolio theory can be employed to construct a portfolio of interest bearing debts which would lead to minimization of interest rate risk.

2.2.2   Capital Asset Pricing Theory

William Sharpe (1964) published the capital asset pricing theory (CAPM). Parallel work was also performed by Treynor (1961) and Lintner (1965). CAPM extended Harry Markowitz's portfolio theory to introduce the notions of systematic and specific risk. For his work on CAPM, Sharpe shared the 1990 Nobel Prize in Economics with Harry Markowitz and Merton Miller. In such a simple world, Tobin's (1958) super-efficient portfolio must be the market portfolio. All investors will hold the market portfolio, leveraging or de-leveraging it with positions in the risk-free asset in order to achieve a desired level of risk. CAPM decomposes a portfolio's risk into systematic and specific risk. Systematic risk is the risk of holding the market portfolio. As the market moves, each individual asset is more or less

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affected. To the extent that any asset participates in such general market moves, that asset entails systematic risk. Specific risk is the risk which is unique to an individual asset. It represents the component of an asset's return which is uncorrelated with general market moves (Lintner, 1965).

The capital asset pricing theory states that the return on assets should, on average, equal the yield on a risk-free bond held over that time plus a premium proportional to the amount of systematic risk the stock possesses (Markowitz 1952). Unsystematic risk is the risk to an asset's value caused by factors that are specific to an organization, such as changes in senior management or product lines. For example, specific senior employees may make good or bad decisions or the same type of manufacturing equipment utilized may have different reliabilities at two different sites. In general, unsystematic risk is present due to the fact that every company is endowed with a unique collection of assets, ideas and personnel whose aggregate productivity may vary.

Despite the fact that electricity sector is exposed to a wide array of risks, these risks stand out and are often interrelated. Interest rate is often the trigger for other forms of risk. An increase in interest rate would trigger credit risk as it leads to liquidity problems. Some firms use derivative instruments to manage their risk exposure and thereby reduce the volatility of a firm's cash flows and firm's value, while other firms use derivatives to speculate and to take advantage of arbitrage opportunities. Derivative instruments are used for risk management by non-financial firms around the world, primarily to manage interest rate risk and foreign exchange risk. Commodity price derivatives are also used, but are specific to certain industries.

Hedging against specific risk (transactional, economic and interest rate can reduce the operational cost and therefore improve the returns of Kenya power).In the model adopted by this study market risk is irrelevant.

2.2.3 Arbitrage pricing theory

The Arbitrage Pricing Theory (APT) was developed primarily by Ross (1976). It is a one-period model in which every investor believes that the stochastic properties of returns of capital assets are consistent with a factor structure. The Arbitrage Pricing Theory (APT) describes the price where a mispriced asset is expected to be. It is often viewed as an alternative to the capital asset pricing model (CAPM), since the APT has more flexible assumption requirements. Whereas the CAPM formula requires the market's expected return, APT uses the risky asset's expected return and the risk premium of a number of macro-economic factors. Arbitrageurs use the APT model to profit by taking advantage of mispriced securities. A mispriced security will have a price that differs from the theoretical price predicted by the model. By going short on an overpriced security, while concurrently going long on the portfolio the APT calculations were based on, the arbitrageur is in a position to make a theoretical risk-free profit. (Ross, [1976])

The basis of arbitrage pricing theory is the idea that the price of a security is driven by a number of factors. These can be divided into two groups: macro factors, and company specific factors. Ross' formal proof shows that the linear pricing relation is a necessary condition for equilibrium in a market where agents maximize certain types of utility. The subsequent work, which is surveyed below, derives either from the assumption of the preclusion of arbitrage or the equilibrium of utility-maximization. A linear relation between the expected returns and the betas is

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tantamount to an identification of the stochastic discount factor (SDF). The APT is a substitute for the Capital Asset Pricing Model (CAPM) in that both assert a linear relation between assets' expected returns and their covariance with other random variables. (Ross, 1976). The difference between CAPM and arbitrage pricing theory is that CAPM has a single non-company factor and a single beta, whereas arbitrage pricing theory separates out non-company factors into as many as proves necessary. Each of these requires a separate beta. The beta of each factor is the sensitivity of the price of the security to that factor.

The implication to the study variables is that firms can minimize currency risk exposure by constantly analyzing the currencies that are more affected by exchange rate changes and apply financial instruments which minimizes the risks. The arbitrage model takes into consideration market risk and other internal risk. The relevance of this is that currency risk, economic exposure and interest rate risk are internal risk. Hedging against this reduces operation cost.

2.3 Empirical Literature

Berument and Dincer (2004) investigated the effects of exchange rate risk on economic performance and focused on the Turkish experience. From the study, the authors concluded that when the ratios of the total foreign exchange liabilities of the Central Bank of the Republic of Turkey (CBRT) to: (1) total reserves; (2) the CBRT's reserves; and (3) the CBRT's total Turkish lira liabilities are taken proxy of exchange rate risk, the empirical evidence suggests that the increase in exchange rate risk causes a depreciation in the real exchange rate, an increase in prices and a decrease in output.

Muller and Verschoor (2006) investigated the foreign exchange risk exposure and provided suggestions. The authors argued that assessing the sensitivity of firm value to exchange rate changes has been one of the most challenging issues in international financial management over the last two decades. Their paper reviewed the rapidly growing exchange exposure literature, with particular reference to recent developments. The studies reviewed focus on two primary areas of inquiry: the theoretical foundations of exchange risk exposure and the empirical evidence on the link between stock returns and currency fluctuations. Although much has been learned in each field, their survey highlights the areas of research in which our understanding of the mechanism of exchange exposure is still incomplete.

Dhanani (2003) investigated Foreign exchange risk management and focused on the mining industry. Using a case study approach, this paper reviews the corporate exchange risk management practices of a single large UK multinational company. The research results shed new light on the management of economic exchange rate risk and also have implications for the effects of movements in exchange rates in the context of the translation process. More generally, these results indicate that, instances in which corporate practices deviate from normative prescriptions do not necessarily imply sub-optimal behavior, although some companies may benefit from the re-consideration of their exchange risk management policies. Finally, they highlight new areas of research and also emphasize the role of qualitative research in accounting and finance.

Papaioannou (2006) investigated the exchange rate risk measurement and management and focused on issues and approaches for firms. Measuring and

managing exchange rate risk exposure is important for reducing a firm's vulnerabilities from major exchange rate movements, which could adversely affect profit margins and the value of assets. This paper reviews the traditional types of exchange rate risk faced by firms, namely transaction, translation and economic risks, presents the VaR approach as the currently predominant method of measuring a firm's exchange rate risk exposure, and examines the main advantages and disadvantages of various exchange rate risk management strategies, including tactical vs. strategic and passive vs. active hedging. In addition, it outlines a set of widely-accepted best practices in managing currency risk and presents some of the main hedging instruments in the OTC and exchange-traded markets. The paper also provides some data on the use of financial derivatives instruments, and hedging practices by US firms.

2.4 Review of Local Research

Wekesa (2012) investigated the relationship between foreign exchange risk management and profitability of airlines in Kenya. The study employed a survey research design. The study sampled 26 out of 46 airlines operating in Kenya. Both primary data and secondary data were used in this study. Cross-sectional analysis was applied to analyze the data. Correlation analysis and regression analysis were used to obtain the results. The study found out that foreign exchange rate risk management has appositive impact on the profits of airlines in Kenya. Currency risk management accounts for 35% of the variability of the profits of airlines in Kenya. The airlines ranked exchange rate risk and fuel price risk as most important risks compared to inflation risk and interest rate risk. The study also found out that all the airlines sampled had a foreign currency risk management policy and had a risk

management department headed by a Risk Manager. The results indicated that airlines often used forwards, futures, money market contracts, options and swaps for hedging in the order of merit. The study also found out that the airlines fully hedged using forwards, futures and money contracts but they partially hedged options and swaps. It also found out that majority of the respondents indicated that the percentage of exchange rate exposure the company was hedging was over 80%. Finally, the study found out that all airlines sampled measured the success of foreign exchange rate risk management policy monthly.

Wanyonyi (2011) surveyed the Foreign Exchange Risk Management Practices of Kenyan Based Subsidiaries of Multinational Corporations. The economic environment in which firms operate is highly volatile and unpredictable increased volatility, greater interdependence and new risks have made the structure of risk exposure of multinational corporations especially of financial institutions more complex. The volatility of foreign exchange rates and interest rates has been increasing significantly thus the necessity to have action plans to hedge the risk exposures. The research study objective was to determine the extent of use of foreign exchange risk management practices by Kenyan based subsidiaries of MNCs. The study is a descriptive survey. The population of this study consisted of the 30 Kenyan based subsidiaries of MNCs from four industries, which are greatly affected by foreign exchange risk. The researcher concludes that foreign exchange risk is an important aspect used by multinationals to ensure a safe and sound management of all institutions as they are exposed to foreign exchange risk. Companies have departments and policies on risk management that helps them minimize exchange losses, reduce volatility of cash flows and protect earnings fluctuations . They are

still faced by various problems in managing risks like frequent increase in exchange rates and getting the needed foreign currency. To solve them various hedging instruments are used to manage these exposures through the risk sharing, matching and diversification strategies. The recommendations are that the risk management department in an organization hence very important for multinationals. Policies should be made to govern the decisions to be made on the exchange rates so as to ensure that efficient diversified strategies are put in place to minimize any risk exposure.

Ngari (2011) developed a model of foreign exchange exposure dependent on three variables, the firm's imports, exports and their effect on profits formulating the problem statement of the effects (if any) that variations in the exchange rate has in the financial performance of the selected listed companies in the Nairobi Stock Exchange for the period covering years 2001 to 2010. The study was to find out whether foreign exchange exposure is minimized where firms have been able to match their foreign currency revenues and costs leaving them with little net exposure. From the findings the study found that listed firms use the income statement and the owner's equity account to record foreign exchange differences. The study 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 also found that there had been significant percentage growth in imports and exports for firms listed in the Nairobi Stock Exchange. The study further concluded that the use of foreign exchange has an effect on import costs and accounts payables, export revenues and accounts receivables with the net effect on the Net Income of the companies.

2.5   Summary

Exchange risk causes unanticipated foreign exchange rate changes which tend to have an impact in the value of the firm. Foreign currency risk ought to be a matter of importance for any sizeable firm. Managers in these firms, as a minimum, need to be aware of the existence of such risk. An understanding of techniques which can be employed to minimize foreign currency risk, consequently, becomes a necessity. The challenge is that such risk may affect the operational cost and the sustainability of a business. Kenya Power and Lightning Ltd is faced with foreign currency risk primarily because of its trading in foreign currency (imports and exports) and also in recognizing assets and liabilities denominated in foreign currency. The problem of this study is that the foreign currency risk in Kenya power has been increasing as results of growth of business and the rising demand of foreign currency in transactions. The problem is further compounded by the fact that Kenya power passes the cost of foreign currency exposure to the consumers. This further implies that the need to recognize the impact of foreign currency risk on operational costs and also to the customer is lost. The problem of rising foreign currency risk that feeds into power costs has been noted by policy makers, industrial sector and domestic customers. Local studies in Kenya done by Ngari (2012) was on foreign exchange exposure on firms listed in the Nairobi Stock Exchange. The study found out that foreign exchange exposure can be minimized where firms have been able to match their foreign currency revenues and costs leaving them with little net exposure. Wekesa(2012) conducted a study on relationship between foreign exchange risk management and profitability of airlines in Kenya and found out that the airlines fully hedged using forwards, futures and money contracts but they

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partially hedged options and swaps but failed to link foreign currency risk to operational costs. Wanyonyi (2011) conducted a survey of the Foreign Exchange Risk Management Practices of Kenyan Based Subsidiaries Of Multinational Corporations but failed to link foreign currency risk to operational costs. These previous studies have dwelt so much on foreign exchange risks management in general without linking these practices with the organization performance. None of these studies have focused on the energy sector which domiciles all excitement of changes. As a result of this research gap, the study sought to fill the existing void by answering the question: What are the effects of foreign exchange risks on the operational costs of Kenya Power& Lighting Company Ltd and how can the risks be mitigated?

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Introduction

In this chapter, section 3.2 presents the research design, section 3.3 presents the data collection methods and instruments while section 3.4 presents the proposed data analysis methods.

3.2   Research Design

The study used the case study design. Norman and Fraenkel, (2001) define a case study as an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables. Phil (1996) says that descriptive research studies are designed to obtain information concerning the current situation and other phenomena and wherever possible to draw valid conclusion from the facts discussed.

For this research, the researcher preferred to carry out a case study on the effects of foreign currency risk on operational cost at Kenya Power and Lighting Company. This design was deemed suitable for the study since the study would, through data collection from the respondents, assess attitudes, opinions and draw conclusions based on the findings. In addition, the method offered the researcher a wide coverage of the population of study and facilitates comparisons as well as being financially economical, given the wide geographical coverage of the population of study.

3.3 Data and Data Collection Instruments

The study used both primary and secondary sources to collect the data. Primary sources entailed the use of a structured questionnaire comprising of both open-ended and close-ended questions to be completed by employees in Finance and Planning divisions of Kenya Power. Walker (1985) observes that the use of questionnaires and interview guides offer considerable advantage in the management of the research. They present an even stimulus to large number of people simultaneously and provide the investigator with a relatively easy accumulation of data. Further, the use of questionnaires allowed the respondents time on questions that would require reflection on, to avoid hasty responses. Secondary sources included, KPLC`s published accounts for the period 2003 to 2012. For questionnaires, online, drop and pick method was used to administer questionnaires to the respondents.

3.4 Data Analysis

Data collected from the field was checked for consistency, completeness and usefulness. This entailed field edits, data results validation and central editing. Obai (1998) points out that analyzing survey research includes coding, tabulating responses, translating the responses into specific categories and then entering them in the Statistical Package for Social Sciences (SPSS) computer software for windows.

For quantitative data, descriptive statistics, percentages and frequencies were derived and used. In addition, mean and standard deviation were used alongside the frequencies for Likert items. Qualitative findings from the interviewees as well as the secondary sources were analyzed using content analysis techniques. Presentations were done by use of tables, graphs as well as charts. Items from the

open ended questions were analyzed and organized into themes and then presented in narrative form.

3.4.1 Analytical Model

This is the algebraic expression of the conceptual model. It has the constant term, the coefficients, and the error term.

$$Y = \alpha + \beta X_1 + \beta X_2 + \beta_3 r_t + \varepsilon. \quad ....(1)$$

Where;

Y= Operational Cost

X1=Transaction exposure

X2=Economic exposure

r_t = Interest rate risk

ε= error term,

β=Beta coefficient,

α= constant term

Operational costs (Y) were the routine costs of running a business. For Kenya Power and lighting these include power purchase costs, transmission and distribution costs. The company purchase power from KenGen, UETCL and other independent power producers. Transmission and distribution costs comprised of staff costs, advertising and public relations, consumables, depreciation etc. The costs are recorded in respective general ledger accounts and used for management reporting at periodic intervals and financial reporting semi annually and at year end.

Transaction exposure (X1))- A firm has transaction exposure whenever it has contractual cash flows (receivables and payables) whose values are subject to unanticipated changes in exchange rates due to a contract being denominated in a foreign currency. This was measured as the net value of forex losses and gains.

Economic Exposure (X2): A firm has economic exposure (also known as operating exposure) to the degree that its market value is influenced by unexpected exchange rate fluctuations. Economic exposure can affect the present value of future cash flows. This was measured by fuel costs(as a proxy)

Interest rate risk (ri)- The risk that an investment's value will change due to a change in the absolute level of interest rates. Kenya Power`s interest rate risk arises from short term borrowings. Borrowings issued at variable rates expose the company to cash flow interest rate risk. Long-term borrowings issued at fixed rates also expose the company to fair value interest risk. The interest rate risk exposure arises mainly from the interest rate movements on the company`s borrowing. Interest rate exposure will be measured by the borrowing costs incurred by Kenya Power.

The beta coefficient was evaluated by using a P value of 0.05. The model goodness of fit was evaluated using the coefficient of determination (R^2). The overall model significance was evaluated using the F statistic which is generated through Analysis of variance (ANOVA).

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1   Introduction

This chapter presented the data analysis and interpretation of the results. This chapter provides various sections; 4.2 Summary Statistics and Trends Analysis of all the variables under study. Section 4.3 presents the estimated or empirical model while section 4.4 presents the discussion. Section 4.5 presents the summary of the chapter.

4.2   Summary Statistics

This section presented the analysis of data from the questionnaires. The results are presented according to the objectives of the study.

4.2.1   Foreign Currency Risk on Operational Cost

The respondents were asked to rate the effects of operational costs on operations at Kenya Power. The findings are presented in Table 4.1 below.

Table 4.1: Foreign Currency Risk on Operational Cost

Statement	No extent at all	Low extent	Moder ate	Great extent	Very great extent	Mea n	Std
To what extent are KPLC`s operational costs constant/fixed.	0.00%	10.00%	60.00%	30.00%	0.00%	3.2	0.62
To what extent are the operational costs influenced by foreign exchange denominated purchases e.g fuel, machinery and other consumables.	0.00%	0.00%	30.00%	50.00%	20.00%	3.9	0.72
To what extent are the receivables/revenues influenced by inputs denominated in other currencies.	0.00%	10.00%	55.00%	25.00%	10.00%	3.35	0.81
Are the receivables/payables matched using the same currency	10.00 %	10.00%	30.00%	30.00%	20.00%	3.4	1.23
Average	**2.50 %**	7.50%	**43.75%**	**33.75%**	**12.50%**	**3.46**	**0.84**

Source: Researcher (2013)

Results in Table 4.1 revealed that majority 60% of the respondents were moderate with the statement that KPLC`s operational costs are constant/fixed firm was always willing to approach a bank for financing, while 50% indicated that operational costs were influenced by foreign exchange denominated purchases to a great extent, 50% indicated that the receivables/revenues were influenced by inputs denominated in other currencies to a moderate extent and another 30% were neutral while another 30% indicated to a great extent that the receivables/payables were matched using the same currency. This was supported by a mean score of 3.46 and standard deviation of 0.84.

4.2.2 Transaction exposure

The respondents were asked to rate the effects of Transaction exposure on operational costs at Kenya Power. The findings are presented in Table 4.1 below.

Table 4.2 Transaction exposure

Statement	Least extent	Low extent	Neutral	Moder ate	Great extent	Mea n	Std
KPLC is affected by unpredictable exchange rate changes.	0.00%	15.00%	0.00%	35.00%	50.00%	4.2	1.06
Settlement of maturing obligations form a great portion of KPLCs operational costs	0.00%	0.00%	55.00%	15.00%	30.00%	3.75	0.91
The primary objective of FX risk management is to minimize potential currency losses, not to make a profit from FX rate movements, which are unpredictable and frequent.	0.00%	0.00%	50.00%	25.00%	25.00%	3.75	0.85
Average	**0.00%**	**5.00%**	**35.00%**	**25.00%**	**35.00%**	**3.90**	**0.94**

Source: Researcher (2013)

Table 4.2 shows that a majority 50% indicated that economic exposure can increase firm value by reducing volatility and the probability of distress to a great extent, another 55% were neutral on the statement that settlements of maturing obligations form a great portion of KPLCs operational costs while another majority 50% stated that the primary objective of FX risk management was to minimize potential currency losses, not to make a profit from FX rate movements, which were unpredictable and frequent as neutral. The mean score for this section is 3.90 and a standard deviation of 0.94.this implies that to a large extent the statements affected the KPLCs.

4.2.3 Economic exposure

The respondents were asked to rate the effects of economic exposure on operations at Kenya Power. The findings are presented in Table 4.3 below.

Table 4.3 Economic Exposure

Statement	Least extent	Low extent	Neutral	Moderate	Great extent	Mean	Std
Economic exposure can increase firm value by reducing volatility and the probability of distress	0.00%	10.00%	25.00%	35.00%	30.00%	3.85	0.99
Economic exposure can reduce the underinvestment problem resulting from the dead weight costs associated with external financing	0.00%	0.00%	40.00%	40.00%	20.00%	3.8	0.77
To what extent are the cash flows of KPLC affected by exchange rate changes.	0.00%	0.00%	10.00%	30.00%	60.00%	4.5	0.69
Hedging can increase debt capacity, but higher leveraget increases the probability of distress	0.00%	0.00%	35.00%	25.00%	40.00%	4.05	0.89
Average	**0.00%**	**2.50%**	**27.50%**	**32.50%**	**37.50%**	**4.05**	**0.84**

Source: Researcher (2013)

Results in Table 4.3 revealed that 35% indicated that economic exposure can increase firm value by reducing volatility and the probability of distress to a moderate extent, 40% indicated that economic exposure can reduce the underinvestment problem resulting from the dead weight costs associated with external financing to a moderate extent while another 60% indicated that the cash flows of KPLC were affected by exchange rate changes to a great extent and another 40% indicated that hedging could increase debt capacity, but higher leverage to the

extent that it increases the probability of distress to a great extent. This was supported by a mean score of 4.05 and a standard deviation of 0.84.therefore this indicated that majority of the respondents felt that the statements affected the KPLC at a great extent.

4.2.4   Interest Rate Exposure

The respondents were asked to rate the effects of interest rate exposure on operations at Kenya Power. The findings are presented in Table 4.4 below.

Table 4.3 Interest Rate exposure

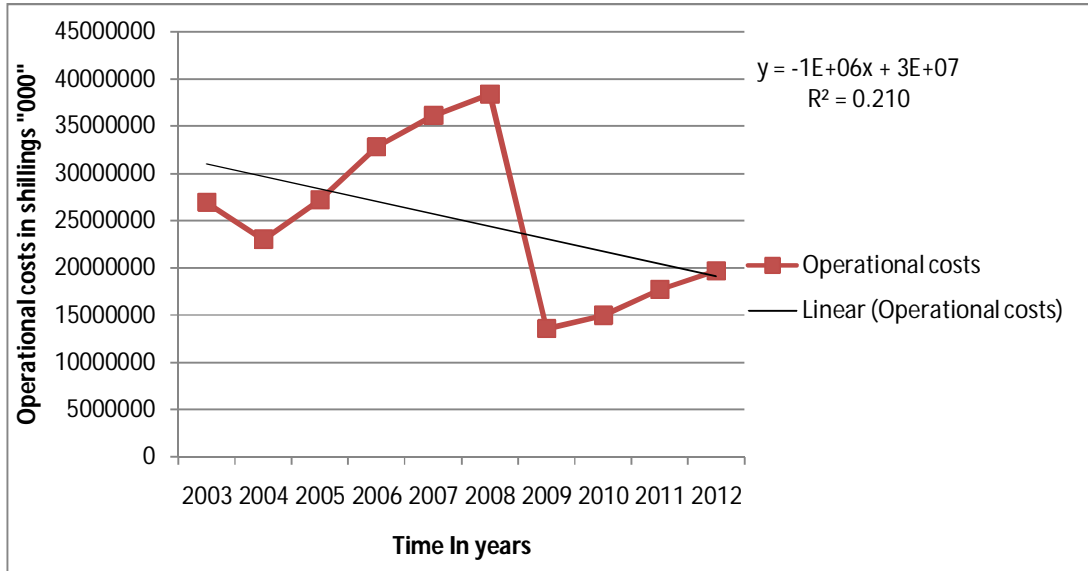| Statement	Least extent	Low extent	Neutral	Moderate	Great extent	Mean	Std
To what extent does KPLC rely on borrowings to finance its operations?	15.00%	0.00%	25.00%	30.00%	30.00%	3.6	1.35
To what extent are the interest rates on the borrowings fixed?	10.00%	15.00%	25.00%	20.00%	30.00%	3.45	1.36
To what extent are the interest rates on the borrowings variable?	10.00%	10.00%	35.00%	15.00%	30.00%	3.45	1.32
To what extent are the operational costs affected by the interest rate expense?	0.00%	25.00%	10.00%	40.00%	25.00%	3.65	1.14
Average	**8.75%**	**12.50%**	**23.75%**	**26.25%**	**28.75%**	**3.54**	**1.29**

Source: Researcher (2013)

Results in Table 4.4 revealed that 30% while another 30% indicated that KPLC rely on borrowings to finance its operations to a moderate extent a great extent respectively, 30% indicated that the interest rates on the borrowings were fixed to a

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great extent while another 30% indicated that the interest rates on the borrowings were variable to a great extent and another 25% indicated that the operational costs affected by the interest rate were expense to a great extent. This was supported by a mean score of 3.54 and a standard deviation of 1.29.therefore this indicated that majority of the respondents felt that the statements affected the KPLC at a great extent.

4.2.5   Trends Analysis

Results in Figure 4.1 indicate that there was an inconsistent trend in operation costs in Kenya Power and Lighting Company from year 2003 to 2012. A drop was recorded in year 2004 followed by a sudden increase in operational cost throughout the years up until year 2008 where a very big drop was recorded in year 2009. Later after the drop a slight increase in the operational cost raised again upto year 2012. These results indicate that the operational costs such as power purchase costs, transmission and distribution costs which include; staff costs, advertising and public relations, consumables, depreciation etc have been increasing since year 2004 and a major decrease in the costs in year 2009 which was an advantage to the company. However, since 2009 slight increase in operational costs were since recorded.

Figure 4.1: Trend Analysis in Operation Costs

The chart shows Operational costs in shillings "000" on the y-axis (ranging from 0 to 45000000) versus Time In years on the x-axis (2003 to 2012). A trend line equation is shown:

$$y = -1E+06x + 3E+07$$
$$R^2 = 0.210$$

Legend: Operational costs, Linear (Operational costs)

Source: Authors Computation

Analysis presented in Figure 4.2 shows an unpredictable trend in transaction costs. From year 2003 to year 2005 the movement of transaction costs through the years has been moderately constant. A slight upward movement of the cost was seen from year 2006 to 2007 followed by a drop in year 2008, with yet another rise upto year 2010. Year 2011 faced a trough which later the trend marked a steep upward movement in year 2012. These results shows that unanticipated changes in exchange rates were experienced highly in years 2007,2011 and 2012 which led to exchange rate gains, on the other hand the highest losses from the unexpected changes in exchange rate was recorded in year 2011.This changes are due to a contract being denominated in a foreign currency.
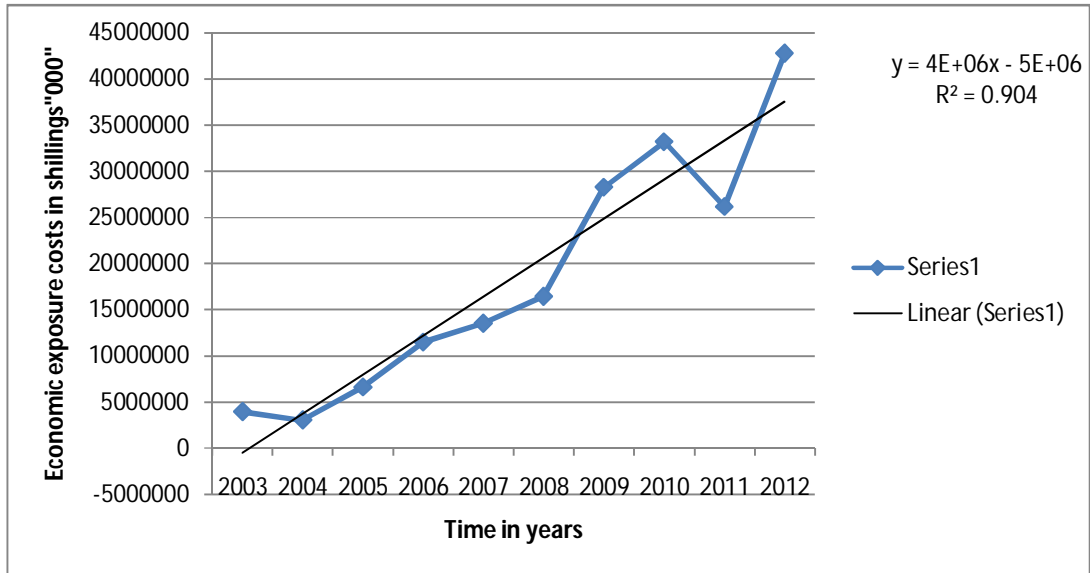
34

Figure 4.2: Trend Analysis in Transaction Costs
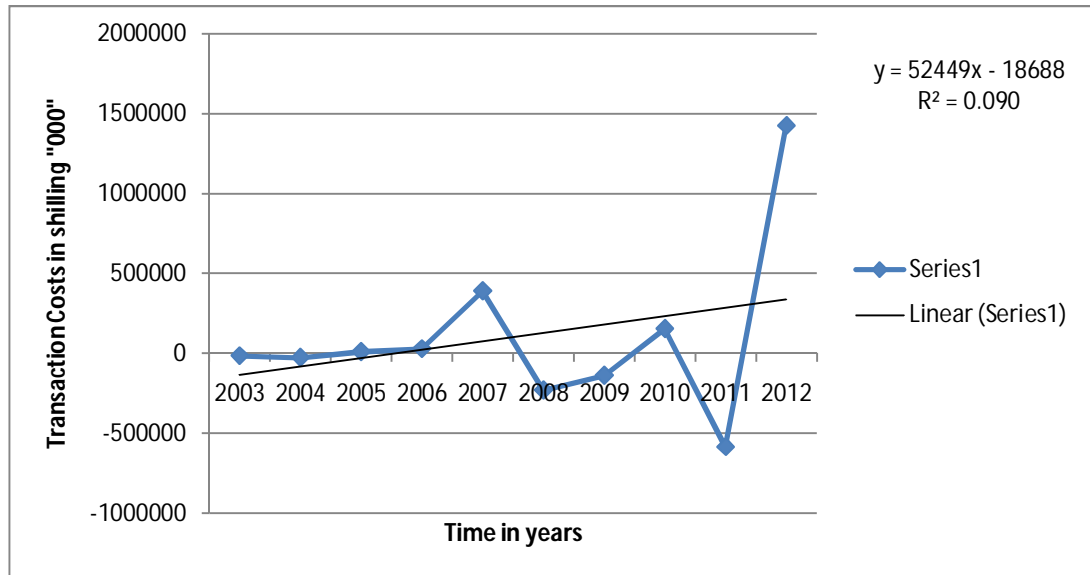
Source: Authors Computation

The trend analysis in economic exposure in Kenya Power and Lighting Company had an upward movement from year 2004 to 2010 with some slight decline in years 2011 which was later followed by a rise in year 2012.

Figure 4.3:Trend Analysis in Economic Costs

Source: Authors Computation

Trend analysis presented in Table 4.4 shows that interest costs had a downward movement from year 2003 to 2004 with slight increase in the subsequent years up until year 2009. Decrease in interest exposure was again seen in years 2010 and 2011 where an increase in the interest cost exposure was recorded in year 2012.Kenya Power`s interest rate risk arises from short term borrowings. Borrowings issued at variable rates expose the company to cash flow interest rate risk. Long-term borrowings issued at fixed rates also expose the company to fair value interest risk. The interest rate risk exposure arises mainly from the interest rate movements on the company`s borrowing.

Figure 4.4: Trend Analysis in Interest Costs
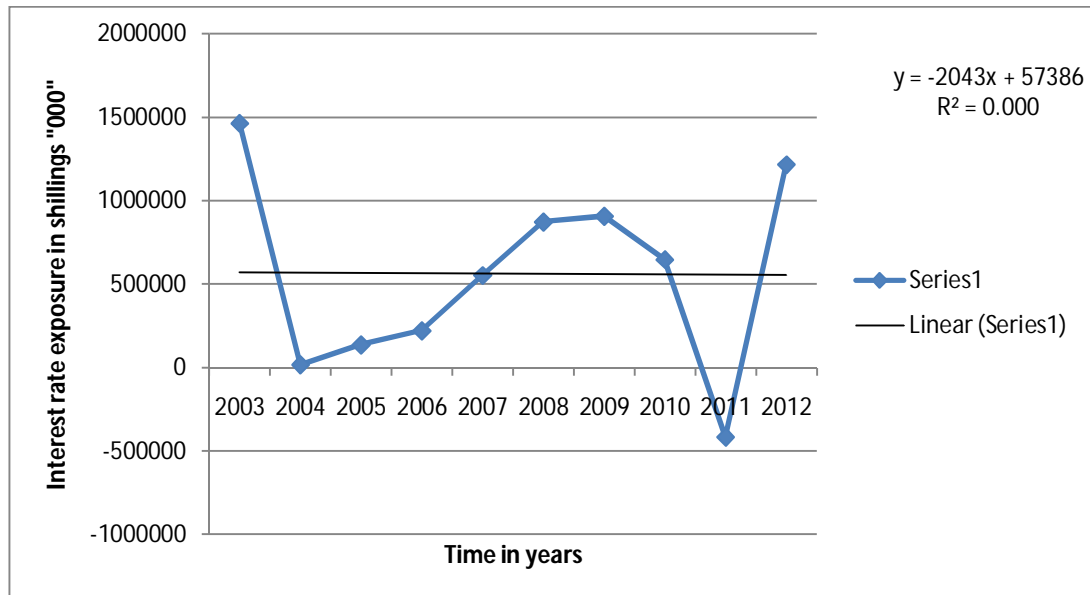
Source: Authors Computation

4.3 Estimated Empirical Model

This section has analysis of the secondary data using inferential statistics like correlation and regression.

4.3.1 Regression Analysis

Results in Table 4.5 present the fitness of the model whose R square is 0.394**.** This means that the combined effect of the predictor variables which are transaction exposure, economic exposure and interest exposure explains 39.4% of the dependent variable which is the operational costs. This also meant that a change in the economic, transaction and interest costs will have a strong and a positive effect on operations costs.

Table 4.5: Fitness of Model

Indicator	Variable
R	0.627
R Square	0.394
Adjusted R Square	0.091
Std. Error of the Estimate	8326006

Source: Authors Computation

ANOVA findings in Table 4.6 shows that the combined effect of the predictor variables that is operational cost, transaction exposure, and economic exposure were statistically significant in explaining operational cost. This is supported by a significant value of 0.003 and an F statistic of 11.29. A significant F test indicates that we can reject the null hypothesis which states that foreign currency risk has no effect on operational cost.

Table 4.6: Analysis of Variance (ANOVA)

Indicator	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.7014E+14	3	9.00453E+13	11.299	0.00358
Residual	4.1593E+14	6	6.93224E+13		
Total	6.8607E+14	9			

Source: Authors Computation

Table 4.7 displays the regression coefficients of the independent variables. The results reveal that economic exposure was the only statistically significant variable in explaining operational costs in KPLC whose significant value was 0.009. The other variables that are the transaction exposure and interest exposure are not statistically significant variables in explaining or predicting the level of operational costs.

Table 4.7: Coefficients of regression equation

Variable	Std. Error	Beta	T	Sig.
Constant	5649450.9		5.734	0.001
Transaction exposure	6.687	0.246	0.606	0.567
Economic exposure	0.233	-0.702	-2.953	0.009
Interest exposure	5.544	0.076	0.207	0.842

* Significant value when Sig Value is less than 0.005

Source: Researcher (2013)

4.4 Discussion

Findings indicated that the majority (60%) of respondents agreed to a moderate extent with the statement that KPLC`s operational costs are constant and/or fixed. In addition, the majority (50%) agreed to a great extent that the operational costs are influenced by foreign exchange denominated purchases e.g fuel, machinery and other consumables. Furthermore, the majority (55%) agreed to a moderate extent that the receivables/revenues are influenced by inputs denominated   in other currencies. Results also noted that the respondents agreed (30%) with the statement to a moderate extent that the receivables/payables were matched using the same currency. Overall, the mean score on statement of foreign currency effects on operational cost was 3.46 which suggests that majority moderately agreed with the statement that various exposures affect operational costs.

The findings agree with those of Rakhimova (2000) who asserted that foreign currency risk is one of the unique complications of financial management in an international environment. The values, in a firm's reference currency, of many of its cash flows depend on foreign exchange rates expected to be in effect at settlement.

Therefore, expectations about future exchange rates are important determinants of the expected future values and thus the current values of such cash flows. Further, variability in exchange rate forecast may be a major source of variability in current value. (Hekman, 1985) defines foreign exchange risk or exposure as the potential for a firm's profitability, net cash flows or market value to change because of a change in exchange rates.

Results indicate that a majority (50%) agreed to a great extent with the statement that KPLC is affected by unpredictable exchange rate changes. A further 55% were neutral about the statement that settlement of maturing obligations forms a great portion of KPLCs operational costs. Still, a further 50% agreed with the statement that the primary objective of FX risk management is to minimize potential currency losses, not to make a profit from FX rate movements, which are unpredictable and frequent. Overall, the mean score was 3.90 implying that the respondents generally agreed that KPL operations are affected by transaction exposure.

The findings agree with those of Lehtinen,(1996) who noted that the practice of corporate risk management has changed dramatically over the past two decades. Originally, risk management was implemented on an uncoordinated basis across different units of the firm. The primary focus of these ad hoc risk management programs was to minimize costs of particular units. Obviously, managing risk across a global firm is a complex task, not only because exposures may be difficult to quantify but also because hedging a group of exposures typically requires a more sophisticated approach than hedging individual exposures. With the development of sophisticated risk management techniques and digital data transfer technology, companies are now able to effectively evaluate and manage foreign exchange risks

on a global basis, by incorporating financial and operational hedges into an integrated analysis.

Results further indicated that 35% of respondents indicated that to a great extent, economic exposure can increase firm value by reducing volatility and the probability of distress. In addition, 40% indicated that to a moderate extent, the economic exposure can reduce the under investment problem resulting from the dead weight costs associated with external financing. Finally, 60% of respondents indicated that to a great extent the cash flows of KPLC are affected by exchange rate changes. A significant portion of the respondents (40%) indicated that hedging can increase debt capacity, but higher leverage increases the probability of distress. Overall, the mean score was 4.5 implying that respondents agreed to a great extent that economic exposure affected the operations of the Kenya Power and Lighting Company Limited.

The findings agree with those of Pantzalis et al, (2001) who asserted that operating exposure is also called economic exposure, competitive exposure, or strategic exposure. It measures the change in the present value of the firm, which results from any change in future operating cash flows caused by unexpected changes in exchange rates. Real assets are affected through exchange rate movements, through effects on aggregate demand or the cost of traded inputs. Operating exposure is the effect of unexpected changes in the exchange rate on cash flows associated with a firm's real assets and liabilities. Operating exposure stems from unexpected changes on the firm's input costs and output prices. For example, if costs are incurred in the local currency but sales are earned in the foreign currency, depreciation in the local

currency will increase profits. Also, if both costs and profits are in a foreign currency, depreciation of the local currency will increase profits.

Study results indicate that a significant proportion of respondents (30%) agreed to a great extent that KPLC rely on borrowings to finance its operations. Results also indicate that a similar 30% agreed to a great extent that that the interest rates on the borrowings are fixed. Results further indicated that 35% of the respondents were neutral about the statement that the interest rates on the borrowings are variable. A significant proportion (40%) agreed to a moderate extent with the statement that the operational costs are affected by the interest rate expense. Overall, the mean score was 3.54 implying that majority agreed with the statements which sought to link interest exposure to operational costs.

Regression analysis indicated that the goodness of fit of the model was satisfactory. The R square was 0.394. This means that the combined effect of the predictor variables which are transaction exposure, economic exposure and interest rate exposure explains 39.4% of the dependent variable which is the operational cost. This also meant that a change in the economic, transaction and interest costs will have a strong and a positive effect on operations cost. The combined effect of the predictor variables that is interest rate exposure, transaction exposure, and economic exposure were statistically significant in explaining operational cost. This is supported by a significant value of 0.003 and an F statistic of 11.29. A significant F test indicates that we can reject the null hypothesis which states that foreign currency risk has no effect on operational cost.

The findings agree with those of Griffin and Stulz (2001) who asserted that foreign exchange losses appear in the income statement as a highly visible separate line item

or as a note to the accounts, but the higher costs of protection are buried in operating or interest expenses. Moreover, each institution needs to ensure that employees conducting foreign exchange trading activities on behalf of the institution do so within a written code of conduct governing foreign exchange dealing. Such a code of conduct should include guidance with respect to trading with related parties and transactions in which potential conflicts of interest exist. These should include trading with affiliated entities, personal foreign exchange trading, activities of foreign exchange traders, and foreign exchange trading relationships with foreign exchange and money market brokers with whom the institution deals. Each institution should ensure that these guidelines are periodically reviewed with all foreign exchange traders.

The results reveal that economic exposure was the only statistically significant variable in explaining operational costs in KPLC. The other variables that are the transaction exposure and interest exposure are not statistically significant variables in explaining or predicting the level of operational costs. A rise in economic exposure therefore leads to a rise in operational exposure. This is justified because economic exposure is highly correlated or connected to both transactional costs exposure and interest rate exposure.

4.5 Summary

The chapter attempted to establish the effect of foreign currency risk exposure on the operational costs at Kenya Power and Lighting Company Limited . The results reveal that economic exposure was the only statistically significant variable in explaining operational costs in KPLC. The other variables that are the transaction exposure and interest rate exposure are not statistically significant variables in

explaining or predicting the level of operational costs. A rise in economic exposure therefore leads to a rise in operational exposure. This is justified because economic exposure is highly correlated or connected to both transactional costs exposure and interest rate exposure.

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1   Introduction

The purpose of this chapter is to discuss and summarize the findings of the study and finally give conclusions and recommendations for improvement or practice. Section 5.2 discusses the summary of findings, 5.3 discusses the conclusion, 5.4 covers the limitations of the study and 5.5 discusses the recommendations for further research

5.2   Summary of the Study

The general objective of this study was to establish the effect of various exposures on the operational cost at Kenya Power and Lighting Company Limited. A sample size of 30 respondents was drawn from the managerial employees of Kenya Power and Lightning Corporation. For purposes of collecting primary data, the researcher developed and administered a questionnaire and the results obtained were analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS).

Findings indicated that the majority (60%) of respondents agreed to a moderate extent with the statement that KPLC`s operational costs are constant/fixed. In addition, the majority (50%) agreed to a great extent that the operational costs are influenced by foreign exchange denominated purchases e.g fuel, machinery and other consumables. Furthermore, the majority (55%) agreed to a moderate extent that the receivables/revenues are influenced by inputs denominated in other currencies. Results also noted that the respondents agreed (30%) with the statement to a

moderate extent that the receivables/payables are matched using the same currency. Overall, the mean score on statement of operational cost was 3.46 which implies that majority moderately agreed with the statement that various exposures affect operational costs.

Results indicate that a majority (50%) agreed to a great extent with the statement that KPLC is affected by unpredictable exchange rate changes. A further 55% were neutral about the statement that settlement of maturing obligations form a great portion of KPLCs operational costs. Still, a further 50% agreed with the statement that the primary objective of FX risk management is to minimize potential currency losses, not to make a profit from FX rate movements, which are unpredictable and frequent. Overall, the mean score was 3.90 implying that the respondents generally agreed that KPL operations are affected by transaction exposure.

Results further indicated that 35% of respondents indicated that to a great extent, economic exposure can increase firm value by reducing volatility and the probability of distress. In addition, 40% indicated that to a moderate extent, economic exposure can reduce the underinvestment problem resulting from the dead weight costs associated with external. Finally, 60% of respondents indicated that to a great extent, the cash flows of KPLC are affected by exchange rate changes. A significant portion of the respondents (40%) indicated that hedging can increase debt capacity, but higher leverage increases the probability of distress. Overall, the mean score was 4.5 implying that respondents agreed to a great extent that economic exposure affected the operations of the Kenya Power.

Study results indicate that a significant proportion of respondents (30%) agreed to a great extent that KPLC rely on borrowings to finance its operations. Results also

indicate that a similar 30% agreed to a great extent that that the interest rates on the borrowings are fixed. Results further indicated that 35% of the respondents were neutral about the statement that the interest rates on the borrowings are variable. A significant proportion (40%) agreed to a moderate extent about the statement that the operational costs are affected by the interest rate expense. Overall, the mean score was 3.54 implying that majority agreed with the statements which sought to link interest exposure to operational costs.

Regression analysis indicated that the goodness of fit of the model was satisfactory. The R square was 0.394. This means that the combined effect of the predictor variables which are transaction exposure, economic exposure and interest exposure explains 39.4% of the dependent variable which is the operational costs. This also meant that a change in the economic, transaction and interest costs will have a strong and a positive effect on operations cost. The combined effect of the predictor variables that is interst rate exposure, transaction exposure, and economic exposure were statistically significant in explaining operational cost. This is supported by a significant value of 0.003 and a F statistic of 11.29. A significant F test indicates that we can reject the null hypothesis which states that foreign currency risk has no effect on operational cost.

The results reveal that economic exposure was the only statistically significant variable in explaining operational costs in KPLC. The other variables that are the transaction exposure and interest exposure are not statistically significant variables in explaining or predicting the level of operational costs. A rise in economic exposure therefore leads to a rise in operational exposure. This is justified because economic

exposure is highly correlated or connected to both transactional costs exposure and interest rate exposure.

5.3   Conclusion

From the findings it was possible to conclude that a model linking transaction exposure, economic exposure and interest rate exposure to operational costs was significant. Therefore, it may also be concluded that the aforementioned exposures can be useful when one want to hedge against exposure.

Specifically, it was concluded that economic exposure was significant in explaining operations costs. This was concluded to be the case as commodity / fuel costs which were taken to be a proxy of economic exposure are highly influenced by the interest rates and also by the foreign exchange fluctuations. However, it was concluded that individually, interest rate exposure and transaction exposure were not significant determinants of operational costs.

5.4   Limitations of the Study

One of the limitations of this study was the level of cooperation from respondents. Some respondents were not cooperative as they were not sure how we intended to use the data. To overcome this limitation, the study presented the respondents with introduction letters from the university to allay their fears. The study also ensured that the respondents were assured of confidentiality. In addition, it may not have been possible to ensure that all the respondents were honest about their responses. Care was taken to explain to the respondents that honesty was important as the report would be valuable to many parties.

The data to be collected is quite sensitive, hence it was difficult to obtain. Specifically, data on foreign currecy purchases for individuals travelling out of the country and also payments to Independent Power Producers was hard to come by because the custodians of such data thought that the data was very confidential and personal. To overcome this limitation, the researcher assured the respondents of the confidentiality and that none of the information will be disclosed without prior consent from them. As regard to the respondents lack of time to answer the questionnaires due to the hectic nature of their jobs, the researcher gave them adequate time to fill the questionnaire. To overcome the limitation of low response, care was taken to replace the non-cooperative respondents with cooperative ones from the same target group.

The findings were limited as the model did not capture all the variables. Despite the fact that the R squared (39.4%) was high enough, still there seems to be a large number of factors not captured in the model that can be used to explain operational costs. For instance, political exposure may also explain the operation costs since the operational cost becomes high during periods of political violence which lead to vandalism of generators and the electricity lines.

The study did not capture the effect of bureaucratic procedures on operational costs. Perhaps, if the bureaucratic procedures were reduced, the operational costs would go down.

5.5   Recommendations for Further Research

Following the study conclusions, it is recommended that the management should put in place mitigation mechanisms for economic exposure. Specifically, they should

employ options, future and swaps. Specifically, the organization should in the spirit of minimizing fuel costs (proxy for economic exposure) make arrangements to buy fuel at predetermined rate. The interest rate swaps and the foreign exchange forwards should be applied in managing these two exposures. It is also recommended that the government should fast track the development of geothermal energy, wind and nuclear energy as they are more stable sources of power generation compared to thermal based generation.

It is also recommended that as a matter of policy, Kenya Power Ltd should ensure that the bureaucratic procedures are addressed with the aim of reducing the procurement cycle as it leads to the operational costs.

The study recommends further studies on other factors that affect the operational cost of Kenya Power Limited should include the effect of bureaucratic procedures on the operational costs. These includes the ever increasing staff costs driven partly by a strong workers` representative union and the general rise in cost of living, vandalism of power equipments and controllable wastage.

In addition, it is recommended that a proper portfolio analysis should be conducted to establish the best hedging techniques. For instance, through cointergration, one may be able to identify which currencies and interest rates converge in the long run. Therefore, one can take positions based on that.

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APPENDICES

APPENDIX I: QUESTIONAIRE

Section A: Effects of Foreign Currency Risk on Operational costs

Foreign exchange risk or exchange rate risk or currency risk is a financial risk posed by an exposure to unanticipated changes in the exchange rate between two currencies

Operational costs are the routine costs of running a business

Rate the effects of operational costs on operations at KPLC using the scale of 1-5 with No extent at all =1, Low extent =2, Moderate =3, Great extent =4, Very great extent =5

	Descriptions	1	2	3	4	5
1	To what extent are KPLC`s operational costs constant/fixed.					
2	To what extent are the operational costs influenced by foreign exchange denominated purchases e.g fuel, machinery and other consumables.					
3	To what extent are the receivables/revenues influenced by inputs denominated in other currencies.					
4	Are the receivables/payables matched using the same currency					

X1=Transaction exposure measures potential gains or losses on the future settlement of outstanding obligations that are denominated in a foreign currency

Rate the effects of Transaction exposure on operational costs at KPLC. Rank by

placing a tick in the appropriate place. 1= Least extent, 2= Low extent, 3= Neutral,

4= Moderate extent and 5= Great extent

	Transaction exposure	1	2	3	4	5
1	KPLC is affected by unpredictable exchange rate changes.					
2	Settlement of maturing obligations form a great portion of KPLCs operational costs					
3	The primary objective of FX risk management is to minimize potential currency losses, not to make a profit from FX rate movements, which are unpredictable and frequent.					

X2=Economic exposure is the possibility that an unexpected change in exchange

rates will cause a change in the future cash flows of a firm and its market value

Rate the effects of Economic exposure on operational costs at KPLC. Rank by

placing a tick in the appropriate place. 1= Least extent, 2= Low extent, 3= Neutral,

4= Moderate extent and 5= Great extent

	Economic exposure	1	2	3	4	5
1	Economic exposure can increase firm value by reducing volatility and the probability of distress.					
2	Economic exposure can reduce the underinvestment problem resulting from the dead weight costs associated with external financing.					
3	To what extent are the cash flows of KPLC affected by exchange rate changes.					
4	Hedging can increase debt capacity, but higher leverage increases the probability of distress					

X3=Interest rate exposure is the risk that an investment's value will change due to a change in the absolute level of interest rates. Kenya Power`s interest rate risk arises from short term borrowings. Borrowings issued at variable rates expose the company to cash flow interest rate risk. Long-term borrowings issued at fixed rates also expose the company to fair value interest risk. The interest rate risk exposure arises mainly from the interest rate movements on the company`s borrowing.

Rate the effects of Interest risk exposure on operational costs at KPLC. Rank by placing a tick in the appropriate place. 1= Least extent, 2= Low extent, 3= Neutral, 4= Moderate extent and 5= Great extent

	Interest rate exposure	1	2	3	4	5
1	To what extent does KPLC rely on borrowings to finance its operations?					
2	To what extent are the interest rates on the borrowings fixed?					
3	To what extent are the interest rates on the borrowings variable?					
4	To what extent are the operational costs affected by the interest rate expense?					

Section B: Management of the Currency risk and interest risk exposures

How does KPLC manage the following exposures?

16. Foreign currency risk

17. Interest rate risk

Appendix II: Primary Data

QuesRef	effectsofoperationalcosts1	effectsofoperationalcosts2	effectsofoperationalcosts3	effectsofoperationalcosts4	Transactionexposure1	Transactionexposure2	Transactionexposure3	Economicexposure1	Economicexposure2	Economicexposure3	Economicexposure4	Interestriskexposure1	Interestriskexposure2	Interestriskexposure3	Interestriskexposure4
Ref 1	4	5	4	4	4	3	4	5	4	5	3	4	3	3	2
Ref 2	3	4	3	3	4	3	3	3	3	4	4	3	2	3	4
Ref 3	3	4	2	1	2	3	3	4	4	4	4	5	4	5	5
Ref 4	3	4	3	5	5	4	3	4	3	5	3	1	3	4	2
Ref 5	3	3	5	2	5	5	5	4	4	5	5	5	5	5	4
Ref 6	3	4	3	3	5	3	3	5	5	5	5	4	5	1	5
Ref 7	4	5	4	4	5	5	5	3	5	5	5	4	4	2	4
Ref 8	2	3	3	4	4	3	4	2	3	3	3	3	1	3	3
Ref 9	3	4	2	1	2	3	3	4	4	4	4	5	4	5	5
Ref 10	3	4	3	5	5	4	3	4	3	5	3	1	3	4	2
Ref 11	3	4	3	3	5	3	3	5	5	5	5	4	5	1	5
Ref 12	4	3	3	5	2	5	5	5	4	4	5	5	5	5	5
Ref 13	4	5	4	4	4	3	4	5	4	5	3	4	3	3	2
Ref 14	3	4	3	3	4	3	3	3	3	4	4	3	2	3	4
Ref 15	2	3	3	4	4	3	4	2	3	3	3	3	1	3	3
Ref 16	3	4	3	3	4	3	3	3	3	4	4	3	2	3	4
Ref 17	4	5	4	4	5	5	5	3	5	5	5	4	4	2	4
Ref 18	3	4	3	5	5	4	3	4	3	5	3	1	3	4	2

QuesRef	effectsofoperationalcosts1	effectsofoperationalcosts2	effectsofoperationalcosts3	effectsofoperationalcosts4	Transactionexposure1	Transactionexposure2	Transactionexposure3	Economicexposure1	Economicexposure2	Economicexposure3	Economicexposure4	Interestriskexposure1	Interestriskexposure2	Interestriskexposure3	Interestriskexposure4
Ref 19	3	3	5	2	5	5	5	4	4	5	5	5	5	5	4
Ref 20	4	3	4	3	5	5	4	5	4	5	5	5	5	5	4

Appendix IV: Secondary Data

Year	operational costs	transactionexposure	economicexposure	interestexposure
2003	26,904,721	-14,600	3,945,406	1,464,959
2004	23,009,887	-26,195	3,020,349	17,657
2005	27171579	9,954	6,586,082	137973
2006	32749667	28,993	11,472,818	221992
2007	36062567	390,291	13,507,795	553663
2008	38363024	-230,068	16,433,003	872660
2009	13570397	-138,448	28,268,851	907074
2010	14977145	154,947	33,190,489	648832
2011	17,694,951	-584,338	26,150,566	-414,835
2012	19,679,846	1,425,263	42,788,616	1,216,272