

IMPACT OF HEDGING FUEL PRICES ON CORPORATE PROFITABILITY

CASE STUDY OF KENYA AIRWAYS LTD

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## DECLARATION

I the undersigned declare that this dissertation is my original work and has not been submitted to any other college, institution or university other than The University of Nairobi for academic credit.

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Many thanks to my family, friends, classmates for their encouragement and Support, not forgetting Kenya Airways management for granting me the Opportunity to work in a challenging environment, hence prompting me to further my education

## **DEDICATION**

To the Love of my life Enos, Son Joash and Daughter Hope for their support and Encouragement throughout the challenging moments of college life.

## **ABBREVIATIONS AND ACRONYMES**

KQ – Kenya Airways

B767 – Boeing aircraft type 767

US – United States

## **ABSTRACT**

The project overall objective was to investigate the impact of hedging fuel prices on corporate profitability, a case study of Kenya Airways Ltd. The study is of significance to the top management of KQ; they will be able to know how hedging has impacted the company's profits for the last six years, and be able to manage the hedging process more efficiently. The potential investors in airline business will also benefit since with the knowledge of factors the risk management strategies employed by their agent and how they impact on profitability, will enable them to gain or lose confidence with the management of the organization. The study is also expected to benefit students who have had to content with making generalizations about situations based on the studies carried outside especially in the developed countries. They will thus be able to cite local examples with confidence. To the scholars and academics, the study will serve as a guide for further research in the areas of hedging of fuel prices in an airline firm and other large fuel consuming companies. The government as well as the providers of services to put up standards for fair competition in the industry.

The researcher faced several problems during the collection of data such as suspicion and contempt from the two management staff interviewed through email, as they believed that such information is too crucial to the success of the organization and if leaked out to competitors, it could cause the organization huge losses. Interpretation of financial statements especially the notes was a challenge given that the researcher does not form part of the management accounting team. To find literature on previous studies done on this subject was a problem since there were limited references. Different authors have commented differently on issues relating to hedging of fuel prices and therefore the researcher referred to several author who had raised issues whether to hedge fuel prices or not, why business organizations hedge fuel prices and impacts of hedging on business organizations profitability.

The researcher used a survey to collect data, and interviewed two management staff in charge of hedging contracts in Kenya Airways. A survey was used because secondary data was the main

source of data collection, and annual financial reports were available at the organizations website. The population was annual financial reports for the years 2000 to 2011. The data was analyzed using SPSS version 18. Line graphs and multiple regression analysis models were used to present the data. The two management staff of Kenya airways saw the importance and need for hedging fuel prices, they however cautioned that even though one of the most important reasons why organizations hedge fuel prices is to reduce profits volatility, it's always not so because it is not easy to predict the exact loss or profit on hedging in any particular planning period. This is also picked up by the researcher in the analysis of the annual financial statements of Kenya airways.

The researcher also concluded that there is a direct relationship between hedging fuel prices and corporate profitability and most of the time the relationship is positive.

The research findings recommended that all large fuel consuming companies should contemplate hedging fuel prices especially in a difficult economy like today, they should however be highly skilled in the risk management strategy because it involves a lot of statistical work to arrive at a congruent decision. The researcher also recommended hedging fuel prices for the Matatu industry in Kenya, and even the common man. This is practiced and working very well in the United States. There is however need to stiffen the regulation in regard to hedging in the country since they leave out important and serious legal aspects. Hedging is the way to go for large fuel consuming companies.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Background to the study

In the 21<sup>st</sup> century business organizations are facing new risks that threaten survival of every organization including airline industries. This is because organizations do not exist in seclusion but rather in a competitive environment. This leads to the increased need for organizations to find ways of mitigating risks. Trying to balance between risk and reward is the optimal goal of organizations such as the aviation industry. (Lane, 2007)

The introduction of new security provisions, static labor, aircraft costs and escalating fuel costs have lead to radical adjustments and implementation of effective risk management in the airline industry, both in developed and developing countries. The business climate requires consideration of how to balance risk and opportunity, while integrating new business processes and operations. Poor risk management can be very risky and costly. For this reason, there is need for effective risk mitigation strategies. (Proviti, 2008)

Airlines are exposed to unexpected movements in fuel prices in the same way as they are for the price of foreign currencies. This is not strictly a financial risk, since fuel is a commodity, similar to others used by airlines such as various food or maintenance materials. The difference is the amount of fuel they require and the fact that they use the same type of refined crude oil product.

Airlines buy fuel from the major multinational fuel companies and their subsidiaries. The companies are responsible for fuel storage and delivery to the aircraft and apron at the airport. For short and medium haul flights, airlines do not necessarily need to pick up fuel at the destination airport because sometimes it's not available there, but if it's cheaper at the destination, they may top up their tanks and engage in tinkering fuel to reduce fuel costs. (Morel, 2005)

Contracts with Major oil companies include a clause which allows them to adjust price in line with world market price movements. They also add handling costs, to recover storage costs, ankering or hydrant installations and sometimes an airport concession fee. thus if world markets increase sharply as they did in 1999 and 2000, airlines experience marked upward pressure on

costs with little time lag after significant crude oil price increases, this calls for the need to hedge fuel prices, in order to stabilize the profits of a business organization. (Peter, 2005)

Fuel Hedging can be described as a contractual tool used by large fuel consuming companies such as airlines to reduce their exposure to volatile and potentially rising fuel costs. A fuel hedge contract allows a large fuel consuming company commits to establish a fixed or capped cost via a commodity swap or option. Large fuel consuming companies enter into hedging contracts to mitigate their exposure to future fuel prices that may be higher than current prices and/or to establish a known fuel cost for budgeting purposes. (Wikipedia, 2008)

Airlines use fuel hedging contracts to stabilize the price they pay for the purchase of jet fuel. A fuel hedge is an agreement to purchase jet fuel at a predetermined price for a specified future time period. Generally, an airline will hedge only a certain portion of fuel requirements for a specific period with multiple contracts overlapping as different hedging agreements expire over time (Wikipedia, 2008).

Airlines enter into Fuel Hedging contracts in order to reduce or save costs based on a bet that future jet fuel prices will be higher than current prices (or the price that an airline has agreed to purchase jet fuel under a fuel hedge contract. Fuel makes up a large proportion of an airline's operating costs. A fuel hedge is a form of insurance policy, protecting an airline's cost structure from potentially catastrophic increases or spikes in jet fuel prices due to external factors/events outside airline control. Fuel hedging contracts are also expected to remove the future uncertainty of volatile jet fuel prices so that the airline can build a business plan knowing fixed or "locked" fuel costs over a prescribed period of time. In other words, protect an airline's cost structure from fuel price market volatility. (Wikipedia, 2008)

Typically, airlines will hedge only a certain portion of their fuel requirements for a certain period. Often, contracts for portions of an airline's jet fuel needs will overlap, with different levels of hedging expiring over time.

Fuel alone costs about 40% of the airline's total costs, and is usually very volatile so hedging fuel stabilizes overall airline costs, hence contributing to more stable profits. It also means

locking in the cost of future fuel purchases protecting against sudden losses from rising fuel prices and also prevents sudden gains from decreasing fuel prices. (Moses, 2011)

Airlines can use a variety of derivatives such as forward contracts, futures, options, and swaps to hedge against upward pressures on fuel costs. These contracts for derivatives can be bought and sold on a number of exchanges around the world. E.g. international petroleum exchange in London or New York Mercantile exchange in New York.

Forward contracts work in the same way as those for currencies except that delivery is not effected at due date, but rather a transfer of money between the parties depending on whether fuel prices have increased in the meantime the airline receives money to offset against its higher spot prices, or declined the airline pays the other party and cannot benefit from the fall in spot prices. Futures are contracts to buy and sell fuel or oil at a future date, but are tradable. Such that a different party may end up as the final buyer, which is not the case with forward. Options give the airline the right but not the obligation to buy or sell fuel at a future date, while collars are the simultaneous purchase and sale of an option. Swaps are similar to interest swaps except that payments are made between the two parties.

## **Hedging Strategy**

In order to determine the strategy of choice when hedging one must first understand what a hedge fund is. This fund is an unregulated investment pool of capital for wealthy individuals or institutions that employ one of various investment strategies in attempts to gain from market inefficiencies. Fundamental and technical analysis are both used to hedge underlying risks.

## **Types of hedging strategies**

### **Dedicated Short bias**

This strategy happens when the fund continuously shorts stocks it doesn't own with the expectancy of a decline in value. The fund should perform contrary to the stock market with tremendous results and with funds having high returns when the market goes down and vice versa.

### **Fixed income Arbitrage strategy**

This strategy uses bonds in a variety of different ways. One example includes the shorting of bonds of higher credit companies. The proceeds are then used to buy bonds of lower credit companies. The idea is that the Bond Confidence Index will move toward 100 and the lower quality bonds will outperform the higher quality bonds.

### **Market timing Strategy**

This strategy is typically based on technical factors (technical analysis) such as price, volume and market sentiment and it is short-term in nature. The goal of this strategy is to buy a financial asset with the expectation that the asset will increase in value.

### **Aggressive growth Strategy**

This strategy deals with investing in stocks that have a high potential for growth due to strong earnings growth or sales. Investors must understand the concept of Standardized Unexpected Earnings (SUE) in order to practice this form of hedge fund investing. This form of investing deals with the buying and selling of stocks in companies that have reported earnings either above or below estimates made by analysts.

### **Opportunistic strategy**

This strategy is a tricky one and depends on the judgment of a portfolio manager. Basically, a fund manager rotates among all possible strategies with it depending on the point of view associated with a particular investment strategy at a specific point in time.

#### **1.1.2 Kenya airways**

Kenya airway is a passenger and cargo air transport organization, which operates in international, regional and domestic routes. It was established in 1977 as a result of collapse of the East African Airways which was jointly owned by Kenya, Uganda and Tanzania. Until 1994,

the airline was wholly owned by the Government of Kenya and never made any profits. In 1995 Kenya airways was privatized and realized its first profits in 1996. The airline flies to 49 countries all over the world and has a fleet of 32 aircrafts, with a plan to acquire up to 100 more flights in the next ten years. The airline has grown rapidly in passenger and cargo numbers, destinations, fleet, and employee numbers. KQ is also a Full sky team member, and was named Africa's Business Airline of the year in 2010.

Kenya airways began hedging fuel prices in 2006. This was considered following an upward trend in increase of fuel prices in the previous years. During this period, Global fuel prices averaged over 22% higher than the corresponding period the previous year but the impact of this was reduced to 16% (in USD terms) as a consequence of the Company's hedging Program. KQ (2006). The fuel cost, net of hedging benefit, was 26% above prior year driven largely by price increase of 15% and increased consumption in US gallons of 13% in line with the increased capacity offered. (KQ, 2006). The airline has had its up's and downs in the hedging arena. In year 2009 and 2010 the airline realized losses on fuel derivatives of 1373 and 3771 M respectively. However the star shined for the airline this year when it reported a gain of Ksh.298M, for the period April 2010 to march 2011. This is a clear indication that hedging fuel prices just like any other risk mitigation strategy has its own challenges and benefits. In a bid to stabilize and increase profits Kenya airways has had its share of both good and bad outcomes from hedging. This study thus seeks to establish the relationship between hedging fuel price risks and corporate profitability in Kenya airways.

## **1.2 Statement of the problem**

Airline profits are usually very volatile because, travel demand is sensitive to consumer confidence, which is correlated with stock market performance, and secondly because airlines are highly leveraged, in the sense that the total value of outstanding stock is a small fraction of annual incomes. This prompts the airline industry to look for ways of sustaining corporate profitability through various strategies such as minimizing risks. One of the ways Kenya airways minimize risks is through hedging fuel prices. For the last few years since its privatization, the airline has experienced a tremendous growth in size, fleet, routes, and all other areas of the



organization. This is attributed to a combination of factors such as geographical advantage, effective management of resources, foreign financing, and technology among others.

The theoretical justification for hedging fuel costs is weak. Classical investment theory holds that investors reward stocks for their performance as part of a larger portfolio. And portfolio investors can hedge oil to balance their returns at their own discretion. As we shall see later, there are conditions where hedging does help. However, the baseline case of using hedging to reduce airline profit swings is weak. There are even market reasons to avoid hedging. The first inescapable market fundamental is that the expected value of a fuel hedge is zero. Airlines that 'make money' hedging fuel and can rely on doing so in the future ought to open a separate division for speculating in oil prices (at least one did: United Airlines). Otherwise, the betting on oil is evenly balanced between sellers and buyers. The markets are deep, meaning they are heavily traded, liquid, and attract the attention of lots of professional traders: oil suppliers and portfolio investors alike. Airline purchases are small, and do not change the market prices. So airlines are getting the market price. And that market price represents a well-examined consensus.

The second market fundamental is that investors should not reward reduced profit volatility with higher stock prices if that reduction is effected by hedging with market instruments. The common benchmark for this kind of statement is the CAPM theory of investments (Sharpe, 1964). CAPM says that investors average away firm specific risk by owning a portfolio of stocks. Investors only pay for reductions in market risk. That is, they expect higher returns for stocks with high correlations with market moves, and lower returns for stocks with lower 'beta'. But they do not require higher returns for stocks whose profits swing a lot if those swings are independent of the general market.

Previous studies have tended to focus more on foreign currency risk than fuel price risk. Their starting point has been the CAPM assertion that risk management is irrelevant to firm value since shareholders are better placed to do these themselves. The counter argument is that in the real world the CAPM theory does not hold because of factors such as taxation, access to information and economies of scale in hedging operations.

Allayanis and Weston (2001) examined foreign currency derivative users in a large sample of non-financial US firms between 1990 and 1995. They found that those that used currency hedging had, on average, of 4.87% higher firm value (measured as Tobin's Q) than firms that did not. Their model explained variations in Q using a number of different factors in addition to hedging. A dummy variable was used to distinguish those firms that did hedge from those that did not. This was because of the lack of more detailed data on hedging; the period they chose was dictated by the lack of any data prior to 1990. Thus the research was not able to take into account the difference between those firms that might have hedged 100% of their currency needs one year ahead, and those that only hedged 20% of needs; and second, between those that hedged three months out and those that hedged two years out.

Carter et al. (2003) essentially applied the Allayanis and Weston (2001) methodology to airline fuel price hedging. They reach similar conclusions: airlines that employ hedging trade at a premium. They also assert that this allows them to conserve cash at times of industry downturn (which coincides with fuel price spikes), giving them the possibility to buy assets at distressed prices. This does not seem to be supported by evidence, and indeed larger airlines that are hedging are also usually cutting back on new capital investment following a major downturn. Cobbs and Wolf (2004) repeat the Carter results above as a rebuttal to the British Airways CEO Rod Eddington's statement that 'a lot is said about hedging strategy, most of it well wide of the mark. I don't think any sensible airline believes that by hedging it saves on its fuel bills. You just flatten out the bumps and remove the spikes'.<sup>5</sup> Rao (1999) takes a different approach by estimating how much better off an airline would be if it had bought different heating oil futures at different periods of time. He concluded that quarterly income volatility would have declined by 23% on the basis of following his assumed hedging policy. The author admits that the use of a fictional airline may have inflated the advantage of hedging. He also assumes that the purchase of futures is costless and the marking to market requirement of some accounting requirements ignored.

Growth gives a positive feedback to the society, but might not mean much to an investor, since the investor is looking for value for his money. The problem therefore is to determine the relationship between hedging fuel prices and corporate profitability, for the period between the years 2000 to 2011. The researcher chose this period in order to determine if profits were more volatile between years 2000 to 2005, when the airline never hedged fuel costs at all or they are more volatile from year 2006 to now, and vice-versa. Even though research projects on risk management strategies and profitability in Kenya airways have been done, no study has been done on impact of hedging fuel prices on corporate profitability for the period between year 2000 and 2011. This is thus the research gap that the researcher intends to fill. Using this information, the management and stake holders of an airline industry, will be able to predict with relative accuracy the value of hedging, not hedging, or hedging a particular percentage of jet fuel.

### **1.3 Research objectives**

The objective of this study is to determine the impact of hedging fuel prices on corporate profitability.

### **1.4 Significance of the study**

The study is expected to benefit various categories of people in different ways. First of all the researcher is expected to gain more knowledge on hedging, which can be volunteered to the contracts department in the airline industry to help in planning and executing hedging contracts. The study is also expected to benefit the management of airline industries, to plan and execute risk mitigating strategies in a better, wiser and beneficial manner. This is because, hedging is a very risky affair and a lot of analysis and forecasts needs to be done before embarking on it.

The study will further assist both potential and current share holders. Investors who have knowledge of such strategies are able to safe guard their investment from bad practices, since they have powers to elect and remove directors of their organization.

Jet fuel companies, and brokerage firms, are also expected to learn something from the study, to enable them place a good bet on their commodities. A constant gain on hedging is good for the airline but not so for the jet fuel vendor, and vice versa. Lastly but not the least, the researcher

realized that there are very few studies on hedging and thus took up this project with fellow students in mind. The study will assist students of finance who intend to further studies on hedging to identify study gaps, for literature review and those who are hedge contract managers can become better managers by reading and understanding this study.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

Fuel hedging is a gamble against the future price of jet fuel. Despite the seemingly consistent belief that fuel prices go up, they also come down unexpectedly. If an airline predicts that the cost of fuel is going to increase in the future, the airline can sign a fuel hedging contract to purchase fuel at the current price for months or years ahead of time. If fuel prices double in a year then the airline is able to purchase fuel at the previous year's locked in lower rate as per the fuel hedging agreement resulting in a saving for the airline (Grabianowski, 2009)

Modigliani-Millers believe that hedging would not add value to a firm if the financial market is perfect. However, in the real world, the financial market is not frictionless and hedging may influence the cash flow of the company. A number of academic researchers have studied the relation between hedging activities and firm value. In addition, a considerable amount of literature has been focused on exploring what factors influence firms' hedging activities.

#### **2.1.1 Research gaps**

Fuel hedging being a 21<sup>st</sup> century phenomenon, is found to be common in airlines and other gas consuming organizations. However a Dallas based organization known as fuel bank recently came up with a fuel hedging strategy for the common man, where a fuel producing organization allows people to buy gas today at the going rate and get that price in two months whether or not the price has gone up or down. The individuals who subscribe to this arrangement must be willing to pay such amounts in advance of delivery, which is not the case with airline industries Barry (2008). Even though this is working in a few areas in the US, it's yet to be proven if it's beneficial to the parties involved or not. Fuel hedging for the common man and small enterprises,(for example road transport companies) in east Africa and Kenya in particular, can be a very good area of further study, because if proven workable, then many business and individuals could benefit from this new risk management strategy.

Fuel hedging just like any other risk mitigating strategy is quite complex and involves a lot of analysis, but as the saying goes “survival for the fittest and dying for the unfit” airline industries hedging contracts managers must work hard to ensure that the airline survives and remains in operation, given that fuel is one of the most significant costs in an airline industry, apart from aircrafts and labor costs. This chapter thus looks at the previous studies on fuel hedging for various airline organizations, and periods. (Researcher, 2011)

### **2.1.2 Fuel price hedging for Lufthansa Group**

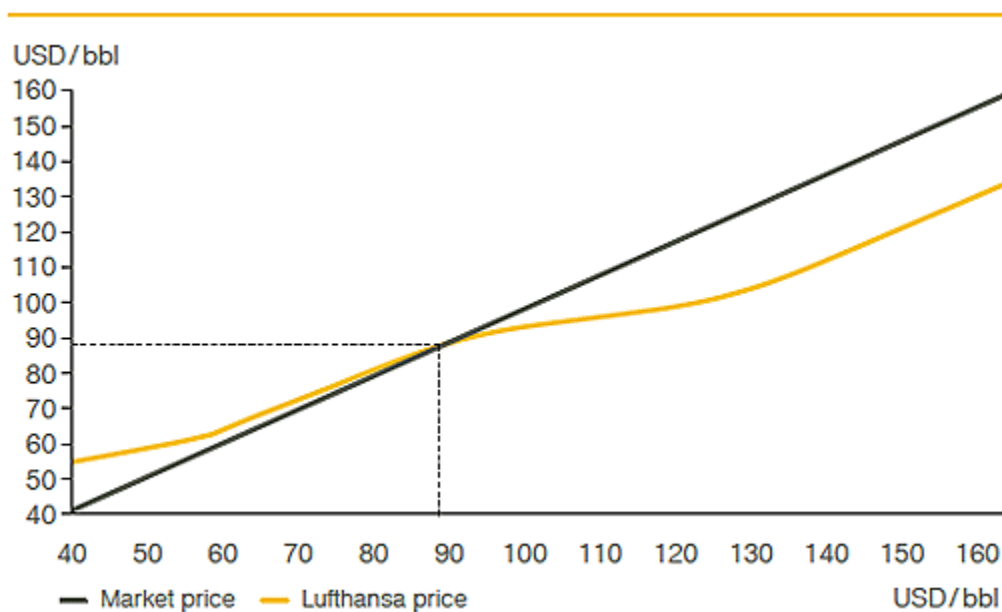
The Lufthansa Group’s annual fuel consumption in 2009 was approximately 8 million tones of kerosene. It is a major item of expense, currently making up around 14.7 per cent of operating expenses for the Lufthansa Group. Severe fluctuations in fuel prices can therefore have a considerable effect on the operating result. Therefore Lufthansa relies on rule-based fuel price hedging over a period of up to 24 month. The aim is to reduce fuel price fluctuations. The hedging level and time horizon depend on the risk profile, which is derived from the business model of the respective Group Company.

There by Lufthansa uses standard market instruments. Fuel price risks are hedged with a lead time of up to 24 months and predominantly by using option structures and mainly take place in crude oil. As a result the hedging transactions are based on fixed rules and map an average of crude oil prices over time. The monthly hedged volumes for an individual Group company can result in a hedge level of up to 85 percent, e.g. for Lufthansa Passenger Airlines the next 6 months are hedged up to 85 percent for any point in time.

As a complementing measure to reduce risk, Lufthansa has established fuel surcharges. However, it is uncertain to what extent the additional fees will offset price increases and depends on the development of fuel prices and the economic environment.

The following graphic illustrates the varying costs of fuel after hedging under different oil price scenarios.

**Figure 2.1: Fuel hedge scenario Lufthansa Group**



(Lufthansa, 2011)

## 2.2 Theories of Hedging

### 2.2.1 Empirical Studies on Hedging

#### 2.2.1.1 Hedging and Firm Value

Allayannis and Weston (2001) found that there is a positive relation between the usage of foreign exchange derivatives and firm value, using the sample of 720 large non-financial firms with foreign sales from 1990-1995. They found that hedging premium is significant about 4.87% of firm value, and it is larger in the period of dollar appreciation. Nain (2004) divided his sample into 548 derivatives users and 2,711 non-derivative users of U.S. firms with ex-ante foreign exchange exposure from 1997 to 1999. He showed that that foreign exchange risk management can increase firm value (proxy by Tobin's Q) if many of their competitors hedge. On the contrary, Guay and Kothari (2003) argued that based on the magnitudes of the notional amount of the derivatives used by U.S. firms, the value premium is insignificantly related to firm's hedging position.

Bartram, Brown and Fehle (2004) used a large sample of 7,319 non-financial companies in 50 countries from 2000-2001 to examine the impact of interest rate and foreign exchange derivatives usages on firm value. They document that the usage of derivatives is a value-adding activity, and the result is more significant for interest rate than foreign exchange hedging. Previous researches also examined whether hedging of commodity risk exposures is related to the firm value in the U.S. market. Lookman (2004) examined exploration and production companies that hedge commodity price risk and its impact on their firm values. He classified oil price into primary risk and secondary risk to show that undiversified exploration and production companies who hedge primary risk are associated with lower value. On the other hand, he showed that for diversified companies, which have exploration and production segments, hedging is associated with higher value. Callahan (2002) found that the extent of gold hedging is negatively related to firm's stock price using a sample of 20 North American gold mining firms over the period 1996-2000.

Carter et al. (2006a, b) studied the fuel hedging of 28 companies in the U.S. airline industry during the period of 1992 to 2003. Their result showed that jet fuel hedging can increase firm value, and the hedging premium is economically significant. Jin and Jorion (2006) argued that risk management has no effect on 119 U.S. oil and gas producers in the period of 1998-2001. On the contrary, Chang, Gu and Xu (2005) examined the relationship between oil and gas hedging and firm value in Canada. They show that gas production hedging has negative effect on firm value, while gas reserve hedging has positive impact on firm value. This result indicates that Canadian oil and gas producers can increase their firm value by hedging gas production and reserve.

### **2.2.1.2 Incentives for Hedging Activities**

Following Smith and Stulz's (1985) discussion of the motivations of firm's hedging behaviors, a growing number of researchers studied why firms may hedge. This line of empirical evidences suggests the following explanations for why firm may hedge.



### **2.2.1.3 Tax Incentives**

If hedging benefit can offset hedging cost, a firm may be willing to use hedging instruments to lessen its expected tax liability and reduce the variability of its pre-tax firm value. Such hedging activity associated with tax incentive can increase firm's expected post-tax value. Smith and Stulz (1985) indicate that the convexity of tax function makes firms to hedge more, which in turn increases their firm values. Leland (1998) also showed that hedging can increase the debt capacity of the firm and reduce their expected tax payments.

Graham and Smith (1999) used simulation method to analyze more than 80,000 firms in the U.S. They found that 50% of their sample firms face convex effective tax functions and 25% of the sample firms face linear tax functions. They showed that approximately one-quarter of the companies that have convex tax function can save substantial tax from hedging potentially. The result is consistent with Smith and Stulz (1985). Graham and Rogers (2002) who concluded that hedging exposures of foreign exchange and interest rate enhance firm value as a result of increased debt capacity but they found no evidence that firm's hedging behavior responds to tax convexity.

### **2.2.1.4 Managerial Incentives**

Because information is asymmetric between insider (managers) and outsider (shareholders), it gives managers an opportunity to behave on their own interests and expropriate shareholders' benefits. Smith and Stulz (1985) indicated that the compensation function is linear and convex to firm value, which may influence managers' hedging decisions. When managers have substantial fraction of firms' shareholdings, they would hedge more. DeMarzo and Duffie (1995) argued that optimal hedging policy adopted by managers depends on the type of accounting information made available to outside shareholders. Following this argument, managers' skills and abilities are monitored more closely by outside investors. In addition, Tufano (1996) took manager-shareholder agency problems into account and showed that managers may damage firm value by hedging. The evidence of his study revealed that managers' wealth tied to firm value would affect firms' hedging policies. Breeden and Viswanathan (1998) showed that managers with poor

skills may not hedge and manage risk exposures adequately without monitoring by outsiders. Rogers (2002) uses simultaneous equation method to show that CEOs' risk-taking incentives have negative influences on firms' currency and interest rate hedging activities.

An alternative view is to regard common stock of a firm as a call option. Thus, the market value of a firm becomes more valuable as firm's risk increases (Galai and Masulis, 1976). Besides, Saunders et al. (1990) found that managers with more equity in their firm would tend to increase risk in bank industry. There are also several empirical studies that find insignificant evidence to support managerial incentives as determinants of firms' risk management behaviors (Géczy, Minton and Schrand, 1997, Gay and Nam, 1998, Allayannis and Ofek, 2001, and Haushalter, 2000).

#### **2.2.1.5 Financial Distress Costs and Underinvestment Costs**

Financial distress is usually followed when firm's revenue fail to meet its expenditures. Hedging can reduce the probability of incurring financial distress costs and creates profitable investment opportunities through minimizing the volatility of firm's cash flow in the foreseeable future. Mayers and Smith (1982) show that firm's insurance contracts can reduce expected transactions costs of bankruptcy. Smith and Stulz (1985) also show that hedging can lower the expected costs of financial distress. Lel (2006) they conclude that financial distress costs are related to firm's hedging activity. However, evidences from Mian (1996) and Tufano (1996) do not support this conclusion.

According to the pecking order theory, external cost of capital is more expensive than internal cost of capital for firms facing valuable investment projects, so firms may have an incentive to hedge risk and assure that they have enough funds to alleviate underinvestment problems. Froot et al. (1993) showed that hedging can ensure companies with sufficient internal funds to complete profitable investment opportunities by lowering the variability of internal funds. Gay and Nam (1998) analyze the relation between a firm's derivatives use and underinvestment problems. Their study examined the interaction influence among firms' investment opportunities, cash stocks, and internal cash flows to identify the position of underinvestment. They argued that firms with great investment opportunities tend to use derivatives to hedge their risks.

Haushalter (2000) examined the risk management activities of 100 oil and gas producers from 1992 to 1994. He found that the correlation between extent of hedging and financial leverage is positive, which supports that a company can reduce financial contracting costs through hedging activity. By hedging fuel costs, Carter et al. (2006a, b) indicated that it can help airline companies to management their potential underinvestment problem as well as reducing the costs of financial distress.

#### **2.2.1.6 Investment, Financing, Cash Flow, and Hedging**

Froot et al. (2003) illustrated the value of hedging for firms facing financial constraints. Their basic framework showed that, when the costs of external capital include deadweight costs, firms requiring outside financing will under invest when internal cash flow is sufficiently low. Allayannis and Ofek (2001), Dolde (2005), Gay and Nam (2004), Géczy et al. (2000), and Nance et al. (2003) Found that hedging increases with the level of R&D expenditures.

Hedging generates additional cash in these states, thus circumventing the underinvestment Problem. An important feature of the Froot et al. (1993) model is that it allows for the firm's investment opportunity set to be correlated with cash flows from the hedge able risk. If a positive correlation exists, less hedging is necessary because the firm enjoys a natural hedge (i.e., when cash flows are low, so are investment opportunities). Thus, hedging is more valuable to firms with investment opportunities that are uncorrelated or negatively correlated with the risk factor's cash flows. Additionally, the Froot et al. model shows that if outside financing costs increase as hedge able cash flows decrease, then hedging becomes more valuable. In essence, hedging allows a firm to minimize its need to access outside capital when it is most expensive.

Tufano (1998) illustrated that, by adding manager-shareholder agency costs to the Froot Et al. (1993) model, hedging may allow managers to destroy value. Tufano.s framework assumed that managers are able to appropriate an amount in excess of the value created from an investment project. External capital providers know this agency problem exists, and therefore, refuse to provide capital for this project. Managers may hedge to avoid the inability to invest in the pet Project after low cash flow realizations.

One of the testable implications of the Froot et al. model is that investment-cash flow Sensitivity should be declining with hedging. Allayannis and Mozumdar (2000) showed that Investment-cash flow sensitivity is lower for firms that hedge with foreign currency derivatives. This result is consistent with Froot et al. (1993), suggesting that firms hedge to ensure sufficient amounts of cash to take advantage of valuable investment opportunities during periods of unfavorable cash flow shocks. Alternatively, their results may be consistent with Tufano (1998). Bessembinder (1991) and Mello and Parsons (2000) make a similar argument as to the benefit of hedging.

Hedgers may be insulating investment from the scrutiny of outside investors so managers can obtain private benefits from pet Projects. Adam (2002) studied the implications of Froot et al. (1993) in a sample of North American gold mining firms. He provided evidence suggesting that firms with higher expected investment hedge a greater degree of expected investment. Furthermore, he documented that the positive relation between investment and external financing is smaller for hedging firms. He interpreted the combination of results as indirect evidence consistent with Froot et al. (1993). Nevertheless, Adam did not examine the value implications of hedging, so his results may also be also be consistent with Tufano (1998)

## **2.3 Hedging In Practice**

### **2.3.1 The bright side of fuel hedging**

Hedging fuel prices, can help stabilize an airline industries profits based on factors like fuel hedging contracts managers experience and competences, Macro economic factors, e.g. economic factors, unexpected crises like the middle east un rest, wrong estimates, and other times, just favorable market environment. This section highlights some of the bright moments of Southwest airlines which got it right by hedging fuel prices.

### **2.3.1.1 Southwest is reaping the rewards of having locked in lower costs.**

What would it be like to pay \$2 for a gallon of gasoline when everyone else is paying twice that much? Southwest Airlines Co. knows, and that's why many analysts believe it may be one of the few U.S. carriers if not the only one to post a profit this year while still offering bargain fares. The airline, one of the largest at Los Angeles International Airport, locked in more than 70% of the fuel it expected to consume in 2008, at about \$51 a barrel, far below the periods closing crude price of \$126.62 a barrel. Other large airlines, meanwhile, had only 20% to 30% of their fuel hedged same year at an average cost of \$100 a barrel.

With the huge cost advantage, Southwest didn't have to hike air fares or like other carriers impose new fees, including a decision by AMR Corp.'s American Airlines to charge domestic fliers \$15 for checking a single suitcase and to increase other fees. Because of a calculated risk the airline took last year essentially betting correctly that fuel prices would escalate southwest was the only one left standing by the end of 2008, when even some airlines went into bankruptcy. The carrier's aggressive fuel hedging had a broader effect on fares in the markets it serves. Tom Parsons, publisher of BestFares.com, said that travelers flying between two cities where there is no competition from Southwest would pay about \$340 more round-trip than they did just six months ago. The airline also allowed its passengers to check up to two free bags.

The cost difference between Southwest and other carriers that don't hedge as much was dramatic. Fuel costs were up 20% for Southwest in the first quarter whereas American said its fuel costs were up nearly 50%, which wiped out profit for the nation's largest airline. On average, Southwest paid about \$1.98 for a gallon while American, which hedged about 27% of its fuel use, paid \$2.74 a gallon.

Southwest Treasurer Scott Topping, considered the guru on hedging for the airline, said the carrier jumped into hedging in a big way in 1999 when oil was at \$11 a barrel. Since then the airline has hedged 70% to 80% of its anticipated fuel use every year, more than any other airline. The airline said it saved \$727 million in 2007 by locking in lower fuel prices in prior years. Up to 2008, the carrier had not lost money in any year on fuel hedges. (Peter, 2008)

### **2.3.2 The other side of hedging fuel prices**

Hedging fuel prices just like any other risk mitigating strategy has its limitations. In this section, the researcher looks at Ryan air which got it wrong trying to militate against rising fuel prices.

#### **2.3.2.1 Ryan air gets it wrong with Fuel-hedging**

Ryan air, Europe's largest airline, lost €102 million (£92 million) in the last three months of 2008 after botching its fuel-hedging strategy. The carrier locked in fuel prices of \$124 a barrel for 80 per cent of its consumption during the third quarter, but the price of oil collapsed to a low of \$33 a barrel during that period. However, Ryan air said that its lack of hedging in the fourth quarter would enable it to take full advantage of the low oil price. As a result, the carrier upgraded its full-year profits forecast to between €50 million and €80 million yesterday. Its previous guidance had been to break even.

Michael O'Leary, Ryan air's chief executive, has admitted that he "screwed up" Ryan air's fuel strategy in 2008 after remaining largely un hedged as prices rose to \$147 a barrel in July. He then bowed to shareholder pressure to protect the airline against rocketing prices by locking in fuel prices during October, November and December - just as oil prices crashed. Ryan air's fuel costs during its third quarter rose by 71 per cent to €328 million, which accounted for 47 per cent of its operating costs. (Robertson, 2009)

### **2.3.3 The airline that doesn't hedge fuel prices**

As previously stated, hedging fuel prices is a risk mitigating strategy, which has to be considered carefully by the management of a business organization, before settling on whether to hedge or not. In this section, the researcher looked at US airways, which does not hedge fuel prices, and the various reasons the airline gives to the public as to why they don't hedge fuel prices.

### **2.3.3.1 US Airways: Why We Don't Bother Hedging Jet-Fuel Prices**

With oil prices continuing to rise, airlines are all getting nervous about it means for the bottom line. Most airlines are stocking up on hedges, but one airline, US Airways however wants nothing to do with them. Weirdly, the strategy seems to be working quite well so far.

In its fourth quarter 2010 earnings call, fourth quarter 2010 earnings call, US Airways detailed that even though it hadn't bought any fuel hedges, it still had the lowest fuel price per gallon \$2.40 of all its competitors.

US Airways CFO Derek Kerr explained that it's hard to look at the market and rationalize hedging when the cost of the insurance is so incredibly expensive and with the cost of the insurance, he remarked that last year insurance would have cost the company approximately 160 million, if it had an industry average hedging program... despite the fact that fuel costs were up from \$70 to \$92 a barrel across the year. So hard to understand how you can make it systematic hedging program work.

There are a lot of different ways to hedge fuel, but the basic idea is that you pay now to lock in a certain price range for your future fuel needs. If the price of fuel goes up, then you reap the benefits. If the price goes down, you're out the cost of the hedge. The reason for hedging is obvious: you can better budget for your fuel costs (or at least a portion of them) because the amount you'll pay is known in advance. That's obviously not the case when you ride the roller coaster on the open market.

But the fuel hedging game is a lot different now than it was 10 years ago. Southwest was seen as the genius of the industry when it hedged a huge chunk of its fuel needs in the \$25 to \$40 range just as prices spiked. It helped the airline make money during a time when others lost, and that set the standard for fuel hedging. But things are different now.

Now that fuel prices appear to be more volatile than in the past, it costs more to hedge. US Airways, for example, said that it would cost \$330 million just in hedging costs to secure the fuel it needs for the next year. That's more than 10 percent of the cost of the fuel itself, based on 2010

numbers. So hedging can be steep, and the airline will have to assume that the benefit will be much greater in order for it to make sense.

While other airlines continue to hedge in order to keep costs predictable on some level, US Airways has done the math and decided it's not worth it. So far, it's been right. If oil prices spike to \$200 a barrel well, that's a different story. And if that happens, this industry might no longer exist anyway. (Snyder, 2011)

## **2.6 Conclusion**

Organizations hedge fuel prices for various reasons, with of course an overall goal of increasing the profitability and value of the firm. This review highlights most of the common reasons past researchers found to contribute to organizations move to hedge fuel prices, which according to researcher's opinion, would be profitable if used in combination. There is however an exception in the case of managerial incentive, where agency problem comes in. In this particular case, the management of an organization would hedge fuel prices if they believe that it will benefit them. Decisions to hedge or not will depend on how much shares they hold in the organization, or how they are remunerated. This is a departure from the overall objective of any business organization, which is to increase and stabilize the profitability and overall value of a business organization. The decision to hedge or not to hedge will also depend on the Management's attitude towards risk. The risk taker will probably hedge, while the risk averse might not be in a hurry to hedge. As seen from the airlines press release, some airlines continue to hedge while others believe that hedging is not beneficial. For those who hedge, just like any other risk mitigating strategy, the airline will realize a gain on one time and a loss on another time. Holding all other factors constant then, the airline that hedges or does not hedge, will make a decision based on the long term benefits of their decision.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This part of the study discussed the kind and design of study undertaken. It also outlined the target and sample population used to arrive at the desired results. It further showed the data collection techniques, instruments and procedures followed during the study.

### **3.2 Research Design**

The research was best studied through the use of a case study. A case study is an in-depth investigation of an individual, institution or phenomenon (Mugenda, 2009). It can be used when collecting information about people's attitudes and opinions, and therefore enabled the researcher to understand the complex issue or object and extended experience or rather added strength to what was already known. A case study also emphasized on detailed contextual analysis of a limited number of events or conditions and their relationships hence was best suited in this study. The primary purpose of a case study was to determine factors and relationships among the factors that resulted in the behavior under study. The study focused on Kenya Airways and used data where subjects were observed in either natural set ups without manipulating the environment. (Mugenda, 2008) It was also an efficient way to obtain information needed to describe the attitudes, opinions and views of Kenya Airways management on the relationship between hedging fuel prices and volatility of profits.

### **3.3 Population and Sample size**

The target population was Kenya airways financial reports for the period between year 2000 and 2005, when the airline never hedged fuel prices at all, and year 2006 to the first quarter of year 2011 when the airline began hedging. Of major scrutiny was the income statement which enabled the researcher identify loss or gain on hedging of fuel prices, and the net profit for the period, to determine if hedging or not hedging contributes in any way to the profitability of Kenya airways. Any other relevant notes to the financial statements were considered for accurate results. A total of three management staff was also interviewed by email to obtain their

comments on fuel hedging and profitability, to determine if their view aligned or contradicted the final results of the study.

### **3.4 Data Collection Techniques**

#### **3.4.1 Data collection instruments**

The researcher used online surveys for data collection. Online surveying can be by use of the web or email. Wikipedia,(2008) The researcher looked at the airlines performance for the period between year 2000 – 2005 and year 2006 - 2011, before and after the airline started hedging fuel prices. The researcher also contacted through email Kenya Airways Fuel hedging contracts staff, Manager Treasury and Head of Financial Accounting for comments on the subject under study. This was because the Kenya airways website has all the information on the performance of the organization for the period in question. The emails were also sent to the above because they play key strategic roles in finance and were in a better position to provide the required comments and advice on KQ's way forward in regard to hedging fuel prices. The email requested for general comments on hedging before and after, and what the management felt should be the way forward in regard to hedging. Any additional information the management was willing to share was welcomed. No questionnaires were used.

#### **3.4.2 Data collection procedure**

The researcher did a pilot testing, of year 2000 and year 2006 only, to reveal any oversights in processes that might have been of serious consequences, and any other additional resources that might have been required to make the study a success. Once the initial results were satisfactory, the final data collection was under taken.

### **3.5 Data Analysis**

The researcher adopted both quantitative and qualitative approaches to data analysis. Data obtained was entered into SPSS v.18 database application for analysis, using descriptive statistics (measure of central tendency and measure of variations) and inferential statistic tools. The data collected through email, was analyzed using conceptual content analysis. Content was as a technique for making inferences by systematically and objectively identifying specific

characteristic of messages and using the same approach to relate trends. Creswell (2003)

The main purpose of content analysis was to study the existing information in order to determine factors that explain a specific phenomenon. Mugenda and Mugenda. The researcher also used multivariate statistics to establish the relationship between hedging and profitability for the period between years 2000 to 2011. This was used to determine if hedging had an impact on the profitability of Kenya airways.

The impact of hedging was measured by the corresponding change in profitability as a result of use of the risk management practice. The financial statements of the company were analyzed for the period between years 2000 and 2005 when the airline was not hedging fuel prices at all, and years 2006 to 2011 when the airline hedged fuel price risks.

A simple regression model in the form below was used

The hypothesized relationship between hedging and profitability may be written as:

$$I = a + bE + e$$

Where

$a$  = a constant amount (what the airline earns with zero hedging)

$b$  = the effect in shillings of profitability, after hedging a minimum percentage of oil prices.  
Hypothesized to be positive and

$e$  = the noise term reflecting other factors that influence profitability.

The variable  $I$  is termed the dependent or endogenous variable

$E$  is termed the independent, explanatory or exogenous

Variable  $a$  is the constant term and  $b$  the coefficient of the variable

$E$ .

## **CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS**

### **4.1 Introduction**

The research objective was to determine the impact of hedging on corporate profitability, a case of Kenya airways limited. The chapter presented the analysis and findings with regard to the objective and discussions of the same. The data was collected from the population of the last eleven years of Kenya airways annual financial reports. The findings were presented in tables, line charts and narrations.

### **4.2 General information**

The general information considered in this study were the last five years Kenya airways was hedging fuel prices and five years prior to hedging fuel prices. Also two Kenya airways management staff in charge of hedging fuel contracts were interviewed.

### **4.3 Response rate**

A survey of all Kenya airways annual financial reports was done, which was 100% response rate. Out of the three management staff, two were interviewed, this was an acceptable number given that, the main data collection procedure was by use of Kenya airways financial statements, and the management comments were sought to obtain their views and comments in regard to hedging fuel price risks.

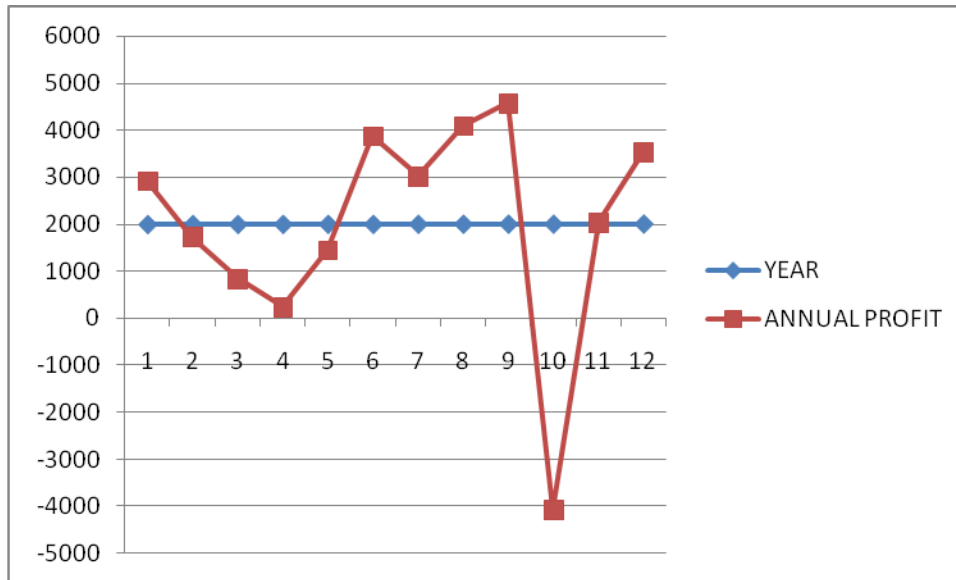
### **4.4 Quantitative analysis**

The respondents were made up of the period before the airline begun hedging (2000 to 2005) and an equal period after the organization begun hedging fuel prices (2006 to 2011), and the respective net profits realized in each year.

**Table 4.1: KQ profitability distribution for the period 2000 to 2011**

YEAR	ANNUAL PROFIT SHs IN MILLIONS
2000	2922
2001	1729
2002	837
2003	237
2004	1449
2005	3882
2006	3020
2007	4098
2008	4578
2009	(4083)
2010	2035
2011	3538

**Figure 4.1: KQ profitability distribution for the period 2000 to 2011**



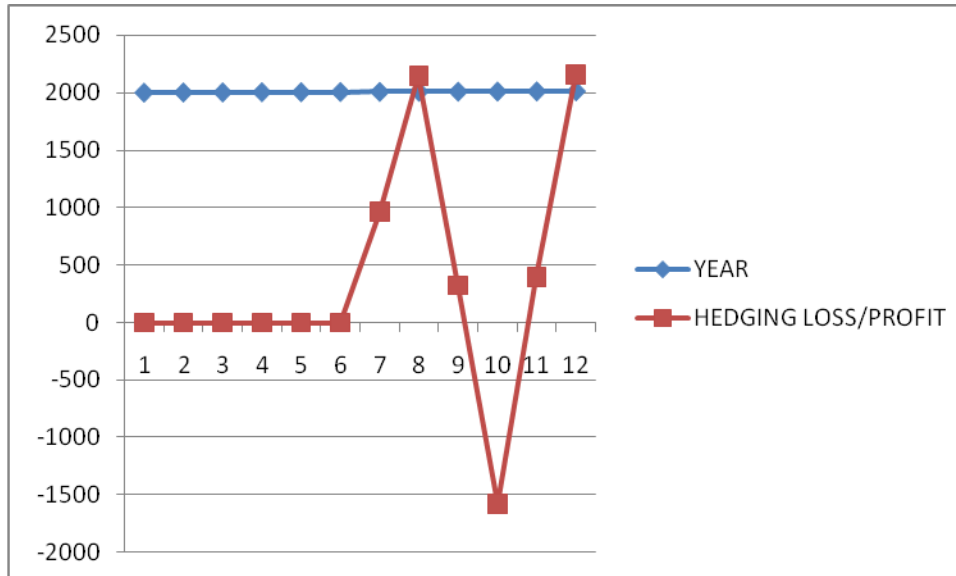
### **Interpretation**

The organization was slightly more profitable during the hedging period, than the period it was not hedging fuel prices. This can be attributed to the introduction of other risk management strategies like hedging foreign currency, which began sometime in 2004, improvement in operations brought about by new technologies and skilled management. This improvement in profitability can however be pegged to hedging fuel prices, except in year 2010, when the organization made a huge loss, which was actually attributed to hedging fuel prices. Despite low profitability between years 2000 and 2005, it is important to note that profits were not as volatile as seen in the period when the airline was hedging fuel prices. Reseracher (2011)

**Table 4.2: KQ hedging profit/loss distribution for 2000 to 2011**

YEAR	HEDGING LOSS/PROFIT SHs IN MILLIONS
2000	
2001	
2002	
2003	
2004	
2005	
2006	966
2007	2142
2008	323
2009	(1575)
2010	398
2011	2155

**Figure4.2: KQ hedging profit/loss distribution for 2000 to 2011**



**Interpretation**

Again its important to note the huge variance in profit/loss on hedging was noted during the period 2006 and 2011. This is an indication that the profitability of a firm is directly linked to hedging its fuel prices because for most of the years, high profit in hedging corresponded with high profitability of the organization and vice versa. The aspect of volatility of profits can also be seen in fuel hedge profits/loss, which again strengthens the direct relationship theory between profitability and fuel hedging in Kenya Airways.

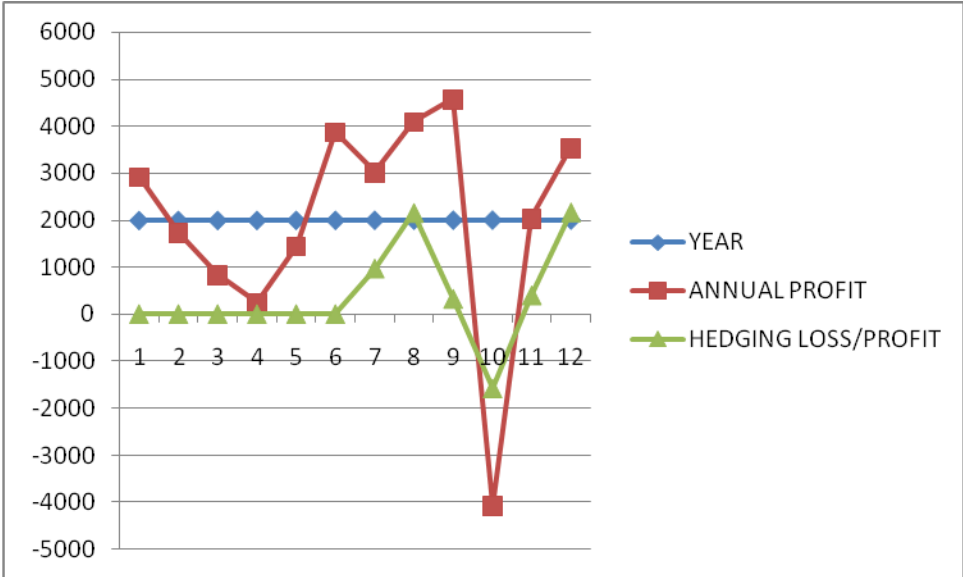
**Table 4.3: KQ profitability and profit/loss on hedging for 2000 to 2011**

YEAR	ANNUAL PROFIT SHs IN MILLIONS	HEDGING LOSS/PROFIT SHs IN MILLIONS
2000	2922	
2001	1729	



2002	837	
2003	237	
2004	1449	
2005	3882	
2006	3020	966
2007	4098	2142
2008	4578	323
2009	(4083)	(1575)
2010	2035	398
2011	3538	2155

**Figure 4.3: KQ profitability and profit/loss on hedging for 200 to 2011**



## **Interpretation**

As observed from the above scatter diagram, and as mentioned earlier, hedging seems to have a direct impact on profits of Kenya airways, for the period between 2006 and 2011. Take for example years 2006, 2007, 2009 and 2011. All the mentioned years except year 2009, fuel hedging profits contributed a reasonable percentage to the profitability of the organization. For example hedging contributed up to 60% of the organizations profitability in 2011, followed by 52% in 2007 and 32% in 2006. In 2009 when the company made a huge loss, hedging of fuel prices contributed 39% to the net loss. This shows that there is a direct relationship between hedging fuel prices and the profitability of the organization. It is crystal clear that hedging loss reduces the profitability of a business organization and vice versa. Initially hedging was meant to reduce the volatility of profits in a business organization, amongst other benefits. It is however not so with Kenya airways for the period under study.

### **4.5 Qualitative analysis**

Out of the three management staff to be contacted on their comments regarding hedging fuel prices, only two were reached. Their opinion on hedging fuel prices were almost the same. Hedging fuel prices which is a risk management strategy, is a risky affair, but with skilled man power, it is a strategy that can save the organization a great deal. For example a contract had been signed late last year for a period up to Dec 2012, since that period, fuel prices have been going up, and are anticipated to go further up because of the instability in Middle East, and especially because of the death of the Libyan leader, and other economical reasons. The organization had locked in fuel prices at a reasonably low price, which has already saved the organization ksh. 2155M for the period 2010/2011 and is anticipated to save the organization more in the next period. One of the staff also agreed with previous findings that, even though hedging fuel prices saves the organization a great deal of costs and inconveniences, it leads to high volatility of organizations profits, holding all other factors constant.

#### 4.6 Regression Model Summary

In reality, any effort to quantify the effects of hedging on profitability without careful attention to the other factors that affect profitability could create serious statistical difficulties (termed as “omitted variables bias”). Donna (2002)

The model sought to confirm the results of the study when other risk mitigating factors assumed to impact corporate profitability directly in a business organization were taken into account. These factors included currency hedges, which are aimed at reducing inflation to manageable bits, and long term leases which reduce the risk of increasing operation costs. Data was analyzed using statistical package for social sciences (SPSS) version 18. A standard deviation of 1,000 was used to represent the noise term, because it was considered sufficient.

**Table 4.4: Regression model Summary distribution**

<b>Table 1</b>	<b>KSH IN Millions</b>				
<b>Variable</b>	<b>Time Value</b>	<b>Estimated value</b>	<b>Std error</b>	<b>T-statistic</b>	<b>Probability</b>
constant	1449	1,376.55	260.81	1.45	0.45
hedging	966	1101.24	67.62	1.14	0.01
Long term Leases	450	351	30.15	2.15	0.2
Currency hedging	-300	-280.14	-52.5	0.79	0.17
R2 = 0.863					

#### Interpretation

A regression line equal to 1.00 symbolizes a perfect estimate. In these case estimated parameters in are considerably closer to its true values. It was not certain they would be because their expected values are equal to their true values regardless of the amount of the noise since the estimator is unbiased. This confirms the quantitative analysis results that hedging fuel price risks

has a direct impact on corporate profitability. The variance in this case is an insignificant 0.137, which is not material. However it is an indicator that other risk mitigating factors practiced by the organization have a direct impact on corporate profitability.

#### **4.7 Summary of findings and interpretation**

From the study it was found that hedging fuel prices affects the profitability of a business organization directly. I.e. when the company gets it wrong in hedging, then this directly impacts on the organizations profits and vice versa. This is evident in year 2009 when the organization made a huge loss, of which 39% is attributed to losses incurred in hedging fuel prices. In the year 2011 there is also a significant direct relationship between hedging fuel prices and profitability of an organization. This is so because hedging fuel prices contributed a 60% increase in the profits for the period. Even though hedging just like any other risk management technique, leads to volatility of profits, it seems to be a bright idea for the organization bearing in mind that fuel costs constitute 40% of the organizations operating costs.

## **CHAPTER FIVE: SUMMERY OF FINDINGS CONCLUSIONS AND RECCOMENDATIONS**

### **5.1 Summary**

The objectives of this study were to determine the impact of hedging fuel prices on profitability of a business organization. The study was set out to determine the impact of hedging fuel prices on Kenya airways for the period between the year 2000 and year 2011. The choice of year 2000 to 2011 was preferred because the first 6 years from the year 2000, the organization was not hedging fuel prices at all, while the other six years from the period 2006 to 2011 the organization was hedging fuel prices. The main data collected was secondary data from KQ annual reports for the same period. This is because the data is from a trusted source and is thoroughly audited both internally and externally, and thus can be depended upon to give a correct picture of the financial status of the organization. Two management staff dealing with fuel hedging contracts was also interviewed for their comments on the impact of hedging on corporate profits.

The study found out that, hedging fuel prices impacts the profits of the organization directly in that, whenever the organization made a profit on hedging, the net profit for the period was positive and vice versa. For example in 2011 the organization made a huge saving through hedging fuel prices, which is 60% of the organizations profit for the period. In 2009 the organization made a huge net profit loss, and also recorded a 38% loss on hedging fuel price risks. This shows that hedging has a direct impact on the profits of an organization. The study also shows that hedging fuel price risks is a strategy worth engaging in since as seen in chapter four, Kenya airways got it wrong only once in the year 2009, other wise the other periods from 2006 to 2011, the airline has saved lots of costs through hedging fuel prices.

The data was analyzed using the statistical package for social sciences (SPSS) version 17. It also used multiple regression analysis to find the impact of hedging fuel price risks on corporate profitability. Forecasting model was developed and tested for accuracy in obtaining predictions. The finding of the study indicated that the model was significant in arriving at the results.

## **5.2 Conclusion**

The main purpose of the study was to determine the impact of hedging fuel prices on corporate profitability, a case of Kenya airways, for the period between the years 2000 to 2011. Based on the literature review, it was found that airlines hedge fuel prices for various reasons, which are aimed at reducing operating costs of the organization. There is however organizations that do not hedge fuel price at all, for example the U.S airways and yet they make a profit. It's however evident that depending on the skills of the risk management team and other external factors, hedging impacts organizations corporate profits both positively and negatively.

A basic principle of hedging theory is that it's meant to reduce volatility of corporate profits. Peter (2005). This is however not so for Kenya airways for the period under study. It was observed that the organizations profitability for the period it was not hedging fuel prices was more stable than when it begun hedging. The study however confirms that there is a direct relationship between hedged fuel profit/loss and the profitability of a business organization.

## **5.3 Recommendations**

Hedging fuel prices is a commendable idea and should be practiced not only in airline industries but in other high fuel consuming firms. In Kenya the idea can be very useful to the Matatu industry; whose main cost is fuel (constitutes about 70% of their operating costs). The idea can begin from Matatu companies like KBS, Double M, City hoppa and the rest, down to the individually owned Matatus. As seen from the literature review, there is also the idea of hedging fuel prices for privately owned Cars, which is being done successfully in the united state of America. Hedging fuel prices should however be done with a lot of courtesy, and under the supervision of a skilled fuel hedging contracts specialist. This is so because statistical data has to be collected and analyzed correctly, to prevent a situation of huge losses in hedges turned sour.

## **5.4 Limitations of the study**

The main limitation was the interpretation of some of the notes in the annual financial statements, which were not clear given that the researcher depended more on secondary data from annual financial statements for the period year 2000 to 2011. The researcher also faced a challenge with the two fuel hedging contract managers, who were not willing to volunteer

information on hedging fuel prices in Kenya airways because they thought that this was volunteering too much information to competitors and some of the information could be too sensitive to release to the public. At some point the manager legal services had to be called upon to give guidelines on what should be volunteered and what should not.

Another potential limitation was the reliability of data obtained. Even though KQ is a public company and the financial statements are thoroughly audited by both internal and external auditors, there are some aspects which might not be correct. This could be as a result of the agency problem.

### **5.5 Suggestions for further study**

This study was restricted to hedging fuel prices in Kenya airways for the period between year 2000 and 2011. Even though studies from other airlines were considered, they were not exhaustive. The researcher that recommends a comparison study between the impact of hedging fuel prices in Kenya airways and airlines in Europe and the U.S. this is so because hedging is a foreign risk management strategy, and if such study is done, it can help KQ and other African and Arab airlines to practice hedging in a more efficient manner.

A study on the impact of hedging for the common man and transport industries for example the Matatu industry in Kenya is also recommended before the practice can begin. This can help business men to make wise decisions hence saving the industry a good percentage in operating costs.

A further study on airlines like US airlines that do not hedge fuel prices at all, can help shed some light on the airlines principal of operations and help some airlines in Africa - which still do not hedge fuel prices, to make the most cost effective decisions in their operations.

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**KQ PROFITABILITY AND HEDGING PROFIT FOR YEARS 2000 TO 2011**

YEAR	ANNUAL NETPROFIT	HEDGING PROFIT/LOSS
2000	2922	
2001	1729	-
2002	837	-
2003	237	-
2004	1449	-
2005	3882	-
2006	3020	966
2007	4098	2142
2008	4578	323
2009	-4083	-1575
2010	2035	398
2011	3538	2155