EFFECT OF FUEL HEDGING ON THE PROFITABILITY OF THE AIRLINE INDUSTRY IN KENYA

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ABSTRACT

In fuel-intensive industries such as the airline industries, high and volatile fuel prices can have significant impact on the bottom line, not to mention adding to the difficult task of budgeting for future fuel expenditures. If fuel costs are not actively managed, they can lead a company to exceed budget forecasts, or worse, lower profit margins or losses. This study sought to investigate the effect of fuel hedging on the profitability of airlines. The study adopted the descriptive and explanatory research study.The population of the study consisted of 15 registered airlines secondary data was obtained and analyzed quantitatively through the use of descriptive statistics and inferential statistics. The results of both correlation and regression analysis indicated that the usage of futures by the Kenyan Airways has a positive effect on the levels of profitability. Precisely, the results established that futures usage was associated with a positive correlation coefficient of 0.418 and a regression beta of 0.029 which were both established to be significant at 5% significance. The results also found from correlation and regression analysis that the use of forwards has a positive effect on the levels of profitability. In particular, the correlation coefficient was found to be 0.381 while the regression analysis was established to be 3.181, both established to be significant to be significant at 5% level of significance. It was further established that the existed a positive and significant effect of the usage of swaps on the levels of profitability. This was established by a 0.776 and 0.476 correlation and regression coefficient respectively which were further established to be significant at 5% significance level. The relationship between options use as a hedging strategy and profitability established that there existed a positive correlation coefficient of 0.746 while the regression results also indicated that options usage had a positive ($\beta = 0.156$) which were both established to be statistically significant at a significant level of 0.05. Fuel hedging is valuable for airline companies as it is a tool to stabilize overall costs and reduce the volatility of profitability. This is supported by the positive relationship established between hedging strategies and profitability. 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 a higher proportion of the organizations operating costs.

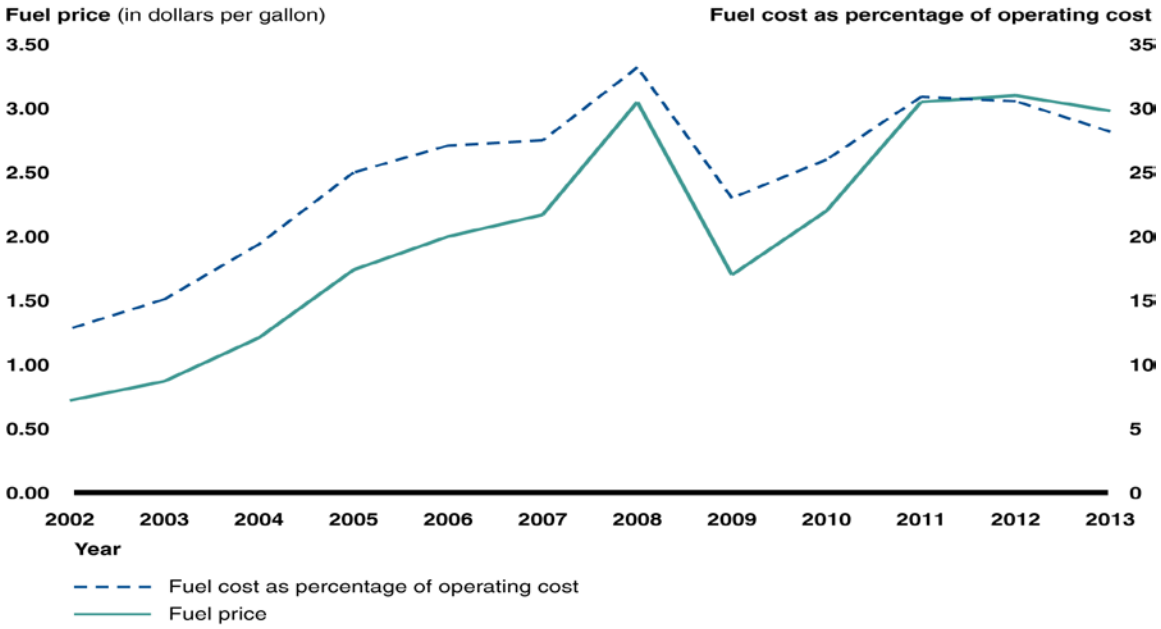
Key Words: *fuel hedging, profitability, airline industry, Kenya*

INTRODUCTION

Aviation brings long distance mobility to people, makes remote regions accessible and connects businesses and markets globally. Faaij (2012) asserts that over two billion passengers flew in the course of 2007 and that the air transport industry approximately generates 29 million jobs worldwide and has an economic impact estimated to be equivalent to eight percent of the global gross domestic product (GDP). Faaij (2012) further predicts that

aviation is expected to be one of the strongest growing transport sectors till 2050.According to Blodgget(2012), recent developments such as the global market place, slow down in market economies, new political leadership, increasing costs of doing businss compounded by fuel shortage, have posed real challenges for most businesses making it difficult to succeed in these turbulent environments.

According to EIA (2014)**,** jet fuel prices more than quadrupled from $0.72 per gallon in 2002 to $2.98 per gallon in 2013. As a result, airlines' annual fuel-related costs more than tripled over the same time period, from about $14 billion to about $50 billion. Over this time period, fuel became the largest component of airlines' operating costs. As shown in figure 1, fuel accounted for 28 percent of operating costs in 2013 and along with other key factors, reduced air carriers' earnings hence becoming a chief contributor to the industry's losses of about $4.3 billion in the first three quarters of 2008.



Sources: GAO analysis of Energy Information Administration and Department of Transportation data. | GAO-14-331

Figure 1: Price of Jet Fuel and Airlines' Fuel Costs as a Percentage of Total Operating Costs, 2002 to 2012

STATEMENT OF THE PROBLEM

Fuel is approaching 40 percent of total operating expenses for passenger airlines, surpassing the cost of labor as the number one expense for many aviation companies. Carte, Rogers and Simpkins (2012) explain that when fuel prices rise so quickly this keeps airline profits extremely thin and vulnerable and in order to cushion from the high fuel costs, airlines have been hiking fare prices and this dampens demand as consumers tighten their grip on their wallets. Gatonye (2011)in her thesis articulates that recent study reports from the UK and IATA have warned that airlines currently face a threatening period of major financial losses following the volatility in jet fuel costs. They predicted global loss in 2008 was around $2.3

billion and latest figures from IATA also indicated that the financial losses may exceed $6 billion in the near future.

Hedging broadly means locking in the cost of future fuel prices, protecting against sudden losses from rising fuel prices and also prevents sudden gains from decreasing fuel prices and thus creating stability in fuel costs, cash flow and profits. The rationale behind fuel hedging as argued by Morrell (2006) is to reduce major swings in profits and thus higher prices in the firm's stocks. Morell argues that airline profits are volatile due to sensitivity in consumer confidence which is correlated to stock market performance and the high leverage in the sense that the total value of outstanding stock in is a small fraction of annual income.

Locally, previous studies have been conducted on fuel hedging: Tanui (2015) conducted a study on the determinants of Corporate hedging practices used by companies listed in the Nairobi Stock Exchange (NSE), Ndosi (2013) studied the relationship between use of financial derivatives and fuel costs in Kenya Airways, Okuto (2011) examined the management of financial risk exposure of fuel price changes in the Airline Industry: the case of African Airlines while Nzuki (2009) did a study on managing price risk using futures: case of oil companies in Kenya. None of these local studies focused on effect of hedging fuel prices on the profitability of airlines.

Airlines are spending a significant amount of time and money just to save 1 percent off fuel consumption and are investing on research on alternative fuels (Constant, 2014). Revenue diversification and reducing the share of fixed costs by using part-time labor, outsourcing work, leasing aircrafts and getting shorter-term leases for real estate are some of the strategies that airlines are using to maintain their profit margins in the midst of high fuel costs. Airlines that want to prevent huge swings in operating expenses and bottom line profitability chose to hedge fuel prices. Scott Topping from Southwest airlines further asserts that if we do not hedge jet fuel price risk, we are speculating. It is our fiduciary duty to try and hedge this risk.This study therefore, sought to find out how airlines use hedging as a risk management tool in controlling fuel market price changes and how this has impacted on the profitability of airlines.

RESEARCH OBJECTIVES

1. To examine whether the use of futures as a hedging strategy has an effect on the profitability of the airline industry.
2. To determine the effect of the use of forwards as a hedging strategy on the profitability of the airline industry.
3. To establish the effect of the use of Swaps as a fuel hedging strategy on the profitability of the airline industry.
4. To examine whether the use of options as a fuel hedging strategy has an effect of the profitability of airlines.

LITERATURE REVIEW

Fuel Hedging Strategies

Airlines do something the industry calls 'hedging' to protect fuel costs. Hedging, broadly means locking in the cost of future fuel purchases. This aims to protect against sudden losses from rising fuel prices. Locking in fuel prices also prevents sudden gains from decreasing fuel prices. So airlines hedge fuel to stabilize fuel costs. Fuel is about 15% of the airlines' costs. More stable fuel costs also means more stable profits (Morell & Swan, 2006). According to Morell and Swan airlines typically hedge between one and two thirds of their expected fuel costs and that most of them look forward six months in their hedging. Airlines have a variety of hedging strategies available to them. This study focuses on four main hedging strategies and how they can be adopted by airlines in fuel hedging. These strategies include futures, options, forwards and swaps.

1. Hedging Using futures

A futurecontract is an agreement whereby a buyer and seller commit to buy or sell a specified quantity and quality of a commodity at specified price at the future date. The seller who takes a short position agrees to deliver the commodity. The buyer takes a long position and agrees to purchase the commodity. Forward contracts are similar to futures, but with exceptions that they are standardized and traded on organized exchanges. While futures might require daily payment of price adjustments, forwards are settled at the maturity date. Thus, futures and forwards can be used by the airlines as tools that mitigate the risk exposure of jet fuel price changes (Trempski, 2009). Hedging using futures can be used by an airline when they anticipate that the price of a contract will decrease.

A futures contract is in principle a forward contract traded on an organized exchange. While forwards and futures serve the same purpose and are functionally similar, the association of fuel prices in the futures market creates some differences between them. To make the fuel prices manageable the features of a futures contract must be standardized since the buyer and seller never meet (Sundaram & Das, 2010). There are two types of hedging using futures; short and long hedges. Short hedge is when someone wants to sell an asset that he/she already owns and wants to guarantee the price. For example a company has 1 million barrels of crude oil. The spot price for a barrel is $19 per barrel and the 3-month futures price is $18.75 per barrel (Pelletier, 2006). Long Hedges is appropriate when a company expects to buy an asset and wants to guarantee the price.

2. Hedging Using Forwards

A forward contract is an agreement between two parties to trade in a specified quantity of a specified good at a specified price on a specified date in the future (Sundaram & Das, 2010). The main purpose for entering into a forward contract is for hedging purposes however they

can also be used for speculation. A fixed forward which is also known as a forward contract or fixed price physical contract is an agreement between two parties to buy or sell a commodity at a certain future time, at a specific price, which is agreed upon at the time the deal is executed. An airline that buys a fixed forward is simply agreeing to purchase a specific quantity of jet fuel, from their supplier, for a specific fixed price, to be delivered on a specific date or over a specific period of time for example on month (Sundaram & Das, 2010).

Forward contracts are best suited for industrial users who rarely use such contracts and when they do, they need a specific contract. In the airline industry, where there is an extensive use of derivates to manage jet fuel price risk, forwards are not the best instruments. Airlines have a continuous need for a standardized product. Using forwards to cover airlines' needs is a waste of resources. The importance of liquidity in the airline industry is confirmed by the fact that airlines' argument for the use of derivatives on crude and heating oil instead of jet fuel (kerosene) is based on the poor liquidity in kerosene derivates.

The advantage of a forward contract is that it is a two-sided contract and the terms of the contract are negotiated directly between the buyer and seller. As such the forward contract is customizable and can be designed to meet the specific needs of the buyer or seller. This makes forwards the most popular contract for hedging foreign exchange rate risk as it eliminates both the delivery basis risk problem and the problem of having an ineffective hedge due to the lack of correlation that may be present between the change in futures price movements and the change in spot price movements (Ben-David, 2013).

3. Hedging Using Swaps

A swap is an agreement whereby one party exchanges their exposure to a floating (often referred to as spot, index or market) fuel price for a fixed fuel price, over a specified period(s) of time. Swaps are available for nearly all types of fuel including bunker fuel, diesel fuel, gasoline, heating oil, jet fuel, fuel oil, etc. Swaps received their name as the buyers and sellers of swaps are "swapping" cash flows, floating for fixed and vice versa (Meera, 2002).

Gatonye (2011) further adds that large fuel consumers in numerous industries utilize swaps in order to hedge their fuel price risk by fixing or locking in their fuel costs. Similarly, many fuel marketers and refiners utilize swaps to hedge their inventory and production related fuel price risk. Many fuel marketers also trade swaps to hedge their exposure to fixed price sales of physical fuel.

Purchasing a jet fuel swap allows airlines to hedge their exposure to unpredictable jet fuel prices. If the price of jet fuel increases, the gain on the swap will offset the increase in their actual fuel cost (Meera, 2002). Similarly, if the price of jet fuel declines, the loss on the swap will offset the decrease in their actual fuel cost. As a result, regardless of whether jet fuel prices increase or decrease, the airline will have "fixed" their fuel costs thanks to the swap.

4. Hedging Using Options

An option is a financial security that gives the buyer the right but not the obligation to buy or sell a specified good at a specified price on or before a specified date (Sundaram & Das, 2010). While the buyer enjoys the right but not the obligation to exercise the option the seller has an obligation to fulfill the options contract in the event the buyer chooses to exercise the option. There are two types of options, a call option which gives the holder the right to buy a specified good on or before a certain date at a set price, a put option which gives the holder the right to sell the specified asset on or before a certain date for a set price. Options are also distinguished by when the right must be exercised. In a European Style option the right may only be exercised on the maturity date. In an American style option the right may be exercised any time before the maturity of the contract. Since an option comes with the right but not the obligation, the holder of the option will only exercise the right when it is in his best interest to do so (Ben-David, 2013). Therefore options are in essence a form of financial insurance and the seller of the option must be compensated for giving such a right. The compensation is called the premium and is an upfront payment to the writer.

There are two main reasons why a company would use options: to speculate and to hedge. In this study the focus is on hedge. An option is a contract that gives the buyer the right, but not the obligation, to buy or sell an underlying asset at a specific price on or before a certain date. An option, just like a stock or bond, is a security. It is also a binding contract with strictly defined terms and properties (Investopedia, 2014). Hedging using options is similar as buying insurance policy i.e. options are used to insure an investments against a downturn.

Unlike futures and forwards, options allow one to be protected from downside risk while still enjoying possible upside benefits. Moreover options are not marked-to-market and thus do not have daily margin requirements; this can potentially provide the firm with serious cash flow relief (Ben-David, 2013). The disadvantage arises in the cost of option premiums that are often more expensive then forwards or futures due to the financial insurance provided.

RESEARCH METHODOLOGY

This study adopted a descriptive and explanatory research design. This design enabledthe researcher get information on the various strategies used by airlines to hedge fuel prices and explain how these strategies affect the profitability of the business.The study population comprised of the 15 commercial airlines registered in Kenya by the Kenya Civil Aviation. However, the target population comprised of183 management staff particularly the top and middle level management from the airline companies in Kenya. For this study, a sample of 30% (55 respondents) wastaken using stratified random sampling. According to Kothari (2004), a sample of 30% of the target population is usually representative and generalizable.

This study used both primary and secondary data.Secondary sources of data on fuel hedging were collected from books, academic journals, periodicals and the internet. On the other

hand, the primary research data was collected from the management staff working at airline companies in Kenyausing a self-administered semi structured questionnaire. The questionnaire designed by the researcher based on the research questions was pilot tested to refine the questions before it can be administered to the selected sample. The quantitative datacollected was analyzed through descriptive statistics such as measure of central tendency and time series analysis that generate relevant percentages, frequency counts, mode, and median and mean where possible. For inferential statistics, multipleregressionwas done to establish the correlation between fuel hedging strategies and the airline's productivity. The regression equation estimated was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where Y is the dependent variable (Airline Profitability), β_0 is the regression constant, β_1, β_2, β_3 and β_4 are the coefficients of independent variables, X_1 is futures, X_2 is forwards, X_3 is swapsand X_4 is options.

RESEARCH RESULTS

A pilot study was carried out to determine reliability of the questionnaires. The findings illustrates that all the four variables were reliable as their reliability values exceeded the prescribed threshold of 0.6.

Table 1: Reliability Analysis

Scale	Cronbach's Alpha	Number of Items
Futures	0.835	4
Forwards	0.798	7
Swaps	0.819	4
Options	0.915	3

Relationship between Futures Use as a Hedging Strategy and Profitability

To establish the extent to which the use of futures contributes to profitability (losses) the study also estimated a univariate regression model where the results are as presented in the table 2.

Table 2: Effect of Futures Usageas a Hedging Strategy on Profitability

	Unstandardized Coefficients		t	Sig.
	β	Std. Error		
Constant	3.138	0.474	6.616	0.001
Futures Usage	0.029	0.053	2.547	0.046
F-statistic	3.299			
Prob (F-stat)	0.004			
Coefficient of Determination	0.447			

The results in the Table 3 above indicates that the use of futures have a positive effect on the profitability levels of the organization. This is indicated by a positive beta coefficient of 0.029 which is found to be significant at 5% significance level given that the critical t-statistic reported is 2.547 which is associated with a probability of 0.046. The variance in this case is an insignificant 0.447, 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.

Earlier empirical studies showed that there is a relationship between financial derivatives and fuel costs (Kaufmann & Ullman, 2009). Bopp and Sitzer(2007) in a study also showed that futures prices have a significant effect on profitability. Further, British Airways CEO Rod Edington's commented that hedging does not save a company bills, but only flatten the bumps and remove the spikes, shows similarities with this study that there is a relationship between the use of financial derivatives and profitability in airline companies in Kenya. In the case of Kenyan Airlines, a positive relation between futures use and cash flows/profitability (losses) is seen by regressing the futures expenses against the profitability/losses recorded by the industry which shows that high futures costs coincide with higher profitability levels. In this case therefore there is sufficient evidence to conclude that higher usage of futures is associated with higher levels of profits at the 5 percent significance level. As a result, a one standard deviation change in usage of futures would lead to a 2.9 percent decrease in profits recorded.

Relationship between Forwards Use as a Hedging Strategy and Profitability

The Table 3 presents the relationship between the use of forwards as a hedging strategy and Profitability (Losses).

Table 3: Effect of Forwards Usage as a Hedging Strategy on Profitability

	Unstandardized Coefficients		t	Sig.
	β	Std. Error		
Constant	2.349	0.577	4.073	0.007
Forwards Usage	0.3181	4.003	2.008	0.032
F-statistic	5.017			
Prob (F-stat)	0.05			
Coefficient of Determination	0.145			

As indicated in the table 4above the results showed that the use of forwards has a positive significant effect on the levels of profitability. This is indicated by a positive beta coefficient of3.181. The results further indicated that model goodness of fit for the estimated regression was significant as indicated by an F-statistic of 5.017 which was established to be significant at 5%. The results further indicate that the coefficient of determination was 14.5% indicating that the variance in this case is significantly low and thus is considered to be immaterial. However it is an indicator that other risk mitigating factors practiced by the organization have

a direct impact on corporate profitability. Further, in this case there is sufficient evidence to conclude that higher usage of forwards are associated with lowerlevels of profits at the 5 percent significance level. As a result, a one standard deviation change in usage of forwards would lead to a 31.81 percent increase in profits recorded.

Relationship between Swaps Use as a Hedging Strategy and Profitability

The Table 4 presents the relationship swaps use as a hedging strategy and profitability (losses).

Table 4: Effect of Swaps Usage as a Hedging Strategy on Profitability

	Unstandardized Coefficients		t	Sig.
	β	Std. Error		
Constant	11.368	3.153	3.605	0.011
Swaps Usage	0.476	0.177	2.687	0.036
F-statistic	7.221			
Prob (F-stat)	0.036			
Coefficient of Determination	0.546			

From the above analysis the results indicates that the estimated goodness of fit of the model was satisfactory as indicated by an F statistic of 7.221 reported in Table 5 above. Further the results above indicated that 54.6 % of the variances in the swaps usage as a hedging strategy explains the variations in profitability (losses). The results further revealed that the use of swaps has a positive significant effect on profitability as indicated by a positive beta coefficient of 0.476. The results shows that hedging strategy do impact in the company value positively.

Relationship between Options Use as a Hedging Strategy and Profitability

Table 5 presents the relationship between options use as a hedging strategy and profitability (losses).

Table 5: Effect of Options Usage as a Hedging Strategy on Profitability

	Unstandardized Coefficients		**t**	**Sig.**
	B	**Std. Error**		
Constant	1.912	0.383	4.991	0.002
Options Usage	0.156	0.057	2.748	0.033
F-statistic	7.552			
Prob (F-stat)	0.033			
Coefficient of Determination	0.557			

The regression analysis results indicated that the estimated goodness of fit of the model was satisfactory as indicated by an F statistic of 7.552. Further the results above indicated that 55.7 % of the variances in the options usage as a hedging strategy explains the variations in

profitability (losses). The regression results also in indicated that options usage had a positive (β = 0.156) and significant (*p-value* = 0.033) relationship with the profitability (losses).

Effect of Hedging Strategies Use on Profitability

Table 6 indicate the goodness of fit for the regression on the effect of hedging strategies use on profitability, the results indicated that the R squared was 0.811 indicating that 81.1 % of the variances in profitability was explained by the variations in the hedging strategies used. Further, the model was established to be significant as indicated by an F statistic of 85.1914 as reported in Table 6 below and this was further supported by a probability value of 0.002 which is less than the conventional threshold probability of $p \leq 0.05$.

Table 6: Effect of Hedging Strategies Use on Profitability

	Standardized Coefficients β	**t**	**Sig.**
Constant	0.390	-3.758	0.033
Futures Usage	1.009	3.162	0.041
Forwards Usage	0.723	4.744	0.018
Swaps Usage	0.794	3.702	0.034
Options Usage	1.751	8.317	0.004
F-statistic	85.914		
Prob (F-stat)	0.002		
Coefficient of Determination	0.811		

The multivariate regression analysis performed indicated that the use of fuel hedging strategies has a positive significant effect on the profitability. In particular, the results in table 7 above indicate that the use of futures is associated with a positive beta coefficient of 1.009 on profitability. It was also established that forwards usage has a positive effect on profitability as indicated by a beta coefficient of 0.723. Swaps Usage and Options Usage both also were established to have a positive impact on the levels of profitability as indicated by beta coefficients of 0.794 and 1.751 respectively. A plausible explanation for this situation relies on the fact that, hedges have been successful in preventing major impacts in cash flows,however, the situation currently experienced by the company has to a large extent been influenced by other factors other than hedging strategies. This confirms the quantitative analysis results that hedging fuel price risks has a direct impact on corporate profitability. Cartet (2006) found a positive relationship between hedging and firm value when using a hedging dummy. Allayannis and Weston (2001) had similar results in their research.

CONCLUSIONS

Fuel hedging is valuable for airline companies as it is a tool to stabilize overall costs and reduce the volatility of profitability. This is supported by the positive relationship established between hedging strategies and profitability. This is consistent with the view of Morrell and

Swan (2006) who support that if a company hedges continuously and for a long time horizon, its profits are expected to remain stable but in practice it may not mitigate volatility.

The study concludes that that futures hedging strategy on fuel prices affect the profitability of airlines to a very great extent. Long and short futures have a positive effect on the levels of profitability. Futures can be used by the airlines as tools that mitigate the risk exposure of jet fuel price changes and even when they anticipate that the price of a contract will decrease and guarantees performance of the contract since buyers and sellers are not exposed to default risks. This concur with Sundaram and Das (2010) who stated that hedging using futures can be used by an airline when they anticipate that the price of a contract will decrease and guarantees performance of the contract since buyers and sellers are not exposed to default risk, parties are exposed only to the default risk of the exchange which in reality is very low.

The study concludes that fixed forward, forward contracts, non-deliverable forwards and outright forwards affects profitability of airline companies to a great extent and that use of forwards by airline companies in Kenyahas a positive effect on the levels of profitability. This implies that increased usage of forwards would increase the profitability whereas a decrease usage would imply that the firm experiences losses. As a result forward contracts can help to protect airline companies against any possible negative change in fuel price. The findings are in line with Bessembinder (2011) that forward contracts helps protect a company against any possible negative change in fuel price and there are no additional price complications in execution from doing a spot trade and can also be tailored to the specific needs of the firm and an exact hedge can be obtained.

The study also concludes that plain vanilla energy swap, differential swap and floating swap have great effect on the profitability of airline companies in Kenya and that there exists a positive and significant effect of the usage of swaps on the levels of profitability. This implies that purchasing a jet fuel swap will allow airlines to hedge their exposure to unpredictable jet fuel prices. Consistent with this, Mercatus (2014) stressed that purchasing a jet fuel swap allows airlines to hedge their exposure to unpredictable jet fuel prices. If the price of jet fuel increases, the gain on the swap will offset the increase in their actual fuel cost.

The study further concludes that call options, put options and fixed options affect profitability of airline companies to a great extent and that there exists a positive relationship between options use as a hedging strategy and profitability.The findings are in line with Meera (2002) that call options are often the ideal hedging instrument for many companies as they provide a hedge against rising prices while also providing the opportunity to benefit from lower prices, should prices settle below the strike price of the option. The study finally concludes that the profitability of airline companies measured in terms of return on invested capital, gross profit margin, overhead ratio and return on asset have improved over the past five years. This indicates that application of the four hedging strategies positively affects the profitability of airline companies. This confirms the quantitative analysis results that hedging fuel price risks

has a direct impact on corporate profitability. Cartet (2006) found a positive relationship between hedging and firm value when using a hedging dummy.

RECOMMENDATIONS

From the study it was found that hedging fuel prices affects the profitability of a business organization directly and thus can be used to cushion on price swings. For instance, when the company gets it wrong in hedging, then this directly impacts on the organizations profits and vice versa. 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 a higher proportion of the organizations operating costs.By fuel hedging, airlines reduce cash flow volatility, improve its cash position thus enhance its flexibility in investment policies during economic downturns. Fuel hedging makes sure airlines have some parity in fuel costs with competitors and prevent competitors from undercut on prices.

The study recommends that the issues related to that futures hedging strategy on fuel prices should always be taken in to account to improve the airlines company transactions and hence profitability. The standardization of prices makes the futures market more liquid then the forward market.The study recommends that forward contracts among airline companies should be continued to mitigate the risk exposure of jet fuel price changes. The management structures need to be put in place so as to facilitate forward contracts and in turn maximize profits to the airline companies.

The study also suggest that despite concerns that swaps among airline companies entail new market risks that need regulatory intervention, the profitability and generally performance of the airline companies has not changed so much. However, market risk does vary considerably across the airline industry. Therefore a better way of assessing the risks associated with swaps and how these risks affect the airline companies in general must be undertaken.

Our evidence suggests that options do improve the profitability of the airline companies as it allows airline companies to buy fuel at specified price on or before a specified date. The study recommends that the airline companies should consider options as an essence form of financial insurance as it mitigates their exposure to potentially rising fuel prices.

This study concentrated on the effects of hedging fuel prices on the profitability of commercial airline companies in Kenya. However, organizations are faced by several risks which require management if the organization is to record positive performance. This study therefore suggests that future studies be carried out on other risk management practices adopted by commercial airline companies in Kenya and how they affect profitability of these firms. Some of these risks may include financing risks, reputation, and human capital competence.

Since studies on effect of hedging on profitability has not been fully studied, the researcher recommends that further and extended research be carried out on other companies in Kenya in order to come up with more findings that this study may not have been able to reveal.

REFERENCES

Allayannis, M. A. and Weston, P. (2001). The Organization of Foreign Exchange Risk Management: A three-country study. *Managerial Finance*, 28(11), 43-52.

Ben-David, T. A. (2013). The effectiveness of hedging foreign exchange rate risk: an emerging market perspective (Doctoral dissertation).

Bessembinder, D. (2011). *Does Fuel Hedging Make Economic Sense? The Case of the US Airline Industry*.Social Science Research Network.

Blodgget, T. (2012). *Hedging with Forwards and Futures.*Darden School Foundation.University of Virginia.

Bopp, G. and Sitzer, L. (2007).*Fuel Hedging in the Airline Industry: The Case of Southwest Airlines.* Retrieved from

Cartet, M. (2006). Who Manages Foreign Exchange Risk? *Managerial Finance Journal*, 23(7), 58-84.

Constant, M. (2014). KQ to renegotiate fuel deals in light of falling oil prices. *theSTAR* .

Faaij, P. D. (2012). *White Paper on Sustainable Jet Fuel.* Retrieved 2015, from http://skynrg.com/wp-content/uploads/2013/11/White-paper-on-sustainable-jet-fuel-June-2012-Faaij-van-Dijk-copy.pdf

Gatonye, N. (2011). *Strategic Response to fuel crisis case stdy of Kenya Airways.* Nairobi: USIU.

Kaufmann, M. & Ullman, T. (2009). Firm Value and Hedging: Evidence from U.S. Oil and Gas Producers. *The Journal of Finance*, 61(2), 893-919.

Meera, K. (2002). Fuel-Hedging Key to Financial Planning", *The Wall Street Journal*, 2(3), 31-38.

Mercatus, H. (2014). To hedge or not to hedge: The performance of simple strategies for hedging foreign exchange risk. *Journal of Multinational Financial Management*, 11, 213-223.

Morrell, P. (2006). Airline Jet Fuel Hedging: Theory and Practice. *Transport Reviews* , 713-730.

Morrell, P. and Swan, W. (2006).*Airline Jet Fuel Hedging: Theory and Practice.* Transport Reviews, Vol. 26, Issue 6 pp. 713 – 730. Department of Air Transport, Cranfield University: Bedford, UK.

Ndosi, J. M. (2013). *The Relationship Between Use Of Financial Derivatives And Fuel Costs In Kenya Airways.*Unpublished Master Of Science In Finance project, University of Nairobi.

Nzuki V. G. (2009). *Managing Price Risk Using Futures: Case Of Oil Companies In Kenya.*Unpublished MBA project, Kenyatta University.

Okuto, E. B. (2011). *The management of financial risk exposure of fuel price changes in the Airline Industry: the case of African Airlines*. Unpublished MBA project, University of Nairobi.

Pelletier, D. (2006).Jet Fuel - To Hedge or Not to Hedge?(Part 2), *The Traders journal*, 4(2), 12-16.

Sundaram, B. B. & Das, P. R. (2010).*Can Selective Hedging Add Value to Airlines? The Case of Crude Oil Futures.*International Review of Applied Financial Issues and Economics, Vol.1, No.1, pp 130-146

Tanui L. K. (2015). *Determinants of Corporate hedging practices used by companies listed in the Nairobi Stock Exchange (NSE*).Unpublished MBA project, JKUAT.

Trempski, R. (2009). Does Fuel Hedging Add Value? Quantitative Analysis but Qualitative Conclusion in the Case of the US Airline Industry. *Undergraduate Economic Review* , Vol. 5: Iss. 1, Article 9.