

**THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND
PROFITABILITY AMONGST AIRLINE FIRMS IN AFRICA.**

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DECLARATION

This is to certify that this research proposal is my original work and has not been presented for a degree award in any other university or institution of higher learning. Information from other sources has been duly acknowledged.

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ABSTRACT

Airline firms in Africa have over the years exhibited difficulties in staying in operation and in over 700 firms that have been registered , only about 45 are currently active and in operation . Even amongst those in operation, achieving profitability is seemingly difficult and most of these firms are in debt and rely heavily on government subsidies or debt from private sector players, a key example being our flag carrier, Kenya Airways. Several factors come into play but key among them is the sources of financing used, inherent in the capital structure. The study looked at the uses and importance of leverage in influencing financial performance of these firms. The study adopted an ex-post facto design and used published financial reports to analyze levels of debt inherent in their capital structure. The study period was 2012 to 2016. Data obtained was analyzed using inferential statistics, regression and correlation analysis methodology. Leverage ratios were regressed against reported performance results. It was found that return on employed capital was improved when the firms applied leverage to a certain extent, and excessive use of leverage was found to be associated with negative equity and firm value in severe cases. Debt to capital employed was found to be statistically significant whereas interest cover ratio and debt to equity ratio were not as statistically significant. The regression model was found to be significant. The study recommends that there be industry standards on use of leverage for airline firms so that only a healthy range of leverage is employed. The major limitation to this study was availability of publicly accessible published financials. Airline firms, especially state owned did not publish annual financials and therefore only firms whose equity was majorly owned by common stock holders upheld the practice of publishing annual reports. The study recommends that future researchers study more of the performance measures and contrast them with leverage to strengthen the business case for regulated debt usage in the industry.

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

Aviation sector provides a worldwide network for transportation, making it essential for tourism and global business. The demand for air services increases the influence of air transport on the global economy, enhancing rapid movement of billions of dollars' worth of goods to markets around the world, as well as the movement of millions of people. (Group, 2005) In Kenya, the need to travel for leisure, business, or to offer relief and humanitarian assistance in various parts of our country and beyond has significantly stimulated the growth of the aviation industry. (Brown, 2011). The publication summarizes some of the economic benefits of Air transport to include worldwide transportation network for global business and tourism, direct and indirect job creation and contributor of significant sectorial revenues through taxation. The sector is also responsible for social benefits such as social inclusion of remote areas not covered by other forms of infrastructure, broadening peoples cultural and leisure experiences, facilitating tourism and trade, enhancing humanitarian and emergency aid, and overall stimulation of economic growth and investment for various sectors within the economy.

Historically, aviation in EAC states and Kenya followed mostly British rule and regulation until the establishment of the East African Common Services Organization (EACSO) in 1963. Upon collapse of the East African Community (EAC) in 1977, each member state established its own infrastructure, flight information region and national carrier based on what existed in its territory at the time. Kenya Airways, the national flag carrier was thus established in 1977.

The Kenyan draft Aviation Policy was revised in 1999 incorporating notions like, code sharing amongst airlines, liberalization and computer reservation systems.

The challenge after liberalization of the air transport sub sector in 1990's has been for the Government to meet local airline firms needs by providing services and the necessary infrastructure.

The infrastructural challenge is quite prevalent in Africa, and aviation corporations such as African Airlines Association (AFRAA) have been at the forefront of appealing to African governments to prioritize on provision of infrastructure, needed to stimulate sectoral growth and address sustenance of players in this industry.

Jomo Kenyatta International Airport is currently the flagship airport of the Kenya Airports Authority, and serves over 40 passenger airlines and 25 cargo airlines, as informed on its website. It is the busiest airport in the East African region, and was recently ranked best airport in Africa and 38th globally in the 2018 rankings by Airhelp. (Okendo, 2018) Airline carrier players in Kenya comprise domestic, regional and international carriers.

Globally, air transportation plays a fundamental role in driving world economies, having both social and economic impacts. (Brown, 2011) . Airline firms, as part of the aviation sector are faced with the decision on how to finance the firm's business strategy in a bid to ensure profitability and viability. In that sense, the same principles of corporate funding apply to airline firms, considering the unique features embodied in airline business.

If we turn our focus to airline firms in Africa, there has been a marked trend of airline firms closing down shop due to a lack of profitability and financial viability. The reasons for this could be multi-faceted, however this study looks at the capital structure component of these airline firms. According to the International Airline Transport Association (IATA), African Airlines made a comprehensive loss of US\$700 million in 2015, followed by a loss of US\$ 500 million in 2016. Whereas it seems airlines in Africa play their part, the States' complementary support in crafting of legislation, development of infrastructure, industry regulation and generally creating a conducive environment for air transport development is critical (African Airlines Association, 2017). This study therefore analyses financial performance of these African Airline firms including that of our flag carrier, Kenya Airways, in a bid to establish the existing relationship between financial performance and capital structure.

1.1.1 Capital Structure

Capital structure normally refers to the proportion of a firm's capital which is equity or debt. (Arnold, 2007). The term capital structure is also used to refer to the mix of long term debt and equity financing (Brealey, Myers, & Marcus, 2003). This study will explore this concept under the assumption that the firm's goal is value maximization and profitability.

It is measured in terms of ratios that compare level of debt in relation to equity in a firm's financial structure.

For purposes of this study, leverage ratios will be the main capital structure determinant. Leverage ratios or gearing ratios are the principle measure of a firm's capital structure and its exposure to financial risk. (Ryan, 2007)

We will be seeking to understand the role of financial leverage that an airline can gain by use of debt in contrast to operating leverage that comes purely from use of equity in understanding the firm's choice between debt and equity. Optimal capital structure will be that point where the cost of capital and risk of business will be minimized. Of interest to us is whether there is a particular leverage range that is suitable to airline firms', that takes into consideration the uniqueness of this business.

Financial leverage according to Lasher (2008) is using borrowed money to multiply the effectiveness of equity employed in the airline company. This is however a double edged sword as it can multiply good results into great results and bad results into terrible ones. Use of debt implies existence of financial risk in addition to already existing business risk. On the other hand, a low debt ratio might indicate that a company is missing out on expansion opportunities and is not necessarily considered a good thing.

There are three main implications of the extent to which a firm employs debt. (Ehrhardt & Brigham, 2011). Firstly, creditors look to owner supplied funds or equity to provide them with a margin of safety, since creditors face lower risk if the proportion of funding by shareholders is higher.

Secondly, if the level of earnings from a firm's investments financed by borrowed funds is higher than what it expends in interest payments, then its shareholders' returns are magnified or leveraged. This also means that their risks are also magnified. And lastly, when funds are raised by way of debt, stockholders get to retain their level of control in the firm without having to augment their investment level.

The exact form of debt that the airline chooses can be used to further analyze the business risk that the airline is facing. This is supported by the pecking order hypothesis. Debt can take the form of bank loans, issuance of bonds or more structured debt instruments. High levels of bank loans in its debt composition would therefore be seen as a symptom of financial difficulty, and the need for the carrier to raise funds in any form possible to finance its working capital requirements.

Some of the most common asset based measurement ratios include debt to equity ratio as well as debt to capital ratio.

Debt ratio, or debt to capital ratio refers to the percentage of debt in the capital structure. (Brealey, Myers, & Marcus, 2003).

Debt to equity ratio is a measure of capital, specifically capital from creditors (debt) as compared with capital from owners according (Brealey, Myers, & Marcus, 2003). Creditors will interpret a higher debt to equity ratio as risky due to the implication that investors haven't funded the operations in the scale that other creditors have.

Ideally, healthy firms service their debts from earnings rather than assets disposals (Sutton, 2000) and for this reason, this study also looks at interest cover ratio. This ratio tells us by how much a company's operating earnings cover financial charges.

In the firm's balance sheet, assets are categorized with the principle asset item categories appearing first in order of liquidity. Airline firm will usually have airline equipment as non-current assets.

Some of the challenges of using these two measurement ratios according to Investopedia include the fact that these are not pure measurements of company debt due to the inclusion of operational liabilities as part of total liabilities. As well, these measurement ratios do not take into consideration the differential nature of industries.

Airline firms are capital intensive in nature (Gilloreto, 1988) and will therefore lean towards use of debt in comparison to other industries.

Other limitations to ratio analysis including distortion from seasonal factors in this industry and companies choices of different accounting practices also present a challenge (Ehrhardt & Brigham, 2011).

1.1.2 Profitability

Profitability in loose terms would describe the relative success of a company's operations. (Gibson, 2011). This would refer to a firm's ability to generate incomes. This would be measured in the firm's income statement after summarizing revenues and expenses, gains and losses.

A number of profitability ratios can be used to determine overall performance, such as Return on Assets (ROA), Return on Capital Employed (ROCE) and Return on Investment (ROI). This study focuses on ROCE due to the fact that it takes into account long term financing, and is more useful in this sense than ROE. Profitability ratios have been defined as financial metrics that are used by investors and analysts to evaluate and measure the ability of a firm to generate income relative to balance sheet items, revenue, shareholders equity and operating costs during a specific period. (Corporate Finance Institute, 2015)

Profitability ratios assist in bringing out combined effects of debt, asset management and liquidity on operating results. (Ehrhardt & Brigham, 2011)

It appears that airline profitability follows cyclical patterns due to the nature of the industry (Doganis, 2001). He goes on to inform that airline industry is not very profitable compared to other industries. The implication here is on airline firms' abilities to generate revenue relative to investment in them.

There are challenges encountered in measuring profitability as a performance measure as defined by research scholars.

Measurement of operational performance is no doubt a complex and multidimensional phenomenon (Gess & Richard B Robinson, 1984).

Researchers frequently encounter difficulty obtaining accurate measures, especially if we consider the variance in accounting procedures and policies used to report net income. As well, as earlier noted, this is a cyclical industry, with peak and low seasons alternating throughout the year. This causes distortion of measurement when reliance is placed on industry averages.

1.1.3 Capital Structure and Profitability

The question of whether capital structure matters in influencing a firm's value and financial performance, thereby implying profitability, is an area that has attracted a lot of scholarly reviews over the past decades. Studies show that value of a firm is affected by the relationship between capital structure debt composition and profitability, and a few theories that have been advanced to expound on this relationship.

Modigliani and Miller in their now famous MM arbitrage propositions on whether the way in which a firm is financed has any effect on its value and profitability is one of the base theories that support this base logic. In their irrelevance theory proposal, they put forth the proposal that capital structure does not affect a firm's value or that there is no such thing as optimal capital structure (Popescu & Visinescu, 2009). The main criticism on this hypothesis was that the assumptions were made in relevance to a perfect market condition that does not exist in real life. (Arnold, 2007).

Their later revision incorporated this real life situations, leading to an acknowledgement on significance of tax shield on a firm's value.

The pecking order theory hypothesizes that information signaling effects and contracting costs to raise new finance create a pecking order of attractiveness of different sources of finance (Ryan, 2007).

In this way internal financing is seen as favorable to external financing and even when the firm has to source externally, safe debts such as bank loans is preferred. For purposes of this study, this might imply a conservative approach to use of financial leverage, which can be observed from available airline financials.

Trade-off theory argues that the value of a levered firm is equal to that of an unlevered firm plus value of any side effects such as tax shield and expected costs of financial distress. Firms have to trade off the benefits of tax shield from debt financing against higher interest rates and bankruptcy costs in settling on their capital structure composition (Ehrhardt & Brigham, 2011).

Signaling theory is also relevant to this study since broadly speaking, the announcement of a stock offering is mostly interpreted as a signal that the way in which the management sees the firm's prospects are not good; and on the other hand , a debt offering is interpreted as a positive signal. (Ehrhardt & Brigham, 2011)

Another theory (Jensen & Meckling, 1976) looks at agency problems which may arise if a conflict of interest exists between managers and shareholders.

One of the proposed ways to curb on spending that does not increase shareholders wealth would be to lean more towards debt. This would force managers to be more disciplined due to debt service management. (Ehrhardt & Brigham, 2011)

The relationship between capital structure and profitability appears to be challenging to confirm empirically due to the fact that there are several other factors that drive profitability in a firm. This is because numerous empirical relationships exist between various factors and corporate leverage (Popescu & Visinescu, 2009)

In deciding on the capital structure, a firm can choose to issue equity to pay off debt thereby minimizing the debt equity ratio, or to issue bonds and use the proceeds to buy back stock thereby increasing the debt equity ratio. These activities are known as restructuring activities and will normally leave the firm's assets unchanged.

The guiding principle here is to select the choice that maximizes the value of the firm. (Ross, Randolph, & Jordan, 2001).

1.1.4 Airline Firms in Africa.

Africa has about 54 countries and approximately 45 airline carrier companies appearing on the IATA's Operational Safety Audit (IOSA) registry. This is a mixture of both state and privately owned firms. The exact number of airline carriers varies because of constant registration and deregistration of members from the two major bodies serving African airline interests, International Air Transport Association (IATA) and African Airlines Association (AFRAA).

Most African countries desired their own flag carriers after gaining independence from European powers. Every country in Africa has either had one in the past, or currently has one. (Guttery, 1998)

The situation in Africa is that while quite a number of air markets between countries outside of Africa and Africa are liberalized to a significant extent, the case is not so for many intra-African aviation markets, as a result of restrictive bilateral agreements which serve to limit development and growth of intra-African air services. (Inter Vitas Consulting Ltd , 2014).

In addition there is a prevailing issue of blocked funds in some countries in Africa, whereby revenues earned by these firms cannot easily be repatriated to the parent company state.

In Kenya, the regulatory body in matters of aviation security and safety, consumer protection, airworthiness, personnel licensing and flight operations is the Kenya Civil Aviation Authority. (KCAA). The domestic airline industry is currently serviced by an estimated 14 carriers and air charter services, according to KCAA.

Upon collapse of the East African Community (EAC) in 1977, each member state established its own infrastructure, flight information region and national carrier based on what existed in its territory at the time. The first draft Kenyan Aviation Policy was

written in 1978 and revised in 1999 incorporating notions like, code sharing amongst airlines, liberalization and computer reservation systems.

The challenge after liberalization of the air transport sub sector in 1990's has been for the Government to accommodate the needs of both domestic and international air operators through the provision of efficient and reliable services at all aerodromes. Kenya Airways, our national carrier was thus incorporated in 1977.

This was a state owned carrier, however due to a loss making trend over the past 5 years, the airline has recently undergone restructuring and privatization. This move was necessitated by an all-time low loss making position of KES 27 billion shillings as at close of financial year 2016.

A sessional paper on integrated transport in Kenya indicates that air transport infrastructure including air navigation systems, runways, terminal building utilities, control towers and buildings housing radar are not in satisfactory state of repair and require rehabilitation. (Ministry of Transport , 2010) It is in this environment that the current local airlines in Kenya are operating. The situation seems to be replicated across the continent, hence the recommendation that African states play their role in boosting infrastructure, as a driver of development in order to foster growth of airlines in Africa. (African Airlines Association, 2017).

Having had an appreciation of the difficult environment in which majority of the airlines in Africa operate, it is important to turn our attention to other drivers of sustainability for these firms. Sources of capital to finance these firms' operations is definitely a fundamental factor in sustenance. Importance of airline firms capital structure must be explored as it would assist with the combating the current challenge of sustenance, even as the continent awaits the much need participation of states in infrastructural development. It is important to explore a financing structure that supports these firms in this difficult and dynamic operating environment.

The balance sheets of most airline firms in Africa reveal a highly levered position. (African Airlines Association, 2017).

The report goes on to reveal that African airlines posted an aggregate net after tax loss of US\$700 million in 2015 and US\$500 million in 2016.

The losses were mainly attributable to the various challenges that were faced such as impact of low commodity prices, blocked funds in some African states and currency fluctuations particularly for oil exporters, as well as oil prices. (African Airlines Association, 2017). Of interest to this study is the debt structure of these firms.

As an example Kenya Airways underwent a debt to equity restructure in what has been hailed as the one of the most complex financial transactions in the region. (Kamau, 2017)

1.2 Research Problem

Just like any other commercial enterprise, airline companies would need to follow a competitive strategy that ensures their survival in their operating environment, which as we have noted earlier has had numerous challenges in the continent. This would include a financial strategy that matches the business risk that the African airlines are facing today. This study therefore focuses on the importance of the capital structure aspect of financial strategy given the business risk, to explore the possibility of existence of a target debt ratio or a range of debt ratios that can influence profitability over others.

One of the longest standing unresolved questions is whether firms have target debt ratios. (Graham & Harvey, 1999).

Profitability remains a challenge to most airlines firms in Africa in most cases leading to ceasing of operations. According to the airline history websites, for instance, out of the 129 domestic airline companies registered in Kenya since inception, only about 19 are still active as at today. Many government owned airlines in Africa are overseen by appointees of the state, who are not necessarily qualified for the positions (Guttery, 1998). These are therefore poorly managed and greatly overstaffed beyond requirements for efficient operation. This leads to extreme unprofitability or closure.

In the recent past, there has been efforts towards privatization of African national carriers. The author informs that there have been about 700 registered airlines in Africa, yet statistics show only about 45 active airlines today.

Annual reports from AFRAA for the year 2017 report an aggregate net after tax loss of US\$700 million in 2015 and US\$500 million amongst airlines in Africa.

This measurement only includes the 16 African airline carriers that availed their financial reports to the establishment for measurement purposes. It remains a challenge to access most of the African airline financials, especially those that are privately owned.

Viable and profitable airline firms would have direct social and economic benefit to the continent at large.

The Air Transport Action Group sessional paper (2005), gives us an insight on the social and economic benefits of air transport to any given country, which include provision of linkages to a worldwide transport network, which is essential for global business and tourism.

According to IATA's report on aviation's economic benefits, these can be measured by the sectoral contribution to GDP, job creation as well as tax revenues generated by the sector and its supply chain (Group, 2005). The ATAG paper goes on to indicate that in some remote areas in Kenya, air transport is the only form of transport, and this provides social inclusions in such regions, thereby allowing provision of humanitarian relief.

This is especially efficient in allowing the government to cater for social needs by transporting food supplies, medicine and others thereby helping to promote quality of life in these areas. Another notable benefit of having profitable and sustainable airline firms is provision of revenues to the government, through sectorial taxation.

The empirical review carried out unearths research works, whose objective is to analyze the relationships between capital structure and profitability, some in the airline transportation sector. Most of the studies reviewed, focused on capital structure in other industries, e.g. manufacturing and banking, as these are mainly publicly listed firms in the various stock exchanges. This informed the research gap, as the need to analyze

whether capital structure has an effect on financial performance on the regional aviation industry has not been fully researched.

This study analyses the existence of a relationship between elements of corporate finance, specifically leverage ratios, and regional airline firm values as well as their resultant profitability. Localization of the study would benefit players and stakeholders locally, as there is need to study these elements and how they impact the country dynamics.

Certain industries have a debt or equity threshold that is catered for in the regulations. For instance, UK banks are required to hold a base regulatory capital of at least 8% of their risk weighted assets plus additional capital intended to reflect various capital buffers. Drawing from this concept, this study will seek to establish whether there is an optimal target debt ratio range for airlines.

The main question is whether there is an optimal leverage ratio or target debt ratio that is inclined to boost profitability in regional airline firms.

1.3 Research Objectives.

The purpose of this research paper is to determine whether capital structure debt composition has a direct determination on the firms value; specifically its profitability.

Is there an optimal financing strategy and capital structure that can be employed by airlines that both maximizes the firm's value and ensures profitability of the firm given the local market risk? Is there an optimal debt equity mix for the regional airline industry that favors profitability?

1.4 Value of the Study

Findings from this study may be useful in establishing industry frameworks for appropriate debt levels for airline industry.

It may also be useful for the organs representing the airline industry in Africa to lobby governments on the need to invest in the aviation sector, in order to reap the much needed economic benefits.

The rational investor seeks to maximize his return at the lowest level of risk. (Markowitz, 1952). Profitable airline firms will attract investors and shareholders, and this allows greater leeway to finance the various strategies of the firm.

This study can also be of use to airline firm's management in decision making positions of existing regional carriers in establishing an appropriate financing structure that supports survival of the firm, and enhances value for the shareholders. This study would also benefit lenders and financial institutions of airline companies and their related service providers, as they would benefit from setting their levels of lending to the sector. It would be useful in setting up specific lending policies for this sector.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, literary theoretical evidence on effect of capital structure on firm's financial performance is reviewed. This starts with a basic mention on existing capital structure theories that lend to the argument on capital structure impacting on profitability. The study tries to identify any similarities between these models to the actual airline firm trends.

A number of theories have been advanced surrounding capital structure and its effects on a firm's value. These include capital structure theories of Net Income Approach, Net Operating Income Approach, Traditional approach and MM theory. Some of the profitability theories include Pecking order theory and Free Cash Flow theory

This study looks at the Pecking order theory, MM Theory and Trade-off theory in a bid to expound on the implied theoretical relationships between capital structure and profitability.

The study goes on to review the determinants of profitability in airline firms, while describing salient features of the airline business. A number of empirical studies will then be reviewed and linked together with a conceptual framework.

2.2 Capital Structure Theories.

According to Pike et Al, (2006), an airline firm just like any other venture will be looking to combine different sources of finance in a bid to attain an optimal capital structure, which should ideally be the point at which its cost of capital is at its lowest. Most financing decisions are reduced to a choice between debts versus equity.

This is because a finance manager who wishes to fund a new project, but who is reluctant to make a rights issue or cut down on dividends or has to consider borrowing. It is important that a clear rationale to support the case of debt as opposed to retentions. There are different base theories on composition of capital structure and its effects on a firm's value, and this study will be validating the capital structure theories in the context of airline firms.

2.2.1 Modigliani – Miller Theorem

This is arguably one of the earliest theories on capital structure as put forth by Modigliani and Miller (1958), and is more popularly referred to as the capital structure irrelevance theory. Many consider this as the initial generally accepted theory of capital structure (Popescu & Visinescu, 2009). This is because the theory proposed that a company's value is unaffected by gearing, or the way in which income was split between owners and lenders. The theory assumes that a firm can freely choose a proportion of debt and equity to finance its assets. MM argument was put forth in three arbitrage propositions, one of which briefly proposed that cost of capital to any firm is not related to its capital structure. (Ryan, 2007);

Firms and investors were assumed to have equal access to finance markets, which allowed for homemade leverage. The argument is that the investor can create any leverage that was desired but not offered, and on the other hand rid itself of any leverage that the firm took on but was not desired. (Popescu & Visinescu, 2009). As a result, it is proposed that leverage has no effect on the market value of a firm.

The argument was that altering capital structure should not affect value since neither the firm's income streams nor business risk would be altered.

There were several assumptions in this original work by Modigliani and Miller as published in the American Journal of Economics, that were seen as descriptive of a perfect economy or business environment which does not exist, for instance no taxes, or bankruptcy costs and this led to a later revision of the theory.

Modigliani and Millers revision of their original theorem in 1963 then took into consideration existence of other factors such as tax. This acknowledgement according Watson and Head (2010) carries the implication that as a company gears up by replacing equity with debt, increasing amounts of its profits are shielded from debt.

This aspect of effect on profitability as implied by Watson & Head, (2010) is of interest to this study. The theory that altering capital structure , to lean more towards debt , produces a tax shield effect and therefore increasing net profitability.

2.2.2 Trade –off Theory

The trade –off theory as proposed by Krautz and Litzenburger, (1973) is also one of the more popular capital structure theories that tries to explain the role of debt and equity to the capital structure of a firm. The argument was one of trade-off between implication of equity versus debt, in a bid to establish optimal capital structure, or a target debt ratio. This was originally proposed in response to the Modigliani and Miller theorem revision to include aspects such as tax. It examines the balance between tax savings advantage inherent in debt and dead weight costs of bankruptcy. The key implication as cited by Frank and Goyal, (2005) of the trade-off theory is that leverage exhibits target adjustments, and in that sense any digression from the intended target are gradually eliminated. It is argued that the chief benefit of debt is the tax advantage of interest deductibility. (Modigliani and Miller, 1963).

This theory has been analyzed by several scholars in the field of corporate finance due to its implication that there exists an optimal capital structure that a firm can arrive at by balancing off between equity and debt. In their conclusion, both taxes and bankruptcy penalties should be considered in the determination of optimal leverage.

It is on this basis that we seek to study the target debt ratio of airline firms in our study, and look at the effect of a high or low ratio on profitability.

2.2.3 Pecking Order Theory

This was advanced by Donaldson in 1961. The theorem suggests that when a company seeks to finance long- term investments, it follows a well-defined order of preference with regards to the sources of finance, as stated by Watson & Head, (2010). The argument here is that firms show a marked preference for using their own internal sources of finance as opposed to external finance (Popescu & Visinescu, 2009). If the available internal finance is not sufficient to finance the required investment, only then does the firm source for external financing. Even then, bank borrowings and corporate bonds are preferred to issuing new capital.

Preference is on to issuance of debt before equity securities, or safe securities before riskier ones (Pike & Bill, 2009). The reason for this order of preference is found in the concept of information asymmetry. Managers of firms have internal information and know a lot more about a firm's prospects and performance than outsiders.

The study will analyze financial statements, in particular the statement of financial position of these airline firms to establish the preference, if any, relating to internal and external financing, and its effect on overall profitability.

2.3 Determinants of Profitability of Airline firms

The major determinants of airline profitability, i.e. the principle tools of strategy and competition are equipment selection, mix of routes served, scheduling and various forms of demand stimulation such as promotion and cabin service (Wycoff & Maister, 1977).

These demand healthy working capital and cash flow management in order to work effectively. Financial policy and cost structure to support these items of strategy includes features such as depreciation policy, debt and equity investment, tax credit and rate of inflation among others.

The business of airline transportation involves optimizing yield from available seats and belly space. An accepted standard, (Wycoff & Maister, 1977) is that 10% of passenger ticket price goes to provide services for the passenger whereas 90% covers costs that would be incurred even if the passenger did not fly. Airline costs are related to the number of seats whereas revenues are related to number of passengers carried. Just like any business, cost factors are considered in determining the fare structure so as to give a required rate of return.

Fare levels follow the normal demand curves and at the point where fares are fixed, competition takes the form of increased capacity or excess capacity in order to gain market share. Airlines face a choice of strategy of serving as many markets as possible or departures in major markets.

Business risk in the airline industry can be viewed in terms its unique industry characteristics, such as high costs of capital and volatile nature of products, seats. The business can be described as capital intensive, service oriented line of business (Gilloreto, 1988).

Other factors in the capital structure argument that are theoretically expected to influence profitability include the risk profiles of debt and equity, in the local market. Equity and debt have different risk profiles and therefore there has to be a balanced way to utilize them in order to suit the company's particular circumstances (Kithinji, 2012)

Financial strategies that may be employed in the specific industry have to match the business risk in order to maximize the value of the firm. Debt equity mix is a managerial variable meaning a company with high business risk like an airline company can choose a financial strategy involving an equally high financial risk.

Airline firm ownership structure, is also important in this discussion, because a listed company like Kenya Airways can easily access equity, whereas a private company like Fly 540 would have more difficulty accessing equity financing from forms other than public listings. This would also point towards size of the firm, because larger firms' have better access to capital markets. The stock of a privately held firm is less liquid than that of a publicly held firm (Ehrhardt & Brigham, 2011).

2.3.1 Competition and Strategy in Airline Business

The strategy that an airline undertakes to stay competitive in the business environment is one of the determinants of profitability. Due to the capital intensive nature of the airline industry, the challenge is to find a way to match capacity and demand in order to improve load factors, yields and eventually profitability.

If one were to remove economic regulation and the government ownership factor in flag airlines, international air transportation would become like any other business (Wycoff & Maister, 1977).

Gains in productivity previously made possible by factors such as technology for instance moving from 200 to 450 seat aircrafts are no longer available to airline management groups who are now forced to turn away from the technical side and to use their commercial and financial wits to achieve higher efficiency (Wycoff & Maister, 1977). The author informs that due to the volatile nature of the product, about 30-40% waste is realized every year.

The costs of these wastes are incredible yet acceptable in airline circles. Airline technology no longer carries majority of the weight of improving an airline and therefore management are being indoctrinated into management practice in other industry sectors and are transplanting what they learnt back into the airline industry management (Wycoff & Maister, 1977). This forces them to employ business and financial strategies needed to stay competitive.

The scramble for Africa's airspace has intensified over the past as more airlines turn to the continent for a piece of the pie from the growing middle class and the high cash inflows from foreign investors (Masinde, 2012). According to the article, our flag carrier not only has to battle it out with all the new entrants but also has to contend with industry challenges such as the high costs of fuel and delays that may arise from expansion of the Jomo Kenyatta International Airport. The financials of Kenya Airways reveal a loss making position from the year 2012 through to 2016.

2.3.2 Nature of Risk in Airline Business

The risk return relationship was explained by Markowitz (1952) while advancing his portfolio theory, where he argues that an investor expects maximum discounted returns and views variance of returns i.e. risk as an undesirable thing. He explains that there exists a rate at which an investor gains expected return by accepting variance, or on the other hand reduces variance by compromising on expected return. If investors grasp the relationships between the return on their investment in this high financial risk, high business risk industry then they will be in a better position to ascertain their desired level of investment in this industry.

Business risk is defined as that inherent risk associated with the underlying nature of a particular business, and the specific competitive strategy being implemented and it encompasses everything with the exception of risk from financing structure (Kithinji, 2012). This implies that investors demand a commensurate return to the risk characteristics they perceive in their investment. It can also be defined as the equity risk brought on by the nature of a firm's operational activities and therefore relies upon systematic risk of a company's assets (Ross, Randolph, & Jordan, 2001).

It is the risk component that a firm's shareholders are exposed to if a company is only financed by equity. A higher the business risk will therefore increase the required rate of return on a firm's assets.

The systematic risk is that which influences a large part of a firm's assets. (Kithinji, 2012) As this can have market wide effects, it is sometimes also known as market risk. This risk depends both on the responsiveness of the firms revenues to the business cycle and on the firm be operating leverage.

Because interest on debt must be paid in full before equity holders receive anything, the equity of a levered firm is more risky than the equity of an unlevered firm. Levered firms are firms with both debt and equity in their structure. Operating leverage therefore refers to a firms fixed cost of capital.

Systematic risk or market risk is the risk component that does not vanish by way of diversification in the choice of portfolio (Ross, Randolph, & Jordan, 2001). The management decides on the mix between debt and equity to employ. The required rate of return on a firm's assets as a whole will be reflected in its overall cost of capital. The fact that a firm uses both debt and equity capital, therefore implies that the overall cost of capital is simply a combination of returns needed to compensate both stakeholders and creditors.

Financing risk on the other hand is about the capital structure of a firm described by the debt equity mix (Ross, Randolph, & Jordan, 2001). Financial risk component is that additional risk that the firm's equity holders bear when the firm takes on debt financing in addition to the already existing equity. Financial leverage refers to a firm's fixed cost of debt.

Airline firm's management would need to establish the level of financial risk that aligns to the business strategy. The management may not be in a position to influence the business risk, but they must align the level of financial risk brought on by leveraging carefully. Debt will increase the financing risk, but in line with most of the theoretical evidence we have looked at, it will also multiply the gains and resultant profitability up to a certain optimum level.

2.3.3 Financial Strategy in Airline Business

Financial Strategy is that which focuses on the financial aspects of a business strategy (Kithinji, 2012). This involves raising funds and managing their employment and distribution. Salient features include asset base and structure, debt equity mix, dividend policy and raising new equity.

Regarding the financial strategy that an airline carrier can employ, (Gilloreto, 1988) speculates that as generalized market interaction occurs there will be commercial market share and revenue wars between carriers who have various operating structures. US carriers and privatized carriers from other nations will have a better chance of excelling because they will have freedom to operate in a “for profit” mode while government owned carriers will continue to be encumbered by the non-commercial attitude of stakeholder governments and may have difficulty raising the necessary equity to compete effectively. One of two things will result, either the inefficient government owned carrier will lose its market share and revenue or it will find a way of getting itself privatized.

This prediction is played out in the African continent, especially with government owned carriers like Kenya airways, South African Airways, Air Namibia, LAM Mozambique Airlines, who have experienced revenue leakages and operational hindrances as a result of liquidity issues. For instance, Air Namibia was recently reported as experiencing severe cash shortages, since their failure to publish annual reports for over 10 years recently caused banks and other lending institutions to suspend lending facilities to them (Lucky, 2018) . Air Zimbabwe has similarly failed to submit financials for 8 years (Daily News, 2017). LAM Mozambique

Airlines has also undergone cash crunches, severe enough that one of the scheduled flights was recently unable to take off due to lack of enough cash to purchase fuel, leaving passengers and goods stranded (Daily Nation , 2018). Kenya Airways has constantly been seeking privatization by issuing more and more stock as evidenced by past rights issues since June 2012, meant to finance an ambitious growth plan. Due to the ongoing loss making trend that lasted as since then up to the current close of 2016, the airline found itself unable to issue more equity and has had to resort to bank loans to finance its immediate cash requirements (Okoth, 2016).

Airline industry experiences a peak in economic cycle and it recommended that this is the time for airline management to take advantage of capital restructuring (Gilloreto, 1988). Actions such as disposal and fleet purchase are recommended around this time when interest rates are relatively low. The financial strategy can be used in this way to enhance profitability.

2.3.4 Asset Structure.

Assets in the airline carriers' balance sheet will largely be composed of aircraft fleet, as non-current assets. Asset acquisition when structured into finance leases, can directly influence the debt ratio. According to Bereznicka (2013), the relationship between tangibility of assets and debt level is usually negative, and most often statistically significant. Leasing of aircrafts is common practice in this industry and in particular airlines engage in finance leases. Fleet ownership costs also form the lion's share of the company's expenditure in the income statement.

International Accounting Standard 17 classifies a finance leasing arrangement as a type of lease in which transfers to the lessee substantially all risks and rewards of ownership of assets. Financial leases are particularly used in the airline industry as they are found to be a substitute for debt and used more by firms with a higher credit risk like airline firms (Erickson & Trevino, 1994).

The capital intensive nature of the airline industry embodies a structure that implies a high debt structure to match the assets carried in the balance sheet. While most carriers grow their asset base as they expand, the pace of asset growth does differentiate carriers from each other. Some carriers adopt an intentionally conservative approach which calls for slow asset growth and therefore a uniformly lower asset growth quotient (Gilloreto, 1988). This means that those conservative carriers are more efficient in the downturn; conversely more risk prone carriers do the opposite and indulge in a more liberal approach. These liberal carriers have a higher incremental revenue gain in the peak than their conservative brethren.

The optimal approach would be to match assets to market needs (Gilloreto, 1988). Human resources are also a significant line item in the assets of the airlines balance sheet. A case in point would be the much publicized recent decision by the flag carrier Kenya Airways to reduce its human resource base in line with current level of business risk experienced in the domestic airline market (Okoth, 2016).

This follows a related decision to dispose off some of the fleet. We deduce a pattern to reduce asset base in order to reduce level of debt, and by implication, debt ratio.

2.4 Empirical Review

A number of scholarly reviews on leverage and its relationship to profitability have been carried out. The study hypothesizes that there is an optimal leverage point or debt ration that can increase the airline firm's chances of reporting profitability and growth, all other contributing factors held constant.

2.4.1 International Studies

Andrea, Serna, Platero, & Dimitar, (2005) studied various dynamics of the airline transport industry. The objective of the study, was to analyze the major trends of the air transportation industry in the United States.

A detailed research was undertaken on two sample airline carriers, American Airlines and Ryan Air , as well as two airport operators; Asur and British Airports Authority. They considered their corporate structure; right from their respective risk characteristics, investment performance, capital structure, stockholder and investments analysis, dividend policy and the resultant valuations. The study focused on the relationship of all of these elements of corporate finance to the value of the firm. Various measurement ratios were tested on the four firms, such as return on capital employed, debt capital ratios, as well as several corporate finance policies such as dividend policy employed. All of these results were compared in order to establish the values of the different firms.

Valuation models such as free cash flow to the firm (FCFF) and free cash flows to equity (FCFE) were used to ascertain market values of the equity of all the firms.

The study revealed possibility that different capital structure compositions, specifically differing levels of debt and equity, resulted in different firm valuations.

Agyeman (2015) studied the effect of capital structure on profitability of manufacturing firms in Ghana. The study objective was to assess the impact of capital structure on resultant profitability on these firms. The population sample was 15 firms selected from different sub sectors of the manufacturing industry. 13 of these were listed in the stock exchange while 2 of these were from the private sector. This study was of interest because the options of sources of finance for listed firms differ from those of private firms. Data for the study was obtained from the firms' financials. The period of the study was 2008 -2012. Descriptive statistics and correlation analysis were employed in the study as the analytical model.

Return on equity was used to denote profitability, while short and long term debts as well as equity were the variables considered to represent capital structure. Study findings were that short and long term debt were negatively related to profitability, whilst equity was positively related to profitability.

Mengesha (2015) explored the impact of capital structure on profitability levels of sampled commercial banks in Ethiopia. The objective of the study therefore was to study the impact of capital structure decisions on profitability of commercial banks as detailed in the records National Bank of Ethiopia, emphasizing on performance of core business operations of the banks. Audited financials of 8 commercial banks were reviewed over a 12 year financial period. Variables used to conduct the study were limited to those that are significant to the banking industry such as total debt to asset ratio, loan to deposit, spread, and deposit to asset ratio, growth and asset size. Quantitative methods approach, panel data methodology was the analytical model used. Study findings proved that debt financing had a negative impact on profitability.

Accumulated reserves proved to be a more recommended way to finance new investments. Financing with deposits was actually found to have a positive impact on profitability, as was increase in amounts of loan advances from deposit financing.

Martis (2013) looked at capital structure and firm's financial performance.

Objective of the study was to study capital structure composition and its effects on firm's profitability, amongst the S& P 500 firms. The study population was 474 companies as listed in the S&P 500 over the period 2003 to 2008.

Several factors determining capital structure were analyzed such as performance, total assets, assets tangibility, sales growth, capital intensity and tax rates. Independent variable was return on assets, whereas short term, long term and total debt to asset ratios were used as proxies for leverage. Study findings indicated that leverage ratios negatively affected a firm's assets. Firm size however seemed to have a positive effect on return on assets. Both short term and long term debt were also found to negatively affect return on assets.

Sovbetov (2013) studied the relationship between capital structure and profitability amongst UK banks. The study period was the 5 years from 2007-2012. The point of divergence when looking at capital structure of banks is an industry standard requiring banks in the UK to have a minimum 8% equity capital. The population sample was 6 of the top tier banks. The analytical model applied on the data gathered from the banks financials, was correlation analysis. The scholar came up with several hypotheses testing the various ratios significant to the banks' balance sheet with the various capital structure variables. Not surprisingly, the study found the banks to be highly levered, due to the industry specific nature, having an average debt of 10-12 times more than their equity. Study findings established a strong, negative relationship between capital structure and profitability of the banks, i.e. debt financing decreased profitability and market value of the equity of these firms.

2.4.2 Local Studies

Mwangi et al (2014) studied the relationship between capital structure and performance of non-financial companies listed in the Nairobi Stock exchange.

The target population was all 44 non-financial companies listed as at December 2012. The study looked at the annual financials of these firms. Correlation analysis and panel multiple regression analysis was used to analyze the data.

The study conclusions were that increased financial leverage seemed to have a negative effect on performance as measured by the ROE of these firms. The researchers concluded that these findings could also have been brought on by the high borrowing interest rate in Kenya.

Mwaura (2013), explored the relationship between capital structure and financial performance of investment firms listed in the Nairobi Securities Exchange. The target population was three investment companies listed under the investment sector of the securities exchange. Data was extracted from published financials covering the years 2010 through to 2013. Analysis techniques used were quantitative method of data analysis and inferential analysis. Study findings revealed that total debt and long term debt were major factors influencing financial performance of investment firms. Conclusions from the study were that total debt has a negative impact on financial performance of the listed firms. Higher debt revealed less return on equity.

Gichangi (2015) reviewed the relationship between capital structure and profitability, which focused on listed non-financial firms in the Nairobi securities exchange. The study period was the 5 year period of 2008-2012, the source of data being company financials, of the target population of 40 listed non-financial firms. Descriptive data analysis techniques and regression were used to analyze the data. The study period was an interesting time to study management decisions regarding capital structure adjustments after the 2007 financial crisis.

The study findings indicated that the firms' profitability (measured by return on equity) was positively correlated with both short and long term debt. The study concluded that there is a negative relationship between capital structure and profitability.

Koech, (2013) looked at the effect of capital structure on profitability of financial firms listed in the Nairobi Securities Exchange. The main objective was to study the effect of capital structure composition of these firms on their related profitability.

The population sample was 11 listed banks and the period of financial performance looked at was between 2008 and 2012. Analytical model used was multiple linear regressions, where return on equity was regressed against debt equity proportion, interest rate and debt.

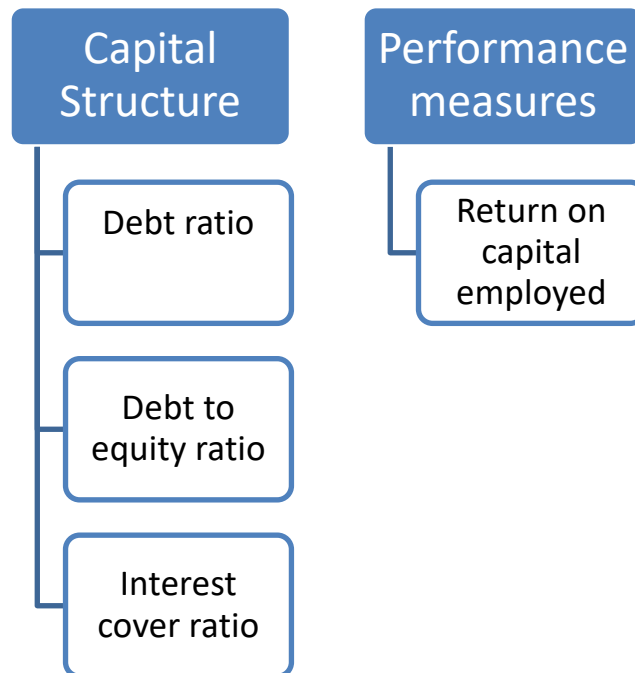
The study findings showed that the banks were highly levered. Higher debt was associated with higher interest and therefore lower profitability. Capital structure was found to be inversely related to performance as revealed by the regression results of debt and return on equity.

Njenga (2014) focused on the relationship between capital structure and financial performance of the manufacturing companies listed on the Nairobi stock exchange. The target population was 5 manufacturing firms out of the 9 listed companies in that category. Data was obtained from the financials of the firm over a 5 year period, 2006 - 2012. Analytical models used were trend analysis and regression. The study findings primarily indicate that high debt levels are consistent with low profitability levels. The study however found no significant relationship between capital structure and assets. The study conclusions were that there is no significant statistical relationship between capital structure and performance, but that tax has an important role to play in the capital structure of firms. Tax shield as a benefit on profitability was noted.

2.5 Conceptual Framework

The conceptual framework below identifies the independent variable which is debt to equity ratio, debt ratio and interest cover ratio in the capital structure and the dependent variable that constitute performance measures, ROCE.

Figure 1: Conceptual framework



2.6 Summary of Literature Review

This study seeks to establish the nature of relationship between financial leverage and profitability in the airline industry.

It begins by defining profitability in the airline industry and reviews various salient features of the airline industry affecting profitability, such as competition, risk, financial and business strategies as well as asset structure items that determine debt level.

With this understanding, the various existing capital structure theories that inform the topic of the study on the impact of capital structure on a firm's value are analyzed. Studies and findings on capital structure in the airline industry are included.

The empirical evidence reviewed reveals research studies performed in a number of other industries such as banks, manufacturing sector and others, but none of the studies reviewed analyses the airline industry. This is a study that is important, noting the economic and social benefits that airline companies bestow on their economies.

Our study findings on airline firms in Africa reveals a majority of loss making firms , some of whom do not even prepare audited financials on an annual basis, despite being recipients of state aid. Understanding of optimum capital structure for these airline firms therefore is a useful study topic that can contribute immensely to the improvement of the state of these firms.

Whereas the contribution of the economic factors and industry hardships has been taken into account, it is evident that certain decisions surrounding financial strategy employed and overall governance issues have played a significant role in this loss making trend amongst African airline firms. . This study therefore reviews the financing decisions, and hypothesizes that a critical revision of this financial strategy in respect to leverage may have an impact on the current value of these firms.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter looks at methods and procedures that will be used to conduct the research in order to meet the objectives of the study. It goes on to describe the design, population and sample as well as the sampling technique used, data collection and analysis. This study focuses on capital structure of airlines; published financial reports were used to extract data, compute ratios that determine the applicable capital structure determinants, in order to arrive at resultant performance measures and develop a prediction model.

3.2 Research Design

Research design is concerned with framework organization of the research problem, the structure and configuration of the relationship amongst the variables to a study, as well as the plan of investigation used to obtain empirical evidence on those relationships (Cooper & Schindler, 2006).

The design used was causal, ex post facto design research, to perform financial statement analysis. The choice of design is informed by the nature of study, where secondary historical data is used to analyze for trends.

With an ex post facto design, the researcher cannot manipulate variables as he has no direct control over them. The researcher's role is restricted to that of reporting the happenings. (Cooper & Schindler, 2006). This study uses data from published financial reports, computes financial ratios and uses these to perform predictions and analyze the hypothesis, without manipulating the secondary data source.

Qualitative technique of data analysis was used, with reliance on secondary data, available in the audited financials of the airline firms sampled.

The independent variable, capital structure determinant is the debt ratio, debt to equity ratio and the equity to fixed assets ratio employed by the airline company in any given financial period. The dependent variable is the performance measure reported in that same given financial period, denoted ROCE. The ratios are computed from the values reported in published financial reports from the various airline websites.

3.3 Population and Sample

A population can be defined as an entire group of objects, individuals or events having a common observable characteristic (Mugenda & Mugenda, 1999). The sample frame is then defined as the listing of all population elements from which a sample will be drawn. (Cooper & Schindler, 2006).

IATA Operational Safety Audit (IOSA) registry lists about 45 active airlines in its registry as at today. These are listed in the appendices section of this study. These comprise a mix of fully government owned, partly government owned and privately owned airlines.

It would have been preferable to study all the financial reports of all the airline firms in Africa. The challenge encountered is that most state owned firms do not publish their annual financials, due to the lackluster attitude characteristic of government parastatals as informed by (Guttery, 1998). Privately owned firms on the other hand are not required to publish annual reports in the public domain. The major constraint faced therefore was lack of access to published financials of all registered airline companies in Africa. Our sampling frame therefore comprises 7 airline firms whose annual reports were in public domain. Non-probability procedure was used to select this sample; since the requirements of this project was that airline financials are readily available for the study.

3.4 Data Collection

A researcher needs to develop instruments with which to collect the necessary information. (Mugenda & Mugenda, 1999) These include questioners, interview schedules and other instruments.

Due to the nature of the study and the variables of interest, we will not develop research instruments, rather, we will rely on common data collection techniques for our data collection. According to (Mugenda & Mugenda, 1999) a historical research is the study of a problem that requires collecting information from the past. This is a qualitative and historical research aimed at establishing a trend. Financial statement reports are the key source of data, and the study uses secondary data. . This study is restricted to corporate finance area on capital structure of airlines, and is inspired by the case of our local airline carrier.

The study period is the five year period between 2012 and 2016.

3.5 Validity and Reliability

The data collection plan specifies the details of the task (Cooper & Schindler, 2006).The study uses published audited financials, available from the airline firms' website. These are relied upon to provide data for this study, as reliance can be placed due to the International Auditing Standards regulations on publishing financials to the public domain. Published financials are required to adhere to Generally Accepted Accounting Principles (GAAP), and it is on this strength that we place our reliance on the information contained in these reports.

3.6 Data Analysis

This study uses secondary data available as most of these airline firms are listed company and year on year audited financials are available in public domain.

Line item amounts contained in the statement of financial position are used to compute the debt to equity ratio, debt to capital ratio and the interest cover ratio as the independent variables, and ROCE as the dependent variables for the years in review. In as much as possible, notes to the financial statements were used to interpret year on year movements of these figures in order to create the comparative tables. Regression analysis is used to analyze the resulting. The model derived was used to predict any existing relationship between these performance measures and capital structure determinants.

A probabilistic model was constructed based on these computed variables, to model the behavior of the performance measures, given the capital structure measurement ratio. The model tries to predict performance measures given measurement ratios.

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_1$$

Y_1 is the dependent performance variable, return on capital employed.(ROCE)

X_1 is the independent variable, capital structure measured by debt to equity ratio.(D/E)

X_2 is the independent variable, capital structure measured by debt to capital ratio.(D/C)

X_3 is the independent variable, capital structure measured by interest cover ratio.(ICR)

ε_1 is the error term

β is the intercept.

Coefficient of correlation R^2 is computed in order to measure this relationships size and magnitude, and t-test used to carry out tests of significance carried out on this correlation.

Airline firms seem to use financial leverage at a higher level than most other industries as illustrated in the below extracted table (Brealey, Myers, & Marcus, 2003).

This depicts the debt ratio of the airline industry in comparison to other non-finance industries in the United Kingdom at a given point in time.

Table 1: Median book debt ratios for a sample of non -finance industries

Industry	Debt Ratio
Internet Information	0.07
Biotech	0.12
Communications Equipment	0.19
Semi conductors	0.21
Oil Exploration	0.29
Aerospace /Defense	0.32
Beverages (alcoholic)	0.36
Consumer Appliances	0.4
Hotels and Motels	0.53
Gas utilities	0.53
Airlines	0.73

The authors only considered debt ratio for this analysis, but this points to an important concept on whether a certain range of debt can enhance profitability.

The hypothesis formulated for this research revolves around exploring this relationship.

- a) There is a positive relationship between interest cover ratio and return on capital employed
- b) There is a positive relationship between debt to equity ratio and return on capital employed
- c) There is a positive relationship between debt to capital ratio and return on capital employed.

Computation of performance measures variables, is as follows;

$$\text{Return on capital employed (ROCE)} = \frac{\text{Net operating profit}}{\text{Employed capital}}$$

$$\text{Interest cover (ICR)} = \frac{\text{Net profit} + \text{Income tax expense} + \text{Interest expense}}{\text{Interest expense}}$$

$$\text{Debt to Equity (D/E)} = \frac{\text{Total liabilities}}{\text{Stockholders' equity}}$$

$$\text{Debt to capital ratio (D/C)} = \frac{\text{Debt (D)}}{\text{Debt(D)} + \text{Equity(E)}}$$

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter basically presents the findings starting with data collected for this study, and relevant computation of ratios, regression analysis and presentation of results. The findings are then used to explain the relationship between capital structure and profitability for the financial years 2012 through to 2016 among the sample population of airline firms.

4.2 Analysis of Information Obtained

As at the date of this study, 45 firms were existing in the IOSA registry as being active and in operation. However, only about 9 of these firms had published financials available in public domain. In our view, the sampling frame of 9 firms will be adequate for purposes of exploring the nature and type of the relationship between the debt make up in their capital structure and the financial performance of these firms. The research was also able to make the observation that most of the state owned airline firms did not publish financials and that quite a number of them were in a state of financial distress, requiring frequent government bail-outs. Privately owned firms also did not publish financial statements in public domain unless the majority of equity was from common stock holders.

4.3 Data Validity

The determination is sought on whether the design and methods used so far in this study, have yielded data that lead to findings on whether capital structure and profitability are related in the context of airline firms. Figures required to perform ratio analysis were extracted from the published statements of comprehensive income, as well as the statements of financial position, details of which are in the appendices to this study.

The below tables show the summary of computed ratios based on figures obtained from the firm's financial statements, for each financial period

Table 2: Computed financial ratios for 2012

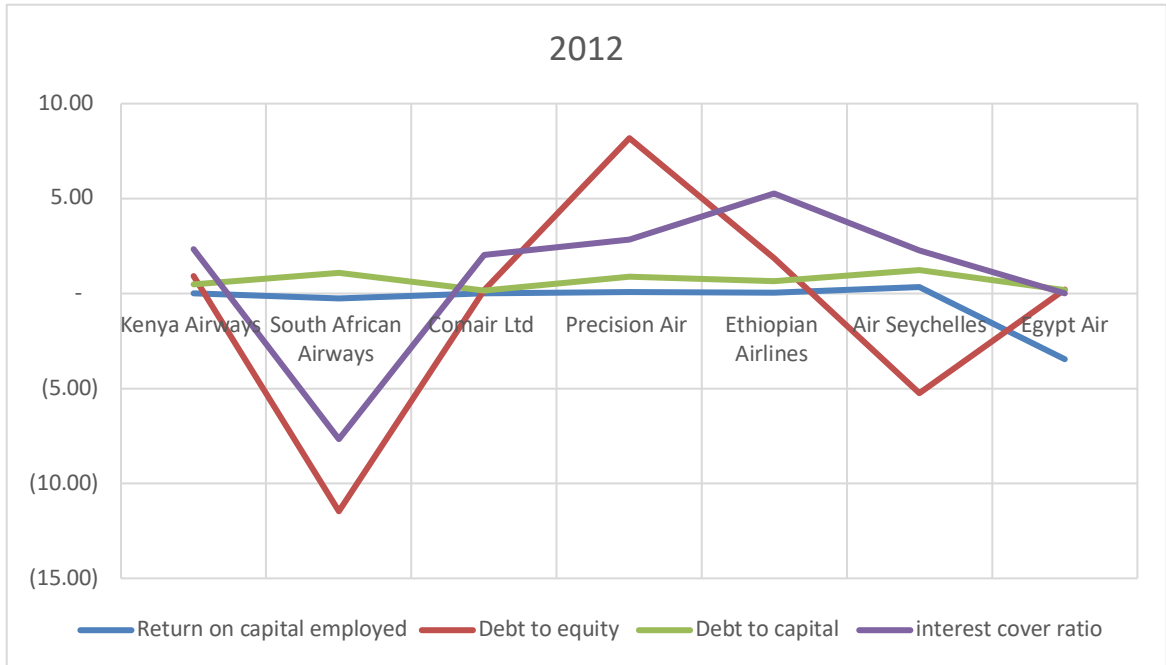


Table 2: Computed financial ratios for 2013

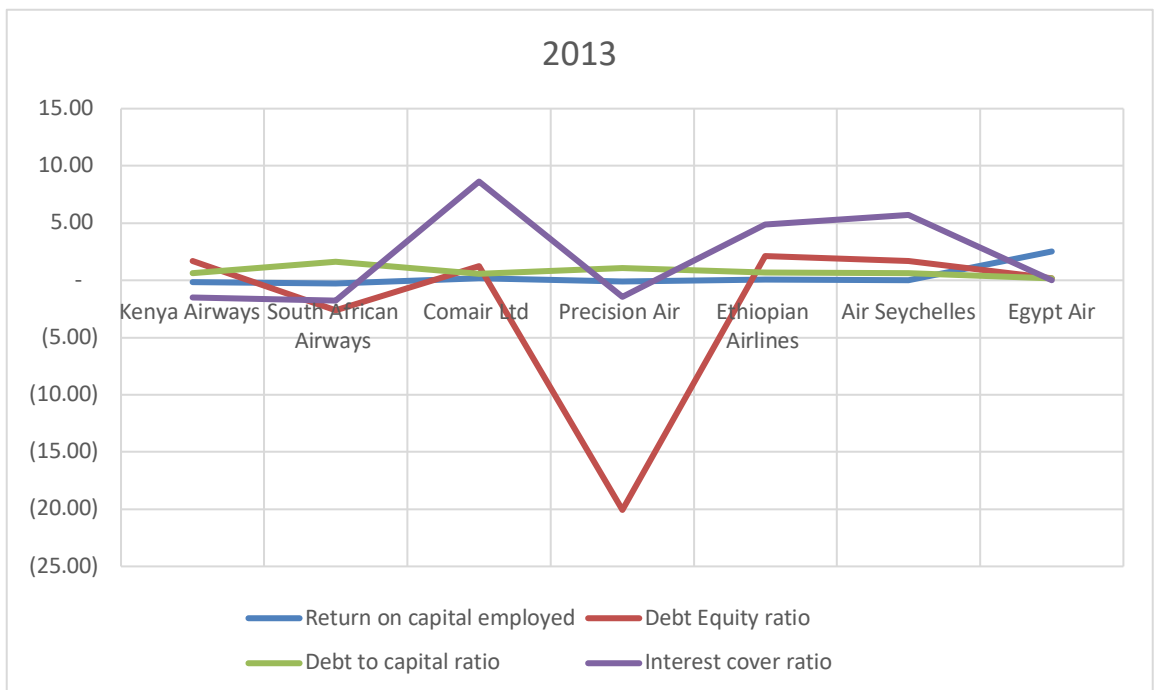


Table 3: Computed financial ratios for 2014

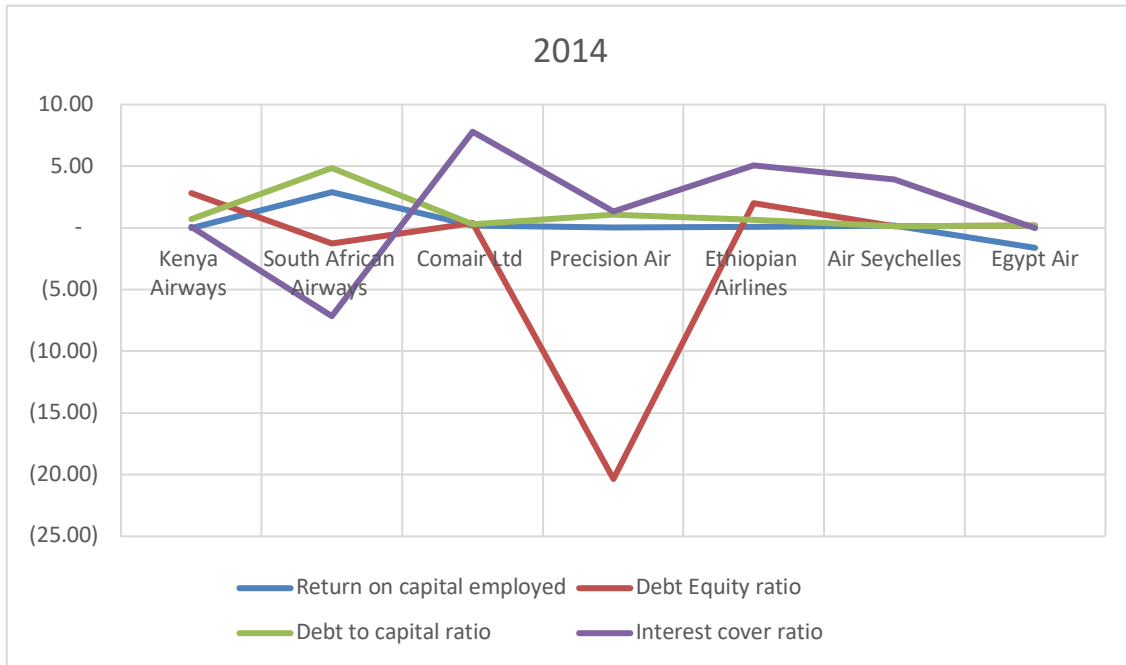
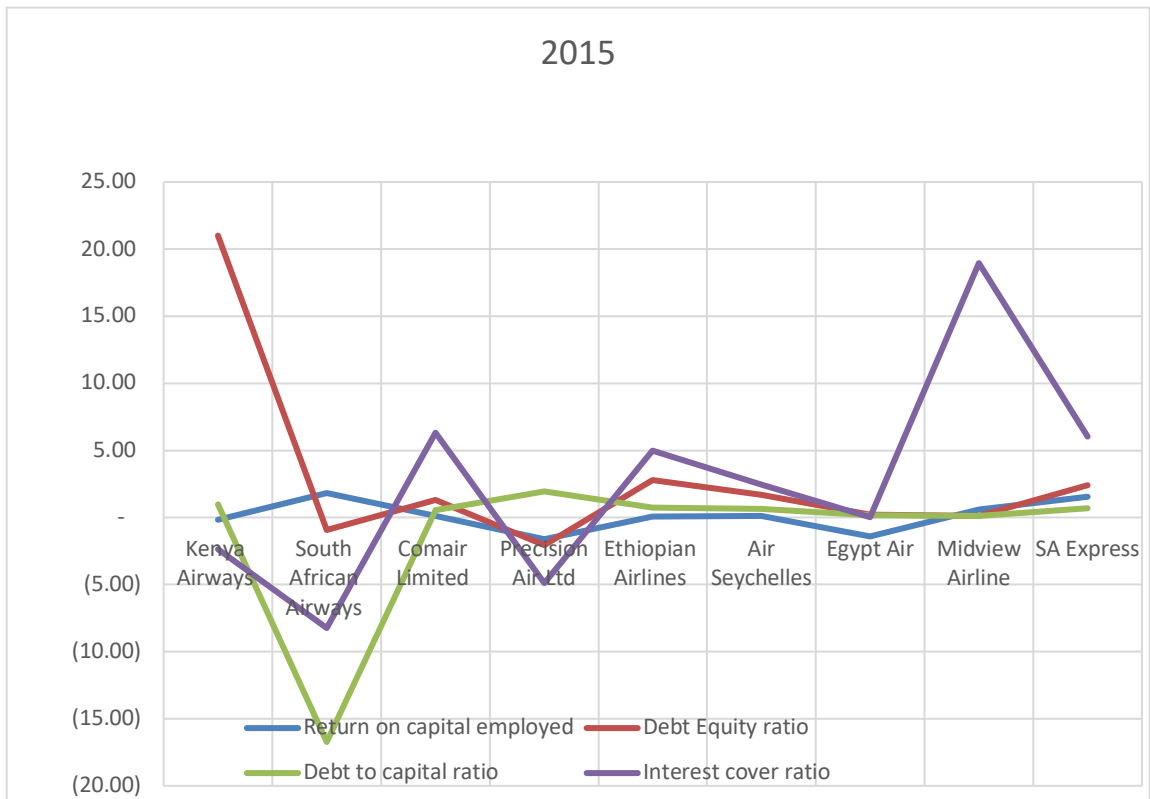
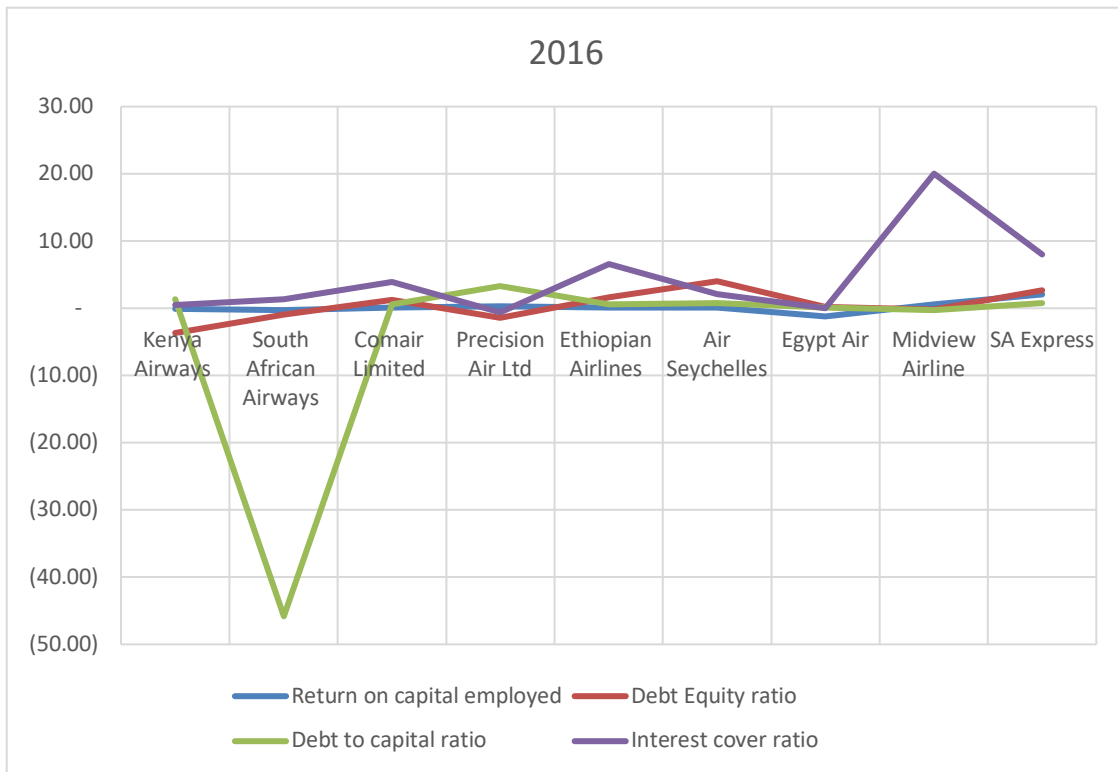


Table 4: Computed financial ratios for 2015



5: Computed financial ratios for 2016



Data used to compute D/E and D/C ratios took into consideration both short and long term debt, whereas only short term debt was considered in ICR computations. The computed data so far indicates debt to equity ratios of between 0-21. On the extreme end, this would imply that for every shilling of equity, there is a corresponding 21 shillings of debt. Similarly, some of the firms in our study exhibited negative debt to equity and debt to capital ratios implying negative company values.

However, some of the firms in the study had positive interest cover ratios which is a good marker for financial health. Firms such as South African Airways that exhibited negative ICR of -7.67 in 2012, implying that the finance cost of debt was too high at the level of operating income achieved. It would therefore be in order to conclude that the data obtained from the research design, is useful for exploring the main research topic for our study.

4.4 Descriptive Statistics

The tabulation below displays the results of descriptive statistics on all the population variables for all the 5 years.

Figure 2: Descriptive statistics

	<i>Y</i> <i>ROCE</i>	<i>X₁</i> <i>D/E</i>	<i>X₂</i> <i>D/C</i>	<i>X₃</i> <i>ICR</i>
mean	0.09	(0.19)	(0.81)	2.51
standard deviation	(0.16)	(0.73)	(5.00)	0.93
coefficient of variation	(1.74)	3.93	6.18	0.37
kurtosis	3.14	6.39	28.69	2.68
skewness	(0.16)	(0.73)	(5.00)	0.93

From the sampled airline firms, the mean (μ) debt to equity ratio was -0.19. This means that on average, the value of the firms was less than the amount of debt borrowed to keep the operations going. The debt to capital ratio was also -0.81, an indicator that the existing capital is not enough to offset current short and long term debt levels. The average ROCE was at 9%, which is a considerably low marker..

Since average ROCE ≤ 1 it is an indicator that the financial efficiency for this industry in the period in review was less than optimum as the employed capital did not generate an equivalent amount of profit. The average interest cover was 2.51, which indicates that the net operating profit is sufficient to settle the finance costs.

The standard deviation (s) of the mean from the population statistical measures was greatest for the debt to capital ratio. This may have been brought about by the very high level of debt used by South African Airways, relative to its capital for the financial years 2015 and 2016. The variation from the mean μ from the population statistics for ROCE, D/E, D/C and ICR were not in large quantities.

Similarly the degree of variation as denoted by the coefficient of variation (CV) is largest for the debt to capital ratio, which may have been as a result of the debt level for South African Airways and Precision Air Limited.

In terms of distribution of the data set, ICR is positively skewed indicating a right pointing tail, while ROCE, D/E and D/C are negatively skewed, or producing a left pointing tail. This means the data is not evenly distributed around the population mean. The kurtosis values are greater than zero for all the data sets, indicating that distribution around the population mean is not flat, but rather skewed. The way in which the data is skewed could indicate that the predictions derived from the study model on these data sets may not be highly accurate, as predictions will usually assume a normal distribution.

4.5 Correlation Analysis

Correlation analysis was used to measure the strength and direction of the relationship between the dependent variable (ROCE) to each of the independent or explanatory variables (D/E, D/C and ICR). The study uses the Pearson Correlation coefficient. A “+” sign indicates a positive relationship, and a value greater than 1 indicates a perfect degree of association. (Investopedia, n.d.)

Table 6: Correlation analysis

	<i>Return on capital employed</i>	<i>Debt to equity ratio</i>	<i>Debt to capital ratio</i>	<i>Interest cover ratio</i>
Return on capital employed	1.00			
Debt to equity ratio	0.03	1.00		
Debt to capital ratio	(0.01)	0.01	1.00	
Interest cover ratio	0.10	0.17	0.08	1.00

From the above table, ROCE is positively correlated to D/E ratio, albeit not perfectly, at 0.03, indicating that an increment in D/E ratio produces a very slight increment in ROCE.

To a certain extent therefore, a level of debt relative to equity may lead to an incremental performance, than if there were no debt at all in the capital structure of the firm.

ROCE is however negatively related to D/C ratio at -0.01, meaning that when the debt level is higher than existing capital, this produces is a negative effect on the performance.

ROCE is positively related to ICR at 0.10, which means that if the debt cost is lower than the operating profit, that debt level may in turn have a very slight positive effect on firm's performance.

The correlation analysis also shows existence of multicollinearity, whereby D/E is positively correlated with D/C by a factor of 0.01, and it is also positively correlated with ICR with a value of 0.17. D/C ratio is in turn positively correlated to ICR, with a correlation value of 0.08. The basic problem with multicollinearity between independent variables is that it makes it difficult to assess the effect of independent variables on the dependent variables. (Hanck, 2018).

The effect of presence of collinearity is to distort the regression equations obtained, especially the slopes, and this may cause them to become unreliable.

4.6 Regression Analysis and Hypothesis Testing

The study was aimed at investigating the relationship between capital structure (measured by financial ratios) and profitability, denoted by the performance measure ROCE. The study variables were computed from the firm's financial statements, and detailed regression outputs are shown in the appendices to the study. However summarized results are shown as follows. ;

Table 7: Summary regression statistics for the period 2012-16

						<i>D/E</i>	<i>D/C</i>	<i>ICR</i>
Year	N	<i>R</i> ²	<i>F</i>	<i>Significance F</i>	<i>Intercept</i>	X1	X2	X3
2012	7	0.4105	0.6962	0.6134	-1.8845	-0.0331	1.8626	0.1546
2013	7	0.5696	1.3234	0.4117	1.8431	0.0050	-1.7340	-0.0965
2014	7	0.9125	10.4296	0.0428	-1.2293	0.0065	1.0915	0.1611
2015	9	0.6420	2.9890	0.1346	-0.4669	0.0438	-0.1822	0.0908
2016	9	0.2814	0.6528	0.6147	-0.0693	0.0818	0.0047	0.0552

During the period in review, for the years 2012 to 2015, the percentage variability in Y explained by the X variables ranges from 41% to 91%, measured by *R*². This means that observed outcomes are fairly replicated by the regression model, especially in 2014 where overall regression accuracy depicted by *R*² stands at 91%. The financial ratios may be used to predict the performance measures. In 2016 however, *R*² shows a low proportion of fit at 28%, which is fairly weak goodness of fit.

The intercept shows the values that would hold if the X variables were 0, and the computed values of X₁, X₂ and X₃ represent the slope of the equation in other words percentage change in ROCE corresponding to every change in D/E, D/C and ICR.

The P values of the coefficients for D/C ratio are less than 3% for the years 2013, 2014 and 2015 which is an indicator that the probability that the coefficient was obtained by chance is very minimal. The Significance F however shows a high probability that these output results were obtained by chance, in 2012 and 2016 at 61% probability.

It was unfortunate that the sample size (n) was small due to the lack of financials, and the observed data was obtained from only 9 out of 45 airline firms in Africa. Even then, two of those airline firms did not publish financials in the years 2012 to 2014.

The F-value for 2013 through to 2015 is greater than 1, and greater than the F statistic for all the years is greater than the computed F. This means there's a probability that the observations did not happen by chance and therefore the relationships observed between variables are statistically significant.

4.7 Discussion and Research Findings

The population to this study comprised of 9 airline firms in Africa. Financial data relating to the period 2012 to 2016 was collected. Information from industry related bodies suggests that airline firms are largely financed with debt (African Airlines Association, 2017).

The study sought to explore the validity of this position and what its effect on performance was, under base hypothesis that implied that debt to a certain level has a multiplier effect on performance. 28% of the observed data sets revealed an operating loss position, probably be due to the fact that Africa as a continent has different economic climates for the different countries from whence these sampled airlines originate.

It is noteworthy however that the study uses net operating performance as opposed to total comprehensive income when drawing out the data observations, in order to compute the financial ratios. In reality, some of the firms with a positive operating income position still closed at a loss making position when all other costs including interest and taxes were factored in. This may have had an influence on the data findings.

Most airlines considered were loss making in the period under review with only Ethiopian airlines, Egypt Air and Air Seychelles seemingly displaying a net operating profit trend. This then brought about limitations to the computed observations, because a number of airlines displayed negative equity. This meant that the interpretation of the financial ratios derived was distorted in meaning.

However, looking at the firms with positive equity, the regression results shows that for every unit increment of D/E produces a very slight increase in ROCE ≤ 1 . However, for every unit of change in D/C, the value of ROCE increases ≥ 1 . For every unit of increase in ICR, there's a slight increment of ROCE ≤ 1 .

The regression analysis displayed positive values of slopes for the most part for all the variables of debt to equity, debt to capital and interest cover ratio which means that as these ratios increase, so does the return on investment, for the periods under review. For the years with negative financial ratios, this was as a result of negative equity for those particular firms as displayed in our data collection section in the appendices to this study.

The scenario of negative equity returned negative debt to equity ratios and therefore distorted the regression results to that extent.

These results are however consistent with the MM proposition whereby debt is seen to increase value of a firm due to the tax shield effect.

The results of the research findings are consistent with the hypothesis formulated for the study as below;

- a) There is a positive relationship between interest cover ratio and return on capital employed. This is accepted based on the regression results.
- b) There is a positive relationship between debt to equity ratio and return on capital employed. This is accepted based on the regression results.
- c) There is a positive relationship between debt to capital ratio and return on capital employed. This is accepted based on the regression results.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this study was to establish the relationship between capital structure and profitability amongst airline firms in Africa. This chapter covers the summary of the research findings, conclusions and resultant recommendations.

5.2 Summary of Findings

The financial data sets observed indicated an almost even incidence of both operating profit and operating loss making amongst the 9 firms studied, in the 5 year period. A total of 39 observations were used in the study, and it should be noted that two of the airlines did not have any published financials during the first 3 year period of the study. 28 of the observations reported an operating profit whereas 11 observations reported an operating loss.

The R^2 values were between 41% and 91 % in the years 2012 to 2015 meaning that capital structure composition amongst the airline firms did actually have an influence on the performance measure. This was the relationship that the model was designed to explain.

ROCE increases by between 0.05% and 8% for every unit increment in D/E ratio. ROCE however increases by between 4.7% and 186 % for every incremental unit of change in D/C. From this findings we can conclude that ROCE is more sensitive to D/C ratio, than D/E ratio. The fact that incremental debt is found to have a positive impact on profitability is consistent with study findings from Mengesa (2015).

It is also observed that an increment in ICR is associated with a 5% to 15% increment in ROCE. The data collected shows that firms with a level of ICR ranging between 3 and 8 times recorded ROCE of less than 0.6. It would be preferable if the airline industry had higher ICR as this is an indicator of financial health and ability to meet costs.

5.3 Conclusions

The regression results concluded that debt ratio values are positively related to performance measure denoted by ROCE during the study period. The regression model was found to be significant. Both D/E and D/C ratio were computed based on a mixture of short and long term debt, while ICR was based on short term debt.

The findings also reveal a greater sensitivity of D/C ratio to ROCE compared to D/E ratio to ROCE, implying that airline firms are at liberty to consider funding levels equal to or higher than employed capital, at the initial stages of the lifecycle. For instance, Precision Air reported an ROCE value of 0.34 when the D/C ratio was at 3.3 in 2016, compared to the immediate prior period in 2015 when D/C ratio was at 1.94 and the resultant ROCE at -1.62. This showed an improved ROCE related to an increased D/C ratio.

The findings reveal that the way in which the debt funding is spread, whether short or long term, is not strongly linked to an improved ROCE in a particular financial period. For the firms electing to use interest bearing debt as a source of funding, the study found that ICR was related to a positive ROCE, however increased ICR ratios in a period did not appear to yield corresponding increase in ROCE.

5.4 Recommendations

The study recommends that airline firms in Africa should consider use of leverage in their capital structure composition as a means to achieve better returns on employed capital. The study further recommends that in deciding on exact debt levels, it would be more prudent to consider the level of capital employed when coming up with a D/C ratio, and attempt to keep this ratio to less than 3. This is because the study observations showed excessive use of debt at higher levels led to negative equity and therefore negative firm value.

It was observed that some of the highly levered firms like Kenya Airways, South African Airways and Precision Air reported total comprehensive losses throughout the study period. Therefore this study recommends that a recommended standard be proposed by industry regulators, curbing the use of debt to a certain ratio or proportion of either its employed capital or existing group equity level.

This is simply because the observed findings have proven that use of debt has a multiplier effect on return on employed capital, but only up to a certain level.

5.5 Limitations of the Study

This study was limited to airline firms domiciled in Africa, meaning that it may not be prudent to generalize the results in airline firms in other sectors of the world.

The study was designed around secondary data sources of data, which is the published financials prepared on a historical basis. One of the major limitations was availability of these published financials for the selected population of 45 airline firms. A sample of only 9 were available. This may be due in part to ownership composition as the financials found were mainly for airlines with a private shareholding composition. Only 2 out of 11 state owned firms in Africa had publicly accessible published financials.

The differences in accounting policies used to prepare the financial statements of the various airlines also brought about difficulty in exact comparison of income figures derived. This could potentially distort the regression result findings since data sets are not determined in an identical manner.

The study was limited to three independent variables, namely debt to capital ratio D/C, debt to equity ratio D/E and interest coverage ratio ICR, as well as one dependent variable which was return on capital employed ROCE. In reality though there are several other factors that come into play in determining airline firm performance which were not captured in the study. For instance, one of the state owned firms that was a study subject, Ethiopian Airlines, enjoys tax free advantage from the state. The airline reported profitability levels throughout the study period, proving that several other factors positively affect profitability.

5.6 Suggestions for Further Research

In the course of the study it was noted that the scale or airline operations varied widely amongst the firms and dollar values of employed capital were materially different. It would be useful to conduct this study taking into account similar sized firms so that the industry dynamics are somewhat homogenous to all the data observations. The current study combines both international and regional airlines and therefore the predicted relationship might not give a very good fit. It would also be useful to include other indicators of financial performance such as ROA in order to study their effect on various debt levels.

REFERENCES

- African Airlines Association. (2017). *Annual Report*. Nairobi: Camerapix Magazines Ltd.
- Andrea, T., Serna, B., Platero, D. C., & Dimitar, P. (2005, May 2). Final Project; Air transportation industry. New York, USA: New York University.
- Arnold, G. (2007). *Essentials of Corporate Financial Management* (2nd ed.). Salford University: Pearson.
- Brealey, R. A., Myers, S. C., & Marcus, A. J. (2003). *Fundamentals of Corporate Finance*. Mishawaka, USA: Irwin/McGraw-Hill.
- Brenda, T. (2014, November). The intriguing business of Swissport. *Airport Business Magazine*, p. 34.
- Brown, B. (2011). *Economic benefits from Air Transport in Kenya*. Oxford: Oxford Economics.
- Cooper, D. R., & Schindler, P. S. (2006). *Business Research Methods* (9 ed.). New Delhi: Tata McGraw Hill Education Private Limited.
- Corporate Finance Institute. (2015). *Profitability Ratios; Measuring a company's earning power*. Retrieved from [corporatefinanceinstitute.com: https://corporatefinanceinstitute.com/resources/knowledge/finance/profitability-ratios/](https://corporatefinanceinstitute.com/resources/knowledge/finance/profitability-ratios/)
- Doganis, R. (2001). *The Airline Business in the Twenty-first Century*. London and New York: Routledge Taylor and Francis Group.
- Duah, A.-A. (2015, August). Assessing the impact of capital structure on profitability on manufacturing industry in Ghana ; . *A Case study at selected firms*. Accra, Ghana: Kwame Nkurumah University of Science and Technology.
- Erickson, S. M., & Trevino, R. (1994). A pecking order approach to leasing; The airline industry case. *Journal of Finance and Strategic decisions*, 7(3).
- Frank, M. Z., & Goyal, V. K. (2005, February). Tradeoff and Pecking Order Theories of Debt . *Handbook of Corporate Finance: Empirical Corporate Finance*. Dartmouth: Tuck School of Business at Dartmouth.
- Gess, G. G., & Richard B Robinson, J. (1984). Measuring Organisational Performance in the absence of objective measures: The case of the privately held firm and Conglomerate business unit. *Strategic Management Journal* , 265-273.
- Gibson, C. H. (2014). *Financial Statement Analysis* (13th ed.). Westbloomfield, MI, USA: Cengage Learning India PVT Ltd.
- Gichangi, N. K. (2014). The relationship between Capital Structure and profitability of listed non-financial firms in Kenya. Nairobi, Kenya : University of Nairobi.
- Gilloreto, L. (1988). *Strategic Airline Management ; Global war begins*. London: Pitman.

- Gitari, T. N. (2014, July). Study on the relationship between capital structure and financial performance of the manufacturing firms listed on the Nairobi Stocks Exchange. Nairobi, Kenya : United States International University -Africa.
- Graham, J. R., & Harvey, C. R. (1999). *The theory and practice of corporate finance ; Evidence from the field*. Durham : Duke University .
- Group, A. T. (2005). *The economic and social benefits of air transport* . Geneva: Oxford Economic Forecasting.
- Guttery, B. R. (1998). *Encyclopedia of African Airlines*. Jefferson, North Carolina: McFarland and Company.
- Hailu, A. (2015, June). The impact of profitability on Commercial Banks in Ethiopia. Addis Ababa, Ethiopia: Addis Ababa University .
- Inter Vitas Consulting Ltd . (2014). *The Economic benefits of Intra-Africa Air Service Liberalisation*. London : Intervistas Consulting Ltd .
- Irandu, E. M. (1995). Air Transport in Kenya; An Analysis of domestic and international airline networks. Nairobi, Kenya : University of Nairobi.
- Kamau, M. (2017, December 3rd). Intrigues behind Kenya Airways debt restructuring . *The Standard Newspaper* .
- Kithinji, A. M. (2012, February to March). The link between financial strategy and corporate strategy. *The Accountant Magazine*, pp. 16-17.
- Koech, S. K. (2013, November). Effect of Capital Structure on Profitability of Financial Firms listed in the Nairobi Stock Exchange. Nairobi, Kenya: Kenyatta University .
- Koralun-Bereznicka, J. (2013). How does Asset structure correlate with Capital struture -Cross Industry and Cross-size analysis of EU countries. *Universal Journal of Accounting and Finance*, 19-28.
- Markowitz, H. (1952). Portfilio Theory. *Journal of Finance*, 7.
- Ministry of Transport . (2010). *Intergrated Nationl Transport Policy* . Nairobi: Ministry of Transport .
- Mugenda, O. M., & Mugenda, A. G. (1999). *Research Methods; Quantitative and Qualitative approaches*. Nairobi: Acts Press.
- Mwaura, P. M. (2014, November). The relationship between Capital Structure and Financial Preformance of Firms listed at the Nairobi Securities Exchange. Nairobi, Kenya : University of Nairobi.
- Okendo, B. (2018). *JKIA ranked best airport in Africa*. Nairobi: The Standard Media .

- Pike, R., & Bill, N. (2009). *Corporate Finance and Investment; Decisions and Strategies*. Edinburgh: Pearson Education Limited .
- Popescu, L., & Visinescu, S. (2009). A Review of teh Capital Structure Theories. *Economic Science Vol 3*.
- Ross, S. A., Randolph, W., & Jordan, B. D. (2001). *Essentials of Corporate Finance* (3rd ed.). McGraw-Hill College.
- Sovbetov, Y. (2013, May). Relationship between capital structure and profitability; Evidence from UK banking industry over the period of 2007-2012. Cardiff Metropolitan University.
- Transport, M. o. (2009, May). *Ministry of Transport: Documents*. Retrieved from Ministry of Transport Web site : <http://www.krb.go.ke>
- Watson, D., & Head, A. (2010). *Corporate Finance; Principals and Practice*. Financial Times Prentice Hall.
- Wykoff, D. D., & Maister, D. H. (1977). *The domestic airline industry*. Lexington Books.

APPENDICES

APPENDIX I: LIST OF AIRLINES IN IOSA REGISTRY AS AT MAY 2018

Name of Airline firm	Availability of published financials	Fully Government owned	Country
Africa World Airlines	×	×	Ghana
Air Algérie	×	✓	Algeria
Air Austral	×	×	Reunion Islands
Air Botswana	×	✓	Botswana
Air Burkina	×	×	Burkina Faso
Air Cairo	×	×	Egypt
Air Madagascar	×	×	Madagascar
Air Mauritius	×	×	Mauritius
Air Namibia	×	✓	Namibia
Air Peace Ltd	×	×	Nigeria
Air Seychelles	✓	×	Seychelles
Allied Air	×	×	Nigeria
Almasria Universal Airlines	×	×	Egypt
Arik Air	×	×	Nigeria
Cameroon Airlines Corporation	×	✓	Cameroon
CemAir (Pvt) Ltd	×	×	South Africa
Comair	✓	×	South Africa
Compagnie Aérienne ASKY	×	×	Togo
Dana Airlines	×	×	Nigeria
EgyptAir	✓	✓	Egypt
Ethiopian Airlines	✓	✓	Ethiopia
FlyEgypt	×	×	Egypt
Kenya Airways	✓	×	Kenya
LAM Mozambique Airlines	×	×	Mozambique
Mango Airlines	×	✓	South Africa
Mauritania Airlines International	×	×	Mauritania
Med-View Airlines	✓	×	Nigeria
Nile Air	×	×	Egypt
Nouvelair	×	×	Tunisia

Nova Airways	✗	✗	Sudan
Overland Airways Ltd	✗	✗	Nigeria
Precision Air Services	✓	✗	Tanzania
Royal Air Maroc	✗	✓	Morocco
RwandAir	✗	✓	Rwanda
SAFAIR (Proprietary) Ltd	✗	✗	South Africa
South African Airlink	✗	✗	South Africa
South African Airways	✓	✗	South Africa
South African Express Airways	✗	✗	South Africa
Starbow	✗	✗	Ghana
TAAG Angola Airlines	✗	✓	Angola
TACV Cabo Verde Airlines	✗	✗	Cape Verde
Tassili Airlines	✗	✓	Algeria
Trans Air Congo	✗	✗	Republic of Congo
Tunisair	✗	✗	Tunisia

APPENDIX II: SUMMARY REGRESSION OUTPUT FOR FINANCIAL YEARS 2012-16

SUMMARY OUTPUT
2012

<i>Regression Statistics</i>	
Multiple R	0.64
R Square	0.41
Adjusted R Square	(0.18)
Standard Error	1.45
Observations	7.00

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3.00	4.39	1.46	0.70	0.61
Residual	3.00	6.30	2.10		
Total	6.00	10.69			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	(1.88)	1.16	(1.63)	0.20	(5.57)	1.80
X1	(0.03)	0.16	(0.21)	0.85	(0.54)	0.47
X2	1.86	1.52	1.22	0.31	(2.99)	6.71
X3	0.15	0.22	0.69	0.54	(0.56)	0.87

SUMMARY OUTPUT 2013

<i>Regression Statistics</i>	
Multiple R	0.75
R Square	0.57
Adjusted R Square	0.14
Standard Error	0.91
Observations	7.00

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3.00	3.32	1.11	1.32	0.41
Residual	3.00	2.51	0.84		
Total	6.00	5.82			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	1.84	0.85	2.17	0.12	(0.86)	4.55
X1	0.00	0.05	0.09	0.93	(0.17)	0.18
X2	(1.73)	0.92	(1.88)	0.16	(4.68)	1.21
X3	(0.10)	0.10	(0.94)	0.42	(0.42)	0.23

SUMMARY OUTPUT 2014

<i>Regression Statistics</i>	
Multiple R	0.96
R Square	0.91
Adjusted R Square	0.83
Standard Error	0.56
Observations	7.00

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3.00	9.73	3.24	10.43	0.04
Residual	3.00	0.93	0.31		
Total	6.00	10.67			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	(1.23)	0.45	(2.76)	0.07	(2.65)	0.19
X1	0.01	0.03	0.23	0.83	(0.08)	0.10
X2	1.09	0.24	4.58	0.02	0.33	1.85
X3	0.16	0.08	1.92	0.15	(0.11)	0.43

SUMMARY OUTPUT 2015

<i>Regression Statistics</i>	
Multiple R	0.80
R Square	0.64
Adjusted R Square	0.43
Standard Error	0.87
Observations	9.00

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3.00	6.79	2.26	2.99	0.13
Residual	5.00	3.79	0.76		
Total	8.00	10.58			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	(0.47)	0.38	(1.22)	0.28	(1.45)	0.52
X1	0.04	0.05	0.93	0.39	(0.08)	0.16
X2	(0.18)	0.06	(2.93)	0.03	(0.34)	(0.02)
X3	0.09	0.05	2.01	0.10	(0.03)	0.21

SUMMARY OUTPUT 2016

<i>Regression Statistics</i>	
Multiple R	0.53
R Square	0.28
Adjusted R Square	(0.15)
Standard Error	0.92
Observations	9.00

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3.00	1.67	0.56	0.65	0.61
Residual	5.00	4.27	0.85		
Total	8.00	5.94			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	(0.07)	0.41	(0.17)	0.87	(1.12)	0.98
X1	0.08	0.15	0.56	0.60	(0.29)	0.46
X2	0.00	0.02	0.22	0.83	(0.05)	0.06
X3	0.06	0.05	1.07	0.33	(0.08)	0.19

**APPENDIX III: LIST OF COMPUTED AND OBSERVED DATA
FROM AIRLINE FINANCIALS FOR THE PERIOD IN REVIEW.**

Year	Airline Carrier	curr million	curr million	curr million	curr million	curr million	curr million
		Net operating Profit	Income tax expense	Interest expense	Net debt	Group equity	Capital Employed
2012	Kenya Airways	KES 1,306.00	KES 486.00	KES 1,341.00	KES 21,251.00	KES 23,023.00	KES 53,676.00
2012	South African Airways	-R 937.00	-R 554.00	R 172.00	R 1,892.00	-R 165.00	R 3,833.00
2012	Comair Ltd	R 18.50	R 1.53	R 19.43	R 150.29	R 810.13	R 995.28
2012	Precision Air	TZS 12,766.00	TZS 1,206.00	TZS 7,598.00	TZS 164,256.00	TZS 20,076.00	TZS 170,887.00
2012	Ethiopian Airlines	Br1,340.00	Br0.00	Br314.00	Br15,837.00	Br8,517.00	Br26,764.00
2012	Air Seychelles	\$ 1.65	\$ 0.00	\$ 1.30	\$ (15.10)	\$ 2.87	\$ 4.83
2012	Egypt Air	EGP 10,762.00	EGP 0.00	EGP 0.00	-EGP 702.00	-EGP 3,284.00	-EGP 3,111.00
2013	Kenya Airways	-KES 5,284.00	KES 486.00	KES 1,907.00	KES 51,802.00	KES 31,209.00	KES 31,209.00
2013	South African Airways	-R 588.00	R 0.00	R 212.00	R 2,752.00	-R 1,055.00	R 2,114.00
2013	Comair Ltd	R 367.66	R 101.07	R 61.45	R 1,269.99	R 1,014.10	R 2,289.00
2013	Precision Air Ltd	-TZS 18,805.00	-TZS 955.25	TZS 8,171.00	TZS 207,671.00	-TZS 10,350.00	TZS 157,280.00
2013	Ethiopian Airlines	Br2,774.00	Br0.00	Br721.00	Br25,934.00	Br12,243.00	Br39,005.00
2013	Air Seychelles	\$ 3.78	\$ -	\$ 0.80	\$ 9.97	\$ 5.95	\$ 8,163
2013	Egypt Air	EGP 12,682.00	EGP 0.00	EGP 0.00	-EGP 1,642.00	-EGP 8,093.00	EGP 5,032.00
2014	Kenya Airways	-KES 2,721.00	KES 486.00	KES 2,424.00	KES 79,681.00	KES 28,229.00	KES 82,162.00
2014	South African Airways	-R 2,413.00	R 0.00	R 296.00	R 4,834.00	-R 3,839.00	-R 832.00
2014	Comair Ltd	R 416.87	R 108.86	R 77.32	R 422.42	R 1,057.60	R 2,432.00
2014	Precision Air Ltd	TZS 3,163.00	TZS 411.07	TZS 10,450.00	TZS 210,620.00	-TZS 10,351.00	TZS 124,632.00
2014	Ethiopian Airlines	Br3,707.00	Br0.00	Br909.00	Br30,514.00	Br15,294.00	Br48,012.00
2014	Air Seychelles	\$ 4.84	\$ -	\$ 1.65	\$ 1.53	\$ 9.37	\$ 26.69
2014	Egypt Air	EGP 12,931.00	EGP 0.00	EGP 0.00	-EGP 1,641.00	-EGP 8,093.00	-EGP 8,015.00
2015	Kenya Airways	-KES 16,333.00	KES 486.00	KES 4,734.00	KES 124,670.00	KES 5,936.00	KES 97,795.00
2015	South African Airways	-R 4,833.00	R 0.00	R 523.00	R 8,801.00	-R 9,327.00	-R 2,658.00
2015	Comair Limited	R 305.12	R 83.09	R 72.92	R 1,450.96	R 1,125.87	R 2,325.00
2015	Precision Air Ltd	-TZS 52,303.00	TZS 331.41	TZS 8,801.00	TZS 233,403.00	-TZS 113,163.00	TZS 32,256.00
2015	Ethiopian Airlines	Br4,853.00	Br0.00	Br1,219.00	Br52,481.00	Br18,823.00	Br60,729.00
2015	Air Seychelles	\$ 6.55	\$ -	\$ 4.46	\$ 19.17	\$ 11.43	\$ 49.41
2015	Egypt Air	EGP 13,861.00	EGP 0.00	EGP 0.00	-EGP 1,915.00	-EGP 9,770.00	-EGP 9,752.00
2015	Midview Airline	₦ 3,398.00	₦ 67.00	₦ 193.00	₦ 764.00	₦ 6,424.00	₦ 5,846.00

2015	SA Express	R 176.00	-R 25.00	R 30.00	R 276.00	R 114.00	R 115.00
2016	Kenya Airways	-KES 4,093.00	KES 486.00	KES 7,047.00	KES 131,046.00	-KES 35,667.00	KES 84,939.00
2016	South African Airways	R 297.00	R 0.00	R 894.00	R 10,677.00	-R 10,910.00	-R 1,269.00
2016	Comair Ltd	R 395.00	R 95.84	R 170.50	R 1,557.54	R 1,265.22	R 3,752.00
2016	Precision Air Ltd	-TZS 25,221.00	TZS 272.26	TZS 15,485.00	TZS 293,241.00	-TZS 204,325.00	-TZS 74,170.00
2016	Ethiopian Airlines	Br7,338.00	Br0.00	Br1,307.00	Br41,474.00	Br25,444.00	Br67,857.00
2016	Air Seychelles	\$ 6.63	\$ -	\$ 6.23	\$ 45.05	\$ 11.20	\$ 98.94
2016	Egypt Air	EGP 13,438.00	EGP 0.00	EGP 0.00	-EGP 1,892.00	-EGP 11,050.00	-EGP 11,034.00
2016	Midview Airline	₦ 4,067.00	₦ 252.00	₦ 227.00	₦ 1,653.00	₦ 7,386.00	₦ 6,746.00
2016	SA Express	R 270.00	R 11.00	R 40.00	R 357.00	R 132.00	R 131.00