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2023
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Sepeng, Reabetswe Tiisetso . (2023). Determinants of Growth and Profitability of the Aviation Industry [Master's dissertation , University of the Witwatersrand, Johannesburg]. WireDSpace.

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RESEARCH REPORT (BUSA7388A)

Determinants of Growth and Profitability of the Aviation Industry

Submitted by:

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February 2023

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A research report submitted in partial fulfilment of the requirements for the degree in Masters of Management in Finance and Investments in the Faculty of Commerce, Law and Management

Wits Business School

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Johannesburg, South Africa

Abstract

Despite the recent decrease in growth rates, there has been a significant growth in the airline industry over the years which is evident in the increase in the number of passengers and networks before the Covid-19 pandemic, thus making the growth attributable to the increase in people's propensity to fly. In this study, the performance of airline industries is measured in terms of the growth rate and the profitability for each region within emerging markets, namely: Africa, Asia-Pacific, Middle East, Latin America, North America and Europe. Due to a constraint in data availability, the duration of interest is between 2009 and 2017, thus excluding the effects of the covid-19 pandemic which took place in 2020.

The problem this study addresses is the discrepancy identified between the growth statement made in the global context and what has been observed in emerging markets. This is done by assessing how some of the determinants that have been reported in the literature to fuel growth and profitability, affect airline companies and by investigating the relationship between the profitability and growth of airline companies in the context of emerging markets.

Three different methods were used to achieve the research objectives of this study, namely: correlation, Granger causality and regression analysis. In response to the first research question, it was found that oil price fluctuations, GDP, passenger yield, size and liquidity have an effect on the growth of airline companies in emerging markets while only liquidity and fleet size to a smaller extent, have an effect on the profitability thereof. In response to the second research question, it was found that there is no significant relationship between the growth and profitability of airline companies in emerging markets.

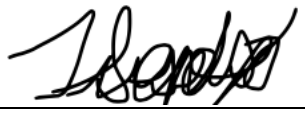
The recommendations made in the study include using a dynamic panel approach for any further research in order to increase the robustness of the study and to reduce any issues associated with endogeneity. In terms of policy and/or management recommendations, depending on the management strategy in place, the determinants should be prioritized based on whether the chosen business model is in pursuit of growth or profitability since the study has shown the relationship between these to be insignificant for airline companies in emerging markets.

Keywords: Airline Companies, Growth, Profitability, Emerging markets

Declaration

I, Reabetswe Tiisetso Sepeng, with student Number: 1355686, declare that this research report is my own work except where indicated in references and acknowledgments. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in Finance and Investment at the University of the Witwatersrand, Johannesburg.

It has not been submitted before for any degree or examination in this or any other university.



Reabetswe Tiisetso Sepeng
21 July 2023

Dedication

To my parents: Thembi and Kotu Sepeng.

Thank you for inspiring me and for your unwavering support.

This one is for you.

Acknowledgements

I would like to thank the Lord for blessing me with such a great opportunity, for His provision and for the strength to see this degree through to completion. I would also like to thank Dr Jones Odei-Mensah for being a great supervisor, assisting me and providing in-depth feedback, your efforts are much appreciated sir.

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Chapter 1: Introduction

1.1. Background and Context of the Study

As shown in Figure 1: Air traffic growth in terms of Revenue Passenger Kilometres , the airline industry has grown significantly over the years (ICAO, 2012; IATA, 2021) and this is evident in the increase in the number of passengers and networks. The sustainability of this growth depends on the efficiency and effectiveness with which airlines utilise the resources they have accumulated during this growth period (Jenatabadi & Ismail, 2012). The environment in which the airline industry operates is susceptible to risks such as the outbreak of a disease, war, increases in fuel and oil prices and the economic cycle (Lee & Jang, 2006), all of which will have a significant impact on both the growth trajectory as well as the profitability thereof.

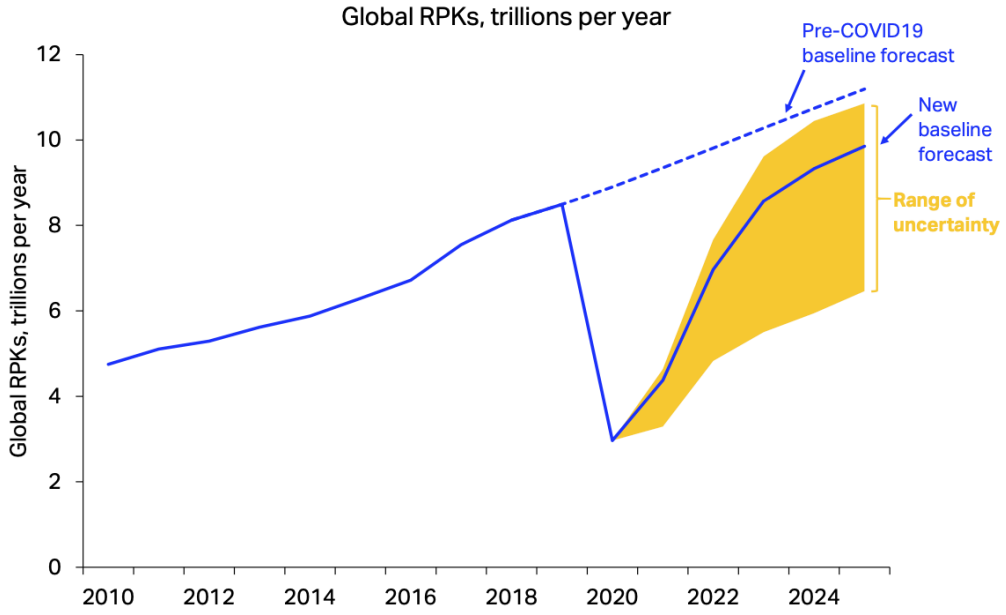


Figure 1: Air traffic growth in terms of Revenue Passenger Kilometres *(IATA, 2021)*

Many studies pertaining to the performance and profitability of airlines have been conducted. These include a study done on the impact of operational performance on airline cost structure where the focus was placed on airline companies in the United States of America (Zou & Hansen, 2012) as well as a study where the operational performance of European airline companies was evaluated (Barros & Peypoch, 2009). However, as suggested by Yan et al. (2016) where they assess the impact of environmental innovation in the airline industry, very few of these studies have focused on emerging markets (Yan,

Cui, & Gil, 2016). One of these is a study done to analyse the efficiency of African airlines which reveals that variables related to size, the fleet mix and public ownership are important in determining the efficiency levels of airlines in this context (Barros & Wanke, 2015).

The demand and hence growth in the airline industry is highly affected by individuals' propensity to fly which is dependent on the general health of the economy, the demographic within that economy as well as the geographical placement (Morphet & Bottini, 2014). Figure 2: Passengers' propensity to fly in different markets shows a comparison of the propensity to fly for 24 countries across the globe (Pearce , 2017). Based on this, countries often classified as emerging market economies have shown the lowest propensity to fly, as informed by statistics taken until 2017. It was, however, reported that the Covid-19 pandemic resulted in a 50.3% loss of global passenger traffic between 2019 and 2022, and that the number of passengers had gone down by 10.2 billion in this time, thus reflecting a reduction in the propensity to fly due to the pandemic. These reported figures present a gap and a need for the this study (Airports Council International, 2022). Upon completing this study, a conclusion regarding the extent to which airline companies in emerging market economies affect the international economic performance of airlines, as reported by the International Air Transport Association (IATA), is made. The regions of interest are in line with the classifications in the aforementioned reports, i.e., two countries from Africa, Asia-Pacific, Middle East, Latin America, Europe and North America, thus providing results that are reflective of the effects of the airline companies across the globe.

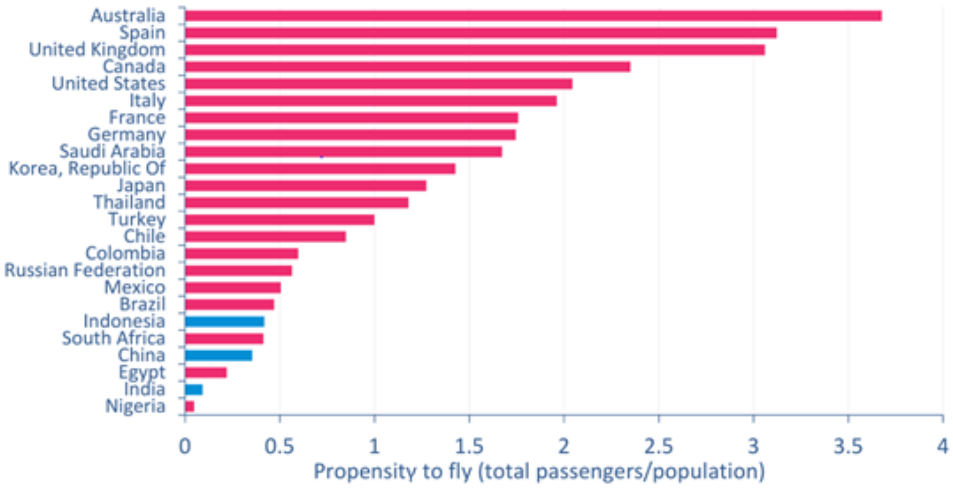


Figure 2: Passengers' propensity to fly in different markets *(Pearce , 2017)*

For companies in general, the literature shows that size, age, location, the country's GDP and the firm's liquidity have an effect on the growth and profitability thereof. There is limited evidence of extensive literature on the effects of these parameters on airline companies (Maung, Douglas, & Tan, 2022). This study aims to look into the effects of the variables mentioned above in addition to more effects of airline-specific variables, such as passenger yield, oil price and exchange rate fluctuations. The rate at which the size of firms changes over the years is, in many studies, used as a measure of firm growth (Yadav, Pahi, & Gangakhedkar, 2021) and as a result, there is a positive relationship between the two concepts.

Some works pertaining to the relationship between company size and profitability suggest that larger firms produce high profits in comparison to smaller firms (Lee, 2009) while other works found contradicting evidence for companies in different locations (Yadav, Pahi, & Gangakhedkar, 2021). Some location studies that have been done on different companies have shown that the growth of a firm can be attributed to its location (Audretsch & Dohse, 2004), however, very little evidence has been found regarding the effect of location on a firm's profitability.

The study of this relationship in the context of airline companies in emerging markets is particularly important because it reflects the extent to which the industry growth, which has been seen over the years and which has been experienced by individual companies, reflects the creation of value and hence profits which can ideally be converted into cash, in an effective and sustainable way (Davidsson, Steffens, & Fitzsimmons, 2008).

This study aims to assess the extent to which a selected number of determinants, identified in the literature, affect the growth and profitability of airline companies in emerging markets. The study also aims to investigate whether the managerial view which puts emphasis on increasing revenue and hence growth, deters the profitability of the company or if a trade-off is not necessary. Furthermore, the study aims to make a contribution to the limited literature that exists by investigating the relationship between growth and profitability of airline companies in emerging market economies. The airline companies of interest in this study are limited only to passenger travel and does not include air freight.

In this study, the changes in overall revenue and the revenue passenger kilometers (RPK) are used to measure growth while the net Profit after tax is used as an indicator for

profitability. The changes in revenue, both the overall revenue and the RPK are chosen as measures of growth because they reflect the changes in demand for air travel, an increase of which indicates improved performance and growth. Furthermore, the net profit after tax is chosen as a measure of profitability because it is the measure used by the International Air Transport Association in their semi-annual reports which are used as a benchmark as they reflect regional and global industry results, furthermore, this parameter is reflective of all the aspects that affect the business' operations.

1.2. Research Problem Statement

Despite the recent decrease in growth rates, Figure 1: *Air* traffic growth in terms of Revenue Passenger Kilometres shows significant growth in the airline industry over the years which is evident in the increase in the number of passengers and networks before the Covid-19 pandemic, thus making the growth attributable to the increase in people's propensity to fly. Aviation bodies such as the International Air Transport Association (IATA) place focus on many aspects that contribute to the growth of the industry and one of the most important is the economic performance thereof (Bakir, et al., 2020). Many of the reports through which this performance has been described include results pertaining to the growth rate of the airline industry, profitability and the propensity to fly for each region (IATA Economics, 2019).

Taking a closer look at emerging markets, it is evident that the growth rates have been unstable over the years (IATA Economics, 2019), the profitability has not shown increases that follow the trends seen in developed markets which follow global trends and the propensity to fly in these markets remains significantly lower (Pearce , 2017). Furthermore, there appears to be a trend of great initial progress for newly formed companies which is then followed by stagnation or failure, examples of which include 1Time Airline, Aerolift, South African Express and most recently Comair.

The problem this study aims to address is the discrepancy identified between the growth statement made in the global context and what has been observed in emerging markets by assessing how some of the mechanisms that have been reported in the literature, to fuel growth and profitability affect airline companies and by investigating the relationship between the profitability and growth of airline companies in the context of emerging markets. The assessment of the determinants of growth and profitability are of particular

importance because theoretical studies have shown that people's propensity to fly is dependent on external factors such as the general health of the economy, as a result, an empirical study will provide insights regarding the differences that have been identified. Furthermore, a study of the relationship between the growth and profitability will provide an understanding regarding whether the performance of airline companies is achieved and sustained by focusing on growth factors, profitability drivers or if the two are directly related and can be pursued simultaneously.

There exists extensive research in the area of establishing the relationship between the growth and profitability of companies, however, this research is very limited in that very few studies place focus on specific industries and regions (Yan, Cui, & Gil, 2016). Of the different studies that have been done on the performance and profitability of airlines, some of which are listed in section 1.1, very few have focused on emerging markets (Yan, Cui, & Gil, 2016), thus presenting a key gap and opportunity for contribution to the literature. Furthermore, there exists very few studies in the literature where focus is placed on the airline industry and the aviation industry as a whole (Maung, Douglas, & Tan, 2022).

1.3. Research Objectives

The aim of the study is to achieve the following objectives:

1.3.1. To assess how some of the mechanisms that have been reported to fuel growth and profitability affect airline companies in emerging markets.

1.3.2. To use the Granger causality test to assess the direction in which the mechanisms that have been reported to fuel growth and profitability affect airline companies in emerging markets

1.3.3. To investigate the relationship between the profitability and growth of airline companies in emerging markets.

1.4. Research Questions

In line with the objectives, the study aims to answer the following questions:

1.4.1. Main research question

What are the factors that affect the growth and profitability of airline companies in the context of emerging markets?

1.4.2. Sub-research-question

Is there a significant relationship between the growth and profitability of airline companies in emerging markets?

Chapter 2: Literature Review

2.1.The Airline Industry

The Aviation industry has grown significantly over the years due to various reasons, including but not limited to, deregulation which resulted in decreased fares, the ability to fly over a greater range domestically and internationally as well as accelerated technological improvements (Maung, Douglas, & Tan, 2022). The aviation industry is made up of many sub-sectors, the main three of which are the commercial sector, the general aviation sector and the military sector (Sectors of Aviation, 2020). The main players within the commercial sector are the airlines whose core function is to provide air transport to passengers, the aim of which is to maximise profits. Similar to other industries, the recent decrease in the rate of economic growth has raised concerns for many of the players within the airline industry regarding the changes in the growth trajectory of the industry over the next coming years.

The International Air Transport Association (IATA) releases a semi-annual report which shows the economic performance of the airline industry. In this report, the growth is measured in terms of the percentage change in Revenue Passenger Kilometres (RPK) over the years of interest while the profit for each period is captured as the net profit after tax and the results obtained between 2014 and 2019 are summarised in Figure 3: The combined growth rate of the airline industry in different regions between 2014 and 2019 and Figure 4: The combined profit made by the airline industry for different regions between 2014 and 2019 (IATA Economics).

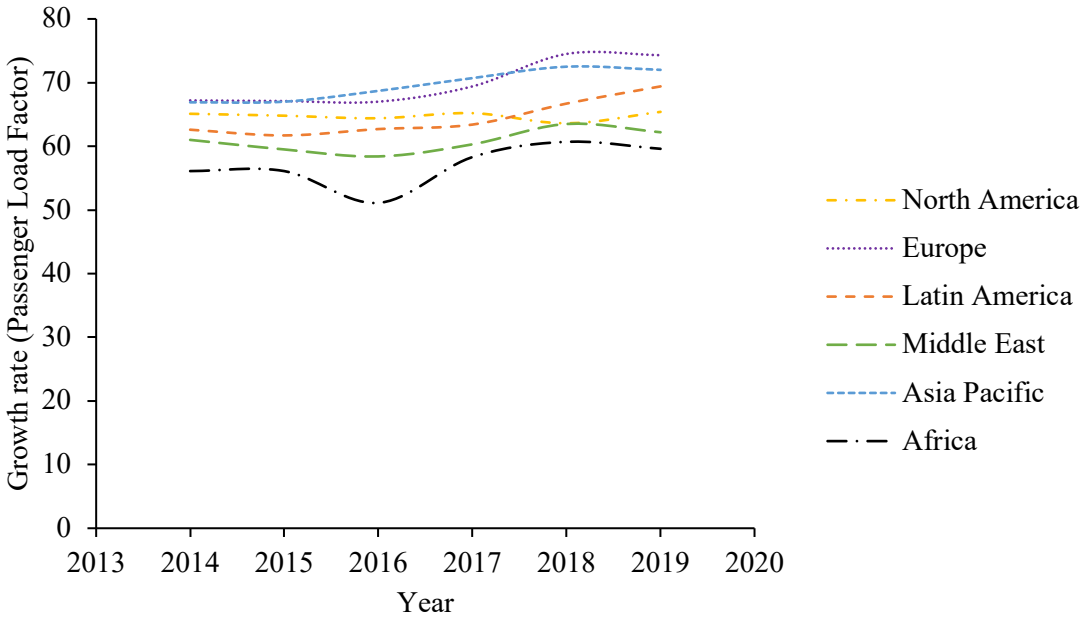


Figure 3: The combined growth rate of the airline industry in different regions between 2014 and 2019



Figure 4: The combined profit made by the airline industry for different regions between 2014 and 2019

Based on these results, it can be seen that for both the growth rate and the profits recorded, the regions that performed least are Africa, the Middle East and Latin America. These

regions comprise of many of the countries that have been classified as emerging market economies (International Monetary Fund, 2021). Emerging markets exist within developing countries and are characterised by prospects of high growth, the nature of the investments is high in risk but there exists a very high likelihood that the returns will be high and they are often undergoing a transitional phase regarding their economic, political and social standing (Mody, 2004). Airline companies in the emerging markets have grown to make significant contributions to the global airline industry by increasing both revenue and the number of passengers which impacts the profitability and growth of the industry respectively (Yan, Cui, & Gil, 2016). However, on their own, emerging markets experience very slow growth in demand and hence growth in their respective airline industries, which is highly affected by individuals' propensity to fly (Pearce , 2017) and is dependent on the general health of the economy, the demographic within that economy as well as the geographical placement (Morphet & Bottini, 2014).

2.2.Emerging Markets

Some of the studies done pertaining to the performance and profitability of airlines include a study on the operational performance of airlines (Barros & Peypoch, An evaluation of European airlines' operational performance, 2009) where the sample is made up of European Airline companies including Czech Republic, Poland, Greece, Romania and Turkey which are classified as emerging markets. The indicators used to measure performance in this study are changes in revenue passenger kilometres and Earnings before interest and tax while the determinants of interest are number of employees, operational costs and the number of planes. Studies have also been done on the efficiency of airlines in the Asia-Pacific region (Wanke, Barros, & Chen, An analysis of Asian airlines efficiency with two-stage TOPSIS, 2015) and the Latin America region (Wanke & Barros, 2016). The samples from both studies comprise of both emerging and developed markets, where due to the nature of the regions, majority of the companies are classified as emerging markets. The variables used to measure efficiency are revenue, earnings before interest and tax, revenue passenger kilometres, number of passengers and number of flights while the determinants include operational costs, depreciation, salaries, employees, planes and total assets. There also exists a studies with similar variables, on the operational efficiency and impacts of the airline industry. The first study is done in the South African context (Mhlanga, Steyn, & Spencer, 2018), a country which is

classified as an emerging market and the other study was done on airline companies in the African region (Barros & Wanke, 2015).

2.3.Growth and Profitability

The growth of a company can occur at different rates, some grow at rates exceeding the GDP while others grow at rates below the GDP and this decision is based on the growth strategy which management has put in place (Maung, Douglas, & Tan, 2022). One of the factors that generally reflect a company's economic growth is its size, while the liquidity position is an important factor in sustaining the growth. This notion feeds into the very common belief in the literature which states that growth can be used as a measure of how successful a company is (Lemar & Nekzada, 2014). There exists two trains of thought regarding the main objective of the firm. Some believe that the main objective of the firm is to maximise shareholder's wealth while others believe it is to maximise profit (Dolenc, Stubelj, & LaporŠek, 2013). The difference between these two objectives is linked to the extent to which the firm has the ability to convert their profit into cash. In the context of the airline industry, majority of the revenue is made up of ticket sales (Muthusamy & Kalpana, 2018), most of which are cash transactions thus making profit maximisation, which results in the maximisation of shareholder's wealth, the objective of airline companies.

For companies in general, the literature shows that size, age, location, the country's GDP and the liquidity of the of the firm have an effect on the growth and profitability thereof. There is no evidence of extensive literature on the effects of these parameters on airline companies (Maung, Douglas, & Tan, 2022). This study aims to look into these effects in addition to the effects that are more airline specific, such as passenger yield, oil price and exchange rate fluctuations.

2.4.Size and Age

The number of employees in a company is used as a measure of the size of the firm at any given time (Parast & Golmohammadi, 2020). The rate at which the size of firms changes over the years is, in many studies, used as a measure of firm growth (Yadav, Pahi, & Gangakhedkar, 2021) and as a result, many studies argue that there is a positive relationship between the two concepts (Hendricks, Singhal, & Zhang, 2009). Some works

pertaining to the relationship between company size and profitability suggest that larger firms produce higher profits in comparison to smaller firms (Lee, Does Size Matter in Firm Performance? Evidence from US Public Firms, 2009). Another study done on airlines in the United States found that the greater the size of the firm, the more complex its structure becomes thus delaying processes that need to be followed to implement progressive performance plans that would increase growth and profitability (Parast & Golmohammadi, 2020). This delay in implementation may lead to the loss of opportunities, thus decreasing growth and profitability. Finally, there are studies done where the airline size is measured in terms of fleet size directly (Yu, Chen, & Chiang, 2017) and of available seat kilometre availability, which is closely related to its fleet (Merkert & Morrell, 2012). The samples of both studies consists of airline companies across the globe, including those in emerging markets. The first study concluded that the greater the size of an airline in terms of its fleet, the stronger the economies of scale which results in improved operational performance (Yu, Chen, & Chiang, 2017) while the second study concluded that there is an optimal size at which an airline company can operate efficiently (Merkert & Morrell, 2012), anything less or greater than this size results in inefficiencies which would impact performance. Finally, companies located in regions with better economic positions as well as those that are bigger in size tend to produce better profits (Garefalakis, Mantalis, Lemonakis, Vassakis, & Konstantinos, 2016).

In general, an analysis of a company's performance in relation to its age reveals the individual company's relevance in the industry at any point in time. Airline companies that show a performance decline as age increases often end in situations where they are unable to take on new opportunities which could lead to stagnation in performance (Ismail & Jenatabadi, 2014). The influence of a company's age on its performance is a topic with extensive literature and the conclusions vary. According to some parts of literature, the age of the company has no significant influence on its profitability (Nawaiseh, 2020). On the other hand, a study done on airline companies in the Asia pacific region concluded that older companies have more experience which provides them with more flexibility to take on opportunities that would increase their performance (Ismail & Jenatabadi, 2014). Furthermore, the lack of experience in younger companies makes it difficult to withstand any economic impacts which results in a greater effect on their performance.

2.5.GDP and Liquidity

The health of the economy of a country in a given period is measured by the gross domestic product (GDP), an increase of which has a positive effect on the propensity to fly within the country in question (Chin & Tay, 2001). The propensity to fly is a measure of the demand for air travel, which has an effect on the growth and profitability of a company. A study done on 30 airline companies across the globe concluded that GDP growth in a country results in a positive effect on performance thereof (Yu, Chen, & Chiang, 2017). This is due to the positive effect it has on the demand and hence the overall country's propensity to fly which increases revenues. Furthermore, a study done on Air passenger transport and economic activity on different geographical locations, as classified by the World Bank, found that there exists a causal relationship between air passenger transport activity and the GDP of each country (Profillidis & Botzoris, 2015), thus closely tying GDP to the airline performance. A study done on airlines in the United States reveals a discrepancy in the long-run and the short-run, where GDP growth positively affects all air travel activity in the long-run but only affects passenger air travel in the short run and has no effect on activities related to freight (Chi & Baek, 2013). A similar study done on air transport activity in Brazil also found that GDP and the demand for air travel have a relationship in the long-run, more specifically, the two variables are co-integrated (Marazzo, Scherre, & Fernandes, 2010).

Liquidity has a direct impact on the company's capital budgeting decisions (Oliveira & Fortunato, 2006) which pertain to its long term investments, affects growth and profitability. Since the liquidity of an airline company is important for the growth and sustainability thereof, it can be said that the trends in a company's cash flows is a factor that affects its growth and the sustainability thereof. Studies show a positive relationship between liquidity and growth where growth is sensitive to the cash flow of a firm (Quader, 2017) and asset liquidity is seen to have a positive effect on a company's innovation thus resulting in increased growth (Pham, Vo, Le, & Le, 2018). According to some studies, there exists a negative relationship between liquidity and the profitability of a company (Martins, Serra, & Stevenson, 2019). Other studies show that airline companies that operate in a cost effective manner present higher profitability than those that aren't and this is attributable to the increased flexibility in the control of fares (Maung, Douglas, & Tan, 2022) which results in increased control of the company's cash flows thus presenting a positive relationship.

2.6.Airline-specific determinants

Although the airline industry has exhibited great growth globally over the years, maintaining individual company growth and profitability continue to prove to be a challenge. The environment in which the airline industry operates is susceptible to risks such as the outbreak of a disease, war, increases in fuel and oil prices and the economic cycle (Lee & Jang, 2006), all of which will have a significant impact on both the growth trajectory as well as the profitability thereof. Furthermore, factors such as high fixed costs and a high dependence on leverage contribute to the inability to reach and sustain high profitability.

One of the factors considered to be of concern is the rate at which trade disputes are increasing over the years, thus resulting in the slowing of world trade and the rate of growth of international travel. Airlines have now seen more of an increase in domestic travel than in international travel, this is attributed to the decrease in prices of air travel. According to the International Air Transport Association (IATA), real transport costs have, as shown in Figure 5: Real transport costs over the years *(IATA Economics, 2019)*, decreased by more than 50% between 1999 and 2019 (IATA Economics, 2019). Hence the growth of sales over the years is has been used as a measure of growth and furthermore, it contributes to the profitability of the company.

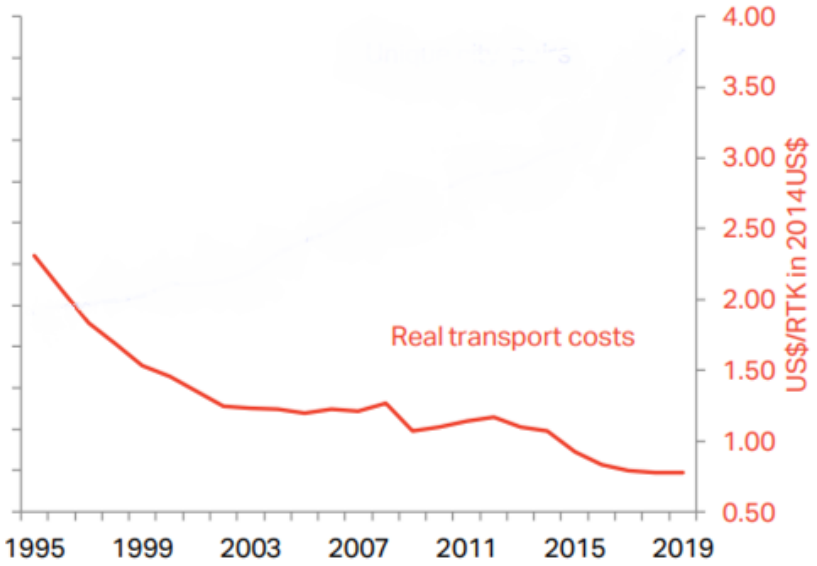


Figure 5: Real transport costs over the years *(IATA Economics, 2019)*

One of the factors that have been reported as a determinant for airline growth and profitability is the passenger yield which is the average fare of flights and is a measure of the efficiency of fare allocation and revenue collection from ticket sales (Maung, Douglas, & Tan, 2022). The passenger yield of an airline is closely related to the demand for its flights, a study of the performance of airlines in South Africa concluded that the higher the passenger yield, the greater the airline's efficiency, thus having a positive effect on its performance (Mhlanga, Steyn, & Spencer, 2018).

Fuel is one of the largest costs that airlines incur and it accounts from close to 30% of the expenses incurred by airlines (Maung, Douglas, & Tan, 2022). As a result, oil price fluctuations have a material impact on airlines' profitability and its overall performance (Wattanatorn & Kanchanapoom, 2012). Figure 6: The effects of jet fuel price on the net profit margin of the airline industry shows the effect of fuel prices on the net profit margin of the airline industry for the years 2010 to 2019 (IATA, 2019). The graphs show a negative relationship between jet fuel prices and the net profit margin, where high prices result in low net profit margins. This was further supported by a study done on the efficiency of airlines in Asia (Wanke, Barros, & Chen, 2015), a study done on airlines in the United States (Pineda, Liou, Hsu, & Chuang, 2017) and another study done on airlines from the different regions across the globe (Yu, Chen, & Chiang, 2017) where results showed a negative relationship between increases in fuel prices and airline performance.

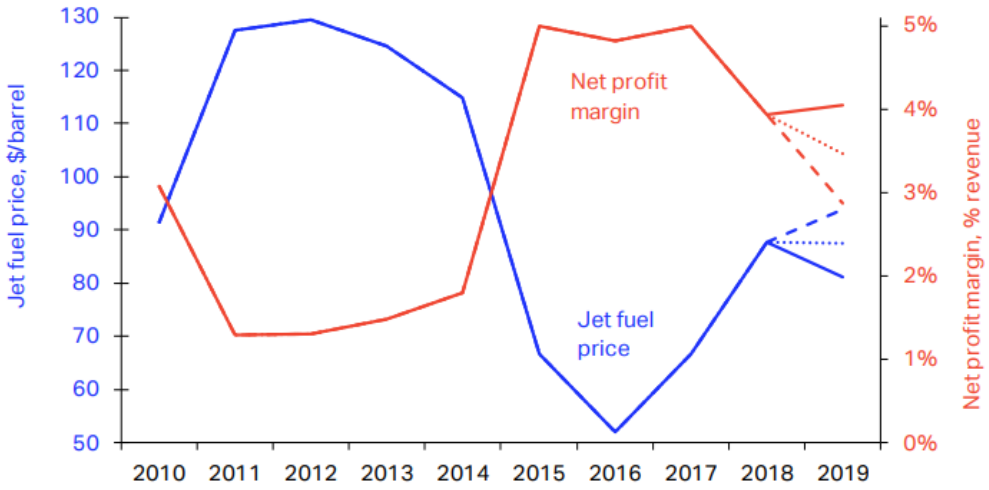


Figure 6: The effects of jet fuel price on the net profit margin of the airline industry

Similar to fuel prices changes, changes in local currency against foreign currency is another world economic shock that can pose a great threat to the performance of airlines, as such, airlines make provisions for foreign exchange risk. Under normal circumstances, the changes in exchange rates are minimal and can be accounted for in the provisions taken, however, major changes often have a huge impact as shown in Figure 7: Changes in currencies due to the appreciation of the US dollar as recorded between January 2014 and December 2015 (Matters, 2015). Any major changes in local currency against foreign currencies will have a significant effect on airlines' costs which will affect their profitability (South African Airways Group, 2017). A study done on airline companies in Indonesia concluded that the weakening of the local currency has a significant impact on the operational costs of the airline, thus affecting its performance and if prolonged, could result in the collapse of the company (Simarmata, Charles , & Wynd , 2014). Furthermore, changes in exchange rates affect supply and demand, thus impacting the propensity to fly and any decisions made by the airline company regarding its capacity. Exchange rate changes also affect the capital structure of the airlines due to any foreign investment that may exist (Yilmaz, 2022).

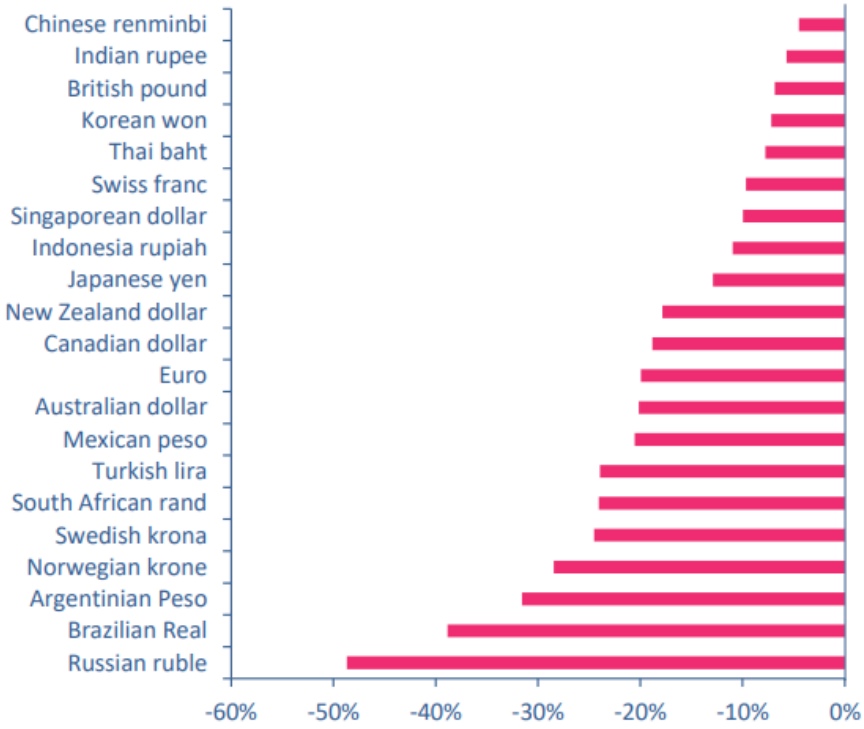


Figure 7: Changes in currencies due to the appreciation of the US dollar as recorded between January 2014 and December 2015 *(Matters, 2015)*

The passenger load factor is a measure of the extent to which an airline's output, which in this case is available passenger seats, is sold or consumed (Airline Data Project, n.d.). An increase in the load factor may increase growth by encouraging airlines to increase their outputs by investing in larger aircraft. In addition, higher levels of output may increase the profitability of the airlines if the benefits that come with the expansion exceed the costs thereof. The passenger yield of the company speaks to the average revenue per customer and is calculated per mile (1.609 km) and the more optimal the airline's seating and fare structure is, the greater the financial performance and hence profitability (Maung, Douglas, & Tan, 2022).

2.7.Relationship between growth and profitability

Although most firms aim to maximise profits, it is in the managers' best interest that growth is maximised. This discrepancy, in addition to how difficult it may be for managers to pursue both goals simultaneously, leads to the belief that the two objectives are competing as opposed to feeding into each other which implies a negative relationship. This phenomenon is seen when companies first take on profitable projects in the beginning and later forgo these to place focus on expansion which results in growth at the expense of profitability (Lee, 2013).

There exists a positive relationship between investment and profitability in such a way that the existence of investment opportunities for the firm and the ability to take them on, increases the likelihood that the firms will be more profitable (Yousaff, 2015). Investments, especially in the context of non-current assets, contribute largely to a firm's growth and since one of the characteristics of emerging markets is the likelihood of high return on investment, it can be expected that positive relationship between investment and profitability can be extended to the link between growth and profitability. Furthermore, it is suggested that firms that have exhibited growth in the past tend to produce positive profits (Coad, 2007) which implies that profits are to some extent dependent on growth.

On the contrary, a study done on European banks suggests that current growth hinders future profits, instead, future growth is dependent on a firm's current profitability (Lee, 2013). This study is backed by the thought that current profitability increases the company's competitive advantage which may hinder current growth but will provide a good foundation for the company to pursue growth in the future (Davidsson, Steffens, &

Fitzsimmons, 2008). Finally, there exists studies which suggest that the relationship between growth and profitability goes both ways (Cowling, 2004).

As per the previous paragraph, there exists extensive research in the area of establishing the relationship between growth and profitability. Extensive as the research is, there exists very little literature regarding this topic in the context of the airline industry and it is very inconsistent. A study on Asian airlines suggests that for companies that do not rush into the expansion of their fleet, there exists a positive relationship between growth and profitability due to the efficient use of the results of either concept (Chin & Tay, 2001). A similar study was done where the location of interest was the United States of America and the results suggest that an airline company that is growth focused may be doing this at the expense of their profitability (Hazel, 2018).

2.8.Empirical Review

The influence of a company's age on its performance is a topic with extensive literature and the conclusions vary with some work concluding that the age of the company has no significant influence on its profitability (Nawaiseh, 2020). The health of the economy of a country in a given period is measured by the gross domestic product, an increase of which has a positive effect on the propensity to fly within the country in question (Chin & Tay, 2001). The propensity to fly is a measure of the demand for air travel, which has an effect on the growth and profitability of a company.

Finally, liquidity has a direct impact on the company's capital budgeting decisions (Oliveira & Fortunato, 2006) which pertains to its long term investments, affects growth and in some cases profitability. One of the factors that are airline specific is the passenger yield which is the average fare of flights and is a measure of the efficiency of fare allocation and revenue collection from ticket sales (Maung, Douglas, & Tan, 2022). Fuel is one of the largest costs that airlines incur, as a result, oil price fluctuations have a material impact on airlines' profitability and its overall performance (Wattanatorn & Kanchanapoom, 2012), similarly, any major changes in local currency against foreign currencies will have a significant effect on airlines' costs which will affect their profitability (South African Airways Group, 2017).

One of the widely examined topics in the literature is the relationship between growth and profitability. On a wider scope, there exists many contradicting views, however, not

many papers are focused on the airline industry especially in the context of emerging markets (Yan, Cui, & Gil, 2016). Parts of the literature state that the relationship between the growth and profitability of airlines is positive in nature (Chin & Tay, 2001), while other parts state that the relationship is negative in nature (Hazel, 2018) and some argue that there is no relationship at all.

2.9.Theoretical review

On a more general scope, some of the literature extends the study to the causality that may exist between growth and profitability as well as the direction thereof, examples of which include the argument that achieving growth in the beginning will result in profitability at a later stage (Cowling, 2004), while others argue the opposite, stating that profitability in the beginning will result in business growth (Davidsson, Steffens, & Fitzsimmons, 2008). The different relationships that have been identified in different studies can be attributed to different concepts and theories such as the economies of scale, the evolutionary theory and the theory based on the managerial view (German-Soto & Sanchez-Hiza, 2021). The concept of economies of scale speaks to the increased advantages due to growth which often result in profitability (Davidsson, Steffens, & Fitzsimmons, 2008), the evolutionary theory speaks to the elimination of non-profitable firms through bankruptcy thus leaving profitable firms which often tend to grow as a result (Coad, 2007) and finally the managerial view emphasises management's focus on increasing revenue which deters simultaneous focus on growth and profitability thus resulting in a trade-off which often translates to a negative relationship (Lee S. , 2020).

2.10. Research hypothesis

Based on the different studies and arguments presented in the literature review, there are potential relationships that are expected in response to the study's main question. It is expected that each of the determinants identified have an effect on both the growth and profitability of airline companies, however, the effects are expected to be present themselves sequentially as opposed to parallel. For example, the size of an airline company, both as measured in terms of number of employees and fleet size, is expected to have an effect on the growth of airline companies. If number of employees is a measure of company size, an increase therein results in growth, furthermore, an increase in the

number of employees translates to an increase in company resources and hence improved rate of operations thus resulting in increased profitability. The same can be said for a bigger fleet size which results in more flights, thus increasing revenue from passengers – both of which result in both growth and increased profitability.

Finally, based on the literature and discussion above, the following hypothesis is made for the sub-question of the study:

H_1: There exists a significant relationship between the growth and profitability of airline companies in emerging markets.

H_0: There is no significant relationship between the growth and profitability of airline companies in emerging markets.

Chapter 3: Research Methodology

3.1. Introduction

In order to meet the objectives outlined in section 1.3, an empirical approach is taken for conducting this research. In this section, the choice of hypotheses and research questions are justified and the research methodology is outlined and consists of the data that makes up the sample, the parameters used to measure each variable and their sources as well as the methods and tools used to measure and analyse the data. Furthermore, any assumptions or limitations pertaining to the methods and tools used to measure and analyse the data are also outlined.

This study does not include any contact with human participants and has thus not resulted in any negative impact. Furthermore, the study is only based on secondary analysis and only quantitative data from annual financial reports and databases that provide world statistics are used. As a result, there are no ethical concerns associated with the study and there is little to no risk.

3.2. Sample

The International Air Transport Association (IATA) releases a semi-annual report which shows the economic performance of the airline industry in that period and the different parts of the world are split into 6 regions, namely: Africa, Asia-Pacific, Middle East, Latin America, North America and Europe. This study contributes to the gap that exists within the literature, and in order to have a sample which is representative of the population, focus is placed on two, instead of one emerging market country from each of the regions listed - except the North American region. Using the figures provided from these reports as a benchmark, a conclusion was made regarding the extent to which the emerging markets contribute to the performance of the different regions.

The sample is made up of two emerging market countries from each region as shown in Table 1: The composition of the sample of airline companies in emerging markets, duration of interest and the corresponding sources of information. The data and information used in this study is mainly extracted from each chosen company's annual financial reports as well as databases that provide world statistics. Due to a constraint in data availability, the duration of interest is between 2009 and 2017, thus excluding the effects of the covid-19 pandemic which took place in 2020.

Table 1: The composition of the sample of airline companies in emerging markets, duration of interest and the corresponding sources of information

Region	Airline Company	Duration	Source(s)
Africa			
South Africa	South African Airways	2009-2017	Annual Financial Statements
Kenya	Kenya Airways	2009-2017	Annual Financial Statements
Asia-Pacific			
India	SpiceJet	2009-2017	Annual Financial Statements
Indonesia	Garuda Indonesia	2009-2017	Annual Financial Statements
Middle East			
United Arab Emirates	Emirates Airline	2009-2017	Annual Financial Statements
Israel	El Al Israel Airlines Ltd	2009-2017	Annual Financial Statements
Latin America			
Panama	Copa Holdings	2009-2017	Annual Financial Statements
Chile	LATAM Airlines	2009-2017	Annual Financial Statements
Europe			
Turkey	Turkish Airlines	2009-2017	Annual Financial Statements
Russia	Aeroflot Russian Airlines	2009-2017	Annual Financial Statements

3.3. Variables and Data Collection

As detailed in earlier sections, the first part of the study focuses on the effects of selected determinants, that have been identified in the literature, on the performance of airline companies in emerging markets as listed in Table 1: The composition of the sample of airline companies in emerging markets, duration of interest and the corresponding sources of information. The performance of these airline companies is measured in terms of growth and profitability while the determinants of interest include size, age, the country's

GDP, the liquidity of the company, passenger yield, oil price and exchange rate fluctuations.

3.3.1. Dependent Variables

The dependent variables are the parameters of interest, which are affected by the determinants identified in the literature and are used to measure the performance of airline companies in emerging markets.

a. Growth

Two parameters are used to measure growth in this study, namely, changes in revenue which is calculated using the current revenue value and the revenue value from the previous year as shown in Equation 1 as well as changes in the revenue passenger kilometres (RPK) which is calculated using the current RPK value and the RPK value from the previous year as shown in Equation 2 (Ismail & Jenatabadi, 2014). The revenue values for the respective periods are found in each airline company's income statement, while the RPK is calculated using the number of revenue paying passenger and the distance travelled as shown in Equation 3. Both the inputs required to calculate the RPK are found in the annual financial statements of the airline company. Furthermore, both the revenue and RPK are chosen as measures of growth because they reflect the changes in demand for air travel, an increase of which indicates improved performance and growth.

$$Growth_{revenue} = \frac{(Revenue_{year2} - Revenue_{year1})}{Revenue_{year1}} * 100 \qquad (1)$$

$$Growth_{RPK} = \frac{(RPK_{year2} - RPK_{year1})}{RPK_{year1}} * 100 \qquad (2)$$

$$RPK = (Number\ of\ passengers) * Distance\ travelled \qquad (3)$$

b. Profitability

The net profit after tax is used as a measurement of the profitability of the different airline companies and is found in each airline company's income statement. The net profit after tax is chosen as a measure of profitability because it is the measure used by the International Air Transport Association in their semi-annual reports which are used as a benchmark as they reflect regional and global industry results, furthermore, this parameter is reflective of all the aspects that affect the business' operations.

3.3.2. Independent Variables

The independent variables in this study are the determinants that are used to analyse the performance of airline companies in emerging markets. These determinants are classified as general features of a company such as size, airline specific determinants such as passenger yield and macroeconomic determinants such as the GDP of the country of interest.

a. Size

The measure of size used in this study is the number of employees and fleet (Yan, Cui, & Gil, 2016) and is found in each airline company's financial reports. A company run by a sole proprietor and a few employees is generally described as a small business while bigger companies that employ many employees are generally categorised as large companies, hence the choice of number of employees as a measure of size. Furthermore, revenue is reflective of an airline company's flight capacity since ticket sales make up a great proportion thereof thus each company's fleet size is used as another measure of size in this study.

b. Age

The age of each airline company is defined as the number of years since the company first started operating and has been identified as a determinant for performance in the literature (Ismail & Jenatabadi, 2014). It is found in each airline company's financial reports and/or the company's website.

c. GDP

The GDP of a country is a measure of the health of the economy and is found from sources such as the World Bank data and the UNCTAD Statistics page. The GDP is chosen as a determinant of performance (Maung, Douglas, & Tan, 2022) because it has a direct influence on the propensity to fly of the people within the country of interest.

d. Liquidity

The liquidity of the airline companies, which shows their ability to pay off short term obligations using their short term assets is considered to be one of the drivers a company's performance. In this study, the liquidity is measured using the company's liquidity ratios (Garefalakis, Mantalis, Lemonakis, Vassakis, & Konstantinos, 2016), inputs of which are found in the balance sheet thereof. Furthermore, the cash generation of the different airline companies which can be found in the cash flow statement of each company was used as another indication of liquidity.

e. Passenger Yield

Since the study focuses on airline companies, an airline specific parameter identified as a driver of airline performance (Maung, Douglas, & Tan, 2022) known as the passenger yield is included, the calculation of which is as shown in Equation 4. The inputs required to calculate passenger yield are found in the airline financial reports as well is IATA World Air Transport Statistics database.

$$Passenger\ Yield = \frac{Total\ Passenger\ Revenue}{Total\ Revenue\ Passenger\ Kilometers} \qquad (4)$$

f. Oil Price Fluctuations

Oil price fluctuations are included as a determinant of airline performance because the literature shows that fuel contributes greatly to the costs incurred by airlines (IATA, 2019). As a result, the performance of airline companies is highly sensitive to oil price fluctuations since they dictate the price of fuel. This is a macroeconomic parameter, the

data of which can be found from sources such as the IATA World Air Transport Statistics database, IndexMundi and Macrotrends.

g. Exchange Rate Fluctuations

Any major changes in local currency against foreign currencies will have a significant effect on airlines' costs, thus impacting the company's overall performance (Matters, 2015). This is a macroeconomic parameter, the data of which can be found from sources such as the World Bank data and the OFX.

3.4. Empirical Model and Data analysis

The objectives of the study, as outlined in section 1.3 of the report, include the investigation of the determinants that affect the performance of airline companies and the relationship between the performance indicators, which in this case are the growth and profitability of the companies, while Section 3.3. of the report is an outline of the variables of interest and the sources from which the data is extracted.

Once the data has been extracted and captured, the descriptive statistics for the full sample are calculated to provide a summary of the data and insights regarding the most important characteristics of the data (Brooks, 2019). This includes statistics such as the mean which gives a measure of the data's central tendency and measures that provide an indication of how spread out or dispersed the data is, such as the standard deviation, the minimum and maximum values. Before finalising the model, the data is scrutinised and checks are done for desirable properties such as the stationarity of the data and the data is tested for heteroscedasticity after the model has been fitted. These aspects are addressed through methods such as transforming the variables into their log form and performing tests such as the Huber-white test and the unit-root test for stationarity (Brooks, 2019).

This study consists of data that was collected over a period of time, for example, the net profit after tax is an input for determining the profitability and was collected on an annual basis, from 2009 to 2017. Furthermore, the data was collected for 10 different airline companies within emerging markets, where two were selected from each region with the exception of North America. Based on this, it is concluded that the data consists of a

combination of time series data and cross-sectional data, thus making it a dataset set that is balanced, more specifically, short panel data (Brooks, 2019).

The first method used to analyse the relationships in question is the Granger Causality test which reveals whether changes in one variable of interest cause changes in another variable of interest and the corresponding direction of causality. The other method used to analyse the relationships between the two performance parameters and their determinants as well as that between growth and profitability is the panel data regression. The advantage of using this as opposed to other methods such as between group cross-section regression is that sample size is not limited, it allows for more degrees of freedom, it incorporates both the changes seen within each company and across the different airline companies and finally, this approach accounts for the impact of the characteristics that specific to each of the airline companies (Obi, 2021). The general form of the panel regression model is as shown in Equation 5, where each variable is represented for each objective as described in the next two paragraphs.

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \cdots + \beta_n X_{n,it} + v_{it} \qquad (5)$$

Recall, the first objective is to identify the determinants of growth and profitability of airline companies in emerging markets, as a result, growth and profitability are the dependent variables and are respectively represented by Y_{it} in Equation 6. The determinants in question are size, age, GDP, liquidity, passenger yield, oil price and the exchange rate as represented by $X_{n,it}$ in Equation 6 while the corresponding beta coefficients represent the slopes of thereof.

The second objective is to investigate the relationship between the profitability and growth of airline companies in emerging markets. Similar to the first objective, growth and profitability are the dependent variables and are respectively represented by Y_{it} in Equation 6. For its effect on profitability, growth is the independent variable represented by X_{it} in Equation 6 with its corresponding slope represented by the beta coefficient, while the opposite is applicable for the effect of profitability on growth.

Three methods can be used for the panel regression approach used in this study, namely, the pooled OLS method, the Fixed Effects Model (FEM) and the Random Effects Model

(REM) (Obi, 2021). The Pooled OLS is done by pooling all the observations and using them to create a single large regression. This method is done on the basis that all the companies considered have the same characteristics which could be misleading because although the companies considered are from the airline industry, in addition to differing locations, there exists differing characteristics which present a great likelihood that heterogeneity exists. Ignoring the effects of the company specific characteristics gives a biased and inconsistent regression which leads to inaccurate conclusions. The Fixed Effects Model (FEM) and the Random Effects Model (REM) both take this undesirability into account and are both based on the assumptions made in the ordinary least squares model, as a result, these are the only two methods considered in this research and the results were used to determine which of the two is most appropriate (Serobe, 2018). The two methods used to inform the decision are the F-test and the Hausman test where the null hypotheses are that there are no fixed effects which is shown by a common intercept between the different airline companies (Serobe, 2018) and that there exists random effects (Obi, 2021) thus making the REM the appropriate approach.

If after running the tests it is concluded that the hypotheses for both F-test and the Hausman test are rejected, it is concluded that that there are fixed effects and the REM approach is not appropriate respectively, as such, the FEM approach is appropriate and was used for the panel regression in this study. The intercepts are expected to vary across the different airline companies but are expected to be constant over time, as a result, the regression run includes dummy variables as shown in Equation 6, where D1 takes on the value of 1 for the first company while the rest take on the value of zero, D2 takes on the value of 1 for the second company while the rest take on the value of zero etc. Finally, the number of dummy variables used is determined by the number of airline companies, i.e., for n number of companies, only n-1 dummy variables were used to avoid the situation of perfect collinearity also known as the dummy variable trap (Brooks, 2019).

$$Y_{it} = \beta_0 + \beta_1 D_{1i} + \beta_2 D_{2i} + \cdots + \beta_{(n-1)} D_{(n-1)i} + \beta_n X_{1,it} + \cdots + \varepsilon_{it} \qquad (6)$$

If after running the tests it is concluded that we fail to reject the hypotheses for both f-test and the Hausman test, it is concluded that the REM approach is appropriate respectively, as such, the FEM approach is appropriate and was used for the panel regression in this

study. In this approach, emphasis is placed on the random deviations of the different firm's intercepts from the common intercept. Unlike the FEM approach, the REM approach assumes that the common intercept term consists of the intercept terms for each firm (Obi, 2021). The equation for this approach is as shown in Equation 7, where the error term is broken down into two components, namely, the error term that is dependent on the individual airline companies and the idiosyncratic term (Obi, 2021).

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \cdots + \beta_n X_{n,it} + w_i + \varepsilon_i \qquad (7)$$

Having defined the data and outlined the sources thereof, this methodology was used to meet the objectives outlined in section 1.3 of the report. The remainder of the report is dedicated to the results yielded and a discussion thereof. Finally, a conclusion and recommendations are made in the final chapter.

Chapter 4: Results and Discussion

4.1.Introduction

Based on the methodology outlined in the previous chapter, the data obtained from the different sources is analysed and the results thereof are presented in this chapter. Firstly, the descriptive statistics are tabulated to provide the reader with a summary of the characteristics of the data. The empirical results from analysing the data are then provided with the results from the different tests that have been run to support the methodology. Finally, a discussion of the results is included to inform the conclusion by answering the research question(s) and confirming whether or not the hypotheses have been rejected.

4.2.Descriptive Statistics

This research report is based primarily on secondary data which is used to inform the conclusions made in response to the objectives outlined in section 1.3. Prior to analysing the data, its key characteristics are described in the form of descriptive statistics as shown in Table *2*: Descriptive Statistics of the performance of companies in the airline industry and the corresponding determinants for the data from airline companies in emerging markets as detailed in Table *1*: The composition of the sample of airline companies in emerging markets, duration of interest and the corresponding sources of information, thus resulting in a total of 90 observations. The determinants of growth and profitability of the airline companies are analysed and the results shown in this section, thus providing further insights and inferences on these descriptive statistics.

The measure of central tendency, which in this case can be the mean, the mode or the median provides the general performance of the airlines on an average basis. Based on the summary statistics, it can be seen that the average growth rate, both in terms of operating revenue and revenue passenger kilometers, lies between 9.5% and 12.6% respectively. This means that although the airline industry has shown growth in both regards, the number of kilometers travelled by paying passengers has grown at a greater rate than the revenue operating revenue. This result is reflective of the nature of the airline industry as more revenue is expected to be driven by passengers than any other source, hence the difference in the average growth performance. Profitability in this study is measured in terms of net profit after tax, the mean value shown in Table *2*: Descriptive Statistics of the performance of companies in the airline industry and the corresponding

determinants represents the average net profit after tax and hence profitability of airline companies in emerging markets. On average, airline companies in emerging markets have a staff complement of 16733 employees and an average fleet size of 134 – both of which represent that airline companies' size in this study. The passenger yield shows that the revenue made per revenue passenger kilometer is 0,089 for airline companies that have been operating for an average of 52 years. Finally, both the quick ratio and the operating cash flow ratios show that on average, the companies in question do not have enough liquid assets to pay off their current liabilities which translates to low liquidity.

The standard deviation reveals how dispersed the data is for the different airline companies. The growth rate, based on the revenue passenger kilometers, has a greater standard deviation than that based on the operating revenue. This means that the airline companies reflect greater differences in their growth in traffic, as compared to the mean, than they do in their growth in revenue. For profitability, the standard deviation of the net profit after tax shows a very high dispersion of the different airline companies' performance relative to the mean. With the exception of the liquidity measures and the passenger yield, it can be seen that the other determinants have high stand deviations, which shows that the data is relatively more spread out from the mean.

The skewness reveals the extent to which the data is symmetrical in relation to its mean while the kurtosis measures the tails of the data in relation to a normal distribution, thus revealing the extent to which there exists outliers. Finally, the Jarque-Bera values confirm whether or not the data matches a normal distribution. Based on the results shown in Table *2*: Descriptive Statistics of the performance of companies in the airline industry and the corresponding determinants for these characteristics, only the growth in revenue shows relative symmetry and a normal distribution while growth, as measured in terms of revenue passenger kilometers and profitability as measured in terms of Net Profit after Tax, do not have a normal distribution which has informed the application of log transformations to the data.

Table 2: Descriptive Statistics of the performance of companies in the airline industry and the corresponding determinants

	Growth revenue	Growth RPK	NPAT	Nr. of Employees	Fleet Size	Firm Age	GDP	Quick Ratio	Operating Cash Flow Ratio	Passenger Yield	Annual Oil Price	Annual Exchange Rate
Mean	9,558	12,608	1,45E+08	16732,833	134,393	51,6	2,3383E+13	0,717	0,233	0,089	80,182	1216,848
Med.	5,795	8,339	48067633	9156	98	58	3,5755E+11	0,727	0,240	0,086	79,47	22,0471
Std Dev.	14,682	21,907	4,09E+08	14484,673	99,862	27,651	2,156E+14	0,267	0,237	0,031	26,487	3471,297
Kurt.	1,683	25,748	8,155087	0,0700	-0,817	-1,278	89,9982789	-0,644	0,417	6,920	-1,727	6,663
Skew.	0,945	4,380	1,851577	1,118	0,721	-0,245	9,48669845	0,199	0,017	2,208	-0,023	2,858
Range	86,078	175,870	2,59E+09	51029	319	91	2,046E+15	1,197	1,334	0,192	67,96	13794,000
Min.	-19,460	-13,735	-6,01E+08	2271	20	3	2,712E+10	0,162	-0,537	0,046	43,67	0,9999
Max.	66,617	162,134	1,99E+09	53300	339	94	2,046E+15	1,359	0,796	0,239	111,63	13795
Count	90	90	90	90	89	90	90	90	90	90	90	90

[1]

4.3.Empirical Results

The previous subsection includes a summary of the characteristics of the data used for the research report. In this subsection, an empirical approach is taken to analyse the data in a more detailed manner, thus informing the conclusions made in response to the objectives outlined in section 1.3.

4.3.1. Stationarity: Unit root test

Stationarity is an important consideration for empirical analysis, it refers to the existence of a constant mean, variance and autocovariances in the set of data used in the analysis and has a great influence on the outcome of the models run in response to the data input (Brooks, 2019). As mentioned in section 3.4, this study makes extensive use of regressions to analyse the data, as such, testing for stationarity is important in ensuring that the spurious regression is avoided.

Since the data in this study is a balanced panel set of data and the number of cross sections exceed 10 but are fewer than 250, the method chosen to test for stationarity is the Levin, Lin & Chu where the null hypothesis states that all the series making up the panel dataset contain a unit root. Using a 5% level of significance, the results from the unit root test performed are as shown in Table 3: Results from the unit root test for stationarity. With

[1] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

the exception of Passenger Yield, the probability values corresponding with each of the other variables for the level, untransformed data is less than 5%. This implies that the null hypothesis is rejected and there is no unit root, as a result, the data is stationary. To account for the failure to reject the null hypothesis for Passenger Yield, the results from the first difference transformation of the data are also shown and the results are all such that the data from all the variables, including Passenger Yield, is stationary as required by the assumptions set for the regression analysis.

Table 3: Results from the unit root test for stationarity

Variable	Method	Level		First Difference	
		Statistic	Probability	Statistic	Probability
Growth revenue	Levin, Lin & Chu	-6,561	0,000	-6,533	0,000
Growth_RPK	Levin, Lin & Chu	-8,946	0,000	-8,791	0,000
NPAT	Levin, Lin & Chu	-6,072	0,000	-11,075	0,000
Number of Employees	Levin, Lin & Chu	-1,910	0,028	-8,734	0,000
Fleet Size	Levin, Lin & Chu	-7,412	0,000	-5,110	0,000
GDP	Levin, Lin & Chu	-3,858	0,000	-4,969	0,000
Quick Ratio	Levin, Lin & Chu	-6,165	0,000	-5,221	0,000
Operating Cash Flow Ratio	Levin, Lin & Chu	-2,773	0,003	-7,751	0,000
Passenger Yield (USD/KM)	Levin, Lin & Chu	-1,481	0,069	-6,048	0,000
Annual Oil Price Fluctuations	Levin, Lin & Chu	-3,477	0,000	-5,516	0,000
Annual Exchange Rate Fluctuations	Levin, Lin & Chu	-4,756	0,000	-3,100	0,001

[2,3]

4.3.2. Correlation

As listed in section 1.3, the objectives of this paper are centred around identifying different relationships, namely, the relationship between performance measurements and their determinants as well as that between the performance measurements themselves. As such, correlation is used before regression analysis, as a tool to indicate the extent to which the different variables of interest have a linear association and is thus only used as a preliminary analysis.

Table 4: Correlation matrix of the performance of companies in the airline industry and the corresponding determinants is a correlation matrix and the first three variables of interest are those chosen to be the measures of the performance of the airline companies

[2] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

[3] Software used: EViews

of interest. More specifically; Revenue Growth, RPK Growth and Net Profit after Tax (NPAT) are the independent variables. From this it can be seen that Revenue Growth and RPK Growth have a high correlation coefficient, which is expected since these are both measures used to measure the growth of the airlines. Furthermore, the correlation coefficient for the Net Profit after Tax and the respective growth measurements are low, thus indicating a low degree of linear association between the growth and profitability of airline companies.

The remaining variables in the correlation matrix are the determinants of airline performance. Similar to the discussion above, a value closer to one shows a significant relationship. For example, the coefficient between the Average Annual Oil Price and the Revenue Growth is 0,472 which is positive and indicates the greatest degree of linear association in comparison to the other determinants and their relation to the performance measures. The correlation coefficients for the different determinants and the performance measures are generally low, thus showing a low extent of linear association. This is, however, not conclusive since correlation is not a measure of causation. As such, further analysis are required to reach a conclusion in response to the objectives of the study.

Table 4: Correlation matrix of the performance of companies in the airline industry and the corresponding determinants

	Growth revenue	Growth RPK	NPAt	Nr. of Employees	Fleet Size	Firm Age	GDP	Quick Ratio	Operating Cash Flow Ratio	Passenger Yield	Annual Oil Price	Annual Exchange Rate
Growth revenue	1,000											
Growth RPK	0,533	1,000										
NPAT	0,008	0,093	1,000									
Nr of Employees	-0,007	0,035	0,129	1,000								
Fleet Size	0,140	0,190	0,076	0,846	1,000							
Firm Age	-0,040	-0,077	0,173	0,197	0,380	1,000						
GDP	-0,092	0,025	0,016	0,086	0,109	0,140	1,000					
Quick Ratio	0,121	0,179	0,207	0,233	0,250	0,066	0,102	1,000				
Operating Cash Flow Ratio	0,229	0,226	0,417	0,256	0,269	-0,074	0,002	0,694	1,000			
Passenger Yield	-0,111	-0,017	0,101	-0,165	-0,202	0,072	0,193	0,361	0,158	1,000		
Annual Oil Price	0,472	0,295	0,009	-0,075	-0,116	-0,040	0,125	0,129	0,0319	0,233	1,000	
Annual Exchange Rate	-0,026	0,005	0,036	-0,190	0,053	0,152	-0,036	-0,054	-0,112	-0,059	-0,032	1,000

[4]

[4] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

4.3.3. Granger Causality

As mentioned in the previous section, correlation does not show the causality but is rather an indication of the extent to which two variables have a linear association and is thus only used as a preliminary analysis. The Granger Causality test is a more appropriate approach as it reveals whether changes in one variable of interest cause changes in another variable of interest and the corresponding direction of causality. As such, Granger causality tests are performed to further develop a response to the question of relationship between the determinants identified in the literature review and the performance measurements.

As previously mentioned, there are three dependent variables, namely: Revenue Growth, RPK Growth and Net Profit after Tax. Granger causality tests are performed for each of these dependent variables, the results of which are shown in Table *5*: Granger Causality - Revenue Growth and the corresponding determinants, Table *6*: Granger Causality - RPK Growth and the corresponding determinants and Table *7*: Granger Causality - NPAT and the corresponding determinants respectively. Furthermore, the hypothesis is tested for each of the determinants, i.e., the independent variables.

For a Granger Causality test performed at 2 lags and a hypothesis testing done at a significance level of 5%, the Granger Causality results in Table *5*: Granger Causality - Revenue Growth and the corresponding determinants reveals the following for Revenue Growth as a performance measure:

- We reject the null hypothesis which states that Annual Oil Price Fluctuations does not Granger Cause Revenue Growth and see a unidirectional causality between the two variables
- We reject the null hypothesis which states that Revenue Growth does not Granger Cause Number of Employees and see a unidirectional causality between the two variables
- We fail to reject all the other null hypotheses

Table 5: Granger Causality - Revenue Growth and the corresponding determinants

Null Hypothesis	F-statistic	Probability
Annual Exchange Rate Fluctuations does not Granger Cause Revenue Growth	0,13624	0,8729
Revenue Growth does not Granger Cause Annual Exchange Rate Fluctuations	2,05413	0,1364
Annual Oil Price Fluctuations does not Granger Cause Revenue Growth	3,4024	0,0393
Revenue Growth does not Granger Cause Annual Oil Price Fluctuations	0,95233	0,3912
Fleet Size does not Granger Cause Revenue Growth	0,22504	0,7991
Revenue Growth does not Granger Cause Fleet Size	0,63695	0,5322
GDP does not Granger Cause Revenue Growth	0,09164	0,9125
Revenue Growth does not Granger Cause GDP	1,47438	0,2365
Number of Employees does not Granger Cause Revenue Growth	0,02135	0,9789
Revenue Growth does not Granger Cause Number of Employees	11,6969	5,00E-05
Operating Cash Flow Ratio (Liquidity) does not Granger Cause Revenue Growth	0,16234	0,8505
Revenue Growth does not Granger Cause Operating Cash Flow Ratio (Liquidity)	1,45348	0,2413
Passenger Yield does not Granger Cause Revenue Growth	1,33279	0,2708
Revenue Growth does not Granger Cause Passenger Yield	2,15007	0,1247
Quick Ratio (Liquidity) does not Granger Cause Revenue Growth	1,02718	0,3638
Revenue Growth does not Granger Cause Quick Ratio (Liquidity)	0,88519	0,4176

[5]

For a Granger Causality test performed at 2 lags and a hypothesis testing done at a significance level of 5%, the Granger Causality results in Table Table *6*: Granger Causality - RPK Growth and the corresponding determinants reveals the following for RPK Growth as a performance measure:

- We reject the null hypothesis which states that Annual Oil Price Fluctuations does not Granger Cause RPK Growth and that RPK Growth does not Granger Cause Annual Oil Price Fluctuations respectively. Thus revealing a bidirectional causality between the two variables
- We reject the null hypothesis which states that GDP does not Granger Cause RPK Growth and see a unidirectional causality between the two variables
- We reject the null hypothesis which states that RPK Growth does not Granger Cause Number of Employees and see a unidirectional causality between the two variables
- We reject the null hypothesis which states that Passenger Yield does not Granger Cause RPK Growth and that RPK Growth does not Granger Cause Passenger

[5] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

Yield respectively. Thus revealing a bidirectional causality between the two variables

- We fail to reject all the other null hypotheses

Table 6: Granger Causality - RPK Growth and the corresponding determinants

Null Hypothesis	F-statistic	Probability
Annual Exchange Rate Fluctuations does not Granger Cause RPK Growth	0,01308	0,987
RPK Growth does not Granger Cause Annual Exchange Rate Fluctuations	0,1641	0,849
Annual Oil Price Fluctuations does not Granger Cause RPK Growth	4,61015	0,0134
RPK Growth does not Granger Cause Annual Oil Price Fluctuations	2,52169	0,0882
Fleet Size does not Granger Cause RPK Growth	0,36112	0,6983
RPK Growth does not Granger Cause Fleet Size	0,72085	0,4902
GDP does not Granger Cause RPK Growth	2,67729	0,0763
RPK Growth does not Granger Cause GDP	0,72783	0,4868
Number of Employees does not Granger Cause RPK Growth	0,46565	0,6298
RPK Growth does not Granger Cause Number of Employees	32,0956	2,00E-10
Operating Cash Flow Ratio (Liquidity) does not Granger Cause RPK Growth	0,46801	0,6283
RPK Growth does not Granger Cause Operating Cash Flow Ratio (Liquidity)	0,34237	0,7114
Passenger Yield does not Granger Cause RPK Growth	11,7996	4,00E-05
RPK Growth does not Granger Cause Passenger Yield	6,3777	0,003
Quick Ratio (Liquidity) does not Granger Cause RPK Growth	1,76333	0,1796
RPK Growth does not Granger Cause Quick Ratio (Liquidity)	0,87799	0,4205

[6]

For a Granger Causality test performed at 2 lags and a hypothesis testing done at a significance level of 5%, the Granger Causality results in Table *7*: Granger Causality - NPAT and the corresponding determinants reveals the following for Profitability as a performance measure:

- We reject the null hypothesis which states that Operating Cash Flow Ratio (Liquidity) does not Granger Cause NPAT (Profitability) and see a unidirectional causality between the two variables
- We reject the null hypothesis which states that Quick Ratio (Liquidity) does not Granger Cause NPAT (Profitability) and see a bidirectional causality between the two variables
- We fail to reject all the other null hypotheses

[6] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

Table 7: Granger Causality - NPAT and the corresponding determinants

Null Hypothesis	F-statistic	Probability
Annual Exchange Rate Fluctuations does not Granger Cause NPAT (Profitability)	0,10606	0,8995
NPAT (Profitability) does not Granger Cause Annual Exchange Rate Fluctuations	0,00949	0,9906
Annual Oil Price Fluctuations does not Granger Cause NPAT (Profitability)	0,69581	0,5023
NPAT (Profitability) does not Granger Cause Annual Oil Price Fluctuations	0,64727	0,5268
Fleet Size does not Granger Cause NPAT (Profitability)	2,02087	0,1409
NPAT (Profitability) does not Granger Cause Fleet Size	0,32238	0,7256
GDP does not Granger Cause NPAT (Profitability)	0,07172	0,9309
NPAT (Profitability) does not Granger Cause GDP	0,02799	0,9724
Number of Employees does not Granger Cause NPAT (Profitability)	1,35559	0,265
NPAT (Profitability) does not Granger Cause Number of Employees	0,06364	9,38E-01
Operating Cash Flow Ratio (Liquidity) does not Granger Cause NPAT (Profitability)	8,07599	0,0007
NPAT (Profitability) does not Granger Cause Operating Cash Flow Ratio (Liquidity)	0,1308	0,8776
Passenger Yield does not Granger Cause NPAT (Profitability)	1,98596	0,1455
NPAT (Profitability) does not Granger Cause Passenger Yield	0,22591	0,7984
Quick Ratio (Liquidity) does not Granger Cause NPAT (Profitability)	6,84733	0,002
NPAT (Profitability) does not Granger Cause Quick Ratio (Liquidity)	3,72478	0,0294

[7]

4.3.4. Regression analysis

In this section, a further analysis of the relationships is done using a regression model and the results for growth and profitability as performance measurements are shown in Table 8: Effect of performance determinants on Growth as a performance measurement and Table 9: Effect of performance determinants on Profitability as a performance measurement respectively. Using the first difference data to account for stationarity, the two approaches used are the Fixed-Effects model and the Random Effects model. As mentioned in section 3.4, the F-Statistic and the Hausman test are used to determine which of the two approaches are the most appropriate where the null hypotheses state that there are no fixed effects and that there exists random effects (Obi, 2021).

Based on Table *8*: Effect of performance determinants on Growth as a performance measurement which shows the results for both growth variables as a measure of performance, it can be seen that both the probability values for the F-statistic and the Hausman test are below the level of significance of 5%. This means that we reject the

[7] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

null hypothesis and that there are no fixed-effects, thus making the Fixed-Effects model the appropriate and preferred model in this case.

Using the results from Fixed-Effects regression, it can be seen from the adjusted R-Squared values, that the determinants account for 48,73% and 42,98% of the variance of the Revenue Growth and RPK Growth respectively. The adjusted R-Squared values are relatively low, thus showing an insignificant value is added to the model, i.e., the extent to which the determinants account for the variance in the growth and profitability respectively, is small. Furthermore, it is revealed that for Revenue Growth; only Number of Employees, Fleet size, Operating Cash Flow Ratio (Liquidity) and Oil Price Fluctuations have probability values below the level of significance of 5%, while for RPK Growth; only Number of Employees and Fleet size have probability values below the level of significance of 5%, thus showing a significant relationship to the dependent variable. From the coefficient values, it can be concluded that a 100% increase in Number of employees, Fleet Size, Operating Cash Flow and the Oil price would result in a 0.15% decrease, a 22.40% increase, a 296% increase, and a 26.30% increase in Revenue growth respectively. While a 100% increase in Number of Employees and Fleet size would result in a 0.38% decrease and a 44.52% increase in RPK growth respectively.

Based on the above discussion, it can be seen that Number of Employees, Fleet size, Operating Cash Flow Ratio (Liquidity) and Oil Price Fluctuations are the significant predictors of revenue growth while only Number of Employees and Fleet size are significant predictors of RPK growth. The two determinants that are common to both measures of growth are number of employees and fleet size, both of which are reflective of the overall size of the airline companies. As a result, size is a significant predictor of airline company growth in emerging markets as shown by the regression results.

Table 8: Effect of performance determinants on Growth as a performance measurement

Performance measure	Growth			
Dependent Variable	Revenue		RPK	
Method	FEM	REM	FEM	REM
Number of Employees	-0,001515*	-0,000708*	-0,003771*	-0,001104*
	(0,0001)	(0,0001)	(0,0000)	(0,0001)
Fleet Size	0,22398*	0,114646*	0,445214*	0,200357*
	(0,0001)	(0,0001)	(0,0000)	(0,0000)
Firm Age	-0,075653	-0,056175	-1,665379	-0,209015**
	(0,9227)	(0,2747)	(0,1777)	(0,0111)
GDP	-9,61E-15***	-9,30E-15***	-5,54E-15	-1,83E-15
	(0,0912)	(0,0898)	(0,5328)	(0,8308)
Quick ratio	6,701994	-2,485997	-5,740752	6,373969
	(0,4976)	(0,7171)	(0,7118)	(0,5555)
Operating Cash Flow Ratio	29,55524*	12,77051	28,03445	3,823994
	(0,0093)	(0,1212)	(0,1118)	(0,7665)
Passenger Yield	-18,06416	-91,99853**	-62,38704	-41,09231
	(0,7377)	(0,0334)	(0,4632)	(0,5408)
Oil Price Fluctuations	0,263045*	0,308483*	0,187152**	0,267067*
	(0,0000)	(0,0000)	(0,0173)	(0,0003)
Exchange Rate Fluctuations	-0,004906**	-0,000699***	-0,006908***	-0,000833
	(0,0346)	(0,0622)	(0,0580)	(0,1563)
C	-16,12459	-7,625128	99,99445	-6,845159
	(0,7128)	(0,1686)	(0,1499)	(0,4306)
Adjusted R-Squared	0,487284	0,402748	0,429759	0,212103
	-	-	-	-
F-statistic	5,646385	7,593507	4,684478	3,632196
	(0,0000)	(0,00000)	(0,000001)	(0,000781)
Hausman Test	22,025352		39,153493	
	(0,0088)		(0,00000)	

8,9,10,11

Based on Table *9*: Effect of performance determinants on Profitability as a performance measurement which shows the results for profitability as a measure of performance, it can be seen that both the probability values for the F-statistic and the Hausman test are less than the level of significance of 5%. This means that we reject the null hypothesis and

[8] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data
[9] Probability values in parenthesis
[10] Software used: EViews
[11] *significance level of 1%, **significance level of 5%, significance level of 10%

that there are no fixed-effects, thus making the Fixed Effects model the appropriate and preferred model in this case.

Using the results from Fixed Effects regression, it can be seen from the adjusted R-Squared value, that the determinants account for 58,78% of the variance of the Profitability measured in terms of Net Profit After Tax. Furthermore, it is revealed that for Profitability; only the operating cash flow ratio, which represents liquidity, has a significant relationship to profitability at a level of significance of 5% while fleet size has a significant relationship to profitability at a level of significance of 10%. From the coefficient values, it can be concluded that a 100% increase in Operating Cash Flow and Fleet size would both significantly increase the Profitability respectively.

Based on the above discussion, it can be seen that only the Operating Cash Flow Ratio (Liquidity) and fleet size are the significant predictors of profitability. However, fleet size is only a predictor at a level of significance of 10% thus making the operating cash flow, a measure of liquidity, a significant predictor of airline company profitability in emerging markets as shown by the regression results.

Table 9: Effect of performance determinants on Profitability as a performance measurement

Performance measure	Profitability	
Dependent Variable	NPAT	
Method	FEM	REM
Number of Employees	-9650,629	12807,88*
	(0,2873)	(0,0037)
Fleet Size	2358754***	-717162,4
	(0,0865)	(0,2942)
Firm Age	1572588	-1596395
	(0,9354)	(0,2128)
GDP	1,46E-08	-6,61E-09
	(0,9171)	(0,9610)
Quick ratio	2,64E+08	1,93E+08
	(0,2850)	(0,2607)
Operating Cash Flow Ratio	7,30E+08***	7,13E+08*
	(0,0099)	(0,0007)
Passenger Yield	1,77E+09	-5,47E+08
	(0,1909)	(0,6064)
Oil Price Fluctuations	-423793,4	91832,41
	(0,7279)	(0,9337)
Exchange Rate Fluctuations	-37911,71	7,83E-06
	(0,5056)	(0,5715)
C	-5,35E+08	-1,64E+08
	(0,6239)	(0,2330)
Adjusted R-Squared	0,587812	0,346193
	-	-
F-statistic	7,971942	6,177373
	(0,0000)	(0,00002)
Hausman Test	55,308758	
	(0,0000)	

12,13,14,15

4.4.Growth and Profitability

Up until this point, the results considered were in response to the first objective of this study which is to assess how some of the mechanisms that have been reported to fuel growth and profitability affect airline companies in emerging markets. This subsection's focus is on the results from the analysis aimed at meeting the second objective which is to investigate the relationship between the profitability and growth of airline companies

[12] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data
[13] Probability values in parenthesis
[14] Software used: EViews
[15] *significance level of 1%, **significance level of 5%, significance level of 10%

in emerging markets. In achieving this objective, the managerial view which puts emphasis on increasing revenue and hence growth is investigated to identify whether the profitability of the company is deterred thus resulting in a trade-off or not.

Recall that the performance measures are growth and profitability and the variables used to measure them are Revenue and RPK Growth as well as Net Profit After Tax respectively. Granger causality tests are performed where each of these performance measures are considered to be the dependent variable while the other two are staged as independent variables respectively. These results are shown in Table *10*: Granger Causality – Performance Measures from the Granger Causality tests performed and Table *11*: Regression analysis for performance measures for the regression analysis.

For a Granger Causality test performed at 2 lags and a hypothesis testing done at a significance level of 5%, the Granger Causality results reveal that we fail to reject all the hypotheses, thus showing a low likelihood of the existence of a significant relationship between the performance measures, i.e., Growth and Profitability.

Table 10: Granger Causality – Performance Measures

Null Hypothesis	F-statistic	Probability
RPK Growth does not Granger Cause Revenue Growth	0,55622	0,5761
Revenue Growth does not Granger Cause RPK Growth	0,53744	0,5868
NPAT (Profitability) does not Granger Cause Revenue Growth	0,6759	0,5122
Revenue Growth does not Granger Cause NPAT (Profitability)	2,17917	0,1213
NPAT (Profitability) does not Granger Cause RPK Growth	0,04966	0,9516
RPK Growth does not Granger Cause NPAT (Profitability)	0,32248	0,7255

[16]

Based on Table *11*: Regression analysis for performance measures which shows the regression results for the performance measures, it can be seen that the probability values for the Hausman test are above the level of significance of 5% for all the dependent variables. This means that we fail to reject the null hypothesis and that there are no fixed-effects, thus making the Random Effects model the appropriate and preferred model for each case.

[16] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data

Using the results from Random Effects regression, the following can be seen regarding the adjusted R-Squared values:

- RPK Growth and Net Profit After Tax accounts for 27,20% of the variance of Revenue Growth.
- Revenue Growth and Net Profit After Tax accounts for 27,76% of the variance of RPK Growth.
- Revenue Growth and RPK Growth accounts for 1,30% of the variance of Net Profit After Tax. Furthermore, this value is negative, thus showing a joint insignificance in the effect thereon.

Furthermore, it is revealed that for Revenue Growth; only RPK Growth has a probability value below the level of significance of 5%, while for RPK Growth; only Revenue Growth has a probability value below the level of significance of 5%. Finally, for Net Profit After Tax; none of the growth measurements have a probability value below the level of significance of 5%, thus showing no significant relationship to growth.

Table 11: Regression analysis for performance measures

Performance measure	**Growth**				**Profitability**	
Dependent Variable	**Revenue**		**RPK**		**NPAT**	
Method	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**
Revenue Growth	-	-	0,811525*	0,79949*	0,000515	-0,001352
	-	-	(0,0000)	(0,0000)	(0,9169)	(0,7721)
RPK Growth	0,358956*	0,359755*	-	-	0,002095	0,002782
	(0,0000)	(0,0000)	-	-	(0,5229)	(0,3735)
NPAT (Profitability)	0,272681	-0,649669	2,507272	3,282674	-	-
	(0,9169)	(0,7943)	(0,5229)	(0,3787)	-	-
C	5,04917	4,984612	4,999011	5,159858	-0,090407	-0,081225
	(0,0015)	(0,0074)	(0,0401)	(0,0619)	(0,2028)	(0,3084)
Adjusted R-Squared	0,304503	0,271973	0,293707	0,277679	0,024723	-0,013015
	-	-	-	-	-	-
F-statistic	4,542363	17,62408	4,364549	18,10692	1,205101	0,428256
	(0,000027)	(0,0000)	(0,000044)	(0,0000)	(0,297874)	(0,653011)
Hausman Test	1,38877		0,401213		1,36768	
	(0,4994)		(0,8182)		(0,5047)	

17,18,19,20

[17] Data source: Annual financial reports, World Bank data and the UNCTAD Statistics, IATA World Air transport database, IndexMundi, World Bank data
[18] Probability values in parenthesis
[19] Software used: EViews
[20] *significance level of 1%, **significance level of 5%, significance level of 10%

4.5.Discussion

In the previous subsections, the results from the empirical analyses undertaken are shown. The correlation matrix, which shows the extent to which variables have a linear association, reveals that there exists a very low linear association between the determinants and the performance measurements. The highest linear association for each performance measure is seen between Revenue Growth and RPK Growth and Annual Oil Price respectively while Net Profit after Tax has the greatest linear association to operating cash flow ratio which is representative of liquidity. These correlation coefficients are the highest values for each variable; however, they are all far from +/-1 thus showing a weak relationship strength. This is an unexpected result as the determinants are expected to be the drivers of the respective performance measurements. For the performance measures, the greatest linear association is seen between Revenue Growth and RPK Growth, which is expected since an increase in flight demand will be reflected in the overall revenue generated by the company. The correlation coefficients for Net Profit after Tax and the growth measurements is below 0,1 which is reflective of a very weak relationship between company growth and profitability. As previously mentioned, correlation does not show the causal relationship between variables, instead, it shows the extent to which there exists a linear association. As such, the value produced by the correlation analyses cannot be used in isolation for the determination of the relationships in question.

To see how changes in one variable of interest cause changes in another variable of interest and the corresponding direction of causality, Granger Causality tests are performed. Based on the literature review, the study was done with certain expectations in mind. Generally, annual exchange rate changes are minimal and companies can account for them, thus having little impact on performance. In the event that the changes in the exchange rate are significant, a negative effect is expected on the performance of airline companies. It is thus no surprise that we failed to reject all the null hypothesis in this regard. Jet fuel prices make up a big proportion of the costs incurred by an airline, as such, it is expected that oil price fluctuations would result in changes in the performance of the airlines. More specifically, high costs are expected to negatively affect profitability and growth. It is thus no surprise that the null hypotheses stating that oil price fluctuations do not granger cause Revenue growth and RPK Growth were rejected, however, it is a surprise that the same is not true for profitability. It is expected that the more experience

a company has, the better it will perform since it is likely to have the capability and resources to withstand any economic impacts. There are two expectations for firm size, which in this case is measured in terms of the company's fleet size and its number of employees: Stronger economies of scale thus increasing performance and more complex structures which may delay the implementation of positive firm performance. The results from the granger causality tests do not show any causal relationship between fleet size and the performance measurements, however, there exists a unidirectional causal relationship for size in terms of number of employees where, as expected, Revenue Growth Granger causes number of employees. An increase in GDP is generally expected to be reflective of an increase in household income and hence the propensity to fly which is expected to increase demand and hence airline performance. It is thus a surprise that this is not reflected by the results, instead we fail to reject all the null hypothesis related to GDP for all the performance measures. It is expected that high passenger yield is reflective of efficient operations, thus having a positive effect on company performance, which is evident in the Granger causality test result showing a bidirectional causal relationship between passenger yield and RPK Growth. Finally, liquidity was measured using the Quick ratio and Operating Cash Flow Ratio and the results show two unidirectional causal relationships where both Operating Cash Flow and Quick ratio Granger cause Net Profit after Tax. This is an expected result since liquidity provides flexibility and allows for innovation which would have a positive effect on the performance.

Based on the results from the regression analysis, the determinants of Revenue Growth are Number of Employees, Fleet size, Operating Cash Flow Ratio (Liquidity) and Oil Price Fluctuations. The determinants between of RPK Growth are Number of Employees and Fleet size. Finally, only the operating cash flow ratio, which represents liquidity, has a significant relationship to profitability at a level of significance of 5% while fleet size has a significant relationship to profitability at a level of significance of 10%.

Based on the results from the Granger Causality tests done for the performance measurements, we fail to reject any of the hypothesis, which is potentially reflective of the non-existence of a significant relationship between the performance measures. Regression analysis show an expected significant relationship between the two growth measurements but none between them and the profitability measures respectively.

From the results section and the above discussion, a conclusion which provides answers to the objectives of the study can be made. Recall that the determinants used to carry out this study were chosen based on the literature which showed that size, age, location, the country's GDP and the firm's liquidity have an effect on the growth and profitability for companies in general while passenger yield and fluctuations in the exchange rate & oil prices were identified as major determinants in the airline industry. According to the literature, the rate at which the size of firms changes over the years is a measure of firm growth (Yadav, Pahi, & Gangakhedkar, 2021) and as a result, there is a positive relationship between the two concepts, furthermore, it was found that larger firms produce high profits in comparison to smaller firms (Lee, 2009). The results from the study show that an increase in the number of employees results in a negative effect on the growth of the company while an increase in fleet size results in a positive effect on both the growth and profitability of airline companies in this context. These results speak to the part in the literature that suggests that the greater the size of an airline in terms of its fleet, the stronger the economies of scale which results in improved operational performance (Yu, Chen, & Chiang, 2017).

In line with the results found in the study, literature based on the study of the relationship between a company's age and its performance found that the age of a company has no significant influence on its profitability (Nawaiseh, 2020) as well as its growth. Based on the results, it can be concluded that the GDP only has an effect on the growth and none on the profitability of airline companies in this context. This is partly supported by some studies done on this topic which suggest that GDP growth in a country results in a positive effect on the performance of airline companies (Yu, Chen, & Chiang, 2017) due to the positive effect it has on the demand and hence the overall country's propensity to fly which increases revenues. Furthermore, it was suggested that there exists a causal relationship between air passenger transport activity and the GDP of each country (Profillidis & Botzoris, 2015), thus closely tying GDP to the airline performance.

Based on the results from the study, it is concluded that liquidity and passenger yield both have an effect on the growth of airline companies in emerging markets and none on the profitability thereof. This is in agreement with part of the literature which shows a positive relationship between liquidity and growth where growth is sensitive to the cash flow of a company (Quader, 2017), furthermore, asset liquidity is seen to have a positive effect on a company's innovation thus resulting in increased growth (Pham, Vo, Le, & Le, 2018).

In terms of passenger yield, a study of the performance of airlines in South Africa concluded that the higher the passenger yield, the greater the airline's efficiency, thus having a positive effect on its performance (Mhlanga, Steyn, & Spencer, 2018).

Some studies in the literature, namely: a study done on the efficiency of airlines in Asia (Wanke, Barros, & Chen, 2015), a study done on airlines in the United States (Pineda, Liou, Hsu, & Chuang, 2017) and another study done on airlines from the different regions across the globe (Yu, Chen, & Chiang, 2017) showed a negative relationship between increases in fuel prices and airline performance. This is in line with the results found in this study which show that oil price fluctuations have an effect on the growth of airline companies in this context. Finally, a study done on airline companies in Indonesia concluded that the weakening of the local currency has a significant impact on the operational costs of the airline, thus affecting its performance and if prolonged, could result in the collapse of the company (Simarmata, Charles , & Wynd , 2014). This is, however, not reflected in the results found during this study which showed no significant effect thereon.

The final part of the results shows that there is no significant relationship between the growth and profitability of airline companies in emerging markets while the literature suggests that an airline company that is growth focused may be doing this at the expense of their profitability (Hazel, 2018).

Chapter 5: Conclusion and Recommendations

5.1.Conclusion

The main purpose of the study was to assess how some of the determinants that have been reported in the literature to fuel growth and profitability, affect airline companies and to investigate the relationship between the profitability and growth of airline companies in the context of emerging markets. The sample is made up of regions within emerging markets, namely: Africa, Asia-Pacific, Middle East, Latin America, North America and Europe. Due to a constraint in data availability, the duration of interest is between 2009 and 2017, thus excluding the effects of the covid-19 pandemic which took place in 2020.

Three different methods were used to achieve the research objectives of this study, namely: correlation for preliminary analysis, Granger causality tests and regression analysis. In response to the first research question, it was found that oil price fluctuations, GDP, passenger yield, size and liquidity have an effect on the growth of airline companies in emerging markets while only liquidity and fleet size to a smaller extent, have an effect on the profitability thereof. In response to the second research question, it was found that there is no significant relationship between the growth and profitability of airline companies in emerging markets.

5.2.Recommendations

5.2.1. Recommendations for further research

Since different methods were used to achieve the research objectives, it is recommended that a dynamic panel approach, such as GMM by first difference or orthogonal deviation, should be taken by any future research that is done on a similar topic for robustness and to reduce any issues associated with endogeneity. It is further recommended that analysis pertaining to the growth and profitability of airline companies should be analysed in conjunction with the different business models adopted by the different companies in the sample as this has provided a more informed approach to the choice of measurements used for each performance indicator. To reduce the margin of error and provide better informed conclusions, it is recommended that a bigger sample size be used for future studies and countries with developed economies should be included in order to fully establish whether the results are indeed unique to airline companies in emerging markets or if they would be the same across the board.

5.2.2. Policy/Management recommendations

As mentioned in the study, the main factors that have been identified as those that are related to the growth and/or profitability of airline companies are the number of employees, fleet size, firm age, GDP, liquidity measured in terms of the quick ratio and the operating cash flow ratio, passenger yield, oil price fluctuations and exchange rate fluctuations. In implementing policies, management needs to focus on the factors that are in their direct control, i.e., the number of employees, fleet size, passenger yield and liquidity. For airline companies in pursuit of growth, it was noted that size and passenger yield have an effect on the growth thereof, therefore, in increasing the number of employees and fleet size, the pursuit for expansion may be achieved. Furthermore, management may look into implementing different strategies within their policy that would increase the revenue received for each passenger per kilometer travelled. For airline companies in pursuit of profitability, different strategies to improve liquidity should be implemented. This could be in the form of identifying different ways of increasing cash from operations or decreasing current liabilities as one way of increasing liquidity, specifically as measured in terms of the operating cash flow ratio. In short, it is recommended that depending on the management strategy in place, the factors need to be prioritized based on whether the chosen business model is in pursuit of growth or profitability since the study has shown the relationship between these to be insignificant for airline companies in emerging markets.

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