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MACRO-ECONOMIC FACTORS AND PROFITABILITY OF DOMESTIC COMMERCIAL AIRLINES IN KENYA

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Abstract: The airline industry plays a crucial role in Kenya's economic development by facilitating trade, tourism, employment creation, and connectivity. However, domestic commercial airlines in Kenya have experienced declining profitability, with many recordings negative return on assets (ROA) over consecutive years, leading to airline closures and financial distress. Kenya Airways, the largest carrier, reported losses for ten consecutive years, with ROA ranging from -6.503 to -20.46 between 2019 and 2023. Despite the recognized importance of macroeconomic factors in influencing firm performance across various sectors, limited empirical evidence exists regarding their specific impact on Kenyan domestic airlines' profitability. This study investigated the effect of macroeconomic factors inflation rates, interest rates, and exchange rates on the profitability of domestic commercial airlines in Nairobi City County, Kenya. The study was anchored on Agency Theory, Deflation Theory, Fisher Theory, and Purchasing Power Parity Theory. A descriptive research design was adopted, utilizing a census approach covering all 13 domestic commercial airlines operating from 2019 to 2023. Secondary data was collected from financial statements and Central Bank of Kenya reports. Profitability was measured using ROA, while macroeconomic factors were operationalized through annual averages. Data analysis included descriptive statistics, diagnostic tests (multicollinearity, stationarity, normality, heteroscedasticity, and autocorrelation), correlation analysis, and panel regression analysis using SPSS. The findings revealed that inflation rate had a significant positive effect on airline profitability ($\beta=0.336$, $p=0.004$), exchange rate had a significant negative effect ($\beta=-0.348$, $p=0.003$), while interest rate showed an insignificant positive relationship ($\beta=0.016$, $p=0.274$). The model explained 50.6% of variance in ROA. The study concluded that macroeconomic factors significantly influence airline profitability. It therefore recommended implementation of foreign exchange hedging strategies, dynamic pricing models, and comprehensive macroeconomic risk management frameworks to enhance financial sustainability of domestic commercial airlines in Kenya.

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1.0 INTRODUCTION

1.1. Background of the Study

The airline industry is a vital sector that connects different regions of the world and adds significant value to the global economy. By facilitating tourism, trade, business travel, and international connectivity, the airline industry contributes to economic growth, job creation, disaster response, and improved living standards (Kraev et al., 2018). It supports global commerce by allowing the efficient movement of passengers and freight, which is critical for both local and international trade. According to Gill (2018), the airline industry contributes \$3.5 trillion to the global gross domestic product (GDP), accounting for 4.1% of the world's total GDP annually. This contribution includes \$961 billion in direct GDP and 11.3 million direct jobs. Globally, airlines transport over 61 million tons of freight and approximately four billion passengers each year (Guo et al., 2019). In addition to direct economic contributions, the airline sector indirectly supports other industries such as tourism, hospitality, and manufacturing. Aviation contributes approximately \$1 trillion to tourism GDP, while spending by aviation sector employees generates \$692.8 billion in induced GDP (Dimitrios & Maria, 2018; Odula & Chege, 2023). The International Air Transport Association (IATA, 2018a) projects that by 2037, air transport will contribute \$6.3 trillion to the global economy, carry 8.2 billion passengers, and support 143 million jobs worldwide.

Despite these contributions, the global airline industry has faced major challenges, particularly after the COVID-19 pandemic. The pandemic caused a historic loss of USD 140 billion in 2020 (Czerny et al., 2021), and recovery has been uneven across regions. IATA (2023) reported that global Return on Invested Capital (ROIC) fluctuated from 5.8% in 2019 to -19.3% in 2020, -8.0% in 2021, and 2.0% in 2022. North American carriers returned to profitability in 2022, whereas European airlines faced delayed recovery due to labor shortages, geopolitical challenges such as the Ukraine war, and economic instability. Asia-Pacific airlines have shown growth in domestic markets such as Australia, China, and India, but full profitability is projected by 2024. African carriers face economic and connectivity challenges, making profitability difficult to achieve, while Latin American airlines are projected to generate losses in 2023 (Wensveen, 2023).

In Africa, international tourist arrivals dropped by 72.2% in 2020, and African airlines lost USD 8.6 billion in passenger revenue in 2021 (African Airlines Association, 2022). In Kenya, the aviation industry has faced multiple challenges, resulting in the closure of airlines such as Kenya Flamingo Airlines, Aero Kenya, Sky Aero, and others (Chege & Theuri, 2021). Kenya Airways, the largest airline in the country, has reported losses for ten consecutive years, including KSh 38.26 billion in 2022 (Kenya Airways, 2022). These challenges underscore the need to investigate factors

affecting the profitability of domestic commercial airlines in Kenya, as they remain central to national economic development, employment creation, trade, and tourism.

1.1.1 Profitability of Domestic Commercial Airlines in Kenya

Profitability is an important measure of a firm's financial health and indicates how efficiently it utilizes resources to generate returns (Odhiambo & Ngaba, 2019). It provides insight into a company's operational performance and sustainability, helping stakeholders evaluate its competitiveness and financial stability (Fatihudin, 2018). Firms with negative profitability may struggle to attract investors, face higher debt burdens, and risk eventual closure (Cho et al., 2019). In this study, profitability is measured using Return on Assets (ROA), which assesses how effectively a company uses its total assets to generate profits. ROA is a widely recognized metric that enables comparisons between companies within the same industry and across time periods. A high ROA indicates efficient use of assets and strong operational performance, while a negative ROA reflects poor financial performance or losses. Kenya's domestic commercial airlines have experienced varied profitability outcomes. Some airlines, such as Blue-Sky Aviation, have maintained profitability over the last few years (2019–2023), whereas Kenya Airways has consistently reported cumulative losses from 2013 to 2022. The persistent losses raise concerns about its sustainability and competitive position within the regional and international airline market (Leona, 2021). This variation in financial performance highlights the importance of understanding the key factors, including macroeconomic conditions and operational strategies, that influence profitability in Kenya's domestic aviation sector.

1.1.2 Macro-Economic Factors

Macroeconomic factors are external conditions in the economy that affect the performance of firms but are largely beyond their control (Hussain et al., 2021). These factors have broad effects across multiple industries and include inflation, interest rates, exchange rates, GDP growth, and unemployment (Osoro & Ogeto, 2014). In the airline industry, fluctuations in these factors can significantly influence operational costs, revenues, and overall profitability. Inflation, defined as the general increase in prices of goods and services, reduces purchasing power and can increase operating costs (Egbunike & Okerekeoti, 2018). In this study, it is measured by the average annual inflation rate. Interest rates represent the cost of borrowing and can affect cash flows, asset values, and debt servicing costs, thereby impacting profitability (Maseki et al., 2019; Pandini et al., 2018). This study uses the Central Bank Rate (CBR) as a measure of interest rates. Exchange rates, reflecting the relative value of the Kenyan Shilling against foreign currencies, influence international transactions, fuel costs, and aircraft maintenance expenses. The study measures exchange rates using the average annual KSh/USD rate.

1.1.3 Domestic Commercial Airlines

Domestic commercial airlines are profit-oriented carriers that operate flights within a single country. In Kenya, multiple airlines provide domestic services, including Kenya Airways, Airkenya Express, African Express Airways, Jambojet, Fly540, Safari Link Aviation, Bluebird Aviation, Skyward Express, 748 Air Services, Mombasa Air Safari, East African Safari Air, Fly

ALS, and Renegade Air. While some airlines operate strictly domestically, others, such as Kenya Airways, operate both domestic and international routes, linking Kenya to global air transport networks. International carriers, such as Emirates, Qatar Airways, South African Airlines, and Air France, also operate through Kenyan airports, further emphasizing Kenya's role as a regional hub. Domestic airlines contribute to economic development through multiple channels. They generate direct and indirect employment, facilitate the transportation of perishable goods such as flowers, vegetables, seafood, and meat, and support the tourism sector (Dimitrios & Maria, 2018). Airlines also contribute to government revenues through taxes on passenger and cargo services (O'Connell, 2018). By connecting cities and rural areas, domestic airlines enhance trade, enable quick transportation of goods, and provide emergency and medical services. Therefore, studying domestic airlines is critical, as their performance directly impacts national economic growth, trade, tourism, and employment creation.

1.2. Statement of the Problem

Domestic commercial airlines play a significant role in Kenya's economic development by providing employment, generating revenue, facilitating tourism, and offering air transport services for cargo, passengers, and mail (Gill, 2018). However, the profitability of these airlines has been declining, with many recordings negative ROA over consecutive years (Leona, 2021; Lidovolo & Atieno, 2023). This has led to the closure of several airlines, including Delta Connection, Flamingo Airlines, Mombasa Air Services, Aero Kenya, Eagle Aviation, Africa Aviation, Imatong Airlines, Kaskazi Aviation, Sunbird Aviation, Sky Aero, and Kenya Flaming Airlines (Chege & Theuri, 2021). Kenya Airways, the largest airline in the country, has reported losses and negative ROA for ten consecutive years, with net losses of KSh 12.985 billion, 36.219 billion, 16.028 billion, 38.315 billion, and 22.696 billion from 2018 to 2023, respectively, and ROA of -6.503, -18.49, -8.666, -20.46, and -10.712 during the same period (Kenya Airways, 2023). The net loss margin of Kenyan airlines reached 32.8% in 2022 compared to 22.6% in 2021 (Mati & Atikiya, 2022), while their contribution to GDP fluctuated between 3.1% and 4.6% from 2018 to 2023 (KNBS, 2023). Despite the importance of macroeconomic factors in other sectors, little evidence exists regarding their impact on Kenyan domestic airlines' profitability (Alici, 2023; Fredrick, 2021). Therefore, this study seeks to examine the influence of macroeconomic factors on the profitability of domestic commercial airlines in Kenya.

1.3. Research Objectives

General Objective

The general objective of the study was to investigate the effect of macroeconomic factors on the profitability of Kenyan domestic commercial airlines.

Specific objectives.

The study sought to address these objectives:

- a) To evaluate the inflation rates' effect on Kenyan domestic commercial airlines profitability.
- b) To investigate interest rates' effect on Kenyan domestic commercial airlines profitability.

- c) To assess exchange rates' effect on Kenyan domestic commercial airlines profitability.

2.0 LITERATURE REVIEW

2.1. Theoretical Framework

This study is guided by theories that explain the relationship between macroeconomic factors and profitability. These include Agency Theory, Deflation Theory, Fisher Theory, and Purchasing Power Parity Theory.

2.1.1 Agency Theory

Agency Theory was introduced by Meckling and Jensen (1976). The theory posits that conflicts may arise when principals (owners/shareholders) delegate asset management to agents (managers). Agents may prioritize personal objectives, such as short-term gains, over the principals' long-term interests, leading to potential inefficiencies and reduced profitability (Panda & Leepsa, 2017). The theory argues that risk preferences, information asymmetry, and differing goals between principals and agents can create conflicts of interest (McColgan, 2001). Agency Theory provides mechanisms to mitigate these conflicts, including monitoring systems and incentive structures that align agents' actions with principal objectives (Yusof, 2016). In the context of this study, Agency Theory explains how airline managers' decisions regarding asset utilization influence profitability as measured by ROA. Efficient management is expected to maximize shareholders' value, but misaligned incentives can result in losses. Therefore, the theory is relevant as it provides a framework to understand how management practices impact financial performance in Kenya's domestic airlines (Andreou et al., 2021; Panda & Leepsa, 2017).

2.1.2 Deflation Theory

Deflation Theory was proposed by Irving Fisher in 1933. It explains economic cycles by linking recessions and depressions to the contraction of debt. Fisher (1930) argued that over-indebtedness leads to asset liquidation, distress selling, and currency contraction, which slows economic activity, lowers price levels, and reduces business net worth. As firms' assets lose value, bankruptcies increase, output falls, unemployment rises, and business confidence diminishes, ultimately decreasing profitability. The theory highlights the relationship between debt, deflation, and interest rates, suggesting that macroeconomic instability directly affects firm performance. For this study, Deflation Theory is relevant because it explains how fluctuations in price levels and inflation influence airline profitability. Airlines that fail to anticipate changes in inflation or manage their debt effectively may experience reduced returns. Therefore, the theory supports understanding the broader economic conditions affecting the performance and sustainability of domestic commercial airlines in Kenya (Gikombo & Mbugua, 2018).

2.1.3 Fisher Theory

Fisher Theory, proposed by Irving Fisher in 1930, examines the relationship between nominal interest rates, real interest rates, and expected inflation. The theory posits that nominal rates adjust to reflect expected inflation, ensuring equilibrium in real rates, which are determined by consumer

time preference and capital productivity (Warue, 2018). Empirical studies indicate that rising inflation reduces real returns on financial assets, including stock markets and investment portfolios (Fama & Schwert, 1977; Bodie, 1976). The theory assumes perfect capital markets; however, in practice, adjustment costs and information lags may affect outcomes (Warue, 2018). Fisher Theory is relevant to this study as it explains how changes in inflation and interest rates impact airline profitability. By understanding this relationship, domestic airlines can anticipate macroeconomic fluctuations and adjust their financial and operational strategies. This insight is crucial in predicting how real interest rates and monetary policy changes affect the financial performance of Kenyan domestic commercial airlines.

2.1.4 Purchasing Power Parity Theory

Purchasing Power Parity (PPP) Theory was introduced by Gustav Cassel in 1920. The theory asserts that exchange rates between two currencies are determined by their relative purchasing power. For example, if a product costs KSh 100 in Kenya and \$1 in the United States, the exchange rate should adjust to \$1 = KSh 100. PPP predicts that arbitrage and trade flows correct currency misalignments over time, although transport costs, tariffs, and non-tradable goods can limit its accuracy. Despite limitations, PPP is widely used to estimate long-term exchange rate trends and assess currency valuation. For this study, PPP Theory is relevant as it explains how exchange rate fluctuations influence the cost of imported aviation fuel, aircraft maintenance, and other operational expenses, ultimately affecting airline profitability. Understanding currency movements enables domestic airlines to make strategic financial decisions, hedge risks, and maintain operational efficiency in a volatile macroeconomic environment.

2.2. Empirical Review

2.2.1 Interest Rates and Profitability

Ruckova and Skulanova (2021) used a descriptive design to examine macroeconomic factors' impact on profitability of organizations in storage and transportation industry in European economies. The study involved 25,000 companies from 2010 to 2018. The findings revealed significant adverse effects of interest rates on ROA. However, this covered the transportation and storage sector in European economies, while this study focused on domestic commercial airlines in Kenya. Mureithi et al. (2019) investigated the factors affecting Kenyan firms listed in NSE profitability. They studied 20 companies listed in NSE. The authors used regression analysis, which revealed different effects from Ruckova and Skulanova (2021). The study indicated that interest rates influenced ROA positively. However, it only included firms listed in NSE, and this project focused on domestic commercial airlines in Kenya. Gikombo and Mbugua (2018) evaluated the macroeconomic factors' effect on the profitability of Kenyan banks. They used descriptive design and included 44 banks. They gathered secondary data and analyzed it using regression analysis, which showed findings similar to those of Mureithi et al. (2019). Real interest rates positively and significantly influenced bank's ROA and ROE. However, they investigated the banking sector in Kenya, while this project studied the airline industry. Nyamu (2016) conducted a study to investigate how changes in macroeconomic environment influence ROA of companies

in Kenya's insurance industry. They studied 50 insurance firms using descriptive design. The findings showed an adverse association between interest rates and profitability. However, it involved the insurance sector, while this study focused on domestic commercial airlines.

2.2.2 Inflation Rates and Profitability

Azmi et al. (2022) investigated inflation and exchange rates' impact on the profitability of a fertilizer production company in Indonesia. Descriptive research methods, secondary data, and multiple linear regression were applied. The relationship established between the inflation rate and PT's profitability was significant. However, they focused on the US dollar Exchange and inflation rates, however, this study focused on different macroeconomic factors. It was also conducted in Indonesia and in the production industry, while this project was conducted in Kenya in the airline industry. Nugraha et al. (2021) conducted quantitative research to examine how inflation, leverage and company size influences Indonesian companies' ROA. In the study they used descriptive methods, and panel data regression analysis. All 14 plantation firms' data was obtained from Internet and library research. The results indicated that inflation did not significantly influence the plantation firms' profitability. The variables were inflation, company size, and leverage, while the current study will focus on inflation, interest, and exchange rates and include Kenyan airlines. Egbunike and Okerekeoti (2018) investigated inflation rates' effect on Nigerian manufacturing companies' profitability. They used an ex-post factor design. They reported an adverse effect of the inflation rate on the companies' ROA. They studied Nigerian quoted manufacturing companies, but the current research focused on Kenyan domestic airlines.

2.2.3 Exchange Rates and Profitability

Azmi et al. (2022) studied exchange rates' impact on the profitability of a fertilizer production company in Indonesia for the period between 2014 to 2020. They found that exchange rate significantly affected the company's profitability. However, they studied the US dollar Exchange rate and inflation rate, while this current study focused on inflation, exchange, and interest rates. They focused on Indonesia and the production companies, while this study covered airlines in Kenya. Xu et al. (2021) examined factors affecting airline profitability in China. They studied three of the largest airlines in China. Quarterly profit data and data on external influencing factors were collected and analyzed through ridge regression. The outcomes indicated that exchange rate predicted the profits of the airlines. The results indicated that an increase in the USD to Chinese Yuan (CNY) exchange rate led to increased profits. However, their study involved different independent variables, including oil prices, competition, GDP, and exchange rate, while the current study involved different independent variables. The research was done on Chinese airlines; however, this research focused on domestic airlines in Kenya that operate commercially.

Almaqtari et al. (2019) investigated Indian Commercial banks' determinants of profitability. They included 69 Indian commercial banks and data was gathered for 2008 to 2017 periods. The factors were inflation, financial crisis, interest rate, GDP, demonetization, and exchange rate, and two dependent variables were ROE and ROA. Panel regression aided in analyzing the gatherings. Their report showed that exchange rate significantly influenced ROA. Their study involved different

independent variables and was carried out on Indian banks, while this research project involved inflation, exchange, and interest rates and was conducted on domestic commercial airlines in Kenya. Egbunike and Okerekeoti (2018) examined the exchange rates’ effects on Nigerian quoted manufacturing companies’ profitability. Exchange rate did not significantly influence ROA. Their research focused on quoted firms in the manufacturing sector in Nigeria, but this study researched Kenyan domestic commercial airlines. Gikombo and Mbugua (2018) also investigated exchange rates and commercial banks' profitability and reported a significant association between the variables. Their findings showed that exchange rate had the least positive relationship with the ROE and ROA of Kenyan banks studied. Their research concentrated on the banks, while this research examined the airline industry.

2.3 Conceptual Framework

It is presented in the form of a diagram to illustrate how the variables influence each other. They are shown in the diagram below and how they were measured. The three variables on the left which are inflation, interest and exchange rates, are the independent variables. Profitability of domestic airlines in Kenya is on the right and is the variable that is dependent and measured in ROA.

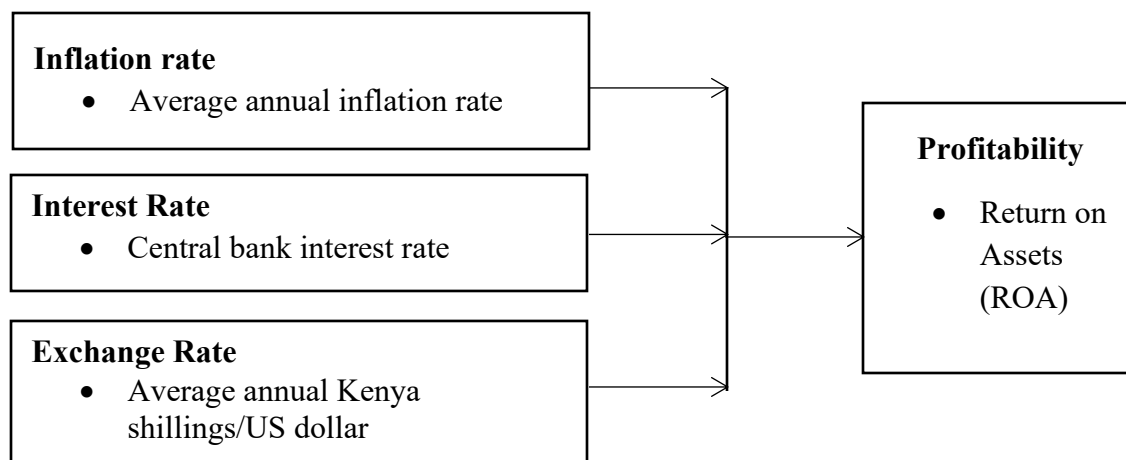


Figure 2.1: Conceptual Framework

Source: Researcher (2025)

3.0 RESEARCH METHODOLOGY

This study employed a descriptive research design to examine the effect of macroeconomic factors inflation, interest rates, and exchange rates on the profitability of domestic commercial airlines in Kenya (Asenahabi, 2019; Bloomfield & Fisher, 2019). A census approach was used, covering all 13 domestic airlines operating from 2019 to 2023, with data collected from secondary sources, including financial statements and Central Bank of Kenya reports. Profitability was measured using Return on Assets (ROA), while macroeconomic factors were operationalized through annual averages of inflation, interest rates, and exchange rates. Data analysis included descriptive statistics to summarize trends, followed by diagnostic tests Autocorrelation, heteroscedasticity,

multicollinearity, normality, and stationarity to ensure the appropriateness of the panel regression model. Panel regression analysis was then conducted using SPSS to determine the relationship between ROA and macroeconomic factors. Ethical considerations were observed, including NACOSTI approval, use of reliable sources, and proper acknowledgment of materials used.

4.0 RESEARCH FINDINGS AND DISCUSSION

4.1 Descriptive Statistics Analysis

The study presents the research findings on the descriptive statistics in the data collected so as to establish the mean, maximum, minimum and standard deviations of the variables.

Table 1: Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Dev
ROA	65	-22.6532	27.7443	1.8012	9.2764
Inflation Rate	65	5.1992	7.6917	6.3875	1.1037
Interest Rate	65	7.0000	10.1250	8.1875	1.1826
Exchange Rate	65	101.9917	139.8483	115.1587	13.4951

Source: Researchers (2025)

The study sought to establish the relationship between macroeconomic factors and financial performance of domestic commercial airlines in Nairobi City County, Kenya. From the findings, the study found that there was a mean of 1.8012 for return on assets (ROA). For the inflation rate, it was noted there was a mean of 6.3875, 8.1875 for interest rate, and 115.1587 for exchange rate. There was a deviation of 9.2764 from the mean of ROA, 1.1037 from the mean of inflation rate, 1.1826 from the mean of interest rate, and 13.4951 from the mean of exchange rate.

4.2 Diagnostic Test Results

The researcher conducted various diagnostic tests to ensure that the assumptions of classical linear regression model (CLRM) were not violated and to choose the appropriate models for analysis in the event that CLRM assumptions were compromised. This section presents the results of the following diagnostic tests: test of Multicollinearity, Stationarity test, Normality test, Heteroscedasticity test, and Autocorrelation test.

4.2.1 Test for Multicollinearity

Table 2: Test for Multicollinearity

Variable	VIF	1/VIF
Inflation Rate	4.686	0.213
Exchange Rate	4.129	0.140
Interest Rate	2.284	0.438
Mean VIF	3.70	

Source: Researchers (2025)

Multicollinearity was tested for the data used in the research and the degree is the key thing when measuring multicollinearity (Gujarati, 2014). This is mostly present in cases where the data used

is in form of time series since variables being studied may follow a particular pattern. These variables might decrease or increase over the given duration. The researcher employed VIF test for determining whether there was adequate and sufficient evidence that multicollinearity was present and was an issue of concern. The results showed that the VIF factor was 3.70 and taking into consideration it was less than 10, there was no doubt that multicollinearity was not an issue since the recommended tolerance or acceptable value is 10.

4.2.2 Stationarity Test

The study employed Augmented Dickey Fuller unit root test (ADF) so as to check for stationarity of the data. If the data is found to contain unit root and require first difference in order to be stationary, then the variable in question will be deemed to have a long run relationship with the dependent variable and would therefore require a co-integration test to be conducted. If the exogenous data is run through ADF test and happens to be stationary at level, the data would be assumed to be affecting the model in the short run. The null hypothesis is that variable is not stationary.

Table 3: Return on Assets

Augmented Dickey-Fuller test for unit root	Number of obs 65
Interpolated Dickey-Fuller Test Statistics	1% Critical Value
Z (t) -5.786	-3.548

Mackinnon approximate p-value for Z (t) = 0.0000

Source: Researchers (2025)

In this case the null hypothesis is that return on assets has a unit root. The Z-score yielded by the test shows that return on assets has no unit root, because it falls within the rejection region (-5.786 < -2.912) at 5% significance level hence the data was stationary. In addition, the p-value (0.0000) was less than the significance level (0.05).

Table 4: Inflation Rate

Augmented Dickey-Fuller test for unit root	Number of obs 65
Interpolated Dickey-Fuller Test Statistics	1% Critical Value
Z (t) -6.139	-3.548

Mackinnon approximate p-value for Z (t) = 0.0000

Source: Researchers (2025)

In this case the null hypothesis is that inflation rate has a unit root. The Z-score yielded by the test shows that inflation rate has no unit root, because it falls within the rejection region (-6.139 < -2.912) at 5% significance level hence the data was stationary. In addition, the p-value (0.0000) was less than the significance level (0.05).

Table 4: Interest Rate

Augmented Dickey-Fuller test for unit root	Number of obs 65
Interpolated Dickey-Fuller Test Statistics	1% Critical Value
Z (t) -9.115	-3.548

Mackinnon approximate p-value for Z (t) = 0.0000

In this case the null hypothesis is that interest rate has a unit root. The Z-score yielded by the test shows that interest rate has no unit root, because it falls within the rejection region ($-9.115 < -2.912$) at 5% significance level hence the data was stationary. In addition, the p-value (0.0000) was less than the significance level (0.05).

Table 6: Exchange Rate

Augmented Dickey-Fuller test for unit root	Number of obs 65
Interpolated Dickey-Fuller Test Statistics	1% Critical Value
Z (t) -11.092	-3.548

Mackinnon approximate p-value for Z (t) = 0.0000

Source: Researchers (2025)

In this case the null hypothesis is that exchange rate has a unit root. The Z-score yielded by the test shows that exchange rate has no unit root, because it falls within the rejection region ($-11.092 < -2.912$) at 5% significance level hence the data was stationary. The p-value (0.0000) was less than the significance level (0.05).

4.2.3 Normality Test

Table 7: Shapiro-Wilk test for Normal Data

Variable	obs	W	V	Z	Prob > Z
ROA	65	0.8920	6.524	4.091	0.0910
Inflation Rate	65	0.7510	15.088	6.234	0.2340
Interest Rate	65	0.8070	11.696	5.278	0.2780
Exchange Rate	65	0.7780	13.450	5.095	0.0950

Source: Researchers (2025)

The Shapiro-Wilk test helped in determining the normality or the abnormality of the error term. The study's null hypothesis states that the population is normally distributed while the alternative is that it's not normally distributed. When making the conclusion if the p-value is lower than 0.05, then the null hypothesis will not be accepted and hence there is enough evidence to deduce that the data tested did not come from a normally distributed population. The findings show that ROA had a (p-value=0.0910), inflation rate had (p-value=0.2340), interest rate (p-value=0.2780), and exchange rate (p-value=0.0950). This is an indication that all the variables used in this research had a p value of > 0.05 . Therefore, the null hypothesis will be accepted meaning that the tested data was from a normally distributed population.

4.2.4 Heteroscedasticity Test

Table 8: Test for Heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity
Ho: Constant variance
Variables: fitted values of Y
chi2(1) = 2.08
Prob > chi2 = 0.1130

When heteroscedasticity is detected, there is no effect on regression coefficient linearity and unbiasedness. Heteroscedasticity exists if the error term is not the same across the independent variable values. Heteroscedasticity has an impact on the best property of OLS, which results to hypothesis testing conclusions being invalid. The research conducted a Breusch-Pagan test to determine if heteroscedasticity existed (Gujarati, 2004). The null hypothesis is rejected when the chi value is higher than the critical value which means that there is evidence of heteroscedasticity in the model or if the p-value is smaller than 0.05, then we reject the null and hence presence of heteroscedasticity. The outcomes show that the chi value is 2.08 which shows that there is no evidence of heteroscedasticity. Additionally, the p value at 0.1130 was higher than 0.05 which means that the study did not reject the null hypothesis of homoscedasticity and thus there was no heteroscedasticity.

4.2.5 Autocorrelation Test

Table 9: Test for Autocorrelation

Durbin-Watson Statistic
d = 1.965

Source: Researchers (2025)

The Durbin-Watson test was conducted to check for serial correlation in the residuals. The test statistic ranges from 0 to 4, where a value of 2 indicates no autocorrelation. Values below 2 suggest positive autocorrelation, while values above 2 suggest negative autocorrelation. From the findings, the Durbin-Watson statistic (1.965) is very close to 2, which indicates that there is no significant serial correlation among the variables. These findings show that there is no serial correlation problem in the model.

4.3 Correlation Analysis

Table 10: Correlation Analysis

	ROA	Inflation Rate	Interest Rate	Exchange Rate
ROA	1			
Inflation Rate	0.3160	1		
Interest Rate	0.0240	0.3710	1	
Exchange Rate	-0.3120	0.8510	0.6580	1

Source: Researchers (2025)

On the correlation of the study variables, the researcher conducted a Pearson correlation. From the findings on the correlation analysis between return on assets (ROA) and the independent variables, the study found that there was a moderate positive correlation coefficient between ROA and inflation rate as depicted by the correlation coefficient of 0.3160. The above positive relationship was due to the fact that as inflation rates increase, domestic commercial airlines can adjust their ticket prices upward, which may lead to increased revenue and thus improved profitability.

There was a weak positive correlation coefficient between ROA and interest rate as indicated by the correlation coefficient of 0.0240. The findings suggest that interest rates have minimal direct

impact on the profitability of domestic commercial airlines. This weak relationship may be attributed to the fact that while higher interest rates increase borrowing costs, they may also indicate a growing economy which can lead to increased travel demand.

There was a moderate negative correlation coefficient between ROA and exchange rate as indicated by the correlation coefficient of -0.3120. The findings indicate that as exchange rates increase (depreciation of the Kenyan Shilling), the profitability of domestic commercial airlines decreases. This negative relationship can be explained by the fact that domestic airlines incur significant costs in foreign currency for fuel purchases, aircraft maintenance, spare parts, and lease payments. When the Kenyan Shilling depreciates against major currencies, these costs increase substantially, thereby reducing profitability.

4.4 Regression Analysis

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.733	0.537	0.506	6.466

Source: Researchers (2025)

The model summary shows that the multiple correlation coefficient (R) is 0.733, indicating a strong positive correlation between the predictor variables and financial performance. The R Square value of 0.537 indicates that 53.7% of the variance in ROA of domestic commercial airlines can be explained by the three macroeconomic factors (inflation rate, interest rate, and exchange rate). The Adjusted R Square of 0.506 confirms that 50.6% of the variation in financial performance is accounted for by the independent variables, after adjusting for the number of predictors in the model. The remaining 49.4% of the variance in ROA is explained by other factors not included in this model.

Table 12: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2957.430	3	985.810	12.81	0.00001
Residual	2549.888	61	41.803		
Total	5507.318	64			

a. Dependent Variable: ROA

b. Predictors: (Constant), Exchange Rate, Interest Rate, Inflation Rate

Source: Researchers (2025)

From table 12, the model showed a significant F-statistic of 12.81 with a p-value of 0.00001 which was less than 0.05. This shows that inflation rate, interest rate, and exchange rate had a significant combined impact on return on assets. The significant F-value indicates that the model is statistically significant and that the predictor variables collectively have a significant relationship with financial performance of domestic commercial airlines.

Table 13: Panel Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.134	10.540		0.677	0.005
Inflation Rate	0.336	0.230	0.397	1.460	0.004
Interest Rate	0.016	0.0145	0.021	1.104	0.274
Exchange Rate	-0.348	0.230	-0.507	-1.511	0.003

a. Dependent Variable: ROA**Source: Researchers (2025)**

From the data in the above table the established regression equation was:

$$Y = 7.134 + 0.336X_1 + 0.016X_2 - 0.348X_3$$

Where:

- Y = Financial Performance (ROA)
- X₁ = Inflation Rate
- X₂ = Interest Rate
- X₃ = Exchange Rate

From the above regression equation, it was uncovered that inflation rate, interest rate, and exchange rate held to a constant zero, return on assets would be at 7.134 while a unit increment in inflation rate would lead to an increment in return on assets by 0.336 units. A unit increment in interest rate would lead to increase in return on assets by 0.016 units, while a unit increment in exchange rate would lead to a decrease in return on assets by 0.348 units.

5.0 DISCUSSION OF FINDINGS

There was a significant positive relationship between inflation rate and performance as measured by return on assets. The coefficient of 0.336 with a p-value of 0.004 indicates that inflation rate significantly influences the financial performance of domestic commercial airlines in Kenya. This positive relationship suggests that as inflation increases, airlines are able to adjust their pricing strategies to maintain or improve profitability. The findings are consistent with those of Muteru and Omagwa (2024) who found that inflation rate positively influenced the ROA of insurance firms in Kenya. There was no significant relationship between interest rate and performance as measured by return on assets. The coefficient of 0.016 with a p-value of 0.274 indicates that interest rate does not significantly affect the financial performance of domestic commercial airlines. The weak positive relationship suggests that while interest rates may have some influence, this impact is not strong enough to significantly affect airline profitability. This finding is supported by Egbunike and Okerekeoti (2018) who also found an insignificant positive correlation

between interest rate and firm performance. However, the findings differ from those of Muteru and Omagwa (2024) who reported that interest rates significantly influenced the ROA of insurance firms.

There was a significant negative relationship between exchange rate and performance as measured by return on assets. The coefficient of -0.348 with a p-value of 0.003 indicates that exchange rate significantly and negatively influences the financial performance of domestic commercial airlines in Kenya. This negative relationship can be attributed to the fact that airlines incur substantial costs in foreign currency for fuel, aircraft maintenance, spare parts, and lease payments. When the Kenyan Shilling depreciates (exchange rate increases), these costs rise significantly, thereby reducing profitability. The findings are consistent with Mwangi (2013) who found a significant negative relationship between exchange rates and ROA of aviation companies in Kenya. However, the results differ from Mureithi et al. (2019) who found a positive relationship between exchange rates and firm performance in the insurance sector.

6.0 CONCLUSION

Macroeconomic factors play a critical role in influencing the profitability of domestic commercial airlines in Nairobi City County, Kenya. Inflation rate, which emerged as a significant positive predictor, enables airlines to adjust ticket pricing strategies and maintain revenue generation despite rising operational costs, thereby improving return on assets through strategic price optimization. Exchange rate showed a significant negative relationship with profitability, indicating that depreciation of the Kenyan Shilling substantially increases foreign currency-denominated expenses including fuel purchases, aircraft maintenance, spare parts procurement, and lease payments, thereby eroding airline profitability and financial sustainability. Interest rate, though showing a weak positive relationship, was not statistically significant, suggesting that borrowing costs have minimal direct impact on airline profitability, possibly because domestic airlines rely more on equity financing or because interest rate effects are offset by economic growth indicators associated with higher rates. The regression model confirmed that all three macroeconomic factors collectively and significantly predict airline profitability, explaining over half of the variance in return on assets. Sustaining competitive advantage and financial viability requires comprehensive macroeconomic risk management strategies, including foreign exchange hedging mechanisms, dynamic pricing models responsive to inflation fluctuations, efficient cost management systems, and strategic financial planning that addresses Kenya's volatile macroeconomic environment and its implications for domestic aviation sector performance and long-term sustainability.

7.0 RECOMMENDATIONS

Domestic commercial airlines in Nairobi should implement comprehensive foreign exchange hedging strategies to mitigate exchange rate risks associated with fuel purchases, aircraft maintenance, and lease payments denominated in foreign currencies. Dynamic pricing models responsive to inflation trends require urgent adoption, focusing on revenue management systems, competitive fare optimization, and strategic route profitability analysis alongside demand forecasting capabilities. Financial management practices must prioritize cost efficiency initiatives, operational optimization, and diversification of revenue streams to reduce vulnerability to macroeconomic fluctuations. Flexible operational structures should facilitate collaboration between finance, operations, and commercial departments to maximize responses to changing

macroeconomic conditions. Airlines should expand partnerships with local suppliers and service providers to minimize foreign currency exposure while supporting import substitution strategies where feasible. Management frameworks should institutionalize macroeconomic risk monitoring within financial planning systems, establishing dedicated treasury and risk management units with clear mandates and adequate analytical capabilities. Airline ownership and management groups must prioritize resource allocation toward fuel-efficient aircraft acquisitions, debt restructuring initiatives, and strategic cost reduction programs to ensure financial sustainability and competitive positioning across Kenya's dynamic domestic aviation sector. Government stakeholders and regulatory authorities should develop supportive policies including tax incentives, fuel price stabilization mechanisms, and favorable foreign exchange regulations to enhance airline sector viability, employment creation, tourism facilitation, and overall contribution to national economic development objectives.

8.0 AREAS FOR FURTHER RESEARCH

Future research should examine how operational efficiency, management quality, and internal financial practices interact with macroeconomic factors to influence airline profitability. Studies could also explore mediating variables like fuel hedging, fleet composition, and route networks, as well as conduct comparative analyses of domestic versus international airlines in Kenya.

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