



Is Financial Performance of Airline Companies Conditional to the Financial Education and Relevant Experience of Board of Directors?

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Is Financial Performance of Airline Companies Conditional to the Financial Education and Relevant Experience of Board of Directors

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Abstract

Numerous variables, particularly the members of the board of directors (BOD), affect the financial results of airline corporations. This study looks how the financial education and relevant work experience of board members, if any, affect the operating results of airline corporations in terms of accounting and stock market performance. The study is based on quantitative information from 20 international airlines for seven years. The study utilized multivariate OLS regression approach for analyzing the impact of board attributes on the corporation's key financial performance indicators: Return on Capital Employed (ROCE), Return on Assets (ROA), Earnings Per Share (EPS), stock price appreciation, total risk, and systematic risk. The results indicate positive impact of financial education on ROCE, however, the impacts on other performance measures such as ROA, and EPS were minimal. It was also found that board size and board experience negatively impacted financial performance because bigger and more experienced boards may restrict flexibility and decisiveness in a dynamic setting, such as aviation. The analysis indicates that although financial training helps in capital resource distribution and utilization, there are diminishing returns due to superfluous experience, or size of the board, which may harm firm outcomes. These pieces of advice are useful for crafting policies around board construction in the airline sector, proving that financial knowledge is just as important as industry knowledge.

Keywords/tags (subjects)

Corporate Governance, Board of Directors, Financial Performance, Airline Industry, Financial Education, Financial Experience, Return on Assets (ROA), Return on Equity (ROE), Stock Market Performance

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1 Introduction

Corporate governance and financial management have for a long time been interested in the financial performance of companies. Against this background, the board of directors (BOD) has come to be the subject of much attention in the context of its role in shaping a firm's financial success. Corporate governance is effective when organizations can maximize profitability, maintain financial stability, and prolong long-term growth. The strategic financial decisions and managing corporate resources efficiently are critically determined by the board's composition, of which the members should have enough financial education and relevant experience (Shaker & Nobanee, 2021).

Due to the airline industry's significant capital requirements and competitive nature, strategic financial oversight from the board is essential. The airline companies operate in an environment that is dynamic and affected by fuel price change, economic downturn, regulatory changes, and operation complexities. These factors require a financially competent board that can assess risks, manage financial resources, and improve firm performance (Nobanee & Neyadi, 2021). While much work has been conducted to understand the effect of corporate governance on firm performance, there is limited research on how board members' financial education and experience affect airlines' financial results.

Several studies have found that financial performance can be divided into accounting performance and stock market performance (Venkatraman & Ramanujam, 1986). Accounting performance measures include return on assets (ROA), return on equity (ROE), net profit margin (NPM), among others, that evaluate how effectively a firm uses its assets to produce profits. On the other hand, stock market performance is measured by stock returns and market capitalization, the indicators of investor confidence and a firm's valuation in the stock market. To the extent that these dimensions are given, there is an imperative of whether a financially educated and experienced board can contribute to improving these performance indicators in the airline industry.

Previous literature on the firm performance indicates that financial experts' board members have better financial decisions leading to higher shareholder value (Jensen & Meckling, 1976). Financially knowledgeable directors are better able to interpret financial reports, manage risk and account for compliance with accounting standards (Haapanen et al., 2002). This expertise holds significant value in industries with complex financial structures, such as airlines, where high capital expenditures, fluctuating fuel costs, and regulatory constraints create financial vulnerabilities. Research also shows that boards with experienced members, like former Chief Financial Officers (CFOs), financial analysts and accountants can increase financial performance through good investment and financing strategies (Guney et al., 2020). By improving financial oversight, such boards might enhance return on assets (ROA) and return on equity (ROE), thereby strengthening investor confidence and market valuation. Nevertheless, such empirical evidence that ties these attributes to airline company performance is scarce.

Board composition is a critical factor in influencing airline companies' financial performance, particularly in a highly volatile and competitive market as in the airline industry (Abdi, Li, & Càmara-Turull, 2022). If financial experience and education matter so much, it would lend support to the idea of strengthening board selection criteria by putting a premium on financial expertise. The purpose of this study is to fill the research gap that exists in terms of evaluating if the financial education and relevant experience of board members condition the financial performance of airline companies.

Although corporate governance and board effectiveness are increasingly important, empirical research concerning the financial education and experience of board members and their impact on the financial performance of airline companies is very scarce. Most of the existing studies focus on general corporate governance practices like board independence and the duality of the CEO, without particular examination of the financial expertise of directors. Therefore, the goal is to ascertain whether a financially proficient board can aid with superior firm performance in the airline industry (Kiracı, Asker, & Güngör, 2022; Makoka et al., 2023).

Due to the high capital expenditure and market competition, airline companies face unique and complex financial and operational challenges of fluctuating fuel cost, regulatory constraints, and others. The board should be effectively overseeing financials to allow strategic decision making, cost management, and risk mitigation. Nevertheless, it is uncertain if airlines with a higher proportion of financially educated and experienced board members outperform those with a lower proportion.

The core research problem of this study is,

Is the financial performance of airline companies conditional on the financial education and relevant experience of the board of directors?

To address this problem, the study examines two key aspects:

1. The impact of board members' financial education on accounting and stock market performance
 - Do airline companies with board members holding formal financial qualifications (e.g., finance, accounting, and economics degrees) achieve better ROA, ROE, NPM, and stock returns?
2. The influence of board members' relevant financial experience on financial performance
 - Do airline companies with board members having prior financial experience (e.g., CFOs, accountants, financial analysts) perform better in accounting and stock market indicators?

1.1 Relevance of the Topic

Due to the industry's nature of capital-intensive, operation complex, and vulnerability to economic fluctuation, the financial performance of airline companies is an important area of study. Considering that the role that corporate governance plays in the financial decisions that an airline company

makes is so important, this paper investigates if the financial education and experience relevant to the airline companies' business that board members have affects the airline companies' financial performance. This research is useful to airline executives, investors, and policymakers to improve corporate governance and financial stability as well as shareholder value with the integration of financial performance metrics with corporate governance principles.

The study is methodological, using quantitative data from 20 international airlines, financial and board composition data, over seven years. Data availability and consistency-based sample selection is made to have a robust longitudinal analysis. The fact that the airlines included are geographically diverse enables a more generalizable representation of the industry. A larger sample could further validate the results, but the chosen sample size yields methodological rigor and assurance of comparability between different years.

The importance of this research is enhanced by an increase in corporate governance reforms and financial crises occurring within the airline industry. The study provides empirical evidence that if the financial expertise impacts firm performance, then future governance policies and decisions in the aviation sector could be informed.

1.2 Structure of the Thesis

This thesis is organized into five main chapters in order to provide for a systematic and logical flow of research.

This chapter introduces the study, background of the study, research problem, objectives, and the importance of the study. It also presents the research questions and the brief of methodology.

Chapter 2 – Literature Review: critiques the current research on corporate governance and financial performance in the airline industry. It fills the gap of literature and provides a theoretical foundation of the study.

Chapter 3 – Methodology: This chapter provides the research design, philosophy, approach, and strategy. It presents data collection methods and the determination of sample size; conceptual framework; variable selection; data analysis techniques; validity and reliability considerations.

Chapter 4 – Results: This section involves the findings using descriptive statistics, correlation analysis, and multivariate OLS regression results.

Chapter 5 – Conclusion: This last chapter touches on the overall conclusion, summary of findings, discussion of hypotheses, and recommendations for future studies.

2 Literature Review

2.1 Firm Performance

Taouab and Issor (2019) suggest that organizational performance has been conceptually thought of in terms of organizational efficiency in the past. In simple terms, it's about how far an organization with scarce resources and specific techniques can achieve its goals without putting too much pressure on its people. They suggest the measurement of performance in terms of aspects like flexibility, productivity, and ability to handle inter-organizational conflict.

Firm performance, as Fatihundin et al. (2018) have discussed, is how an enterprise is able to use its resources, something closely related to good corporate governance. Venkatraman and Ramanujam (1986) have stated that firm performance can be considered from two perspectives: financial performance and operational performance. On this basis, Selvam et al. (2016) assert that better financial performance can be powered by smart resource management, while stakeholder satisfaction can lead to better operational performance. Operational performance is basically taken up with "how much" a company manufactures, while corporate governance is interested in "how" it's manufactured.

Al-Matari et al. (2014) highlight that measuring performance is a leading consideration in determining whether an enterprise is making the best use of its resources. Meeting goals like maximizing shareholder value and meeting investors' expectations remains a central concern for most firms. Even though financial performance is pivotal with regard to determining the capability of an enterprise to capture revenue, Selvam et al. (2016) note that non-financial or strategic performance cannot be less vital in the evaluation of general business success.

This study is on financial performance, which is a subject of great interest in this case. In this way, an attempt to shed light on how board members' financial education and experience might influence the financial performance of airline companies offering insights potentially valuable both theoretically and practically.

Firm Financial Performance

Fatihudin (2018) explains that the financial performance of a company is the extent to which the company achieves its goals within a specific period, based on several significant financial measures such as the capital adequacy, liquidity, solvency, efficiency, leverage, and profitability and how it raises and employs funds. Financial performance simply refers to the capability of a business firm to manage and regulate its resources.

Penttinen (2023) goes on to emphasize the critical function of financial performance, especially from the investor's perspective. Since investors are so motivated by a firm's finances, good and stable performance is required not only to attract new investors but also to be able to borrow money and maintain a good corporate image. This, as Jindrichovska (2013) points out, has shockwaves to a wide audience of stakeholders.

This thesis examines both aspects of financial performance accounting-based and market based more closely following Otley's (2004) view that both accounting measurements and share performance are key indicators in determining a firm's overall financial health.

Accounting Performance

Among the most widely used methods for measuring firm performance is through accounting based measures. Accounting measures are required in order to gauge the effectiveness with which a firm's agents use its resources. As Guney et al. (2020) argue, accounting performance analysis allows researchers and practitioners to gain meaningful insights into a firm's financial condition as well as its operating efficiency.

In history, firms have employed accounting numbers to track and quantify their performance. To Brealey et al. (2014), measures not only do report numbers—also act as a prism for judging the excellence of management. In this way, accounting figures offer a barometer by which investors and analysts can gauge whether the firm is offering good return on investment (Vernimmen et al., 2014).

This study specifically focuses on how the finance education and work experience of decision makers impact their resource usage effectiveness. By studying this relationship, the study aims to uncover some of the complex variables that contribute to a firm's finance and business performance.

Accounting performance, being a traditional method, has a long history of performance measurement in the form of a company's financial status. It indicates periodic results, best expressed by way of financial statements (Osadchy et al., 2018). Among many metrics employed, three are most essential: cash flow management, profitability, and financing and asset expenses (Otley, 2004).

Penttinen (2023) underscores the importance of financial reports in revealing the actual picture of a company's financial situation. For listed firms, preparation of three major financial reports - the

income statement, balance sheet, and cash flow statement is mandatory. Among these three, the income statement and balance sheet hold the most significant information for assessing accounting performance and are the subject of this research.

These also provide the foundation for financial ratio analysis. As explained by Bosworth (2005), ratio analysis involves employing provided calculations to view further into a firm's performance. Ratios allow analysts to understand the previous and current financial situation, as well as even the future outlook, of a company by analyzing key figures among statements. Although numerous ratios could theoretically be used, the determination of which is to be applied often hinges upon the evaluator's point of view whether by management, shareholders, lenders, or regulatory bodies and the ends of the particular evaluation (Bosworth, 2005, p.42).

Choi and Meek (2008) categorize financial ratios into four groups: coverage, profitability, efficiency, and liquidity. The most common ratios, according to Schönbohm (2013), are utilized to measure a firm's ability to fulfill its commitments, manage such assets as inventory and receivables, generate profits, and capture investment opportunities.

This thesis will analyze the financial performance of a company primarily from the accounting perspective, considering three significant profitability ratios: Return on Assets (ROA), Return on Capital Employed (ROCE), and Earnings Per Share (EPS). These are the most crucial to understand whether a company is effectively converting its investments into returns.

Profitability ratios are mostly categorized into rate of return ratios and profit margin ratios (Moyer et al., 2014). Both ROA and ROCE are part of rate of return ratios, as Chandra (2007) points out, and help to clarify the relationship between profit and investment.

Assets such as equipment, property, or technology are tangible assets a company uses to reap future rewards. Capital, on the other hand, is the money invested by owners or raised from external

sources to buy such assets (Mackay, 2018). Capital invested includes both equity and liabilities employed in business operations (Kenton, 2020).

ROA tells us about how well a firm can generate profit from each unit of its assets (Gallagher & Andrew, 2007). For shareholders, it provides a clear signal regarding how well a firm is able to transform its investments into revenues (Hargrave, 2020). Berk and Demarzo (2017) also affirm that ROA is an important measure when it comes to gauging the profitability of a firm relative to its asset base.

$$\text{Return on Assets} = \text{Net Profit} / \text{Total Asset}$$

Net Profit more popularly referred to as the "bottom line" is that which is left after all expenses and taxes have been incurred from a company's overall revenue (Berk & DeMarzo, 2017). It is an effective but straightforward metric of a firm's bottom line.

Another core metric is Return on Capital Employed (ROCE), which shows the proportion of return being earned by the company for every euro invested within the company (Nishantini & Nimalthasan, 2013). ROCE is especially useful while calculating overall firm performance because it reflects the efficiency of the management in using owner and creditor capital. One of the benefits of ROCE is that it can show trends over time whether the firm is making progress or losing progress (Manna et al., 2019). The ROCE formula is:

$$\text{Return on Capital Employed} = \text{Net Profit} / (\text{Total Assets} - \text{Current liabilities})$$

Earnings Per Share (EPS) is an extremely widely utilized ratio. In the words of Bragg (2017), EPS captures profitability from the investor's perspective by computing net profit divided by shares outstanding. Effectively, it tells investors the amount of profit that was created (or lost) per share within a specified accounting period:

$$\text{Earnings Per Share} = \text{Net Profit} / \text{Shares Outstanding}$$

While these are good accounting-based metrics, from some research, they are not the whole picture. From Selvam et al. (2016), market-based indicators can paint an even broader picture by considering not just financial performance but also investors' expectations, as well as their growth potential, and sentiments in the market. That's why the firm's performance on the stock exchange will also be analyzed in the next chapter as a broader picture of value and potential.

Stock Market Performance

According to Paulet & Rowley (2017), stock market performance is a key indicator that reflects business performance in the stock market. Market performance can be demonstrated by the increase of market share. By having a positive impact on market channels, a firm can develop its effectiveness and responsive capability.

Market-based performance measures are commonly utilized to evaluate a company's potential future worth. Selvam et al. (2016) prove that growth performance, anticipated stock market trends, and company-related events can predict a firm's future developments. It is worth noting that, among other factors in the equity market, the value of a firm's equity can be determined by whether it is overpriced, reasonably priced, or underpriced, as highlighted by Peavler (2017).

The value of a company's shares can be influenced by factors that are not always rational. For instance, when a company announces a profitable new contract, investors view it as a sign of success, which can drive up share prices. Conversely, if a company loses a significant client, investors may perceive it as a setback, causing the share price to drop due to fluctuations in the stock market. Baker and Wurgler (2002) explain this phenomenon in their research.

Market capitalization (market cap, market value) can be a valuable gauge for evaluating the share market's performance, comparing the scale and expansion of business activities, and assessing the worth of stocks. It is a crucial economic indicator that offers valuable information about the market's general state and performance (Selvem et al., 2016; iMinds, 2009). Market capitalization, which refers to a company's overall market value, can be calculated by multiplying the number of equity shares traded in the stock market by the current price per equity share prevailing in the market (Hundal et al., 2020).

Organizations are usually divided into three categories in the business world based on their capitalization size - large-cap, mid-cap, and small-cap. Each category has unique features that set it apart from the others. Large-cap companies, typically significant players in their respective industries, are known for their stability and resilience to external market forces. As a result, their stocks are considered less volatile and less risky but may also produce lower returns compared to smaller, more agile companies. Investing in the stock of small-cap companies can potentially result in significant returns on investment due to their high mobility. However, it is essential to note that this comes with higher volatility, increasing the risk. Mid-cap companies are considered less risky while having a good potential for growth, which is why investors and traders tend to favor them. They fall between large-cap and small-cap categories and have gained popularity over time. (Cuadra, 2002; Brooks et al., 2014).

According to Chen (2020), a company with a market capitalization of \$10 billion or more is considered a large-cap, \$2 to 10 billion is considered a mid-cap, and \$300 million to \$2 billion is considered a small-cap.

According to Caudra (2009), one advantage of utilizing market capitalization as an economic indicator is its straightforward calculation process and the readily and broadly available information it provides. However, the market cap is not always an accurate measure of a company's value, as it does not consider all factors that determine enterprise value, such as debt and cash. Additionally, if

a company's stock is not correctly valued, relying too heavily on market cap could result in inaccurate deductions about its performance (iMinds, 2009).

According to Sukesti *et al.* (2021), stock return is a very important measure to evaluate the firm performance because stock price provides the market value of a firm. But when a company's stock price rises, it implies that more and more investors are willing to fund a firm with the expectation that it will earn profits in the future and expand. Such is usually due to good financial performances, efficiencies or great prospects such as increased expansion potential. The following formula is used to calculate a firm's stock return:

$$\text{Stock Return} = [\text{Current price} - \text{Previous price}] / \text{Previous price}.$$

High stock returns are an indicator of good performance by the firms in terms of meeting and or exceeding investor expectations and optimal usage of the available resources. On the other hand, decreasing stock returns are an implication of poor firm performance, inefficiencies or adversities in the equity market. Besides, stock returns bear a direct relationship with the wealth of shareholders. Stock returns are crucial because, as it has been pointed out, shareholders invest with an aim of making profits (Awalacki & HN, 2021). At the broader macroeconomic level, returns on stocks also offer an idea on the health of industries or even the economy. Therefore, stock returns are a crucial tool for evaluating the performance of a firm because they embrace market perceptions, investors' confidence, as well as firm's capacity to deliver value which form the cornerstones of value creation hence a useful tool for managers and investors.

The uncertainty of potential events is rooted in a firm's risks that can impact the fulfillment of its various objectives, especially those related to strategy, operations, and finance. The risk-return trade-off is essential for firms and investors as it plays a pivotal role in achieving their objectives (Watson & Head, 2016). Berk and DeMarzo (2017) have suggested that when shareholders often face the risk of holding shares of a firm in their portfolio, the dividends to be paid out and the closing

share price might fall below the predicted levels. Quantifying the level of risk in investment projects is crucial in financial decision-making, especially when determining the expected return on investment. Investors usually measure overall financial risk by analyzing the standard deviation statistic of the stock return, cash flows, and revenue of the firm or portfolio they invest in. This approach is essential for determining the level of exposure to risk that investors face (Watson & Head, 2016).

Lofthouse (1994) distinguishes total financial risk into unsystematic and systematic risks.

Unsystematic risk is a firm-specific risk that depends on various factors associated with a particular industry or firm. To minimize unsystematic risk, investors must diversify their portfolios by investing in the stocks of different enterprises belonging to various industries, sectors, and locations (Dimson, 1998).

Systematic risk measures market risk, affecting all industries and sectors rather than being limited to a specific firm or industry. Trade cycles, regulatory policies, changes in interest rates, and exchange rates are some of the factors that contribute to systematic risk (Watson & Head, 2016).

Systematic risk is often used to estimate expected returns for company shares (Ross et al., 2002). One way to measure the sensitivity of a specific type of risk to market changes is to consider its level. The beta coefficient, which measures volatility or sensitivity as described by Vernimmen et al. (2009), is frequently used to express this level of sensitivity.

The calculation of beta involves using regression analysis on past data of stock prices and market indices. It is important to note that beta represents the slope of this regression, which measures the difference between stock prices and stock indices. This information is expressed in Vernimmen et al. (2009) for the purpose of clarifying the concept of beta.

The stock's beta benchmark indicates the degree of its correlation with the market. If the beta is 1, it means the stock's returns are perfectly aligned with the market movements. For example, a 10% increase in the market results in a 10% increase in stock prices. Conversely, for a share with a beta of 0.5, a 20% increase in the market return results in a 10% increase in the security's return (Head & Watson, 2016). However, diversification cannot decrease systematic risk, and the only way to lessen it is by implementing a risk management strategy, which can be achieved through financial hedging (Hundal et al., 2020).

The following calculation is used to find the beta (Vernimmen et al., 2009):

$$\text{Beta} = \text{Covariance}(R_e, R_m) / \text{Variance}(R_m)$$

Where:

R_e – stock return

R_m - market return

Covariance – a measure of a stock's return relative to that of the market

Variance – a measure of how the market moves relative to its mean

The airline industry, with its inherent operational complexities, capital intensiveness, and vulnerability to external forces like fuel costs and regulations, demands a robust corporate governance framework, particularly within the boardroom (Faulkner, 2016). The airline's leadership team (board of directors) is essential for ensuring its financial health and long-term success (Jensen & Meckling, 1976). This section of the literature review explores the intricate relationship between board capital especially focusing on the financial education and relevant experience of directors, and the financial

performance of airline companies. The researcher aims to unveil the significant interplay between these board characteristics and their potential influence on an airline's financial success. By critically examining extant research, the researcher seeks to ascertain whether airlines with boards possessing a high degree of financial literacy and industry expertise demonstrably outperform their counterparts in terms of financial metrics. By analyzing the link between board composition and airline financial performance, this research aims to provide valuable insights for both academic researchers and airline practitioners. By understanding the interplay between board composition and the theoretical contributions for the focused subject, airlines can make informed decisions when structuring their boards, ultimately fostering long-term financial success and navigating the ever-evolving complexities of the airline industry.

Theoretical perspective on financial performance

Capital Asset Pricing Model (CAPM)

To price hazardous assets, CAPM was developed with the help of Sharp (1964) and Lintner (1965). Capital Asset Pricing Model (CAPM) is a way to price hazardous assets according to their projected return and risk. Based on this concept, a portfolio's or underlying asset's expected return is just the rate on a risk-free security plus a premium for risk. With the use of CAPM, one may find out how risky an asset is and how the projected return relates to the risk involved. Given the asset's systematic risk and its exposure to a portfolio, the model calculates the necessary rate of return for the underlying security. The beta coefficient quantifies the overall risk associated with an asset. A security's beta indicates how much its return is susceptible to fluctuations in the market. Academics and practitioners alike have made extensive use of the Capital Asset Pricing Model (CAPM), which was developed by Sharp (1964) and Lintner (1965), since its inception. The CAPM principle states that risk beta alone may explain the cross-section of anticipated return; yet, several stock market anomalies have arisen where the return characteristics of companies appear to contradict this.

Revenue and Investment Catering Theory

Catering is defined as any activity to artificially inflate share values beyond their intrinsic worth. According to Stein's (1996) investment catering theory, market value influences a company's investment choice regardless of whether new investment initiatives are funded by stock or not. According to the theory, managers would logically invest in expensive initiatives and avoid underpriced ones if investors have short horizons. This is done to maximise near-term stock values by catering to sentiment. If companies are undervalued relative to their investment levels, managers may attempt to manipulate short-term investor sentiment to increase share prices. Those managers whose assets are harder to evaluate or who have shorter time horizons with shareholders should cater more. If company executives are concerned about the stock price at the moment, they will work more to boost sales while investors prioritise income, as stated in the catering hypothesis put out by Aghion and Stein (2008). According to them, the demand for revenue growth from investors varies over time, and managers will increase revenue delivery in response to a bigger revenue premium. When the market values revenue above all else, the manager would be wise to focus on growing sales if she is concerned about the stock price.

2.2 Corporate Governance and Board Composition

According to Zingales (1998), corporate governance encompasses a wide range of factors that influence the distribution of quasi-rents, including ownership structure, capital structure, management incentive schemes, takeovers, the board of directors, institutional investor pressure, product market competition, labour market competition, organisational structure, and more.

The continued prosperity of any organization is contingent upon the implementation of effective corporate governance. It provides a solid foundation for clear decision-making on strategic direction, resource allocation, and other critical matters. It also ensures accountability within the organization and fosters contingency management practices (Cheffins, 2012). The division of ownership and control within large corporations is the foundation of the concept of corporate governance, as

noted by Berle and Means in their landmark work, "The Modern Corporation and Private Property" (1932). La Porta et al. (1998) credit Berle and Means with sparking further research on corporate governance practices designed to address these potential conflicts. Within this framework, the board of directors (BOD) plays a critical role, acting as a bridge between shareholders and management (Jensen & Meckling, 1976). The BOD is entrusted with comprehensive oversight, including financial forecasting and risk management, ensuring the company's financial performance remains robust, and safeguarding the interests of the shareholders who have invested in the company.

The board of directors plays an essential role in safeguarding a company's financial well-being through a combination of strategic oversight, financial reporting accountability, and risk management. One key function involves setting the strategic direction, and considering factors like market trends, competitor landscape, and growth opportunities. This strategic vision directly impacts financial performance (Calder, 2008). Furthermore, the board oversees financial reporting, ensuring the accuracy and adherence to accounting standards. They heavily rely on the audit committee, composed of independent directors with financial expertise, to delve deeper into financial operations and internal controls (Haapanen et al., 2002). Beyond reporting, the board establishes and monitors a comprehensive risk management framework.

This framework identifies and mitigates potential financial risks, including operational disruptions, market fluctuations, credit risks, and even fraud. Notably, the Sarbanes-Oxley Act (SOX) of 2002 further emphasizes board accountability for financial reporting integrity (PwC, 2003). The board also actively monitors key metrics like profitability, debt-to-equity ratio, and solvency to assess the company's financial health and progress toward strategic goals. This ongoing monitoring allows for early detection of potential problems and timely course correction, ensuring the company stays on track (Rindova, 1999). Finally, the board plays a crucial role in shaping executive compensation. They set compensation packages for senior executives, aligning them with financial performance and long-term value creation (Conyon & Peck, 1998). Therefore, it is apparent that these combined efforts ensure the company operates on a sound financial footing and pursues sustainable growth.

Effective board composition and practices

The effectiveness of a board's financial oversight depends not only on its composition but also on the practices it adopts. To fulfill this critical function, boards should be strategically designed with a focus on both composition and practice. Firstly, board composition should be strategically designed to include a diverse skillset with a strong financial foundation. Ideally, the board should comprise members with expertise in accounting, finance, and risk management, allowing them to dissect financial information with a critical eye (Beasley & Salterio, 2001). Furthermore, achieving a balance between independent and non-independent directors is essential. Independent directors, free from significant financial ties to the company, provide a more objective perspective on financial matters and are less likely to be swayed by management (Chototourou et al., 2001). Effective boards also implement practices that support sound financial oversight. These practices might include regularly scheduled board meetings with dedicated time for in-depth discussions on financial performance, risk management strategies, and long-term financial goals. Additionally, access to independent financial advisors and legal counsel can empower directors to ask informed questions and delve deeper into complex financial matters. Finally, a robust internal audit function that operates independently of management plays a vital part in guaranteeing the reliability and accuracy of financial reporting.

Board size also plays a crucial role. While a larger board offers a broader range of expertise, potentially encompassing finance, accounting, and risk management (Beasley & Salterio, 2001). This diversity of knowledge can be invaluable for tackling complex financial situations, as well as it can also lead to communication challenges and hinder timely decision-making. Additionally, a larger board may boast a broader network of connections, granting access to resources and partnerships that could bolster the company's financial standing. However, this advantage comes with drawbacks. Communication challenges and slower decision-making can arise with more voices at the table. Coordinating schedules and ensuring efficient meetings can also be hurdles for larger boards. Research suggests an "optimal" size exists, maximizing effectiveness. Finding the optimal size that balances effectiveness with diverse viewpoints is key (Smith et al., 1985). Effective oversight often involves

establishing dedicated committees, such as the Audit committee. This committee, typically composed primarily of independent directors with financial expertise, plays a vital role in reviewing financial statements, assessing the company's internal controls, and communicating directly with the independent auditor, ensuring a thorough examination of the company's financial health (Haapanen et al., 2002). Regular board meetings with clear agendas focused on financial performance are crucial for effective oversight. Management's responsibility lies in providing the board with timely and accurate financial information and reports, empowering the board to make informed decisions that safeguard the company's financial well-being (Calder, 2008).

A diverse boardroom, with members from different backgrounds, genders, and experiences, fosters enhanced decision-making (Moghaddam et al., 2018). This diversity brings a broader range of perspectives to financial discussions, leading to more creative and well-rounded approaches to financial challenges. It also reduces the risk of groupthink, where a board with similar backgrounds might be less likely to challenge the status quo or identify potential financial blind spots. Board diversity can be categorized as demographic (age, gender, ethnicity, education) and skillset (expertise in accounting, finance, law, and risk management) (Beasley & Salterio, 2001).

The independence of non-executive directors is critical for objective financial oversight. Independent directors, with no significant financial ties to the company, are less susceptible to management influence and provide a more objective perspective (Chototouru et al., 2001). This objectivity is crucial for ensuring the board acts in the best interests of shareholders and makes sound financial decisions.

Board composition is a complex but crucial factor influencing financial performance. Finding the right balance in board size, diversity, and independence of non-executive directors is essential for effective financial oversight and sustainable company growth. Airlines, with their unique financial challenges, should carefully consider these factors when structuring their boards to ensure long-term financial success.

In the airline industry, with its capital-intensive nature and vulnerability to external factors like fuel prices, effective board composition is even more critical. Boards with a strong financial skillset and a strategic mix of independent and non-independent directors (representing industry experience) can navigate complex financial decisions and ensure long-term financial stability.

Theoretical Perspectives on Board Composition

Agency Theory

Agency theory serves as a prominent framework utilized for examining the relationship between a principal and an agent (Hillman et al., 2009). Within the realm of corporations, the principal typically constitutes the shareholders, who possess ownership of the company but may not engage directly in its day-to-day functions. The agent, on the other hand, embodies the management team, overseen by the CEO, who are entrusted with the responsibility of decision-making and operational management on behalf of the shareholders (Jensen & Meckling, 1976).

A fundamental aspect of agency theory revolves around the possibility of a conflict of interest arising between the principal and the agent. Shareholders aim to optimize the value of their investment, whereas managers may prioritize personal objectives such as job security or enhanced compensation. Termed as the principal-agent problem (Fama, 1980), this issue raises the question of how agency theory tackles this potential conflict within corporations. The theory underscores the pivotal role played by the board of directors as a monitoring mechanism (Zahra & Pearce, 1989). Acting as an intermediary between shareholders and management, the board guarantees that managers operate in the best interests of the shareholders (Eisenhardt, 1989). In order to effectively carry out their monitoring function, incentivizing the board to prioritize shareholder value is essential. Agency theory proposes that aligning board member remuneration with company performance represents one approach to achieving this goal (Jensen & Meckling, 1976).

In conclusion, agency theory provides a valuable lens for understanding the dynamics between boards of directors and management teams. By acknowledging the potential for conflicts of interest and highlighting the board's monitoring role, agency theory helps us evaluate how effectively corporations are structured to represent shareholder interests (Berle & Means, 1932).

Resource Dependency Theory

Resource dependence theory (RDT) provides a valuable framework for comprehending how organizations maneuver through the trials of survival within an intricate and ever-evolving external environment (Hillman et al., 2009). This theory perceives organizations as open systems that depend on external resources for efficient operation (Pfeffer & Salancik, 2003). RDT underscores the pivotal role of the social and economic backdrop encompassing an organization (Pfeffer & Salancik, 2003). To understand an organization's strategic decisions and composition of its board, it's vital to examine the external pressures and opportunities it faces. This focus shifts attention away from solely internal dynamics and leadership values, acknowledging that vital resources like information, finances, and materials are acquired externally. While organizations are undoubtedly shaped by their environment, RDT recognizes their ability to take proactive measures (Pfeffer & Salancik, 2003). Organizations can employ various tactics like cooptation (gaining influence over external actors) to secure autonomy and pursue their interests. This highlights the importance of building relationships with stakeholders beyond just customers and products, encompassing government figures, suppliers, and other actors who influence the organization's environment.

RDT underscores the concept of social power, which stems from the interdependence between organizations and their environment (Pfeffer & Salancik, 2003). Managers strive to manage these dependencies and mitigate environmental and social constraints. This power can manifest in an organization's ability to exert influence within its social space, potentially granting a competitive advantage.

The Role of the Board of Directors:

Within RDT, the board of directors assumes a critical role (Hillman & Dalziel, 2003). They are instrumental in securing resources for the organization. Board members are appointed with the expectation that they will actively support and advocate for the organization's needs. By fostering connections with the external environment, directors act as a crucial bridge for resource acquisition. Additionally, they play a vital role in mitigating negative external influences and representing the organization externally. Daily and Dalton (1998) suggest that the need for effective boards increases with organizational complexity and size. As the number of stakeholders grows, a robust board, either through increased size or diversified expertise, becomes essential to maintain necessary connections.

In conclusion, resource dependence theory provides valuable insights into how organizations navigate the external environment to secure resources and achieve long-term survival. The theory emphasizes the importance of understanding the social context, the agency organizations possess to shape their environment, and the critical role of the board of directors in resource acquisition and external relations.

Board Expertise and Financial Performance

A well-functioning board of directors makes an important impact on stabilizing financial integrity and continued success. This section delves deeper into the crucial roles of Executive Directors (EDs) and Non-Executive Directors (NEDs) within airline boards, highlighting their distinct contributions to financial performance.

Executive Directors (EDs)

EDs are the bridge between board-level strategy and tangible action. They translate broad strategic goals into actionable plans and oversee their execution across various departments. This ensures that strategies directly translate into revenue generation, cost control, and ultimately, profitability (Ramanujam & Venkatraman, 2017). The evolving role of Executive Directors is evident in changes to audit committee composition. In India, for example, recent regulations allow them to participate in audit committees, which were previously restricted to independent directors (Hundal, 2016).

Non-Executive Directors (NEDs)

Non-Executive Directors (NEDs), in contrast to Executive Directors (EDs) who participate actively in the daily functioning of the organization, operate externally from the management of the company (The Institute of Chartered Secretaries and Administrators, n.d.). Their role involves offering impartial viewpoints and specialized knowledge to the board, promoting efficient supervision, and the formulation of strategic choices (Shakir, 2008).

A synergy of expertise

A well-balanced board of directors with a strong mix of Executive Directors (EDs) and Non-Executive Directors (NEDs) fosters a dynamic environment that optimizes financial performance and promotes effective corporate governance (Venkatraman & Ramanujam, 1986). This synergy of expertise arises from the complementary skillsets of these two director categories. EDs bring deep industry knowledge and operational expertise to the table. They are instrumental in translating strategic goals into actionable plans that improve profitability and growth metrics (Venkatraman & Ramanujam, 1986). Their understanding of the company's day-to-day operations allows them to identify opportunities for process improvement, cost reduction, and revenue generation. NEDs, on the other hand, provide strategic guidance and risk management expertise. They offer a fresh perspective,

free from the pressures of daily operations. Their diverse backgrounds and experiences allow them to consider long-term trends, anticipate potential threats, and incorporate broader environmental and social considerations into decision-making (Selvam et al., 2016). This helps ensure the company's long-term financial sustainability.

The effectiveness of a board goes beyond just driving financial performance. In the wake of corporate scandals like Enron, regulatory bodies like the Securities and Exchange Commission (SEC) in the USA emphasized the importance of robust corporate governance practices (SEC, 2002). A strong board fosters good corporate governance by following approaches. Firstly, Strengthening internal controls. The board, particularly the audit committee, plays a crucial role in ensuring the company has a sound system of internal controls ([Blue Ribbon Committee (BRC), 1999]; Sarens & Abdolmohammadi, 2011). This minimizes the risk of fraud and errors in financial reporting. Furthermore, the board oversees management and ensures fair and accurate financial reporting (Sarens & Abdolmohammadi, 2011). This builds trust with stakeholders like investors. Additionally, the board ensures the company adheres to all relevant laws and regulations (Sarens & Abdolmohammadi, 2011). This helps avoid legal and financial penalties. A well-balanced board with a strong synergy between EDs and NEDs is crucial for effective corporate governance and financial performance. Beyond financial results, the board's role extends to ensuring transparency, accountability, and regulatory compliance. A well-functioning audit committee, free from undue influence and excessive workload, is essential for maintaining the integrity of financial reporting.

Financial Literacy

Research by Hambrick and Mason (1984) suggests that educational background reflects an individual's knowledge and skill base. A degree in finance equips directors with a specific cognitive model for analyzing financial data, understanding market trends, and evaluating the financial implications of strategic choices (Hitt & Barr, 1989). This specialized knowledge allows them to dissect complex

financial reports, identify key metrics, and assess a company's financial health. Also, BODs can recognize potential threats like currency fluctuations, economic downturns, and debt levels, allowing for proactive risk management strategies. Moreover, Directors will be able to critically analyze financial projections and assess the potential return on investment for proposed ventures.

According to Fama & Jensen (1983) Financial literacy equips directors with the tools necessary for effective decision-making within the boardroom. This expertise empowers them to actively contribute in several keyways. Firstly, directors with a strong financial background can critically analyze proposals. They can ask pointed questions that delve deeper into the financial implications, challenge underlying assumptions, and ensure all financial aspects are meticulously considered before strategic decisions are made. Secondly, their financial literacy allows them to dissect financial metrics. This enables them to evaluate the success of current strategies and pinpoint areas where adjustments might be necessary to improve financial performance. Finally, directors with financial acumen can effectively monitor management. They can hold management accountable for the company's financial health and ensure their actions align with the interests of the shareholders.

A key factor in determining an organization's long-term success is board effectiveness (Fama & Jensen, 1983). The makeup of the board, especially the members' backgrounds, is a significant factor that affects how effective the board is (De Villiers et al., 2011). According to the Resource Dependence Theory (Pfeffer & Salancik, 1978), organizations must rely on outside resources to accomplish their strategic goals. Boards with members possessing relevant experience can be considered a valuable resource. These directors bring a deep understanding of the industry's dynamics, financial metrics, and risk landscape (Al-Matari et al., 2014a). In the airline industry, for example, directors with industry experience can provide insights into factors like fuel costs, competition, and regulations, allowing them to anticipate challenges and identify opportunities (Nuscheler et al., 2019).

Directors with airline experience can significantly contribute to an airline's financial strategy. Their knowledge of the industry allows them to Make Informed Investment Decisions (Cui et al., 2019a),

Implement Effective Cost Management (Bédard et al., 2004), and evaluate Mergers and Acquisitions (M&A) Opportunities (Henry et al., 2019a).

Top Executive Management Experience (TEME)

The concept of relevant experience aligns with the research on Top Executive Management Experience (TEME) (Nuscheler et al., 2019). The passage highlights that experienced management can make informed decisions (2.6). Similarly, directors with airline experience bring industry knowledge that leads to better financial decision-making for airlines. Furthermore, studies on TEME suggest a positive relationship between experience and corporate performance (Al Matari et al., 2014). This finding strengthens the argument for relevant experience on boards, as it likely translates to improved financial outcomes. While relevant experience is crucial, a well-rounded board requires a diverse skillset. Overreliance on airline experience can lead to echo chambers of similar perspectives that may hinder innovative financial strategies and overlook external opportunities (Henry et al., 2019b). An exclusively airline-focused board might lack expertise in areas like financial technology or legal aspects of international operations.

2.3 Hypothesis Development

For the thesis “exploring whether the financial performance of airline companies is conditional on the financial education and relevant experience of the board of directors,” we can derive the following hypotheses:

Hypothesis 1 (H1): Financial Education of the Board and Accounting Performance

- **H1a:** Airline companies with a higher proportion of board members possessing formal financial education (e.g., degrees in finance, accounting, economics) exhibit superior accounting performance compared to those with a lower proportion.

- **H1b:** There is a positive relationship between the presence of financially educated board members and key accounting performance indicators (e.g., return on assets, return on equity, net profit margin) in airline companies.

Hypothesis 2 (H2): Relevant Experience of the Board and Accounting Performance

- **H2a:** Airline companies with a higher proportion of board members having relevant financial experience (e.g., previous roles as CFOs, financial analysts, accountants) demonstrate better accounting performance than those with fewer experienced members.
- **H2b:** There is a positive relationship between the board's relevant financial experience and the airline company's accounting performance indicators.

Hypothesis 3 (H3): Financial education of the board of directors and Stock Market Performance

- **H3a:** Airline companies with a higher proportion of board members possessing formal financial education (e.g., degrees in finance, accounting, economics) exhibit superior stock market performance compared to those with a lower proportion.
- **H3b:** There is a positive relationship between the presence of financially educated board members and key stock market performance indicators (e.g., stock return) in airline companies.

Hypothesis 4 (H4): Relevant experience of the board of directors and Stock Market Performance

- **H4a:** Airline companies with a higher proportion of board members having relevant financial experience (e.g., previous roles as CFOs, financial analysts, accountants) demonstrate better stock market performance than those with fewer experienced members.
- **H4b:** There is a positive relationship between the board's relevant financial experience and the airline company's stock market performance indicators.

These hypotheses offer a systematic approach to analyse the role of financial literacy and financial knowledge on financial consequences of airline firms, at firm and industry level, in terms of direct effects of each and the interactions between them, and potential moderators.

3 Methodology

This research aimed at analysing the effects of financial literacy and experience of the board on airline firms' financial performance. The financial performance of these companies was analyzed through two primary dimensions: accounting performance and stock market performance. The accounting performance was measured by factors like Return on Assets (ROA), Return on Capital Employed (ROCE), Earnings Per Share (EPS). Another method used to measure the stock market was in terms of factors such as stock return and risk measure in the market. Through these aspects, the study sought to determine if the board of directors' education level and experience affected airline firms' financial performance.

The study was motivated by the growing research interest in corporate governance and the leadership responsibilities of boards in managing financial performance. Given the intensity of competition in the airline industry, the influence of board characteristics on financial performance gave an appreciation of other potentialities in board structure that could enhance organisational financial performance. The following sections of this research provided a rich understanding of these dynamics using appropriate methodologies (Rana, Luna-Gutierrez, & Oldroyd, 2021).

Research methodology is defined as the process by which a particular study is carried out, including the methods, techniques, and tools used in data collection, analysis, and interpretation (Ghanad, 2023). In this study, the research methodology outlined the framework through which data were collected, analyzed, and evaluated to answer the research question: "Does the financial performance of airline companies depend on the financial literacy of the board of directors and their prior experience?"

The methodology of this study is based on the research onion model.

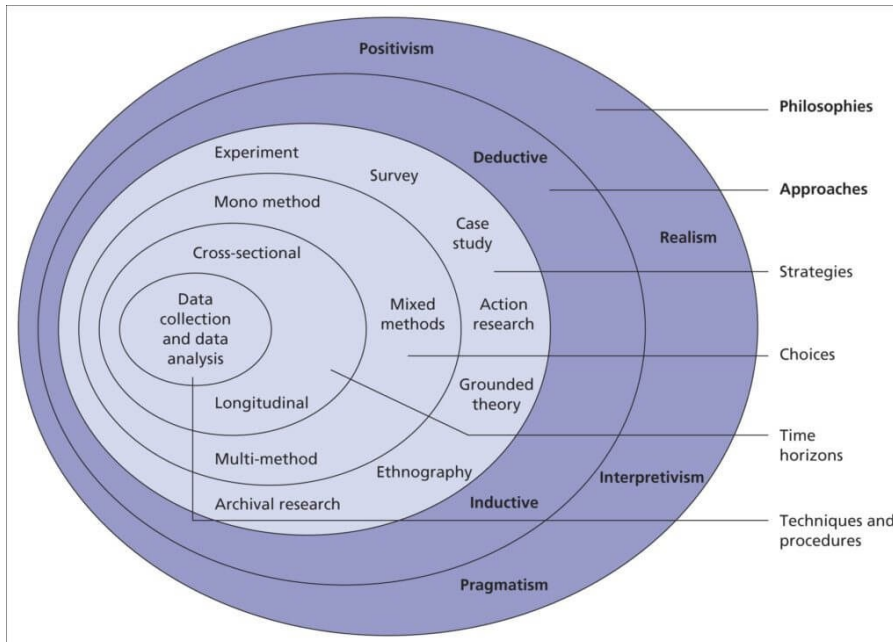


Figure 1. The research onion model (Saunders et al., 2007)

Saunders et al., 2007, having developed the research onion model, helped in developing the research methodology of the study. The above framework as given by Saunders et al., 2007 is multi-layered, and each of these layers contains pivotal decisions of the research process. These layers are Research Philosophy, Research Approach, Research Strategy, Methods, Time Horizon & Data Collection Techniques. The research process of this study was systematic and consistent and followed the research onion model.

- Research Philosophy: The study was informed by the positivism paradigm since it deals with the occurrence of events and makes use of data. This philosophy was consistent with the quantitative nature of the study, and the aim of the study to hypothesize and analyze the results statistically (Pandey, Margam, & Singh, 2023).

- **Research Approach:** The study used an analytical, deductive method of developing hypotheses with an aim of testing theories from the existing literature. The deductive approach enabled the generation of specific hypotheses about characteristics of boards and how they related to performance, and these were tested against empirical data (Pandey, Margam, & Singh, 2023).
- **Research Strategy:** Survey approach was employed, which called for the accumulation of secondary data from other sources including financial statements and stock exchange records. This approach embraced the use of samples where the researcher compared financial ratios and board features of various airline firms, thus broad and comparative (Barella *et al.*, 2024).
- **Choice of Methods:** To collect data, a quantitative method was adopted, and the only type of data collected was the quantitative type of data, and the only data analysis technique used was quantitative. It has allowed for accurate identification of the parameters and their correlation as well (Thomas & Zubkov, 2023).
- **Time Horizon:** This research work considered a cross-sectional time horizon where data was collected from one particular time. This approach was suitable for establishing the relationships and trends within a given period, thereby providing timely results.
- **Data Collection Techniques:** Secondary data were obtained from published sources, which include company balance sheets, published annual reports, and stock exchange databases. Board of director data, including financial literacy and experience, was collected from online biographies of the directors and annual corporate governance reports. The listed financial performance information was retrieved from the companies' financial statements and market performance reports (Bacon-Shone, 2022).

3.1 Research Design and Method

The study used a descriptive and structured research approach to establish the financial performance of airline firms based on a board of directors' financial literacy and experience. Descriptive

research methodology was adopted because it provided an opportunity to analyze the correlation between the dependent and the independent variables. This design also made it easier to use statistical approaches to qualify the numerical data so that the results could be standardized and reproduced. It also helped to establish an organizational framework that would make the two steps of data collection and analysis clear and concise (Barella *et al.*, 2024).

The present study used the quantitative research method. Qualitative methods were considered less suitable because they are qualitative, while quantitative methods enable the assessment of the quantity of the results. Other paradigms, for example, Qualitative or Mixed Methods, were also taken into consideration but were ruled out. Although the quantitative research methods are useful for discovering attitudes and experiences, it was not pertinent to the study of airline companies' financial position since they call for numbers. Cross-sectional designs, which incorporate both qualitative and quantitative data, were also considered, as well as dismissed, due to the emphasis on numerical association rather than perception (Apuke, 2017).

The reason for using a quantitative research approach was informed by the topic of the study as well as the objectives of the study. The dependent variable, financial performance, was assessed by the accounting and stock market returns. Accounting returns were evaluated using return on assets, return on capital employed, and earnings per share. The number of stocks, stock return, and different measures of risk were used to examine stock market performance indicators that include average daily and annual financial returns, total financial risk, and systematic risk. These indicators needed an accurate numerical value which could be easily fed into the quantitative method.

The independent variables were the level of financial literacy or financial knowledge of the board of directors' members and their experience. The educational qualifications comprised finance, accounting, or economics for the financial literacy, and the experience included experience of having been employed as a CFO, analyst, or an accountant. These relationships were tested by statistical techniques, which also point to the necessity of using a quantitative research method.

The chosen approach had several advantages. Quantitative measures were used to test hypotheses that the proffered relationships were statistically significant. This method also made generalization possible because the results could be generalized to other airline companies that share the studied characteristics. In addition, since the study adopts a quantitative research approach, the study was more reliable, thus reducing the possibility of researcher bias, hence increasing the credibility of the results (Freeman, Anderson, & Scotti, 2000).

This research design was chosen as descriptive and structured since they would best fit with the objectives of the study that sought to establish the extent to which financial performance depended on the board's financial education and experience. The research questions were answered to the greatest extent due to the structure that helped to collect and analyze the data systematically. This design was particularly suitable for assessing variables of a clear and well-known nature and their interactions (Anderson & Long, 2002).

The decision to use a quantitative research method was made because the study is based on the assessment of quantitative results. Financial performance, being the dependent variable, included measurable variables which needed quantitative treatment. Quantitative research enabled the utilization of regression models to analyze the effects of the independent variables on financial performance. This was crucial for an answer to the questions of whether the hypotheses were confirmed or refuted by the data.

3.2 Research Philosophy, Approach and Research Strategy

The research philosophy used in this study was positivism. It pointed to positivism as relevant given the objective to study identifiable events and phenomena and to conduct hypotheses tests using empirical data. Other philosophies like interpretivism or pragmatism were considered but not applied in the selection. Marxism that also provides understanding of power relations was not useful because the study adopts a quantitative approach. Evaluations made and held by the researcher, integral to the pragmatic perspective held both subjective and objective stances, were considered

inconsequential in handling the research since it was based on empirical quantitative data, whereby cause-and-effect relationships were sought (Park, Konge, & Artino, 2019).

Positive research focuses on facts and the scientific analysis of data, making it appropriate for research that measures financial performance. This type of thinking was supported by organizational reliance on numerical systems of data, especially accounting and stock market performance. Because of the use of positivist paradigm in the research, the study was able to use statistical techniques to test hypotheses and arrive at an accurate conclusion. This approach made the research real and relevant to the field of accounting and finance and gave credibility to the information collected (Park, Konge, & Artino, 2019).

Therefore, the research adopted a deductive approach as envisaged in the study's objective of testing research hypotheses that are developed from tested theories a priori. Deductive reasoning involves the construction of hypotheses based on a specific theory and the subsequent data analysis tests them. This approach facilitated the confirmation or nullification of hypotheses regarding the effect of the financial education and the experience of the board members on the performance of the airline companies.

The deductive reasoning process was commenced with the literature analysis of the corporate governance, financial performance indication, and the board characteristics' influence. The theory of agency and resource dependency theory were used to develop the hypotheses for the study. These hypotheses were then tested with quantitative data collected within a given period. This approach made it easier to maintain an objective as well as reliability when conducting the research from a theoretical point of view to the empirical analysis. The study also used a deductive approach of research to arrive at valid conclusions because it followed a systematic approach (Apuke, 2017; Bacon-Shone, 2022).

The research method used in this study was survey data sourced from secondary data from the annual returns of airline companies. Several approaches, including experiments, case studies, archival investigation, and surveys, were considered before arriving at the survey strategy. However, even experiments were not possible here since the researcher is unable to control certain independent variables like composition of the board and financial performance of the companies. The case studies, which give detailed descriptions of particular entities, were excluded as the study sought to make comparisons across different airline companies. Historical analysis was conducted using archival data, which was rather helpful but could not be as useful as qualitative analysis for the evaluation of its current financial performance.

The rationale of adopting a survey strategy was that it ensured the collection of data from many airline companies systematically. Annual reports were considered as a highly reliable secondary data source and contain rich information about the financial results and the composition of the board of directors. This approach also allowed the authors to analyze a large amount of data, thus increasing the study reliability. Moreover, the reliance on secondary data helped to cut the risk of bias because all data were collected from audited documents accessible to the public.

The justification for choosing survey strategy was based on its relevance with the goal and objectives of the study. Through the use of secondary data, this study was able to look into the effects of financial literacy and experience of the board of directors on financial performance without having to embark on data collection on its own. It was cost effective and time saving as it centralized the process on the analysis and testing of hypotheses. In the light of the above findings, the following recommendations are made: The study adopted the use of annual reports since they were consistent and provided comparable data across the dataset, hence improving the reliability of the results (Ghanad, 2023).

3.3 Data collection

This section presents the research time horizon, highlighting the use of a longitudinal study design to analyze the financial performance trends of airline companies over seven years. This is followed by a discussion on the sample selection process, where 20 international airlines were chosen based on the availability of comprehensive financial and board composition data. Furthermore, the section outlines the key variables examined, including accounting performance, stock market performance, and board characteristics, along with the data sources utilized, such as annual reports and financial disclosures.

3.3.1 Time Horizon

In the current study, the research design used was longitudinal research which meant the collection and analysis of data at different time points. This design was chosen to capture trends, patterns, and variations in the operating financial performance of airline companies, about the changes in composition and characteristics of the boards of these companies. Primary data was obtained from the annual reports of twenty airline companies, and the period cross-sectional analysis was performed over seven years.

This research design enabled the study to control for temporal issues and especially provide causal relationships better than a cross-sectional study. Accounting performance (ROA, ROCE & EPS) and stock return and risk up to a specific date were examined for pattern and relationship with the financial education and experience of the board members.

The long span allowed the research to establish a comparison between the effects that various board attributes have on financial performance during different economic cycles, booms and recessions. This approach also reduced the likelihood of the results being biased by short-term fluctuations, therefore increasing the reliability of the results.

Due to the use of longitudinal design, the study obtained insightful findings of the links between board characteristics and firm financial performance compared to the cross-sectional study that gives a broad perspective on the research issue. This time horizon was particularly relevant to an industry like aviation, where strategic choices and their financial consequences span several years.

3.3.2 Sample Firms

The sample size for this study was determined on the availability and accessibility of comprehensive financial and board composition data of airline companies over seven years period. From over 250 international airlines providing data to World Air Transport Statistics (WATS), the sample was pulled down to twenty airlines. This decision was made owing to the nature of the study and the practicality of getting complete and consistent data for the different years.

Consequently, the first criterion for sample selection was the accessibility of data for the empirical analysis concerning the period under study, which is from 2017 to 2023. The data required to incorporate the financial performance indicators, such as accounting coefficients (for example, the rate of return on assets, rate of return on the capital employed, and earnings per share), stock exchange performance indicators (for instance, rates of return on the stock and risks involved). Further, it was important to gather data on the educational background and working experience of the board of directors to assess the effects of board attributes on performance (Kaur, 2021).

The study used a sample size of 20 companies to research to get detailed and time series information to meet the research objectives. While the findings can be improved by a bigger sample size, mainly because of the focus and longitudinal nature of the research, the sample size had to be kept small to make sure that data are collected and analyzed in the same manner. In addition, the selected companies are geographically diverse and encompass members of the international aviation business, giving an accurate picture of the market.

Purposive sampling was used while identifying the companies to be included in the sample. This non-probabilistic approach helped the researcher to select companies that correspond to the criteria set for the study: timely and accurate disclosure of information, availability of annual reports, and their significance for the world aviation market. This way, the sample was geographically, by size of the company, and market presence diverse, where at the same time the data was most uniform.

Several factors justified the selection of 20 companies as the sample size:

- **Data Completeness:** The lack of transparency in reporting the educational background and working experience of board members of many airlines reduces their coverage in the study. The selected companies reported all the required variables of the study over the study period completely.
- **Representation of the Industry:** The sample entails major airlines across the globe, including North America, Europe, Asia, and Oceania to capture a worldwide outlook. Large global players such as Delta Air Lines, Ryanair, Lufthansa, and Air New Zealand were used, which would help cater for various operational strategies and market environments.
- **Feasibility of Longitudinal Analysis:** Due to the study design, data analysis for seven years was a practical and approach-focused process. The decision to select 20 companies for analysis means that trends and relationships could be examined in detail without a risk of sacrificing the research quality for the number of participants (Apuke, 2017; Kaur, 2021).
- **Balance Between Breadth and Depth:** The sample used in the research is relatively large enough to ensure generalization across the industry, but at the same time as small as possible to enable initial exploration of the relationship between board characteristics and financial performance.

3.3.3 Conceptual Framework and Variable Design

The dependent variable in this research, proposing hypotheses such as the level of financial education and experience of the airline companies' board of directors on the financial performance of the airline companies, was financial performance. The analysis of financial performance was done by the use of both the accounting ratios and the market returns.

Accounting Performance

The following measures of accounting performance have been taken. These ratios provided insights into the airline companies' profitability with their assets and equity.

Return on Assets (ROA)

The formula for ROA is:

$$\text{Return on Assets} = \text{Net Profit} / \text{Total Asset}$$

ROA indicates how efficiently a company utilizes its assets to generate profit. A higher ROA suggests that the company is using its assets effectively to maximize profits.

Return on Capital Employed (ROCE)

The formula for ROCE is:

$$\text{Return on Capital Employed} = \text{Net Profit} / (\text{Total Assets} - \text{Current liabilities}).$$

ROCE measures the profitability relative to the capital invested in the business, excluding short-term liabilities. It reflects the company's ability to generate profit from its capital base.

Earnings Per Share (EPS):

The formula for EPS is:

Earnings Per Share = Net Profit/Shares Outstanding

EPS is a widely used indicator of a company's profitability on a per-share basis. It helps investors understand how much profit is allocated to each outstanding share of the company.

These accounting performance indicators served as crucial metrics to assess the operational efficiency and profitability of airline companies with their board members' financial education and relevant experience.

Stock Market Performance

In addition to accounting performance, stock market performance was measured through stock return and market risk metrics. These indicators offer insights into the investor perspective of the company's financial health and future potential.

Annualized Stock Return

The daily firm stock return and market (index) return are calculated and subsequently annualized by applying the following formula:

$$\text{Stock Return} = \frac{[\text{Closing price}_{\text{Current day}} - \text{Closing price}_{\text{Previous day}}]}{\text{Closing price}_{\text{Previous day}}}$$

Stock return reflects the percentage change in the stock price over a specific period. It is an essential indicator of market performance, showing how well the market perceives the company's future growth prospects.

Stock Market Risk

Several risk metrics were used to evaluate the volatility and risk associated with the airline companies' stock. These included average daily and annual returns, along with the total risk and systematic risk. The key formulas are as follows:

- **Beta Value**
- **Average Annual Total Risk (AATR):** Measures yearly fluctuations in the stock's value.
- **Total Systematic Risk:** Measures the exposure of the airline to market-wide risks that affect all companies in the market, typically computed using regression analysis to assess the relationship between the airline's returns and the market returns.

Board Variables

Median Board Experience

Board experience was measured through the number of years a board member had been involved in the airline industry or held a directorial position in an aviation company. Greater experience likely leads to improved decision-making in aviation. To quantify board experience, the following formula was applied:

Experience Score = \sum (Years of Experience of Each Board Member)

The total experience score was calculated by the median of the years of experience for all board members. This approach was applied over multiple years, utilizing data from the company's annual reports, 10-K forms (SEC filings), governance reports, or proxy reports.

Median Board Education

Board education was measured by assigning a score based on the highest level of education attained by each director, with a focus on their financial expertise. A scoring system was developed as follows:

- **Bachelor's in Finance:** 5 points
- **Bachelor's in Non-Finance:** 3 points
- **Master's in Finance:** 8 points
- **Master's in Non-Finance:** 4 points
- **No College Degree:** 1 point
- **Illiterate:** 0 points

To arrive at the total education score for the board, the median of the individual scores of all the board members was made. This enabled the researchers to determine the educational backgrounds of the directors of the respective airlines, hence giving a better view of education's influence on financial performance.

Number of Independent/Dependent Board Members

The number of independent board members was also used as another measure of an independent variable given that the results of previous studies indicate that independent directors possess outside views that help shape corporate governance and performance. The number of independent board members was obtained from the company's annual reports and proxy reports.

Hypothesis one was developed to measure the net effect of the board's education, experience and independence on the financial performance of the airline companies, from which these independent variables were derived.

The number of directors with financial qualifications compared to the total no. of directors

This is important to know how much of the directors have financial education since their decisions can make an impact on the company's performance.

Table 1 Variable descriptions (adapted by the author)

Variable	Label	Purpose	Data Source
Accounting Performance		Performance measured through accounting ratios	Annual Reports, 10-K, Proxy Reports
Return on Assets	ROA	Efficiency in utilizing assets to generate profit	Annual Reports, 10-K, Proxy Reports
Return on Capital Employed	ROCE	Profitability relative to capital employed	Annual Reports, 10-K, Proxy Reports
Earnings Per Share	EPS	Profit allocated to each outstanding share	Annual Reports, 10-K, Proxy Reports
Market Performance		Performance based on stock market indicators	Annual Reports, 10-K, Proxy Reports
Stock Return	StockReturn	Percentage change in stock price	Annual Reports, 10-K, Proxy Reports
Average Annual Return	AAR	Average return per year	Annual Reports, 10-K, Proxy Reports

Beta	Beta	Beta of the stock price	Annual Reports, 10-K, Proxy Reports
Average Annual Total Risk	AATR	Yearly fluctuations in the stock's value	Annual Reports, 10-K, Proxy Reports
Average Annual Market Return	OMXH25IndexRet	Market's yearly return for comparison	Annual Reports, 10-K, Proxy Reports
Total Systematic Risk	TSR	Exposure to market-wide risks affecting all companies	Annual Reports, 10-K, Proxy Reports
Board variables			
Board Experience	BE	Total years of experience in the aviation sector	Annual Reports, 10-K, Proxy Reports
Board Education	BEdu	Scored based on the highest level of education attained by directors	Annual Reports, 10-K, Proxy Reports
Number of Independent Board Members	NIBD	Number of independent members on the board	Annual Reports, 10-K, Proxy Reports

No of directors have financial qualification compared to total no. of directors	ProrDirectorFinEdu	No of directors have financial qualification compared to total no. of directors	Annual Reports, 10-K, Proxy Reports
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3.4 Data Analysis

The data analysis for this study was done using the IBM SPSS software, since this research sought to establish a relationship between board characteristics, including experience and education of board members, and the financial performance of airline companies (Frey, 2017).

First, frequency analysis was used to describe the demographics of both dependent and independent variables in terms of mean, median, standard deviation and frequency distribution. This step assisted in studying the general behavior and features of the data, which is important in algorithms that are sensitive to the data distribution (Rahman & Muktadir, 2021).

After that, validity and reliability tests were conducted to validate the measurement items. The scales' internal consistency was evaluated using Cronbach's alpha, specifically for the board experience and education.

Since the objective was to establish the extent of the connection between variables, correlation analysis was performed to determine the nature and degree of relationship between board attributes and the firm performance indices. In the present study, Pearson's correlation coefficient was used to determine the extent of the linear relationship between the variables (Islam, Kabir & Nisha, 2021).

Last, regression analysis was used to analyze the hypotheses for the effect of board experience, education, and board independence on airline companies' performance. Simple and multiple regression analyses were conducted in order to determine the extent to which these predictors influenced the dependent variables of ROA, ROCE, EPS and both stock return and risk (beta). The findings offered understanding of the relationships between the board's characteristics and financial outcomes.

The formulas of the regression can be presented as follows.

Return on Assets (ROA)

The regression formula to model ROA as a function of the independent variables:

$$ROA = \beta_0 + \beta_1(\text{LnTA}) + \beta_2(\text{StockReturn}) + \beta_3(\text{DE}) + \beta_4(\text{Med}) + \beta_5(\text{OMXH25IndexRet}) + \beta_6(\text{Mex}) + \beta_7(\text{LnBS}) + \beta_8(\text{BETA}) + \beta_9(\text{NonExD}) + \beta_{10}(\text{ProrDirectorFinEdu}) + \epsilon_{ROA}$$

Where:

- LnTA = Natural algorithm of Total assets
- StockReturn= Market return of the company
- DE = Debt equity ratio
- Med = median of education
- OMXH25IndexRet = Market return of OMXH25
- Mex = Median experience of directors
- LnBS = Natural algorithm of No of directors
- BETA = Beta value

- NonExD = Independence Directors (NonExD) ratio
- ProrDirectorFinEdu = No of directors with financial qualification compared to total no. of directors
- ϵ = Error term for company

Return on Capital Employed (ROCE)

The regression formula for ROCE:

$$\text{ROCE} = \beta_0 + \beta_1(\text{LnTA}) + \beta_2(\text{StockReturn}) + \beta_3(\text{DE}) + \beta_4(\text{Med}) + \beta_5(\text{OMXH25IndexRet}) + \beta_6(\text{Mex}) + \beta_7(\text{LnBS}) + \beta_8(\text{BETA}) + \beta_9(\text{NonExD}) + \beta_{10}(\text{ProrDirectorFinEdu}) + \epsilon_{\text{ROCE}}$$

Where:

- LnTA = Natural algorithm of Total assets
- StockReturn= Market return of the company
- DE = Debt equity ratio
- Med = median of education
- OMXH25IndexRet = Market return of OMXH25
- Mex = Median experience of directors
- LnBS = Natural algorithm of No of directors
- BETA = Beta value
- NonExD = Independence Directors (NonExD) ratio

- ProrDirectorFinEdu = No of directors with financial qualification compared to total no. of directors
- ϵ = Error term for company

Earnings Per Share (EPS)

The regression formula for EPS:

$$\text{EPS} = \beta_0 + \beta_1(\text{LnTA}) + \beta_2(\text{StockReturn}) + \beta_3(\text{DE}) + \beta_4(\text{Med}) + \beta_5(\text{OMXH25IndexRet}) + \beta_6(\text{Mex}) + \beta_7(\text{LnBS}) + \beta_8(\text{BETA}) + \beta_9(\text{NonExD}) + \beta_{10}(\text{ProrDirectorFinEdu}) + \epsilon_{\text{EPS}}$$

Where:

- LnTA = Natural algorithm of Total assets
- StockReturn = Market return of the company
- DE = Debt equity ratio
- Med = median of education
- OMXH25IndexRet = Market return of OMXH25
- Mex = Median experience of directors
- LnBS = Natural algorithm of No of directors
- BETA = Beta value
- NonExD = Independence Directors (NonExD) ratio

- ProrDirectorFinEdu = No of directors with financial qualification compared to total no. of directors
- ϵ = Error term for company

Stock Return

The regression formula for Stock Return:

$$\text{StockReturn} = \beta_0 + \beta_1(\text{ROA}) + \beta_2(\text{ROCE}) + \beta_3(\text{LnTA}) + \beta_4(\text{DE}) + \beta_5(\text{Med}) + \beta_6(\text{OMXH25IndexRet}) + \beta_7(\text{Mex}) + \beta_8(\text{LnBS}) + \beta_9(\text{NonExD}) + \beta_{10}(\text{ProrDirectorFinEdu}) + \epsilon_{\text{StockReturn}}$$

Where:

- ROA = Return on Assets
- ROCE = Return on capital employed
- LnTA = Natural algorithm of Total assets
- DE = Debt equity ratio
- Med = median of education
- OMXH25IndexRet = Market return of OMXH25
- Mex = Median experience of directors
- LnBS = Natural algorithm of No of directors
- NonExD = Independence Directors (NonExD) ratio
- ProrDirectorFinEdu = No of directors have financial qualification compared to total no. of directors

- ϵ = Error term for company

Beta

Stock Risk has been calculated as the beta value.

$$\text{Beta} = \beta_0 + \beta_1(\text{ROA}) + \beta_2(\text{ROCE}) + \beta_3(\text{LnTA}) + \beta_4(\text{DE}) + \beta_5(\text{Med}) + \beta_6(\text{OMXH25IndexRet}) + \beta_7(\text{Mex}) + \beta_8(\text{LnBS}) + \beta_9(\text{NonExD}) + \beta_{10}(\text{ProrDirectorFinEdu}) + \epsilon_{\text{Beta}}$$

Where:

- ROA = Return on Assets
- ROCE = Return on capital employed
- LnTA = Natural algorithm of Total assets
- DE = Debt equity ratio
- Med = median of education
- OMXH25IndexRet = Market return of OMXH25
- Mex = Median experience of directors
- LnBS = Natural algorithm of No of directors
- NonExD = Independence Directors (NonExD) ratio
- ProrDirectorFinEdu = No of directors with financial qualification compared to total no. of directors
- ϵ = Error term for company

3.5 Validity and Reliability

To maintain the reliability and validity of data collection, and analysis, several measures were taken. To attain reliability of the study, a longitudinal research design was used to ensure consistency of data was captured for seven years. This approach reduces the influences of short-term variation and can track the long-term transformation in airline performances in different economic phases. The sample involves consistent use of actual performance measures that include ROA, ROCE, EPS, and stock market performance to offer a comparative model (Roberts, Priest & Traynor, 2006).

Validity was enhanced by strict criteria for sample selection. To do this, only airlines with complete and accurate data on board characteristics and their financial performance over the period under consideration were selected. The purposive sampling made it possible to select companies that operate globally to provide valuable information about the aviation industry. Moreover, credible information from sources such as turnover ratio, balance sheet, income statement, and others from annual reports and proxy statements were employed (Sürücü & Maslakci, 2020).

To increase reliability, internal consistency was checked by applying Cronbach's alpha for most of the board education and experience measures. Validity was justified by correlation and regression analyses that showed a relationship between independent and dependent variables. The systematic and transparent approach to the study made it possible to capture the right methodology for measuring the actual relationship between the board characteristics and the airline financial performance (Sürücü & Maslakci, 2020).

4 Results

This chapter presents and interprets the analysis results. The findings are organized into three primary sections. The first section provides descriptive statistics that summarize essential financial, governance, and market data from the airline companies in the sample. The second section explores correlation analysis, emphasizing the relationships between financial performance, board attributes, and risk factors. The final section delves into regression analysis, investigating how factors such as board education, experience, and other governance elements influence financial performance and stock market results.

4.1 Descriptive Statistics

The Stock market data, governance data, and financial data results are discussed under descriptive statistics.

The average value appears in the mean calculation and the median shows the central value after data sorting. Standard deviation shows the extent to which the data points appear around the mean value. The skewness measurement reveals how distributed values are arranged across the distribution scale between left-negative and right-positive ends. Standard error of skewness demonstrates the extent to which the calculated skewness measurement can be trusted. The standard error of Kurtosis determines the precision of measurements about distribution peaks and tail characteristics. The data range shows the extreme value difference between highest and lowest points, while minimum and maximum values specifically represent smallest and largest observations, which together produce a comprehensive view of data distribution features including central tendency, variability and shape.

Stock Market Data

The market data for the sampled airline companies are presented with descriptive statistics that help to understand the financial performance and risk characteristics of the sampled airline companies. It also includes key variables, such as closing price, and financial return (StockReturn), OMXH25 closing price, beta, total systematic risk, and total unsystematic risk.

The sampled airline stocks have a mean closing price of 1406.70 with a standard deviation of 5122.31; stock prices for the sampled airline stocks vary significantly across the sample. The mean value (1.87) of the financial return (StockReturn) is not very high but the standard deviation of 16.75 indicates high volatility in stock returns. The value of the market index (OMXH25) is 4474.95, with a mean closing value, which makes it an important benchmark for measuring stock performance. The Mean of Beta (beta, which measures systematic risk) being 0.17 indicates that airline stocks on average are less volatile than the market. The high standard deviation (0.16) implies that systematic risk varies across different companies.

A distribution's asymmetry becomes evident through the skewness measurement. A value of zero in skewness indicates that the distribution remains perfectly symmetrical. Positive skewness identifies distributions which have their values mainly located in the lower end yet have prolonged higher values extending into the right side of the distribution. A distribution exhibits negative skewness when it extends more toward the left side because most values cluster at higher levels while extreme lower values exist. The measurement of skewness produces values between -0.5 and 0.5 to describe a symmetrical distribution but values above or below this range indicate growing asymmetry.

Kurtosis, on the other hand, measures the "tailedness" of a distribution. The kurtosis value of 3 defines a distribution as mesokurtic, which means normal. The distribution of outliers becomes

heavier as kurtosis increases into the leptokurtic range while platykurtic distributions have fewer extreme values.

The distribution in this dataset deviates from normality because its skewness and kurtosis measurements show non-normal characteristics. The distribution of financial return demonstrates positive skewness due to its right skew, which shows most airline stocks have lower values while several stocks have exceptionally high values that shift the distribution toward the right. Similarly, the closing price and total risk also show positive skewness. Extreme outliers significantly affect financial performance analysis due to the high kurtosis values found in financial return (121.94) and total risk (38.77).

This only emphasizes that the dataset is indeed quite variable. The closing price has a wide range from 0.64 to 29.350, indicating a large discrepancy in stock valuation from airline company to airline company. In addition to the volatility in the financial return, it is found that the financial return also experiences considerable fluctuation over the sample period, ranging from -0.74 to 191.53, which is a very high level of gains and losses.

Table 2 Descriptive Statistics - market data

Descriptive Statistics - Market Data										
	Mean	Median	Std. Deviation	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum
Closing price	1406.70	21.53	5122.31	4.15	0.20	16.22	0.41	29349.37	0.64	29350.00
StockReturn(%)	1.87	0.06	16.75	10.85	0.21	121.94	0.41	192.27	-0.74	191.53
TotalRisk	0.43	0.34	0.38	5.71	0.20	38.77	0.41	3.18	0.13	3.31
OMXH25 Close Price	4474.95	4515.97	580.04	0.51	0.20	-0.47	0.41	1886.81	3685.16	5571.97
OMXH25IndexRet (%)	0.03	0.00	0.12	0.26	0.20	-1.26	0.41	0.35	-0.13	0.22

BETA	0.17	0.13	0.16	1.72	0.20	3.35	0.41	0.81	0.00	0.81
TotalSysRisk(%)	0.03	0.02	0.03	1.72	0.20	3.17	0.41	0.15	0.00	0.15
TotalUnSysRisk(%)	0.42	0.35	0.39	5.76	0.20	39.89	0.41	3.34	0.13	3.46

Governance Data

The descriptive statistics regarding the board composition variables reveal characteristics of airline company boards. The mean number of directors per company ($M = 6.89$, $SD = 2.82$) is moderate board size between 1 and 16 directors.

Concerning board structure, the mean number of non-executive directors is 4.58 ($SD = 2.50$), and executive directors have 2.31 ($SD = 2.50$). This composition suggests that the boards of the airline industry are more likely to have more non-executive directors. The dependent directors (ExD) ratio has a mean value of 0.36 ($SD = 0.21$) and the independence ratio for non-executive directors (Non-ExD) is 0.67 ($SD = 0.19$). These figures show that airline companies' board structure tends to have a higher level of independent directors compared to the average.

The average number of financially qualified directors is 3.22 ($SD = 1.68$) the minimum is zero and the maximum is nine. The value of the mean of ProrDirectorFinEdu has been 0.47 ($SD = 0.18$); therefore, more than half of the board members do not possess any financial education. Directors' median level of education is 4.6 and the median experience is 21.67 years ($SD=9.08$), indicating that there is a considerable range of experience levels among directors on different boards.

Skewness and kurtosis values indicate that skewness and distributional characteristics are moderate. Board size and dependent director ratio are positively skewed and the logarithmic transformation of board size and independence ratio has negative skewness. The kurtosis values, especially for the median education variable (Kurtosis = 3.66) indicate a more peaked distribution than others.

Table 3 Descriptive statistics - governance data

Descriptive Statistics - Governance Data										
	Mean	Median	Std. Deviation	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum
No of directors	6.89	7.00	2.82	0.93	0.20	1.03	0.41	15.00	1.00	16.00
Non executive	4.58	4.00	2.50	0.75	0.20	0.73	0.41	12.00	0.00	12.00
Executive	2.31	2.00	1.59	1.01	0.20	0.07	0.41	7.00	0.00	7.00
Dependent Directors (ExD) ratio	0.36	0.29	0.21	0.92	0.21	0.35	0.41	0.89	0.11	1.00
Independence Directors (NonExD) ratio	0.67	0.71	0.20	-0.57	0.21	-0.53	0.41	0.87	0.13	1.00
No of directors have finance special qualifications	3.22	3.00	1.68	0.63	0.20	0.91	0.41	9.00	0.00	9.00
ProrDirectorFinEdu	0.47	0.50	0.18	-0.50	0.20	0.08	0.41	0.83	0.00	0.83
median of education	4.60	4.50	0.82	1.44	0.20	3.66	0.41	5.00	3.00	8.00
Median experience of directors	21.68	19.00	9.08	0.61	0.20	-0.02	0.41	42.00	3.00	45.00

Financial Data

The descriptive statistics give some insights into the financial performance variables of airline companies during the study period. Results show large variations in the sampled companies' financial metrics, corresponding to the different economic performance.

The EBIT is reported as a mean of 6742.38 and a median of 1693.09, which indicates a positively skewed distribution (skewness = 2.58). The high standard deviation of 13789.41 implies that there is a lot of variability among the companies. Total equity and long-term finance debt also show a high

degree of dispersion with a mean of 7400.51 and 12590.84 respectively and skewness values of 1.22 and 0.81 implying a degree of asymmetry.

Furthermore, financial performance indicators like Return of Assets ROA, Return of Capital Employed ROCE, and Earnings Per Share EPS give further information. The average return on assets (ROA) is 0.06, with a median of 0.05, indicating a very low return for the sampled firms. It implies that there are variations in asset utilization efficiency with a standard deviation of 0.06. The average Return on Capital Employed (ROCE) is 9.73, and the skewness value is -0.68, which suggests a slight leftward tilt while still being close to a normal distribution (where skewness equals 0). Additionally, a kurtosis value of -0.69 indicates a platykurtic distribution, meaning the data is flatter than a normal distribution (which has a kurtosis of 0), implying there are fewer extreme values present in the dataset.

Earnings per share (EPS) has a large variability with a mean of 20.46 and a median of 4.29, suggesting that many firms have high performance and that a few high-performing firms have a lot of impact on the mean. The skewness of 2.98 implies a highly right-skewed distribution, meaning that most companies have lower EPS values, while a few have significantly higher EPS values. The kurtosis of 11.87 confirms that the leptokurtic distribution, indicating a sharper peak and heavier tails compared to a normal distribution, this infers that extreme EPS values are more frequent than in a normal distribution.

The DE Ratio shows a significant right skewness of 10.53, indicating that most airlines exhibit low leverage levels, while a few operate with extremely high debt. Additionally, the kurtosis value of 117.73 points to a leptokurtic distribution, suggesting the presence of extreme outliers and a pronounced peak. This reflects a scenario where certain airlines manage their financing well, while others are heavily dependent on debt, leading to those extreme values in the distribution.

Table 4 Descriptive statistics - financial data

Descriptive Statistics - Financial Data										
	Mean	Median	Std. Deviation	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum
EBIT 1	6742.38	1693.09	13789.41	2.58	0.23	5.22	0.46	57904.37	143.63	58048.00
TE 2	7400.51	7357.56	5069.22	1.22	0.21	2.11	0.43	23503.00	10.00	23513.00
LTD 3	12590.84	11912.89	6880.12	0.81	0.20	0.68	0.41	33725.00	1846.00	35571.00
DE	13.05	2.04	72.12	10.53	0.20	117.73	0.41	824.51	0.19	824.70
PBT 4	1757.41	1304.69	1666.61	1.68	0.24	2.65	0.47	7457.94	41.02	7498.96
TASSET 5	33080.35	27076.04	17371.97	0.58	0.20	-0.63	0.41	65539.00	8105.00	73644.00
LnTA	10.26	10.21	0.57	-0.30	0.20	-0.72	0.41	2.21	9.00	11.21
TCE 2+3 = 6	19086.44	20849.00	8577.31	0.09	0.20	-0.63	0.41	33302.40	5094.00	38396.40
LnTCE	9.73	9.95	0.54	-0.68	0.20	-0.68	0.41	2.02	8.54	10.56
ROCE 1/6	0.26	0.11	0.51	2.92	0.20	7.46	0.41	2.19	0.00	2.19
ROA 4/5	0.06	0.04	0.06	1.28	0.20	2.48	0.41	0.32	0.00	0.32
EPS	20.46	4.29	35.47	2.98	0.20	11.87	0.41	240.09	0.02	240.11

Operating profit (EBIT), Return on Capital Employed (ROCE), Return on Assets (ROA), Total Capital Employed (TCE), Total Equity (TE), Profit before taxes (PBT), Long-term Financial Debt (LTD), Total Assets (TASSET).

4.2 Correlation Results

Correlation analysis is conducted to measure the strength and direction of the relationship between two variables, helping to determine whether changes in one variable are associated with changes in another.

The results show that there is a strong positive correlation between the financial return (StockReturn) and the total unsystematic risk ($r = 0.78$, $p < 0.01$) and total risk ($r = 0.77$, $p < 0.01$). It is found that these firms have higher levels of total and unsystematic risk. Furthermore, there is a positive

correlation between financial return and systematic risk ($r = 0.37, p < 0.01$), indicating that firms that are making more financial returns are also more susceptible to market-wide risks.

The stock volatility measured by the beta coefficient (BETA) has a positive correlation to the systematic risk ($r = 0.89, p < 0.01$) and total risk ($r = 0.20, p < 0.05$). This implies that the risk factor exposure of a firm increases with its stock volatility. However, the beta is negatively related to the median director's experience ($r = -0.24, p < 0.01$), such that firms with more experienced directors have lower stock volatility.

Concerning board composition, return on capital employed (ROCE) ($r = 0.33, p < 0.01$) and return on assets (ROA) ($r = 0.28, p < 0.01$) are positively correlated with the proportion of directors with financial education (ProrDirectorFinEdu). This implies that financially educated directors lead to better corporate performance (profitability). Furthermore, the proportion of independent directors is negatively correlated to ROA ($r = -0.31, p < 0.01$), which indicates that firms with a higher proportion of independent directors will find it difficult to earn higher profitability.

In general, the findings corroborate the hypothesis that financial education and relevant experience of board members significantly impact airline companies' financial performance, particularly profitability and risk exposure.

Table 5 Pairwise correlation results (Part 01)

	X1	X2	X3	X4	X5	X6	X7	Y1
X1	1	0.057	,212*	,368**	,782**	,767**	0.031	0.029
X2	0.057	1	0.103	0.071	0.126	0.118	-0.123	0.048
X3	,212*	0.103	1	,898**	,171*	,204*	0.096	-0.106
X4	,368**	0.071	,898**	1	,360**	,402**	0.105	-0.118
X5	,782**	0.126	,171*	,360**	1	,995**	0.071	-0.012
X6	,767**	0.118	,204*	,402**	,995**	1	0.086	-0.021
X7	0.031	-0.123	0.096	0.105	0.071	0.086	1	0.066

Y1	0.029	0.048	-0.106	-0.118	-0.012	-0.021	0.066	1
Y2	0.050	0.047	0.072	0.079	0.148	0.145	,189*	-,207*
Y3	0.044	0.063	0.020	0.052	,176*	0.165	-0.042	-,186*
Y4	-0.007	-0.004	-,244**	-,230**	-0.100	-0.106	-0.111	,448**
Z1	-0.018	-0.054	0.094	0.076	-0.052	-0.043	0.073	0.084
Z2	-0.021	0.015	0.051	0.037	0.038	0.029	0.143	,170*
Z3	0.080	0.038	0.003	0.004	0.125	0.115	,179*	,308**
Z4	-0.056	-0.060	,201*	0.138	-0.055	-0.055	-0.029	-0.055
Z5	-0.102	0.073	0.061	0.114	-0.016	0.000	-0.141	-,310**
Z6	-0.062	0.026	0.033	0.089	-0.046	-0.024	-0.137	-0.091

Table 6 Pairwise correlation results (Part 02)

	Y2	Y3	Y4	Z1	Z2	Z3	Z4	Z5	Z6
X1	0.050	0.044	-0.007	-0.018	-0.021	0.080	-0.056	-0.102	-0.062
X2	0.047	0.063	-0.004	-0.054	0.015	0.038	-0.060	0.073	0.026
X3	0.072	0.020	-,244**	0.094	0.051	0.003	,201*	0.061	0.033
X4	0.079	0.052	-,230**	0.076	0.037	0.004	0.138	0.114	0.089
X5	0.148	,176*	-0.100	-0.052	0.038	0.125	-0.055	-0.016	-0.046
X6	0.145	0.165	-0.106	-0.043	0.029	0.115	-0.055	0.000	-0.024
X7	,189*	-0.042	-0.111	0.073	0.143	,179*	-0.029	-0.141	-0.137
Y1	-,207*	-,186*	,448**	0.084	,170*	,308**	-0.055	-,310**	-0.091
Y2	1	,750**	0.071	0.023	0.153	0.042	,331**	0.042	-0.084
Y3	,750**	1	-0.055	-0.056	-0.042	-0.127	,282**	0.134	0.002
Y4	0.071	-0.055	1	-0.081	0.096	,325**	-,223**	-,500**	-,203*
Z1	0.023	-0.056	-0.081	1	-0.029	-0.135	0.120	0.109	,197*
Z2	0.153	-0.042	0.096	-0.029	1	,876**	,393**	-0.063	-0.083
Z3	0.042	-0.127	,325**	-0.135	,876**	1	0.126	-,266**	-,173*
Z4	,331**	,282**	-,223**	0.120	,393**	0.126	1	,182*	-0.004
Z5	0.042	0.134	-,500**	0.109	-0.063	-,266**	,182*	1	,660**
Z6	-0.084	0.002	-,203*	,197*	-0.083	-,173*	-0.004	,660**	1

* Significant at 0.05 level (2-tailed).

** Significant at 0.01 level (2-tailed).

X1: FinnRet; X2: FinnRet; X3: BETA; X4: TotalSysRisk; X5: TotalUnSysRisk; X6: TotalRisk; X7: LnBS;

Y1: Independence Directors (NonExD) ratio; Y2: ProrDirectorFinEdu; Y3: median of education; Y4: Median experience of directors

Z1: DE; Z2: LnTA; Z3: LnTCE; Z4: ROCE; Z5: ROA; Z6: EPS

4.3 Multivariate OLS Regression Analysis Results

Accounting Performance

Return on Capital Employed (ROCE)

Regarding the financial performance of airline companies, Return on Capital Employed (ROCE), the regression analysis studies how board characteristics affect the financial performance of airline companies. The amount of variance in ROCE as explained by the independent variables is 41.5% (as indicated by the model summary R-squared value of 0.42). The value of adjusted R squared of 0.37 confirms that the model is reliable while the value of Durbin Watson of 1.19 indicates some auto-correlation in residuals.

Results of the ANOVA indicate that the regression model is statistically significant ($F = 8.95$, $p < 0.001$) which implies that at least one of the independent variables significantly predicts ROCE. of the predictors, both the proportion of directors with financial education ($\beta = 0.34$, $p = 0.008$) and LnTA ($\beta = 0.400$, $p < 0.001$) positively influence ROCE. On the other hand, LnBS ($\beta = -0.251$, $p = 0.002$) and median board experience ($\beta = -0.333$, $p < 0.001$) negatively affect ROCE, indicating that larger boards and more experienced directors may sometimes not improve profitability.

Findings indicate that financial education for directors serves to enhance firm performance while too-large and too-experienced boards can also be inefficiencies. This insight helps complete the ongoing discussion about the right board composition in the airline industry.

Return on Assets (ROA)

The impact of board financial education and experience on airline companies' financial performance as measured by Return on Assets (ROA), is evaluated through the regression analysis conducted. The R-squared value in the model summary (0.33) means that about 32.8% of the variance in ROA is explained by the independent variables used in the study. The value of the adjusted R-squared of 0.275 also confirms how much explanatory power the model has, taking into account the number of predictors. With a Durbin–Watson statistic of 1.97, this indicates little autocorrelation in the residuals, and therefore the reliability of the regression model.

The ANOVA results indicate that the overall regression model is statistically significant ($F = 6.161$, $p < 0.001$), and so the independent variables collectively do affect ROA. However, the results of the coefficient analysis are mixed. The negative effect of the median director experience on ROA ($\beta = -0.509$, $p < 0.001$) indicates that more board experience does not always lead to a higher financial performance. Similarly, ROA ($\beta = -0.207$, $p = 0.016$) is negatively affected by board size (LnBS). The education on the board and financial qualifications do not have significant effects on the other variables. The findings reveal the complicated relationship between board characteristics and financial performance in the airline industry.

Earnings Per Share (EPS)

The results produced from the regression analysis suggest that the independent variables taken together account for 11.5 percent of the variation in Earnings Per Share (EPS) as shown by the R Square value of 0.115. Nevertheless, compared to adjusted R Square (0.045), it seems that some independent variables are not significantly contributing to a given explanation of EPS. No severe autocorrelation in the data comes out as 1.958 from the Durbin-Watson statistic.

ANOVA results indicate that the overall regression model is not statistically significant ($F = 1.635$; $p = 0.104$). In other words, the independent variables as a group cannot predict EPS significantly.

The coefficients are examined, and it is found that there is only one statistically significant coefficient ($\beta = 0.198$, $p = 0.024$), which is the Debt to Equity (DE) ratio, thus showing a positive relationship with EPS. However, other variables such as directors' financial education (ProrDirectorFinEdu), board size (LnBS), and independence of directors do not bear significant effects. Median director experience is close to significance ($p = 0.067$), which implies a potential negative relationship with EPS.

Variance Inflation Factors (VIF) are used to assess multicollinearity, and all values are less than 3.5, with no severe multicollinearity problems. In general, the findings provide little evidence that board financial education and experience affect EPS within the sampled airline companies.

Table 7 Accounting performance measures

	ROCE		ROA		EPS	
	Standardized Coefficients Beta	Sig.	Standardized Coefficients Beta	Sig.	Standardized Coefficients Beta	Sig.
(Constant)		0		0.099		0.263
LnBS	-0.251	0.002	-0.207	0.016	-0.155	0.111
Independence Directors (NonExD) ratio	0.14	0.102	-0.063	0.487	-0.017	0.873
ProrDirectorFinEdu	0.34	0.008	0.087	0.521	-0.076	0.626
median of education	0.04	0.733	0.02	0.874	0.036	0.803
Median experience of directors	-0.333	0	-0.509	0	-0.196	0.067
DE	0.079	0.266	0.094	0.218	0.198	0.024
LnTA	0.4	0	0.02	0.798	-0.017	0.846
StockReturn	-0.089	0.207	-0.093	0.219	-0.051	0.554

OMXH25IndexRet(%)	-0.143	0.043	0.056	0.46	0.022	0.8
BETA	0.148	0.046	-0.053	0.505	-0.014	0.878

Stock Market Performance

Annualized Stock Market Return

In this study, the regression analysis done is about the effect of financial education and board directors' experience on airline companies' financial performance. The R^2 of the regression model is 0.85 which indicates that the model explains 85% of the variance in financial return ($R^2 = 0.85$), implying a close relationship between the independent variables and financial performance. The adjusted R^2 value of 0.83 shows the model's robustness. Furthermore, the Durbin-Watson statistic (1.924) is inside an acceptable range, and hence this suggests minimal autocorrelation in the data.

ANOVA results indicate that the regression model is statistically significant with an F value of 5.405 and a significance level of 0.05. If so, then this implies that the independent variables individually have a great impact on the dependent variable, financial return. However, it can be seen from the coefficients table that none of the individual predictors have a statistically significant influence at the 0.05 level. The positive coefficient on the variable representing the proportion of directors with financial education ($B = 10.204$) is not statistically significant ($p = 0.503$). Likewise, financial return does not appear to be related to either median board experience returns on assets (ROA), or return on capital employed (ROCE). These results imply that the overall financial performance is related to the board characteristics, but the individual contribution is not significant.

Beta

The results of the regression analysis show that the model explains 13% variance in the dependent variable (Beta) as seen by the R square value of 0.13. The R-squared value of 0.061 indicates that the predictive power of the model is not very strong after having adjusted for the number of predictors. Since the Durbin-Watson statistic of 2.003 indicates no significant autocorrelation in the residuals, the model is reliable.

The result from the ANOVA indicates that the overall regression model is not significant, with an F statistic of 1.882 and a p-value of 0.053. This implies that the independent variables do affect Beta, but that relationship is not very important.

The coefficients show that only the median experience of directors is a statistically significant predictor ($p = 0.043$) and has a negative relationship with Beta. That implies that, all other things being equal, stock market risk decreases with increased board experience. Approaching significance are other variables such as return on capital employed (ROCE) and financial return (StockReturn), which indicate the possibility of the Beta being influenced by these other variables. Nevertheless, the board education and independence ratio does not show strong effects on these variables. The variance inflation factors are less than the critical threshold of 10 and no severe multicollinearity issues.

These results indicate that while financial expertise may be related to financial performance, board experience is a more important determinant of market risk.

Table 8 Stock market performance measures

	Stock return		Beta	
	Standardized Coefficients Beta	Sig.	Standardized Coefficients Beta	Sig.
(Constant)		0.889		0.182
LnBS	-0.03	0.782	0.063	0.536
Independence Directors (NonExD) ratio	0.067	0.544	-0.029	0.784
ProrDirectorFinEdu	0.113	0.503	0.096	0.545
median of education	0.003	0.983	-0.121	0.403
Median experince of directors	-0.143	0.261	-0.245	0.043
DE	-0.006	0.949	0.06	0.491
StockReturn	0.048	0.602	0.148	0.088
LnTA	-0.003	0.978	-0.041	0.679
Return on Capital Employed (ROCE) 1/6	-0.092	0.415	0.191	0.075
Return on Assets (ROA) 4/5	-0.148	0.164	-0.1	0.319

5 Conclusion

Results are useful in shedding insight into the impact of board characteristics on the financial performance of airline companies. The results indicate that financial education and LnTA have a positive or negative effect on Return on Capital Employed (ROCE), while larger board sizes and more experienced directors have a negative effect on ROCE. The adverse effect of larger board size on ROCE could be the result of inadequacies in decision making as larger boards tend to have poor inter-division coordination and respond at a slower pace to market movements. In the same fashion, an increased level of director experience could result in risk aversion, where seasoned board members voters opt for less profitable and more traditional value strategies.

Similar to board size and experience, Return on Assets (ROA) also has a negative relationship with both board size and experience, showing that board dynamics have complex interactions with financial outcomes. This explains why, unlike expertise which could provide some level of stability, it could also hinder flexibility within a fast-paced industry such as aviation where almost all multi-functional strategies are needed.

Board characteristics do not significantly influence the EPS, except for the Debt to Equity (DE) ratio. This could suggest that even though the composition of the board affects how the business operates, it does not seem to affect the stock price, which is influenced by the general market and how investors view the situation. Although one can account for a large part of the variance in market returns with the regression model, individual predictors are not statistically significant in the context of predicting stock market performance.

The results are overall nuanced regarding the role of board composition, in that financial education at the board level is not always beneficial with regards to all financial metrics and that board size and experience have varied effects on performance. One possible reason for the paradoxical impact of financial education is that while it increases financial knowledge and planning, it does not necessarily translate into better decision-making unless supplemented by industry expertise. This highlights the importance of balancing education with experience to optimize board performance.

5.1 Discussion

Answers to the research questions or hypotheses have been discussed in the discussion section.

The hypotheses studied the effect of board financial education and experience on accounting and stock market performance in the airline industry. The hypotheses are mixed and supported by results from multivariate OLS regression analysis.

Hypothesis 1 (H1): Financial Education of the Board and Accounting Performance

H1a: Airline companies with a higher proportion of board members possessing formal financial education (e.g., degrees in finance, accounting, economics) exhibit superior accounting performance compared to those with a lower proportion

H1b: There is a positive relationship between the presence of financially educated board members and key accounting performance indicators (e.g., return on assets, return on equity, net profit margin) in airline companies

The analysis finds that H1a and H1b are supported by the finding that the financial education of board members has a positive impact on Return on Capital Employed (ROCE). The contribution of the financial education proportion of the directors to the higher ROCE ($\beta = 0.340$, $p = 0.008$) confirms that financial literacy helps in better allocation of resources and better financial decisions. In contrast, financial education did not affect Return on Assets (ROA) or Earnings Per Share (EPS) statistically significantly, indicating that it is more instrumental in driving capital efficiency than the overall profitability of assets or shareholders returns.

Hypothesis 2 (H2): Relevant Experience of the Board and Accounting Performance

H2a: Airline companies with a higher proportion of board members having relevant financial experience (e.g., previous roles as CFOs, financial analysts, and accountants) demonstrate better accounting performance than those with fewer experienced members

H2b: There is a positive relationship between the board's relevant financial experience and the airline company's accounting performance indicators

In contrast to H2a and H2b, H2a and H2b are rejected since higher median board experience negatively affects ROCE ($\beta = -0.333$, $p < 0.001$) and ROA ($\beta = -0.509$, $p < 0.001$). This suggests that while experience is useful, it is also dangerous to rely too much on seasoned board members so that they

end up making conservative decisions that hamper financial performance. Moreover, LnBS had negative effects on both ROCE ($\beta = -0.251$, $p = 0.002$) and ROA ($\beta = -0.207$, $p = 0.016$) suggesting inefficiencies in larger boards.

Hypothesis 3 (H3): Financial education of the board of directors and Stock Market Performance

H3a: Airline companies with a higher proportion of board members possessing formal financial education (e.g., degrees in finance, accounting, economics) exhibit superior stock market performance compared to those with a lower proportion

H3b: There is a positive relationship between the presence of financially educated board members and key stock market performance indicators (e.g., stock return) in airline companies

The results of the regression show that the annualized stock market return ($\beta = 10.204$) had a positive coefficient and thus not statistically significant as $p = 0.503$. Thus, H3a and H3b are not supported. If financial expertise on the board would improve the internal performance metrics, then this suggests that better stock market outcomes are not guaranteed.

Hypothesis 4 (H4): Relevant experience of the board of directors and Stock Market Performance

H4a: Airline companies with a higher proportion of board members having relevant financial experience (e.g., previous roles as CFOs, financial analysts, and accountants) demonstrate better stock market performance than those with fewer experienced members

H4b: There is a positive relationship between the board's relevant financial experience and the airline company's stock market performance indicators

Also, as it pertains to H4a and H4b, no significant effect was found in board experience on stock market return. Although the overall model explained a high variance ($R^2 = 0.85$), individual predictors failed to be significant, suggesting that external market forces and investor sentiment may be more important determinants of stock performance than board characteristics.

Overall, financial education does not significantly affect stock market performance but has a positive effect on accounting performance. On the other hand, excessive tenure and large boards may not be good for financial outcomes. The insights offered in this article have important implications for the board composition strategies in the airline industry.

5.2 Researcher's opinion on success of the research study

From the problem identification to the overall conclusion of the study, the researcher has achieved a higher level of success as far as the knowledge of the researcher, However, some issues were experienced during regression analysis. The adjusted R-squared value establishes the success of regression models through its calculation based on both predictor number and refined explanatory power measurement. The adjusted R-squared values show different measurements of financial performance during this analysis. The combination of ROCE (0.369) and ROA (0.275) in the model shows a moderate explanatory capability. The EPS model shows weak explanatory power because the independent variables do not successfully explain EPS variations according to the (0.045) value. The stock market performance model demonstrates a very strong relationship (0.83) with its data. The models demonstrate varied levels of predictive power because a combination of reliable and weak predictive models exists.

5.3 Limitations and suggestions for future research

Multiple weaknesses exist in this research investigation. The wide application of the research findings remains uncertain because the study examined only a limited number of companies instead of

a larger scale analysis. This analysis centers its evaluation on particular performance indicators instead of assessing complete financial success dimensions. The study results would gain robustness if the researchers extended the analysis period to include longer-term trends and variations. The study fails to include essential macroeconomic variables such as inflation and interest rates and Gross Domestic Product (GDP) growth because these aspects would impact financial performance strongly.

Financial reports obtained from public sources fall short of revealing the complete actions of board members and how they exercise governance over their organizations. The research neglects to incorporate external factors like economic downturns, fuel price variations, and regulatory transformations, which influence financial performance. The assessment of financial education and experience faces difficulties because director-level qualifications do not always indicate strategic abilities in the field.

To achieve a better understanding of corporate performance, the study needs expansion through additional industries and implementation of qualitative approaches such as case studies and interviews, and the examination of board diversity elements including gender composition and digital financial proficiency. Research should move forward by including macroeconomic factors and using extended time frames in their investigations to build evidence about corporate governance board effectiveness.

5.4 Broader significance of the study

This study makes significant contributions to the research on financial performance in corporate governance, particularly within the airline sector. By analyzing how board characteristics affect financial metrics, the research generates valuable insights that can benefit corporate leaders, investors, and policymakers. Providing financial education for board members enhances capital efficiency, although it does not always lead to increases in stock market value. Additionally, a large board size combined with long-term experience can have negative financial effects, highlighting the

need for a well-balanced selection of board members. The findings of this research can also benefit organizations outside of the airline industry, as they establish principles to maximize both financial performance and operational outcomes.

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