Use of financial ratios in Identifying Jet Airways' Financial Distress

A Dissertation

Presented

By

VASUDEVAN RENGASWAMY

Hrvoje Volarević

[Email address]

swamy.renga@gmail.com

Submitted to the Research Committee at the

Swiss School of Business and Management

SEPTEMBER 2023

USE OF FINANCIAL RATIOS IN IDENTIFYING JET AIRWAYS' FINANCIAL DISTRESS

by

Vasudevan Rengaswamy

APPROVED BY:

_____
Associate Professor, **Andreja Rudančić**, PhD, Chair

_____
Assistant Professor, **Hrvoje Volarević**, PhD, Mentor

_____
Professor, **Josip Burušić**, PhD, Committee Member

RECEIVED/APPROVED BY:

_____
<Associate Dean's Name, Degree>, Associate Dean

Table of Contents

ABSTRACT

Directed by: Dr.sc. Hrvoje Volarević

The aviation sector is a crucial contributor to GDP. Jet Airways, a prominent airline in India, is currently facing significant financial distress, necessitating a thorough examination to support its ongoing contribution to the country's economy and overall growth. The research questions are: What causes financial distress for Jet Airways? How should the airline use the financial process ratio to analyze to come out of financial distress? How can financial ratios help forecast the debt crisis? This study is significant because the financial ratio estimates will help identify financial distress at Jet Airways, thus providing fairness and returns to both investors and creditors of this company. The study uses liquid asset theory and liquidity and profitability theories. In addition, the study employs a mixed research design based on qualitative and quantitative analysis of data from Jet Airways' financial statements.

The findings of this study reveal that Jet Airways' financial distress originated from severe financial difficulties due to a combination of factors, including high fuel prices, a depreciating Indian rupee, intense competition, and rising debt levels. Furthermore, empirical analysis results obtained through Altman's Z-score and logistic regression models revealed that financial ratios that are categorized as profitability and liquidity are significant predictors of financial distress for Jet Airways. Consequently, for the airline to avoid future bankruptcy, it must implement an effective debt management plan and adopt robust cost reduction measures.

Chapter 1 INTRODUCTION

1.1 Background of the Study

Financial distress is a term that refers to a temporary condition in an industrial sector when a corporate entity cannot generate income or revenue to sustain its monetary obligation, thus plunging into debt, losses, and a downturn in economic status. Losses and lack of profitability are caused by high fixed costs, inflations caused by economic downturns, and significant illiquid assets. Companies with poor budgeting, high debt load, lawsuits, overspending, and unbalanced employment versus productivity can easily suffer financial distress. According to Al-Ali (2018, P. 224), poor management, which entails poor planning, ignoring vital signs of financial problems, embezzlement, corruption, and remedied debts, can cause financial distress too. However, companies are a critical component of the economy. Thus, investigating such challenges and mitigating measures are necessary for major economic contributors such as Jet Airways, especially in a growing economy such as India.

The aviation sector contributes significantly to the GDP of any country, more so for India. Paul (2019, p. 6) argues that Jet Airways is one of the companies in financial distress and needs strategic help to continue its contributory role in India's economy and overall growth. According to Subalakshmi et al. (2018, p. 2395), financial distress impedes a business organization and makes it impossible to generate considerable income, revenue, or profit. Prolonged distress poses a challenged for such a corporation to effectively meet all its debts and liabilities in time, leaving the corporation at risk of liquidating its assets and bankruptcy. For instance, the firm cannot pay dues to suppliers, workers, and creditors. Other times, financial distress forces a company to file for bankruptcy, followed by liquidation to allow it to pay debts. The situation is most prevalent in companies in a growing economy where companies cannot keep up with the inflations and distress

of a growing economy. Robinson (2020, P. 1) states that the Indian economy has numerous small and big industries fighting for niche and sustainable growth. As competition stiffens, businesses must continuously innovate and adapt to thrive in the market. Moreover, the management team in the businesses should foster a conducive working environment that leads to formation of new ideas and products. Therefore, prudent financial management practices are vital to ensure the long-term success and stability of the businesses in the Indian economy.

1.2 Preliminary Literature Review Objectives

A horizontal analysis of Jet Airways' financial records shows a profit deterioration and increased losses. The gross income is also steadily declining due to reduced services and assets over the last six years. According to Balasubramanian et al. (2019, p. 24), the vertical analysis shows areas where the losses and profits emanate from and a gap that, once filled, can help restructure the airlines. The management has constantly made poor decisions that have affected profitability, liquidity, leverage, and efficiency. With the depreciation of assets, Jet Airways' cannot meet it current debt obligations. Due to the reduced number of services, employees, and jets using the airlines, the company lost significant profits in the short-term, which gives it a bad image and credit history in the long term, which affects its ability to acquire products necessary for operations.

Creditors resumed operations with the airlines after a change in stakeholders and management. Kimmel et al. (2020, p. 236) explain that these stakeholders greatly improved financial records and steady payments as agreed with creditors. The current administration has shown commitment in restoring Jet Airways, with significant improvement in finances and capital

structure. The current Debt to equity ratio as of 2021 is at par with other Asian airlines, thus able to compete and pick up.

1.3 Overview of the financial ratios and Performance at Jet Airways(standalone) from 2004 to 2023

In corporate management, poor decision-making and low performance of a firm are noted by studying its financial ratios over time. Based on publicly available data, this section provides an overview on the ratios that show the cause of Jet Airways' financial problems. The three main categories of ratios highlighted below are Per Share ratios, Profitability ratios, Liquidity ratios, and Valuation ratios.

1.3.1 *Per Share Ratios*

Per share ratios show a company's performance and profitability on a per-share basis. The ratios mainly compare how a firm is generating earnings or managing its financial resources relative to the number of outstanding shares of its common stock (Ahmad et al., 2018). A proper application of per share ratios is in industries that comprise of both small and large enterprises to obtain an accurate comparison on their performance. Table 1 below illustrates Jet Airway's per share ratios from 2004 up to 2023. The ratios include Basic EPS, Diluted EPS, Cash EPS, Book Value (Excluding Revaluation Reserves)/Share, Book Value (Including Revaluation Reserves)/Share, Dividend / Share, Revenue from Operations/Share, PBDIT/Share, PBIT/Share, PBT/Share, and Net Profit/Share.

Table 1: Jet Airways Per Share Ratios (Money Control, 2023).

Year	Basic EPS (Rs.)	Diluted EPS (Rs.)	Cash EPS (Rs.)	Book Value [ExclRevalRese rve]/Share (Rs.)	Book Value [InclRevalReserv e]/Share (Rs.)	Dividend / Share(Rs.)	Revenue from Operations/ Share (Rs.)	PBDIT/Share (Rs.)	PBIT/Share (Rs.)	PBT/Share (Rs.)	Net Profit/Share (Rs.)
2023	-88.21	-88.21	-74.5	-1,541.07	-1,541.07	0	4.38	-74.13	-87.83	-88.21	-88.21
2022	-46.44	-68.01	-52.69	-1,452.86	-1,452.86	0	12.01	-30.51	-45.82	-68.01	-68.01
2021	-19.39	-13.38	3.9	-1,371.47	-1,371.47	0	3.4	0.43	-16.85	-13.38	-13.38
2020	-250.13	-250.13	-224.09	-1,371.47	-1,371.47	0	29.35	-133.53	-159.56	-250.13	-250.13
2018	-67.57	-67.57	-12.94	-637.5	-637.5	0	2,049.87	61.25	6.62	-67.57	-67.57
2017	130.5	130.5	189.56	-570.06	-570.06	0	1,897.21	264.46	205.41	130.49	130.5
2016	103.31	103.31	190.9	-293.08	-265.32	0	1,863.32	260.38	172.78	103.31	103.31
2015	-159.66	-159.66	-92.54	-387.82	-360.06	0	1,723.01	52.06	-15.07	-159.66	-159.66
2014	-381.3	-381.3	-245.78	-223.87	-196.11	0	1,523.05	-94.46	-171.55	-322.88	-322.87
2013	-56.23	-59.23	51.09	-113.58	-39.68	0	1,952.11	168.37	61.04	-56.24	-56.24
2012	-143.18	-143.18	-34.31	-62.49	136.78	0	1,716.19	67.48	-41.39	-145.41	-143.18
2011	1.12	1.12	106.6	96.92	301.67	0	1,475.36	218.66	113.18	5.39	1.12
2010	-54.17	-54.17	57.26	95.8	306.03	0	1,209.15	168.55	57.12	-57.9	-54.17
2009	-46.6	-46.6	57.62	149.97	365.68	0	1,340.34	9.29	-94.94	-180.43	-46.6
2008	-29.31	-29.31	60.78	214.5	527.24	0	1,020.63	95.89	5.8	-51.28	-29.31
2007	3.24	3.24	51.2	243.81	259.15	6	817.54	78.9	30.93	3.11	3.24
2006	52.36	52.36	99.44	248.33	267.1	6	659.53	128	80.93	78.91	52.36
2005	45.41	45.41	98.34	202.81	232.85	3	502.49	123.53	70.6	65.25	45.41
2004	22.63	22.63	94.09	-5.55	48.21	0	478.21	103	31.55	24.64	22.63

Some of the common Per share ratios in table 1 above include Earnings Per Share (EPS), Dividend Per Share, and Profit Before Interest and Taxes Per Share (PBIT/Share). For instance, EPS is calculated by dividing the company's net income by the average number of outstanding shares. It gives insight into how a company's profit relates to its total outstanding stock. A general sign of profitability is a positive EPS. Table 1 shows that the Jet Airways' last positive EPS value was in 2017, despite having negative EPS values in some of the previous years. Additionally, the airline's Dividend Per Share and Profit Before Interest and Taxes Per Share value reveal the presence of financial distress. Since 2007, Jet Airways' Dividend Per Share remained zero. On the other hand, Profit Before Interest and Taxes Per Share was as low as 0.43 in 2021, and had negative values in some of 2014 and 2020.

1.3.2 *Profitability Ratios*

Profitability ratios give a clear picture into a company's ability to generate profits from its operations. Investors, creditor, managers, and financial analysts use profitability ratios to assess a company's efficiency in generating earnings from its continuing business operations (Robinson, 2020). Table 2 below shows Jet Airways' profitability ratios such as net profit margin, return on equity, return on assets, and asset turnover ratio.

Table 2: Jet Airways Profitability Ratios (Money Control, 2023)

	Profitability Ratios								
Year	PBDIT Margin (%)	PBIT Margin (%)	PBT Margin (%)	Net Profit Margin (%)	Return on Networth / Equity (%)	Return on Capital Employed (%)	Return on Assets (%)	Total Debt/Equity (X)	Asset Turnover Ratio (%)
2023	-1,693.60	-2,006.79	-2,015.40	-2,015.40	0	5.99	-17.79	-0.2	0
2022	-254.07	-381.55	-566.25	-566.25	0	3.33	-13.41	-0.21	0
2021	12.6	-495.39	-393.47	-393.47	0	1.3	-2.19	-0.23	0
2020	-454.91	-543.6	-852.13	-852.13	0	12.33	-41.02	-0.23	0
2018	2.98	0.32	-3.29	-3.29	0	-4.45	-6.14	-0.73	186.27
2017	13.93	10.82	6.87	6.87	-22.89	156.98	11.72	-1.11	170.39
2016	13.97	9.27	5.54	5.54	-35.24	26.45	6.12	-2.77	110.46
2015	3.02	-0.87	-9.26	-9.26	0	-4.37	-9.62	-2.33	103.84
2014	-6.2	-11.26	-21.19	-21.19	0	-39.79	-19.96	-3.38	94.19
2013	8.62	3.12	-2.88	-2.88	0	7.51	-2.58	-9	89.85
2012	3.93	-2.41	-8.47	-8.34	0	-3.41	-5.92	-20.15	70.96
2011	14.82	7.67	0.36	0.07	1.15	0.08	0.04	13.75	61.56
2010	13.93	4.72	-4.78	-4.47	-56.54	-3.72	-2.3	16.64	51.53
2009	0.69	-7.08	-13.46	-3.47	-31.07	-2.64	-1.75	12.4	50.43
2008	9.39	0.56	-5.02	-2.87	-13.66	-1.64	-1.2	6.27	42.1
2007	9.65	3.78	0.38	0.39	1.32	0.35	0.25	2.88	65.57
2006	19.4	12.27	11.96	7.93	21.08	6.51	4.98	2.28	62.79
2005	24.58	14.04	12.98	9.03	22.38	7.42	6.13	1.69	67.85
2004	21.53	6.59	5.15	4.73	-407.87	4.13	3.42	-80.27	72.44

Each of the above ratios give an overview of the specific measures of Jet Airways' profitability and are crucial in identifying the general progress in the company's financial performance. For example, the net profit margin which represents a percentage of revenue that remains after the deduction of expenses, illustrates whether a firm generated income over a given

financial year or it incurred losses. Notably, a business records losses when its expenses exceed revenue. Table 2 above shows that Jet Airways' net profit margin was low and the company had losses between 2008 and 2010, 2012 to 2015, and 2018. Additionally, since 2020 to 2023, Jet Airways had large negative net profit margins after it filed for bankruptcy in 2019.

Figure 1: Jet Airways Return on Assets from 2004 to 2023 (Researcher).
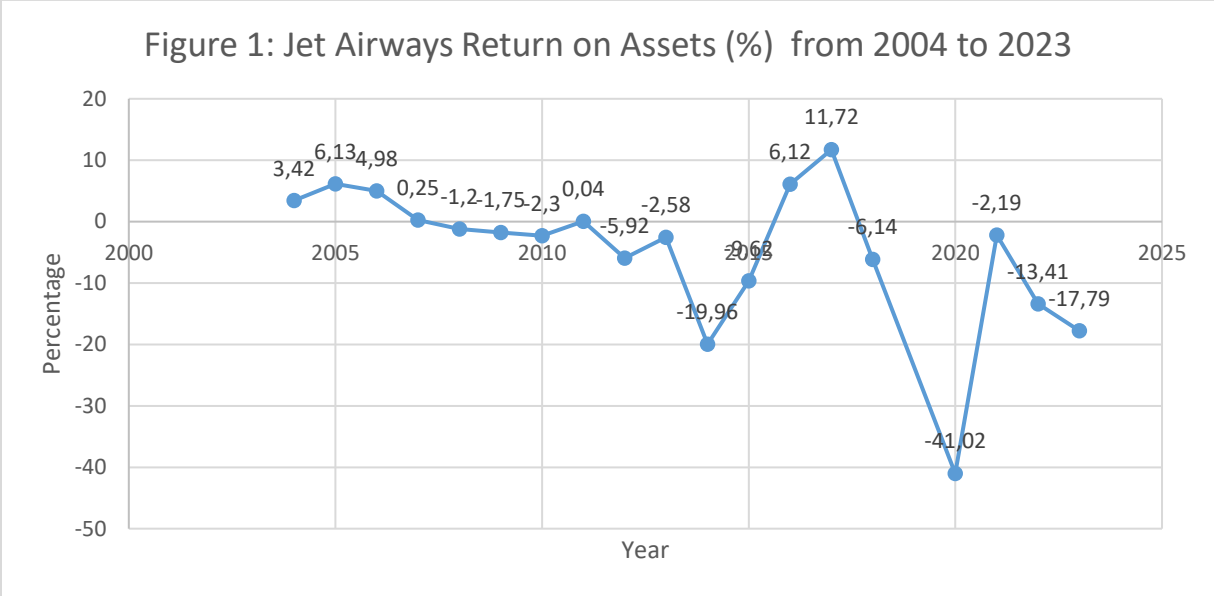
ROA measures how efficiently a firm uses its assets to create profits. The ratio values in table 3 above shows that Jet Airways could not generate profits sustainably over the entire study period. Since 2004, Jet Airways recorded positive ROA digits in 2004, 2005, 2006, 2007, 2011, 2013, and 2021. In years prior to filing for bankruptcy such as 2008, 2009, 2010, 2012, 2013, 2014, 2015, and 2018, Jet Airways had negative ROA. It signifies that Jet Airways had strategic challenges on generating profits from its assets. As the airline failed to yield income from its assets, its financial health dwindled leading to accrued debt and higher expenses.

1.3.3 *Liquidity Ratios*

Liquidity ratios are crucial determining a company's ability to meet its short-term financial obligations using its available liquid assets. Examples of liquid assets include Cash and Cash Equivalents, Bonds and Treasury bills, and assets that can be converted to cash within 2 years (Robinson, 2020). Since Jet Airways has operations in the aviation, the company requires robust liquidity ratios that are crucial when the airline needs to obtain financial support from investors and other lending institutions. Table 3 below shows several ratios that depict the financial crisis at Jet Airways. The ratios include Current Ratio, Quick Ratio, Inventory Turnover Ratio, Dividend Payout Ratio, Dividend Payout Ratio, Earnings Retention Ratio, and Cash Earnings Retention Ratio.

Among the ratios, the current ratio and the quick ratio reveal that Jet Airways' inability to repay its debts begun as early as 2008. From 2008 to 2023, the current and quick ratios had values below 1, signifying that Jet Airways could not meet its immediate and short-term debt obligations. Figure 2 below gives a visual representation of the trend in Jet Airways' current and quick ratio. The airline had the highest value of current and quick ratios in 2006. However, as the company's financial situation worsened, the current ratio kept decreasing up to 0.13 in 2023, while the quick ratio reached 0.12 in the same year.

Table 3: Jet Airways Liquidity Ratios (Money Control, 2023)

	Liquidity Ratios						
Year	Current Ratio (X)	Quick Ratio (X)	Inventory Turnover Ratio (X)	Dividend Payout Ratio (NP) (%)	Dividend Payout Ratio (CP) (%)	Earnings Retention Ratio (%)	Cash Earnings Retention Ratio (%)
2023	0.13	0.12	0	0	0	0	0
2022	0.14	0.12	0	0	0	0	0
2021	0.15	0.13	0	0	0	0	0
2020	0.15	0.13	0	0	0	0	0
2018	0.5	0.46	48.4	0	0	0	0
2017	0.46	0.41	43.21	0	0	0	0
2016	0.42	0.35	20.16	0	0	0	0
2015	0.37	0.3	21.11	0	0	0	0
2014	0.3	0.24	21.53	0	0	0	0
2013	0.35	0.28	21.42	0	0	0	0
2012	0.32	0.25	19.04	0	0	0	0
2011	0.36	0.28	17.91	0	0	0	0
2010	0.49	0.41	17.85	0	0	0	0
2009	0.56	0.49	19.43	0	0	0	0
2008	0.71	0.61	16.17	0	0	0	0
2007	1.2	1.04	16.08	185.39	11.71	-85.39	88.29
2006	1.92	1.73	14.05	11.45	6.03	88.55	93.97
2005	1.84	1.54	13.05	6.6	3.05	93.4	96.95
2004	1.38	0.96	9.92	0	0	0	0

Figure 2: Jet Airways Current Ratio and Quick Ratio Trends (Researcher).

Graph 2: Jet Airways Current Ratio and Quick Ratio Trends (2004 - 2023)
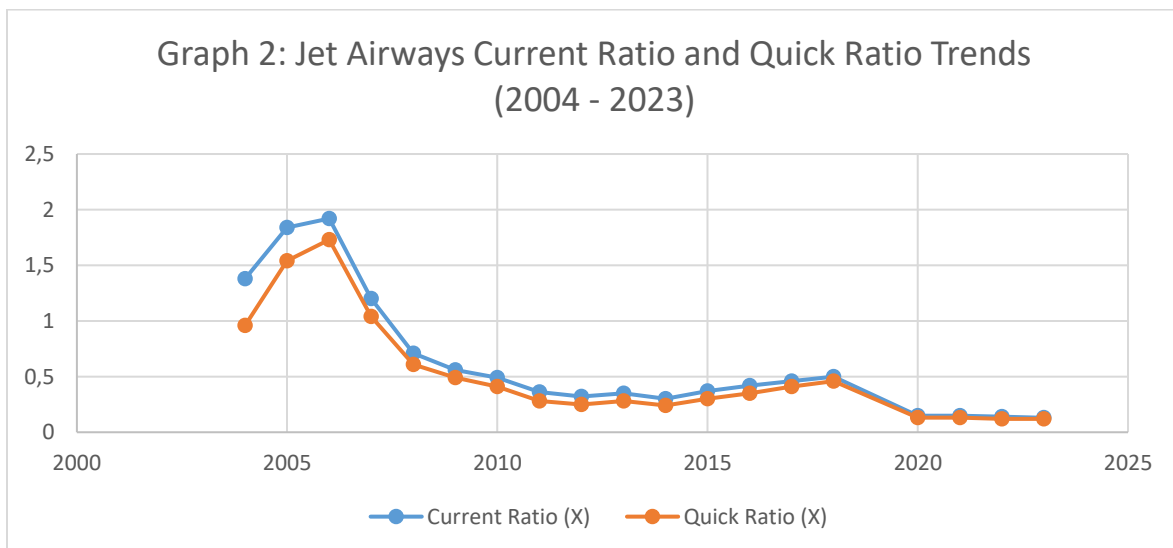
1.3.4 *Valuation Ratios*

As a publicly traded company, Jet Airways had outstanding shares in the market. Valuation ratios offer crucial insight into the relative value of Jet Airways stock or and its general market performance. For company to attract external investors, it requires good valuation ratios. Thus investors, analysts, and financial professionals use valuation ratios assess the attractiveness of a company's shares. Table 4 below shows how Jet Airways market value and stock performed from 2004 to 2023. The values in table 4 include Enterprise Value, EV/Net Operating Revenue, EV/EBITDA, Market Cap/Net Operating Revenue, Retention Ratios, Price/BV, Price/Net Operating Revenue, and Earnings Yield.

Vital considerations under table 4 are the Enterprise Value and the Price to Book Value ratio. Enterprise Value represents the market capitalization of Jet Airways. Figure 3 depicts that the airline's Enterprise Value decreased from as high as 17,130.92 Cr. in 2010 to 3,872.80 Cr. in 2023. The drop in the airlines value is due to the liquidation process that led to the decrease in the company's assets and market performance. Similarly, in figure 4, the Price to Book Value ratio of Jet Airways fluctuates but follows a general declining trend. The reduction in the airline's Price to Book Value ratio over time indicates that investors perceive the company as undervalued. Moreover, since Jet Airways Price to Book Value ratios are also negative since 2013, it signifies that the company's liabilities exceed its assets, which an undesirable financial position.

Table 4: Jet Airways Valuation Ratios (Money Control, 2023)

Year		Valuation Ratios							
	Enterprise Value (Cr.)	EV/Net Operating Revenue (X)	EV/EBITDA (X)	MarketCap/ Net Operating Revenue (X)	Retention Ratios (%)	Price/BV (X)	Price/Net Operating Revenue	Earnings Yield
2023	3,872.80	77.89	-4.6	13.25	0	-0.04	13.25	-1.52
2022	4,149.28	30.41	-11.97	6.68	0	-0.06	6.68	-0.85
2021	4,529.06	117.21	929.99	27.47	0	-0.07	27.48	-0.14
2020	3,619.13	10.85	-2.39	0.45	0	-0.01	0.45	-18.74
2018	10,858.60	0.47	15.61	0.3	0	-0.96	0.3	-0.11
2017	11,657.62	0.54	3.88	0.28	0	-0.92	0.28	0.25
2016	13,967.66	0.66	4.72	0.29	0	-1.87	0.29	0.19
2015	13,727.81	0.7	23.21	0.28	0	-1.26	0.28	-0.33
2014	10,262.77	0.59	-9.56	0.16	0	-1.11	0.16	-1.3
2013	12,444.79	0.74	8.56	0.26	0	-4.55	0.26	-0.11
2012	13,188.11	0.89	22.64	0.19	0	-5.22	0.19	-0.44
2011	14,773.23	1.16	7.83	0.3	0	4.61	0.3	0
2010	17,130.92	1.64	11.77	0.4	0	5.01	0.4	-0.11
2009	16,120.78	1.39	201.06	0.13	0	1.13	0.13	-0.27
2008	15,550.37	1.76	18.78	0.55	0	2.59	0.55	-0.05
2007	10,417.87	1.48	15.3	0.77	-85.39	2.59	0.77	0.01
2006	11,385.07	2	10.3	1.51	88.54	4.01	1.51	0.05
2005	12,208.98	2.81	11.45	2.41	93.39	5.98	2.41	0.04
2004	0	0	0	0	0	0	0	0

Figure 3: Jet Airways Enterprise Value (Cr.) Trend (Researcher).

Figure 3: Jet Airways Enterprise Value (Cr.) 2004 - 2023
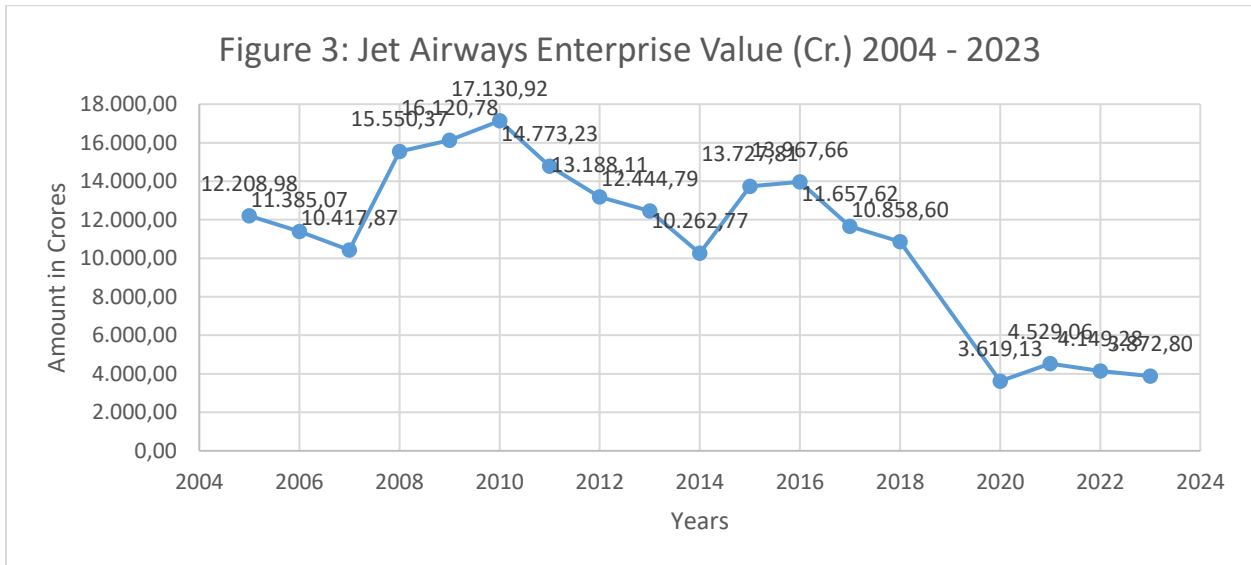
Figure 4: Jet Airways Price to Book Value Ratio (Researcher).

Figure 4: Jet Airways Price to Book Value Ratio from 2004 to 2023
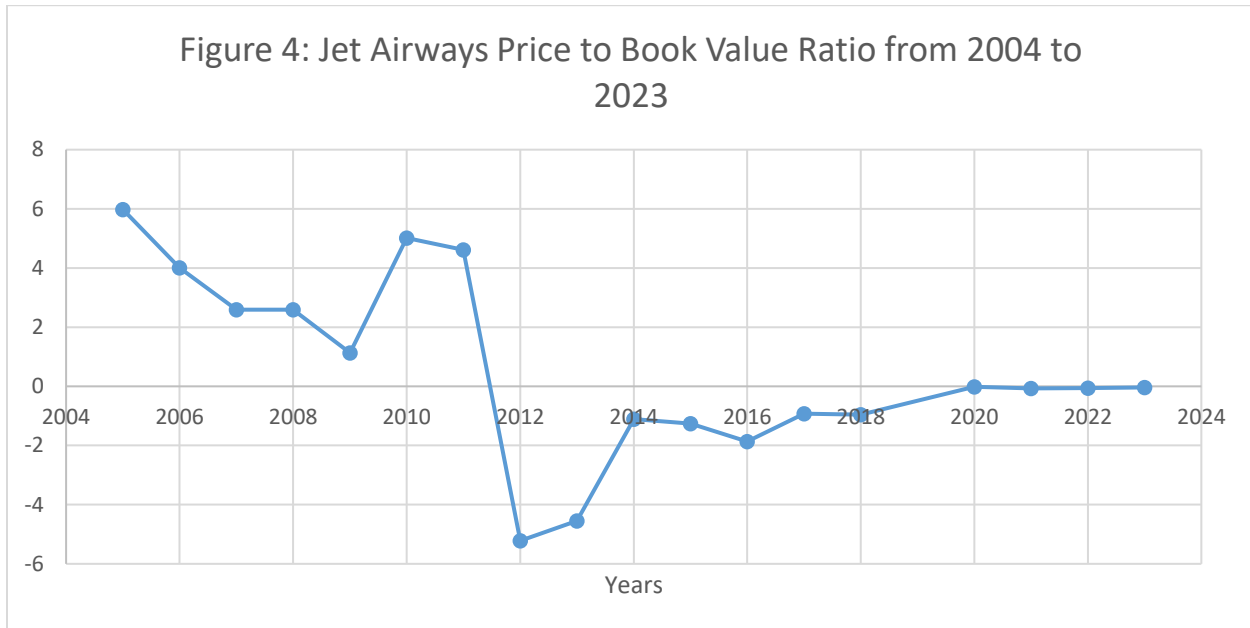
1.4 Further Discussion of the financial ratios of Jet Airways

According to Rossi et al. (2020. p. 15), during the airway's shutdown in April 2019, the total earnings of the airways dropped steadily for three years at approximately 15% per annum. Reviving the airlines has been a process where a steady improvement of 20% is necessary to return to total operational capacity. To recover the airlines back to a smooth operational position, the shareholders should increase their shares by 25%, 30% more than in previous investments per annum. The shareholders, who mainly comprise the consortium banks, must also change to increase their shareholding capacity and put mechanisms to attract more investors into the airlines. Bank and unsecured loans increased by 17% in 2018 and 2019. As shown below, the core income ratio must be more than the debt ratio for a smooth takeoff after reopening the airlines.

The operating capacity of Jet Airways must not use more than a quarter of its capital on salaries and employee remuneration. Tikku and Sherman (2019, p.33) state that for profitability, tier-one stakeholders should comprise those reviving the airlines, such as the bank consortium,

who took part in management to avoid losing their capital. There should also be tier two, which comprises any person or business entity interested in investing in the company.

From a financial analyst's perspective, it is vital that the airline is audited and that the valuation of all its items is used to earn more money. According to Rossi et al. (2019, p. 1047), an average of 47.09% of the airline's income was from air tickets, jet services, and the airline's sporting activity range. However, the rest of the money comes from investment by Jet Airways in other sectors, including designated flights to tourist destinations, private investment by the airlines, and airline-related services. According to Sriram (2022, p.1) analysis of Asian airlines, Jet Airways' percentage is 12% below in capital inflow. The services are outdated and need review and betterment for more significant revenue.

1.5 Problem Statement

As of December 2021, Jet Airways owed US$1156.55 million in debt. The airline's debt is getting out of control due to un-remedied financial problems, which include occasional lawsuits with its employees, and the adversity caused by the coronavirus pandemic, which led to the suspension of its services for a considerable time in 2020. The company has also had numerous management issues that hinder it from unilateral leadership and direction of its projects. The airline has income that can no longer pay all its financial obligations to its employees, suppliers, and outsiders. Ghosh (2020, p. 103) asserts that the economic distress has steadily increased in the past three years, making it a recurring managing issue for the company's reputation and business capability. Jet Airways has considered restricting to cut debt and the high cost of business. Non-essential employees are outsourced by independent companies that are paid on a contract basis, thus reducing the cost of labor and maintenance of employees long-term. Nair and Sachdeva (2018,

p. 66-69) argue that the Indian manufacturing industry is unstable, making it difficult for airlines to buy spares locally. The cost of importation and inflations makings the cost of repair and maintenance for companies without a good credit history, such as Jet Airways, especially when outsourcing material.

Due to the enormous debts, Jet Airways handed over operations to consortium banks to avoid total closure and bankruptcy. The banks made plans to convert some debt amounts from their lenders to equity shares. This step by the consortium banks can effectively control some assets and implement the banks' interest in managing and running the airline. In addition, the banks and shareholders made plans to use financial ratios to offset the airline's financial distress and put it back in a position of profitability and steadiness.

Balasubramanian et al. (2019, p. 23) explain that when the founder Naresh Goyal started Jet Airways in 1992, he envisioned the development of the best airline in India, one capable of rising with the markets and increasing in share and revenue while constantly improving customer services. Supriyanto and Darmawan (2018, p.110) explain that by 2005, Jet Airways was one of the best airlines in India, with a considerable share in the aviation industry. Huang and Yen (2019, p. 10567) argue that the manager began large investment projects to increase the airlines and funding. However, at the time, there was stiff competition in the aviation sector, and the company had to lower the cost of carriers leading to diminishing profits for Jet Airways. The company further faced a series of challenges and managerial misdirection, which put Jet Airways in considerable debt and a loss-making enterprise leading to the temporal cessation of its operation in April 2019.

The Bank consortium resorted to sustaining it using financial ratios and participating in the management decision-making to avoid further losses and possible bankruptcy. Primary investors

and banks formed part of the new management of the airlines and have since employed several mechanisms to ensure the airlines stay financially afloat and in a competitive capacity to avoid more financial distress in the future.

1.6 Research Questions

1. What are the causes of financial distress for Jet Airways?

2. How should the airline use the financial process ratio to analyze to come out of financial distress?

3. How can financial ratios help forecast the debt crisis?

1.7 Delimitations of the Study

The dissertation focuses on the use of financial ratios to identify financial distress in Jet Airways. Thus, it will rely on a variety of financial ratios, including debt-to-equity ratio, current ratio, and return on assets, to assess the company's financial health. From a theoretical perspective, the study considers the macroeconomic environment in which Jet Airways operates and the specific challenges facing the Indian airline industry. Moreover, the study derives its analysis based on the period from 2004 to 2023 since it gives a reliable dataset. Additionally, the study will only consider financial ratios that are commonly used to assess financial distress. In that case, the researcher will use only the relevant ratios that tend to predict bankruptcy.

1.8 Hypothesis Development

Jet Airways' financial performance since the company went public offers reliable insights in developing hypotheses for this study. Most of the company's ratios, such as Per Share Ratios, Profitability Ratios, Liquidity Ratios, and Valuation Ratios, reveal that the company struggled to operate in the market. Other types of ratios include Activity Ratios and Leverage Ratios. In the case of Jet Airways, this study's hypotheses propose that Financial Leverage Ratios, Liquidity Ratios and Profitability Ratios influence financial distress. Another hypothesis is that the resultant Z-score, which is based on the three ratios, helps predict bankruptcy. Hence, the study relies on the following hypotheses to evaluate how financial distress is predictable using a few primary ratios.

H1: Profitability Ratios have a negative impact on the possibility of financial distress.

H2: Liquidity Ratios have a negative impact on the possibility of financial distress.

H3: Leverage Ratios have a positive impact on the possibility of financial distress.

H4: Lower Z-scores for key financial ratios will be observed in periods of financial distress for Jet Airways.

1.9 Significance of the Study

Analysis of financial ratios in an Indian setting will rely on its market characteristics and data to characterize and forecast the direction of the troubled Jet Airways. The aviation sector in India generates enormous amounts of revenue that is vital to the country's GDP. Kimmel et al. (2020. p. 237) explain that with the rise in companies that are unable to cope with the surge in interest and maintain a competitive edge, financial ratios provide quantitative values that help a company against economic, social, legal, cultural and political challenges and make profits. The

societal cost and anguish of incompetent entrepreneurs and managers can be overcome using quantitative forecasting provided during financial ratio analysis. These estimates will help overcome unemployment and service decrease and neutralize the high costs in the Indian aviation industry. Thus, the financial ratios used to identify financial distress will provide fairness and returns to both investors and creditors in Jet Airways.

Chapter 2 LITERATURE REVIEW

2.1 Introduction

This section covers an extensive body of literature that informs the study on Jet Airways' financial distress performance. It relies on other scholars who have conducted background research to develop a conceptual framework for the study. Furthermore, this section explores theoretical and empirical literature to provide deeper knowledge and context on the relevance of financial ratios. The entire literature review extends this paper's purpose to explore the causes of financial distress for Jet Airways, how the airline should utilize the financial ratio to analyze, anticipate and overcome the situation, and the comprehensive role of bankruptcy models and theories. The chapter ends with a brief summary.

2.2 Inclusion Criteria

A study's inclusion criteria explain the methodologies that the researcher used to gather the extensive, critical, and insightful review of relevant, peer-reviewed literature. In this paper, the researcher adheres to all the ethical considerations while searching for the crucial body of literature that achieves the required threshold of existing knowledge on the subject matter. To ensure a thorough literature review on the use of financial ratios in identifying Jet Airways' financial distress, the researcher uses the following inclusion criteria.

Each source must have substantial relevance to the research topic. The selected articles must directly discuss the use of financial ratios in identifying financial distress specifically related to Jet Airways. Otherwise, the studies should closely resemble the topic in terms of industry and explore bankruptcy. The focus should be on the application, effectiveness, and limitations of financial ratios in evaluating Jet Airways' financial health.

Peer-reviewed sources form the general body of literature that will be included in this study. Hence, only scholarly, peer-reviewed journal articles, conference proceedings, or reputable books will be considered for inclusion. It is essential to include only peer-reviewed sources to get comprehensive and reliable information. Additionally, since peer-reviewed sources have undergone a rigorous review process that meets high academic standards, the researcher can be confident and rely on their findings to lay a foundation for the study.

All sources of literature must be recent. In the contemporary world with a global economy, fields of research and industries evolve at an unprecedented pace. Hence, preference will be given to recent publications to ensure that the information and findings are up-to-date. The inclusion criteria will consider articles published within at least the last ten years, from 2013 to the present, to incorporate the latest research and developments in the field. Nonetheless, legacy theories and publications that are fundamental in financial distress are also added.

Every article, book, or journal used as a source must be written in English. Since this study is presented in the English language, the literature selected must be in English. In this case, since the researcher communicates in and understands English, the content of the sources must also be in English.

A significant portion of the studies included in the paper must utilize quantitative or mixed-methods approaches to assess financial ratios and their application in identifying financial distress. The extensive field of financial distress and bankruptcy provides researchers with several research tools at their tools. However, only secondary data analyses will be considered for the case of Jet Airways and the nature of the aviation industry.

Accurate findings on financial relations require the use of relevant variables. This perspective also applies to the selected literature. Hence, only those studies exploring financial ratios such as liquidity, profitability, leverage, and efficiency ratios will be considered. Specifically, the sources must distinguish the role of each type of ratio in analyzing and predicting financial distress. Moreover, the literature should acknowledge how the ratios vary across industries and sectors.

Jet Airways specifically operates in the aviation sector. For that matter, the inclusion criteria will prioritize studies that examine financial ratios in the context of the aviation industry or, more specifically, in the analysis of airline companies in India and the greater Asian continent. The importance of industry-specific sources is their uniqueness and relatability to the Jet Airways scenario. Nonetheless, a few of the sources can discuss how other major sectors address the issue of financial distress.

The final inclusion criterion is how the initial research uses data sources to derive findings. Reliability and credibility of data are crucial in getting accurate findings. Most sources and research work acknowledge their sources of data. Thus, the literature selected should utilize reliable and credible data sources for calculating financial ratios. This criterion ensures that the findings are based on accurate and trustworthy financial information.

2.3 A Brief Focus on the Indian Economy

One of the major contributors to an economy is its industrial sectors. In a growing economy, a country's industrial sector can thus be portrayed as a major contributor to the GDP. Now, one of the major issues with the companies present within the industrial sector is financial distress which they might face, thereby affecting the overall growth of the economy in general.

Financial distress represents that eminent condition in which a business organization cannot generate considerable income or revenues or, in certain circumstances, cannot effectively meet all of its liabilities within time (Dance & Imade, 2019). When the financial distress situation worsens, it forces a business organization to file for bankruptcy and consequently liquidate itself to pay off all dues owed to outsiders. In the case where several companies face financial distress in a growing economy, then economic growth declines significantly.

The Indian economy is one such growing economy with numerous big and small industries fighting for subsistence and sustainable growth. Hence, predicting financial difficulties concerning the companies present within the different business sectors of a growing economy like the Indian economy is paramount. If there is a timely estimation of financial distress faced by businesses within the growing economies that can be done, then many different companies which may be facing financial distress can save altogether from the issue of bankruptcy. On the other hand, it is to be noted that numerous well-known tools and techniques are available in the field of finance to specifically measure this issue of financial distress, out of which the 'financial ratio analysis' is one of the most time-tested and proved methods or tools. Lastly, it should be noted that there have not been many studies dedicated to identifying the financial distress faced by Indian companies using calculated financial ratios. Therefore, this research aims to identify the companies operating within the Indian economy which might be facing financial distress using the financial ratio analysis technique.

2.4 Objectives of Financial ratios and their use in identifying financial distress

Rafatnia et al. (2020, p.646–648) state that a financial ratio indicates the relative magnitude of quantitative values in a financial statement of an enterprise. The ratios portray financial

information on the business enterprise's efficiency, profitability, leverage, and liquidity. The pre-published data on a company such as Jet Airways gives information on operations, effectiveness, and prudence in investing in such a company. Using financial ratios, analysts can look into specific aspects of a company and identify its present position in terms of profitability, liquidity, operation, and efficiency. According to Rashid (2018, p. 104), an analysis of financial positions in a company gives it leverage in the business. It helps identify areas of weakness and thus makes prudent business decisions concerning the enterprise as an entity. Nugraha, Puspitasari, and Amalia (2020, p.2539) assert that all financial ratios help to identify an effective comparison and contrast of the financial detain four positions of an enterprise. A financial analyst, therefore, gives sound financial knowledge of a specific company sector and helps the management compare results over a particular time. The ratios' comparisons are critical in identifying a firm's range to maintain smooth operations and profitability.

In this research, the analysis is in a nineteen-year range, covering the time when Jet Airways shifted from making profits to losses and financial distress. Dance and Imade (2019, p. 89) argue that the timing gives stakeholders a sound financial position of the airlines and is critical in directing strategic decisions regarding Jet Airways. This research will identify specific weak points at Jet Airways and advice on necessary steps in instances where Jet Airways' liquidity position is below the average in the Indian aviation industry. The financial ratios will be for the internal management of Jet Airways and will be compared to aviation industry averages and standards. The measures will be to reduce further liabilities and current ones while increasing their asset. In that way, Rahman et al. (2021, p.199) argue that financial ratios enhance business performance and lead companies to pre-determination desired goals and growth. Peppal (2018, p. 2) cautions that financial ratios are tools for identifying good warning signs and the urgency at

which the management must implement precautions and mitigating measures for acceptable and healthier monetary limits.

2.5 Theoretical Literature

2.5.1 *The Concept of Financial Distress*

Financial distress is a phenomenon that always draws the attention of scholars, investors, and research enthusiasts. Before firms file for bankruptcy, a notable similarity usually manifests through the companies' financial statements. Many of the firms that go bankrupt report tend to have a financial status that implies terms such as overdraft, negative net assets, failure to pay bonds, insolvency, and inability to pay dividends for preferred stocks. According to Bo-Hyung Lee and Sang-Ho Lee (2018), the early depiction of financial distress commences when the value of a firm's assets is less than the amount of its total debt. Moreover, the concept of financial distress extends directly to reflect its operational aspects. A keen inspection of the firm's activities can show a reduction in its operations, such as downsizing. Eventually, a lesser operational footprint results in correctional efforts, including debt restructuring and lowering dividend payments.

According to Alaminos and Fernández (2019), financial distress refers to an economic condition faced by any business or non-business enterprise or by any individual person where such individual person or the business or non-business enterprise fails to generate enough financial resources mainly in the form of revenue or income to keep such an entity alive. This means that under a financial distress condition, a business enterprise is not in a position to generate enough income for itself, which can allow such a business entity to keep its operations alive by paying all its liabilities in time and by purchasing new assets or raw materials to keep the production or sales alive thereby regenerating the scope for future earnings. Hence, a business or an individual

experiencing financial distress lacks easy access to capital or funds in general, which impacts its production, sales, and potential for future earnings.

Additionally, Alaminos and Fernández (2019) and many other well-known scholars, such as Dewi and Hadri (2017), postulate that there are different reasons why a business enterprise faces such a situation of financial distress. However, the imminent reasons for financial distress faced by business organizations first include a high degree of fixed and variable costs (Kamal, Ishak, and Mohammed, 2019). It is important to note that if a business enterprise has a substantial amount of fixed and variable costs or if these costs have increased rapidly over time, the business may face significant challenges in terms of its liquidity position. Hence, if the business has to pay substantially high costs, especially of fixed nature, that cannot be avoided at all, and such costs can be seen as enhancing over time, then the business may face difficulties in meeting all of its current liabilities in time.

Furthermore, if the business cannot meet all of its current liabilities on time, it can have significant consequences. One such consequence is the decline in the creditworthiness of the business and its reputation among suppliers and creditors. Minimal trust from creditors has a negative impact on the business's production process. Suppliers may become reluctant to provide large quantities of raw materials on credit or may limit the amount of materials they provide on credit. Thus, when the situation persists, it can have a detrimental effect on the business's ability to generate future income and, ultimately, its operational efficiency.

The second eminent reason for financial distress for any given business enterprise is the lack of proper availability of working capital to keep the business running in a sustainable way. According to Dewi and Hadri (2017), if a business organization is incapable of generating an optimum amount of working capital in a timely manner, then such a business may be subject to

financial distress. This is because working capital is the life source of any business enterprise as this capital is used to finance the business in its day-to-day operations after a capital investment is already made. Now, if such a capital source stand missing or is not available at optimum quantities or is not generated by the business as and when required, then in such a case, the business will be facing a serious financial crunch or financial distress, which may affect the overall ability of the enterprise to sustainably operate as a going concern.

The third most probable cause behind the financial distress faced by any business enterprise is the presence of a large number of illiquid assets. Notably, if a business organization has a presence of large quantities of illiquid assets, such as fixed assets that cannot be readily sold at the market, unlike cash or any other liquid assets (Luce, 2018). Hence, the business is most likely to face financial distress as it will not have funds to finance its day-to-day operations thereby keeping the business operations and scope for future earnings alive.

Another reason for financial distress faced by any business enterprise is the sensitivity of the revenue generation abilities to the present prevailing economic conditions of the country or the industry in which the business organization operates (Mselmi, Lahiani, and Hamza 2017). For instance, if the business has been manufacturing any luxury goods and the present economic condition may be classified as an "economic downturn," which might have been induced by the spread of any pandemic disease, then in such a case, the business may lose its ability to generate probable future income which might affect the financial condition of such a business organization and may force it towards financial distress.

The last important cause behind financial distress is the mismanagement and fraud conducted by the executives trusted with administrative roles. Since the top-level executives are trusted by the owners of a business with the management of the business, any fraudulent activities

or mismanagement of current and fixed assets just out of negligence or non-application of effective supervision and due care, then the business may run into serious financial distress and jeopardize its sustainability.

The aim of this study is to use financial ratios in identifying the companies which might be facing financial difficulties in India. It is worth analyzing the issue of financial distress faced by the companies that were operational or are operational within India. The first case which may be taken upon in understanding the issue of financial distress in India is the most recent case of Jet Airways. Jet Airways was considered one of the most flourishing Indian-International aviation companies known for its premium services. The company had recorded a total loss of over fifteen thousand Crores over a period of ten financial years, where it can be seen that the airline has recorded a loss in its last eight years out of ten years of operation (Ghosh 2020). There are many issues that were identified that caused serious financial distress for the airline, which ultimately forced the business to file for bankruptcy. Such issues include rising and uncontrollable fixed and variable costs and the inability to generate profits over the years owing to operational mismanagement.

Since financial distress directly leads to corporate failure if not properly assessed, initial empirical studies tried to find a reliable method of earlier detection. Early scholars started by exploring the financial information of corporate entities to obtain meaningful differences between bankrupt and non-bankrupt firms. The first group of studies, by NYU Professor Edward Altman, utilized discriminant analysis as a method to evaluate bankruptcy (Prusak, 2020). Afterward, the Ohlson model, designed by Dr. James Ohlson, incorporated a logistic regression approach (Prusak, 2020). The subsequent studies focused on industry-specific analysis using probabilistic regression and surviving analysis (Sayari & Mugan, 2017). Currently, most studies use either the discriminant

analysis method provided by the Altman Z-score model or the logistic regression approach outlined in the Ohlson O-score model.

2.5.2 *The Importance of Early Detection of Financial Distress*

Early detection of financial distress is vital for the sustainability of a corporate entity. The importance of promptly recognizing financial distress has several advantages. Firstly, when an organization discovers the probability of going bankrupt, it has ample time to implement corrective measures and strategies to address the risk of financial distress before it worsens (Kliestik et al., 2020). Secondly, an organization that detects financial distress prior to filing for bankruptcy can cushion it assets and reduce unprecedented losses. Thirdly, the recovery potential increases when a business can identify financial distress on time. For instance, the business can review its contracts and restructure its debt to regain stability.

Apart from the recovery aspects, other benefits of early detection of financial distress entail meeting legal requirements and achieving business continuity. It is crucial for firms to comply with legal provisions to prevent unnecessary charges. Moreover, a company can salvage its business continuity by addressing issues such as credit rating, public opinion, and stakeholder confidence. For example, implementing proactive steps before financial distress worsens helps a firm retain its creditworthiness and seek financial assistance on time. On the other hand, since financial distress impacts the trust of customers, employees, investors, and stakeholders, noticing it allows the management to communicate with such stakeholders and bring transparency.

Financial ratios have a vital role in detecting financial distress. Firms use ratios to track their performance against industry standards and extremes such as the required minimum for profitability, asset base, and revenues. For instance, the amount of debt that a firm can accrue

should not exceed a predetermined maximum debt ratio. Financial ratios are derived from three main statements; the Balance Sheet, the Cash Flow Statement, and the Profit and Loss Statement. Since businesses keep a record of the three primary financial records, they can track their performance against a recommended level. Hence, financial ratios provide a way to measure and monitor a firm's performance and determine whether it is still within the sustainable lower limits. When firms use ratios to audit and examine their performance, then they can detect financial distress at an early stage and act accordingly to minimize unprecedented effects.

2.5.3 *Financial Ratios and Analysis*

Financial ratios have an important role in revealing corporate financial soundness, which helps to maintain the competitive position of an enterprise. The analysis of financial ratios is an important part of the assessment of the future financial development of a company. Moreover, this analysis can reveal financial distress and thus enable the company to be prepared for potential changes in its financial structure. Falling profits and losses can be seen as a deteriorating level of competitiveness compared to other industry representatives. Therefore, by using financial predictors, companies can identify potential risks and take necessary measures to remain financially healthy and competitive.

2.5.4 *Liquidity Ratios*

The analysis of liquidity ratios is crucial when evaluating a firm's capability to meet its short-term financial obligations. Liquidity ratios include the current ratio and cash ratio. Short-term obligations of a firm include short-term debts and short-term investment opportunities.

Current ratio is a common ratio that analyses the capability of a firm to pay its short-term financial obligations. It is determined by dividing current assets and current liabilities. A high current ratio of between 1.5 and 3.0 is recommended for a company's sustainability.

Cash ratio is a more stringent gauge of a firm's ability to pay its short-term financial obligations. The Cash ratio is also called the acid test ratio. A higher cash ratio enables a company to finance its most immediate obligations without fail. Thus, when a firm has low current and cash ratios over a lengthy period, it implies operational struggles.

2.5.5 *Profitability Ratios*

Profitability ratios indicate how much profit a company generates from its operations. Some specific types of industries and companies record higher profit margins than others. For instance, technology companies have less physical footprint and more cloud-based business models such as monthly subscriptions. On the other hand, airline carriers require significant infrastructure and operational costs such as fleet maintenance, hence they tend to have lower margins. A common profitability ratio is the Profit Margin, which demonstrates the percentage of revenue that translates into profit after accounting for all expenses and costs.

Another profitability ratio is Return on Assets (ROA) which shows how much profit a firm generates from its assets base. Companies with high ROA generally utilize their assets efficiently to gain profit.

Return on equity (ROE) is a type of profitability ratio that measures how much net income a company generates with every dollar of shareholder equity. ROE is calculated by dividing net income by shareholders' equity. A high ROE indicates that a company is using its equity effectively

to create profits. A low ROE indicates that a company is not using its equity efficiently and that it is facing financial difficulties.

2.5.6 *Financial Leverage Ratios*

Financial leverage ratios evaluate the long-term sustainability and solvency of a firm. According to Brigham and Houston (2022), solvency implies the ability of a company to thrive in the future and meet its long-term financial commitments. The long-term obligations primarily consist of long-term debt and equity investments. Hence, investors focus their attention on financial leverage ratios to comprehend a company's future financial health. Examples of financial leverage ratios include long-term debt ratio and total debt ratio.

The long-term debt ratio gives a clear picture of how much of a company's total assets are made up of long-term debt. It is calculated by dividing the company's long-term debt by its total assets. This ratio helps investors and analysts assess the extent to which a company relies on long-term debt financing to support its operations and growth. A high long-term debt ratio indicates that a significant portion of the company's assets is financed by long-term debt, which increases a company's financial risk. On the contrary, a low long-term debt ratio suggests that the company relies more on equity financing or short-term debt to fund its operations.

Another commonly used financial leverage ratio is the total debt ratio, which measures the proportion of a company's total assets financed by short-term and long-term debt. Similar to the long-term debt ratio, dividing the company's total debt by its total assets yields the total debt ratio. The total debt ratio provides a comprehensive view of a company's overall indebtedness and its ability to meet its financial obligations. A higher total debt ratio indicates a greater reliance on debt financing and may indicate higher financial risk. Conversely, a lower total debt ratio implies that

the company has a smaller proportion of its assets financed by debt and may be in a stronger financial position.

2.6 Theories of Financial Distress

2.6.1 *Liquid Asset Theory*

The "Liquid asset theory" is one of the most important theories concerning financial distress, which measures the condition of financial distress of a business through the relationship existing between the current liabilities and the net cash flows of a business organization (Isayas, 2021). If a firm has a positive cash flow, then it can easily borrow from financial institutions to enhance its business operations. On the other hand, if the business has a negative cash flow, that is, if the net cash flow is lower as compared to the debt obligations of the firm, then the firm is expected to face the risk of default or is anticipated to be bankrupt.

2.6.2 *Liquidity and Profitability Theory*

According to Isayas (2021), the "Liquidity and profitability" theory portrays that if a firm's profitability and liquidity conditions are good, then the particular business is said to be healthy. According to this theory, a healthy firm with a good profitability and liquidity position is less likely to face any financial distress or bankruptcy issues and has a greater potential for future growth. Contrarily, if a firm is not in a healthy state and also going through a bad profitability or liquidity situation, then it is more likely that the firm will default in the near future relating to its payment obligations or may file for bankruptcy. So, the management of every firm is expected to measure the financial state and position of the business after regular intervals of time using well-known financial analysis tools such as the "financial ratio," through the use of which the firms can take

timely action to identify the financial distress situation if there is any and can make prudent business and economic decisions thereby saving the firm from running into financial bankruptcy.

2.7 Financial Ratios and Their Use Cases

Financial ratios, which are also known as accounting ratios, help evaluate the "relative magnitude" of two quantitative values mainly extracted from the financial statements published by any given business enterprise. Financial ratios provide crucial information about the profitability, efficiency, leverage, and liquidity positions of a business enterprise based on pre-published data (Subalakshmi, Grahalakshmi, and Manikandan, 2018). Therefore, through financial ratio analysis, one can easily identify the present position of liquidity, profitability, efficiency in operation, and position of leverage concerning the business based upon which any given stakeholder can make effective and prudent investment and business decisions relating to the business entity in question.

Moreover, the financial ratios provide an effective comparison of financial data concerning the four different positions, as explained above, relating to the business enterprise over a period of years. A financial analyst or any specific individual having sound financial knowledge can effectively compare the results of the business over time and can also compare the results of one business with that of another or with a wide range of firms operating in the same or different industries across the same country or different countries thereby generating sound financial knowledge to guide a potential investor or any other relevant stakeholders of a company. Financial ratios are also used by the management of any business for making certain strategic business decisions. The financial ratios can be prepared by the internal management of a business entity which can be effectively compared with the industry standards or averages as well as with the

calculated ratios of the leading firm in the industry (Robinson 2020). Hence, the company's management can identify its present position in the industry through identification of certain weak points which if rectified, can help the firm to grow efficiently and effectively compete with the leading firm within the same industry.

For instance, if the liquidity position of the firm is below the industry average specifically measured through the Current ratio and the Quick ratio, then the internal management may take steps to improve the present state of current assets or reduce the current liabilities through certain strategic business decisions. Financial ratios help the management of a business in making insightful business, thereby enhancing performance and leading the firm toward a pre-determined and desired level of growth (Zainudin and Hashim, 2016). Therefore, relying on financial ratios empowers management teams to make informed decisions that enhance the long-term sustainability of the firm.

Lastly, financial ratio analysis often serves as the tool for flagging warning signs for a business. For example, financial ratios can be utilized by a business to measure its performance over a period of time. In this case, if it is found that the performance or profitability, liquidity, or efficiency is consistently falling over the years and may go below the industry average within a few years' time, then in such situations, the financial ratio serves as the tool for providing sufficient warning signs for the management to consider the matter of urgent importance and to make certain short-term or long-term business decisions which might restore the financial ratios to a healthier and acceptable limit. Therefore, on a concluding note, financial ratio analysis is vital for acquiring meaningful first-hand quantitatively analyzed financial data concerning any given business enterprise (Robinson 2020). As discussed, the various reasons show why financial ratios are one of the most effective and efficient tools for carrying out a quantitative analysis of a company's

financials which are of utmost importance for all the different stakeholders of a company, namely lenders, shareholders, investors, creditors, management, employees, government agencies and the general public at large.

2.8 Users of Financial Ratios and their Information Requirements

Financial statements are of utmost importance to all related stakeholders of a business enterprise for which such financial statement analysis is being conducted. Notably, there are several well-established techniques to conduct financial statement analysis, such as Horizontal analysis, Vertical analysis, financial ratio analysis, and many more. However, according to Zainudin and Hashim (2016), one of the most effective techniques of financial statement analysis is the financial ratio analysis, which has a separate set of users since it caters to their specific financial information needs. These are as follows:

a) Management

The first and foremost user of financial ratio analysis is the internal management of a business enterprise. Managers use financial ratios to monitor the true performance and position of the business through a number of important ratios, such as profitability, efficiency, liquidity, and leverage. In each department, respective managers should examine and track financial ratios to ensure that they align with the company's overall objectives. Thus, for effective business administration, the management team can classify business decisions as short-term, medium-term, and or long-term based on information from financial ratios.

b) Lenders

Lenders are specific stakeholders who provide capital to a business organization on formal terms. Hence, lenders require first-hand information in the form of liquidity ratios, leverage ratios

such as debt-equity ratios, and certain profitability ratios such as ROA, ROI, profit margin, Debt-equity ratios, and many more to examine whether a company is within a valid position to repay the debts and whether it is in a position to get more funds. The lenders also require the financial ratio information to check whether the business organization is honoring the terms of the debt covenants or not.

Additionally, lenders also inspect cash-flow-related ratios such as cash flow to debt ratio and interest coverage ratio. The cash flow to debt ratio indicates the company's ability to generate enough cash flow to cover its outstanding debt obligations. Lenders analyze this ratio to determine the company's cash flow stability and its capacity to make timely debt payments. On the other hand, the interest coverage ratio provides insights into the company's ability to meet interest payments promptly. Thus, such information from financial ratios aids lenders in making informed decisions regarding extending credit or providing loans to the company.

c) **Creditors**

The creditors are another set of business stakeholders who require utilizing financial ratios. As external funders, creditors mainly require the financial ratios of liquidity and leverage, such as Current and Debt-equity ratios, to assess whether the business can meet its short-term liabilities and study the capital structure (Kimmel, Weygandt, and Kieso 2020). Unlike lenders, creditors, such as suppliers and individuals, offer direct and indirect financial support to a business in less formal terms.

d) **Retail and institutional investors**

Retail and institutional investors also require financial information from the intended company before deciding on their future investments. Investors expect returns on their capital

along with the capital structure and its trends for a given company (Nugraha et al., 2020). Thus, investors are interested mainly in the profitability and leverage ratios of a firm.

e) **Competitors**

Competitors of a business organization require different first-hand financial information in the form of financial ratios that measure profitability and efficiency for comparison purposes. By examining ratios such as profitability margins, such as gross profit margins, and net profit margin, and efficiency ratios such as inventory turnover, and receivables turnover, competitors can gauge how well a business is managing its resources, generating profits, and utilizing its assets. Competitor analysis through financial ratios allows a firm to follow industrial benchmarks and capitalize on the weaknesses of its peers.

f) **Regulatory and Government authorities**

The regulatory or government agencies such as the stock exchanges and tax authorities require financial ratios of a business, mainly the profitability ratio. The other sub-parts of financial ratios, namely efficiency, leverage, and liquidity, are also needed by the regulatory and government authorities to form a holistic view of the operations and efficiency of the business in question, which might have a direct impact on the efficiency of operation and perpetual existence in the form of going concern of the business.

g) **Financial analysts**

Financial analysts represent stakeholders who are not directly affiliated with a business organization. Their role involves working with individuals, institutional investors, lenders, or other organizations to obtain an unbiased financial analysis of a business. The analysts may come from other businesses or act on behalf of individuals who lack the necessary financial intelligence, knowledge, and expertise. They conduct thorough financial analyses, which help them make

important decisions like buying and selling shares, mergers and acquisitions, lending, providing goods on credit, and more (Kimmel, Weygandt, and Kieso 2020). Thus, financial analysts require all kinds of financial information in the form of financial ratios to assist their clients in making prudent economic or investment decisions.

For instance, financial analysts may conduct a liquidity, leverage, and profitability analysis by analyzing the liquidity, leverage, and profitability ratios for creditors or lenders of a business while may conduct market value analysis for possible acquisitions and mergers by conducting a financial analysis of a business with the help of market value ratios such as Book value per share ratio or Dividend yield ratio, and EPS (Rashid 2018). This allows the relevant stakeholders of a business to make informed business and economic decisions.

h) Owners and employees

The last relevant and direct stakeholders of any given business enterprise are its owners, shareholders, and employees. These direct stakeholders require first-hand information regarding the actual working, liquidity, leverage, and profitability position of the business, which impacts their present investment and future sustainability positions. The shareholders require first-hand financial information regarding the past workings of the business in the form of "efficiency ratios" to evaluate the working of the executives hired by them to run the business entity on their behalf. Thus, a trend of the different efficiency ratios would portray how well the business has been working until now, that is, whether the efficiency of the management in managing the affairs of the firm has enhanced over time or whether it has deteriorated (Nugraha et al., 2020). The financial ratios may also be used by the owners and stakeholders to detect corporate fraud, if there is any, because in today's corporate structure, the executive compensation, especially the incentive part, is greatly reliant and linked to the corporate performance, which denotes the actual efficiency of

the executive in overseeing the affairs of the business (Kourtis et al., 2019). Therefore, owners can readily compare corporate performance and profitability trends over time to those in executive compensation. Consequently, they can determine fraud cases among the executives who may inflate their remuneration without a corresponding improvement in the overall trend of corporate efficiency and profitability.

The employees of a business organization also require financial information, mainly in the form of financial ratios, in order to check the profitability and liquidity position of the business in order to form an opinion on the "going concern" ability of the business. This checking and forming an opinion on the going concern ability of the business will certainly give them an idea as to whether their job is secure or there may be a possible effective reduction of workforce owing to the lack of ability of the business to continue as a "going concern" measured through bad and decreasing liquidity and profitability position especially in comparison to the industry standards and to the calculated ratios of its competitors. This also helps them to identify those businesses with better present and future prospects, thereby assisting them in making effective and prudent choices concerning shifting jobs or employment.

2.9 Theories Applied in Financial Distress Prediction

2.9.1 *Altman Z-score model*

The Altman Z-Score is a formula that measures the financial health of a company by combining several financial ratios. It takes into account factors such as profitability, liquidity, leverage, and solvency to determine the likelihood of a company experiencing financial distress or bankruptcy (Dwiningsih & Yahya, 2023). The Z-Score combines multiple financial ratios into a

single score, providing a quantitative measure of a company's financial stability. The higher the score, the less likely it is that a company will experience financial distress.

The formula for calculating the original Altman Z-Score involves five key financial ratios, each assigned a specific weight. These five ratios include Working Capital/Total Assets, Retained Earnings/Total Assets, Earnings Before Interest and Taxes (EBIT)/Total Assets, Market Value of Equity/Total Liabilities, and Sales/Total Assets (Ha et al., 2023). Altman selected the ratios based on their ability to differentiate between healthy and distressed companies.

When the five ratios are determined for a given corporation, the Z-Score is determined by multiplying each ratio by its respective weight and summing the results. An illustrative version of the formula is as follows;

$$Z = 0.12X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

Where;

$$X_1 = \frac{Working\ capital}{Total\ Assets} \qquad X_4 = \frac{Market\ value\ equity}{Book\ value\ of\ total\ debt}$$

$$X_2 = \frac{Retained\ Earnings}{Total\ Assets} \qquad X_5 = \frac{Total\ Sales}{Total\ assets}$$

$$X_3 = \frac{Earnings\ before\ interest\ and\ taxes}{Total\ assets} \qquad Z = Overall\ Index$$

Each ratio's weight signifies its importance in the resultant Altman Z-score. Firstly, the Working Capital to Total Assets ratio has a weight of 0.012. This ratio measures the liquidity of a company by assessing its ability to cover short-term obligations. A higher value indicates better short-term liquidity. Secondly, the Retained Earnings to Total Assets ratio has a weight of 0.014.

This ratio reflects the profitability of a company and its ability to generate earnings that are retained and reinvested in the business. A higher value indicates stronger profitability. Thirdly, the Earnings Before Interest and Taxes (EBIT) to Total Assets ratio has a weight of 0.033. This ratio measures a company's operating efficiency and profitability by comparing earnings before interest and taxes to its total assets. A higher value indicates higher profitability. The fourth ratio, the Market Value of Equity to Total Liabilities, has a weight of 0.006. This ratio compares the market value of a company's equity to its total liabilities. It provides insights into the market's perception of a company's financial health and risk. The fifth ratio, Sales to Total Assets, has a weight of 0.999. This ratio assesses the efficiency of a company's asset utilization by comparing its sales revenue to its total assets. A higher value indicates better asset turnover.

For a given firm, the resulting Z-score is interpreted based on three categories. A Z-Score greater than 2.99 implies that the company is considered safe, with a low probability of bankruptcy. A Z-Score between 1.81 and 2.99 shows that a company is in the grey zone, indicating moderate bankruptcy risk (Dwiningsih, & Yahya,2023). Lastly, a Z-Score less than 1.81 means that the company is considered distressed, indicating a high probability of bankruptcy. Figure 5 below gives a summary of the zones defined in Altman's Z-score model.

Figure 5: Altman's Z-Score Model Zones (Dwiningsih and Yahya, 2023).

Altman's Z-Score Model		
Safe Zone	Grey Zone	Red Zone
Between 4 and 2.99	*Between 2.99 and 1.81*	*Below 1.81*

The Altman Z-Score is a primary tool for evaluating the financial stability of manufacturing and industrial companies. It provides a simple and objective measure that can be used by investors, creditors, and analysts to assess a company's financial health and bankruptcy risk. Nonetheless, apart from the Altman initial Z-Score financial analysis, researchers should also use other metrics when making investment or credit decisions. Modern financial distress analyses use the Modified Z-score, which can be adapted to any industry. The Modified Z-score drops the X5 component to remove the effect of the type of industry. Thus, the Modified Altaman's Z-score, which is used in the results section of this study, is as follows;

$$Z = 3.25 + \ 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

2.9.2 *The Ohlson O-score model*

In 1980, James Ohlson developed the Ohlson bankruptcy prediction model. The model sought to provide another alternative to Altman's Z-score model. It is widely used in financial analysis to predict the likelihood of a company facing financial distress or bankruptcy. The model is based on accounting data and financial ratios, providing a quantitative measure of a company's financial health. Similar to Altman's model, the Ohlson O-score model takes into account several financial variables derived from a company's financial statements (Waqas & Md-Rus, 2018). These variables are categorized into two groups: financial ratios and other accounting-based variables. The financial ratios capture the relationship between different elements of the company's financial statements, while the accounting-based variables represent specific characteristics of the financial data.

The categories of financial ratios included in the O-score model include profitability ratios, leverage ratios, liquidity ratios, and activity ratios. Profitability ratios provide insights into a company's operational efficiency. For example, profitability ratios include gross profit ratio, return on investment, and earnings per share. On the other hand, liquidity and activity ratios determine whether a company can meet its financial obligations. Activity ratios or turnover ratios include the Total Asset Turnover Ratio, Fixed Asset Turnover Ratio, and Working Capital Turnover Ratio. The main purpose of activity ratios is that they help in evaluating a company's efficiency in managing its assets.

A unique feature of the Ohlson O-score model is that it allows the inclusion of other factors that have a direct impact on financial performance. Since financial distress can also emerge from other external and internal causes, the Ohlson O-score model considers such elements as earnings quality, asset turnover, the market value of equity, and other financial indicators related to recent financial performance (Waqas & Md-Rus, 2018). Each variable is assigned a weight based on its statistical significance in predicting bankruptcy to calculate the O-score. The weights are determined through empirical analysis using historical financial data of companies that have experienced bankruptcy. The model uses a logistic regression approach to assign weights to the variables and combine them into a single score.

The logistic regression used by the O-score model assigns higher values to companies that exhibit financial characteristics associated with a higher risk of bankruptcy. Under the O-score model, such financial characteristics associated with a higher risk of bankruptcy include high levels of debt, poor cash flow management, declining sales revenues, and shrinking profit margins. Thus, a higher O-score indicates a higher likelihood of financial distress or bankruptcy in the future. On the other hand, a lower score suggests a lower risk of bankruptcy.

Similar to Altman's model, the O-score model predicts bankruptcy in advance and acts as an indicator of financial health. Hence, the O-score can be interpreted as a probability of bankruptcy within a specific time frame, often one year (Waqas & Md-Rus, 2018). The criteria for classifying a company as 'at risk' of bankruptcy varies depending on the specific analysis and industry standards.

This study also relies on the O-score model as a framework to design a logistic regression that uses several financial ratios to determine the ones that can predict Jet Airways' bankruptcy. Most of the ratios in this study fall into three main categories: profitability ratios, leverage ratios, and liquidity ratios, which are also included in the greater O-score model.

2.10 Empirical Literature

2.10.1 *Empirical Studies on Financial Distress*

Lumbantobing (2020) conducted a study on the effect of financial ratios on the possibility of financial distress in selected manufacturing companies listed in the Indonesia Stock Exchange. The study found that liquidity ratios have a significant negative effect on the possibility of financial distress, while debt ratios and earnings ratios have a significant positive effect. The data source was derived from annual reports and audited financial statements of 30 listed manufacturing companies in IDX during 2015-2017. The methodology used was constructing an empirical research model based on previous studies and testing it using regression analysis. One limitation of the study is that it only focused on manufacturing companies listed in IDX, so the findings may not be applicable to other industries or countries. Another limitation is that the study only used financial ratios as predictors without considering other factors that may affect financial distress.

A study by Kamal, Ishak, and Mohammed (2019) examines the relationship between cash flow ratios in predicting financial distress companies. The authors sampled companies offering industrial and consumer products in Bursa Malaysia. Their proportionate sampling method exclusion criteria resulted in 150 companies. The findings of the study indicate that there is a positive relationship between cash flow ratios and financial distress. Nonetheless, the study has limitations, such as a small sample size and a focus on only one country's stock exchange. Additionally, there may be other factors beyond cash flow ratios that contribute to financial distress that were not considered in this study.

Supriyanto and Darmawan (2018) conducted a study on the effect of financial ratios on financial distress in predicting bankruptcy in mining companies listed on the Indonesian Stock Exchange during the 2011-2014 period. The study entailed a total of 119 mining companies based in Indonesia. In this case, the authors used the Altman Z-Score Modification, which includes four ratios: Net Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Tax to Total Assets, and Book Value of Equity to Total Liability. Findings from the study show that all four ratios were able to predict financial distress in the companies. A notable limitation of the study is that it only used ratios from the Altman Z-Score Modification and that many companies had incomplete annual reports.

Another study done on the Indonesian Stock Exchange analyzed the financial ratios of basic and chemical industry sub-sector manufacturing companies from 2014-2017 to predict financial distress. Gandy (2019) implemented logistic regression analysis and the Altman Z-Score to measure financial distress. From a sample size of 26 companies, the authors found that liquidity and solvency ratios have a strong negative relationship with financial distress, while profitability

ratios have a strong positive relationship with financial distress. Nonetheless, the study has a limitation since it only uses a specific sample.

A third study on the Indonesian Stock Exchange analyzed the impact of financial ratios such as leverage, liquidity, activity, and profitability on the possibility of financial distress in the food and beverage industry. Specifically, the population observed in this study were food and beverage companies listed on the Indonesia Stock Exchange from 2017-2020. The authors used logistic regression to analyze the data. Out of thirty companies, sample selection followed a purposive sampling technique, and six companies were selected based on certain criteria. Kuraesin, Susanti, and Azis (2021) find that leverage and liquidity ratios have a significant impact on financial distress in food and beverage companies. However, activity and profitability ratios do not have a significant impact on financial distress. The limitations of this study include the small sample size and the fact that it only focuses on one industry in one country. Therefore, caution should be taken when generalizing these findings to other industries or countries.

Fawzi, Kamaluddin, and Sanusi (2015) focus on Malaysian-based firms to investigate the importance of cash flow ratios in identifying financially distressed companies. Their study uses a sample of 52 distressed companies from seven industries between 2009 and 2012. The cash flow ratios employed in the study are classified into four categories: liquidity, solvency, efficiency, and profitability. Logistic regression analysis is used to distinguish between distressed and non-distressed companies. The authors' findings suggest that cash flow ratios are useful in identifying financially distressed companies. However, the study's main limitation is the small sample size and the focus on Malaysian companies only.

Bo-Hyung Lee and Sang-Ho Lee (2018) investigated the financial ratios of 30 bankrupt Korean-based savings banks that suspended business from 2011 to 2015. The authors collected

material to verify variables influencing bankruptcy based on the financial ratio index and forecast models. Findings show that variables impacting bankruptcy forecast models included total asset increase ratio, operating income increase ratio, sales to account receivable ratio, tangible equity ratio, and liquidity ratio. The study's main limitation is that it only analyzed a specific sample of savings banks in Korea and may not be generalizable to other countries or types of financial institutions.

Kliestik et al. (2020) analyze and compare financial ratios used in the models of transition countries to assess the financial situation of a company. The authors consider a set of 22 financial ratios to predict the future financial development of enterprises and determine potential dependencies among nations based on financial ratios and country of origin. The study includes more than 400 prediction models from 10 transition economies, such as the Slovak Republic, the Czech Republic, Poland, Hungary, Romania, Lithuania, Latvia, Estonia, Croatia, Russia, Ukraine, and Belarus. Based on the findings, some financial ratios are more important than others in predicting future financial performance, and there are significant differences in the use of financial ratios across countries. The methodology involves a comparative analysis of different prediction models using statistical methods such as correlation analysis and regression analysis. However, the study has some limitations, including the fact that it only focuses on transition economies, which may limit its generalizability to other contexts. Additionally, the study does not take into account qualitative factors that may also influence financial performance.

Isayas (2021) used a sample size of eleven Ethiopian insurance companies aimed to investigate the determinants of financial distress using balanced panel data for the period covering from 2008 to 2019. The author employed a quantitative approach and explanatory design and collected secondary data from annual financial statements of sampled insurance companies for the

stated period. Additionally, the study used both descriptive statistics and econometric tools, including a random effect (RE) regression model, to analyze the data. The findings suggest that factors such as liquidity, profitability, solvency, size, age, and ownership structure significantly affect the financial distress of insurance companies in Ethiopia. Moreover, the study recommends that policymakers and industry leaders should pay special attention to these factors to reduce the likelihood of financial distress in the sector. Nonetheless, the sample size of eleven insurance companies may limit the generalizability of the findings to other insurance companies in Ethiopia or other countries. Similarly, future studies may investigate the determinants of financial distress by employing a mix of firm-specific and macroeconomic variables.

Puro et al. (2019) explore the financial distress prediction models for acute care hospitals in the US. The study used three models; modified Altman Z-score, Ohlson O-score, and Zmijewski score. Notably, the study's sources of data were Modern Healthcare, the American Hospital Association Annual Survey, and Medicare cost reports. Also, the researchers used a sample of 106 acute care hospitals: 53 bankrupt and 53 non-bankrupts, matched by bed size, asset size, ownership status, county, and calendar year selection. According to the study's findings, the modified Altman Z score was more effective in predicting financial distress resulting in bankruptcy. However, no single financial ratio was found to differentiate bankrupt hospitals from financially healthy hospitals consistently. The limitations of the study include the use of only three financial distress prediction models and the exclusion of hospitals that did not file for bankruptcy.

Waqas and Md-Rus (2018) examine the use of financial ratios to predict financial distress in Pakistani firms. The study uses a sample of 290 firms listed on the Pakistan Stock Exchange from 2006 to 2016 and includes cash flow ratios in addition to profitability, leverage, and liquidity ratios. Finding illustrate that the estimated logit model produces a higher accuracy rate in

predicting financial distress compared to the O-score model. Moreover, the study highlights the importance of using cash flow ratios in predicting financial distress and fills a gap in the literature on the topic for Pakistani firms. The limitations of the study include the use of relatively small sample size and the exclusion of macroeconomic variables that may affect financial distress.

Ceylan (2021) researched factors that contribute to financial distress risk in small and medium-sized enterprises (SMEs) listed in the Borsa Istanbul Small and Medium Enterprises Industrial Index between 2010 and 2019. The study finds that firm-specific factors such as liquidity, profitability, and firm value have a positive effect on financial distress, while factors such as leverage, size, and dividend payment have a negative effect. Macroeconomic variables such as GDP, inflation, interest rates, and exchange rates also have a significant impact on financial distress. Under this case, the study uses panel data analysis to determine the impact of determinant factors on financial distress. The Springate S-Score method is used to test the financial distress risk. Moreover, the author uses secondary data issued over the period from 2010 to 2019, and ten-year panel data are acquired from the annual financial statements of the 31 firms listed in the BIST SME Industrial Index. One of the notable limitations is that the study considers SMEs listed in the Borsa Istanbul Small and Medium Enterprises Industrial Index between 2010 and 2019. The study does not consider other factors that may contribute to financial distress risk, such as management quality and external shocks.

Perinpanathan (2015) explores Altman's financial distress prediction model and current ratio to assess the financial situation of companies listed on the default board of the Colombo Stock Exchange. The analysis was restricted to a sample of eight companies that matched the firms selected from the default board of the Colombo Stock Exchange. The data was collected from the listed companies' financial reports available at Colombo Stock Exchange, based on their last two

published annual reports. Findings illustrate that there are financially distressed companies listed on the default board of the Colombo Stock Exchange, and concluded that Altman's model and current ratio are useful tools for investors to predict the financial failure of companies. A clear limitation of the study is the small sample size and focus on the Colombo Stock Exchange default board.

Ahmad, Ramakrishnan, Raza, and Ahmad (2018) conducted research on the various theoretical and statistical models used for predicting financial distress and bankruptcy in companies. The Ohlson model, which incorporates variables related to corporate governance, has an accuracy of 96.1% and 95.5% in predicting bankruptcy one and two years before the event, respectively. Altman's Z-score model provides bankruptcy prediction two years before the occurrence of bankruptcy or financial failure. Logit analysis is another statistical technique used to predict default and bankruptcy. The article also discusses the limitations of these models, including assumptions related to multivariate and normally distributed independent variables, equal variance-covariance matrices, and prior probability default. The sample sizes and methodologies used in the studies vary, with some using discriminant analysis, neural networks, decision trees, and support vector machines. The article highlights the importance of incorporating variables related to corporate governance in models for better predictive quality.

A research study by Rachmawati and Maulana (2022) focused on forecasting the financial distress of airline companies and the impact on financial performance. It used data collected from the financial statements of four airline companies listed on the Indonesia Stock Exchange. The study found that liquidity, solvability, profitability, activity, and investment ratios have a significant impact on the financial distress of airline companies. Moreover, the results of the study also showed that the Springate model is an effective tool for predicting financial distress in airline

companies. Unlike previous literature, the study used multiple linear regression analysis to examine the impact of financial ratios on financial distress. The study also used the Springate model to predict financial distress in airline companies. Notably, the authors used a small sample of four airline companies listed on the Indonesia Stock Exchange. The sample size was determined based on specific criteria, including the availability of financial statements and the relevance of the companies to the study. Nonetheless, the paper has several limitations, including the small sample size, which limits the generalizability of the findings. The study also focused only on airline companies listed on the Indonesia Stock Exchange, which may limit the applicability of the findings to other industries and regions. Additionally, the study did not consider external factors that may impact financial distress, such as changes in the economic or political environment.

Gritta, Bahram Adrangi, Davalos, and Bright (2008) analyzed various statistical techniques used to forecast airline bankruptcy and financial stress. For example, the authors examined both generic and industry-specific models, including the Altman Model, the ZETA Model, the AIRSCORE Model, the Pilarski or P-Score Model, Neural Networks, Genetic Algorithms, and the Fuzzy Logic Model. The sample sizes and methodologies in the study vary depending on the model, with some models using a sample restricted to the airline industry and others using a much larger sample. Some of the limitations of each model include biases towards larger carriers and difficulties in applying a single cut-off point. Overall, the paper provides a comprehensive overview of the different statistical techniques used to assess the financial health of the airline industry and highlights the importance of predicting insolvency and financial stress.

Divekar and Sukhari (2021) conducted comprehensive research focusing on assessing the financial distress of Indian aviation sector companies using Altman's Z-Score model and Pilarski's P-Score model. Secondary data used in the study was collected mainly from the annual reports of

four leading airline companies in India. The study concludes that the aviation industry requires high professionalism as well as a robust balance sheet to cushion itself at any point in time. The LCC model used in the industry requires controlling fixed costs and providing quality services to attract more customers. Moreover, the study identifies various internal and external factors responsible for the financial distress of aviation companies. The study also uses various financial ratios such as interest coverage ratio, debt service coverage ratio, debt equity ratio, short-term debt to current assets, and short-term debt to cash from operations to find early signs of corporate distress. Four leading airline companies in India, such as Indigo, Spice Jet, Jet Airways, and Air India, are the study's main focus. Other studies mentioned in the paper consider different sample sizes ranging from two to six companies. The paper's limitations are the use of secondary data and the limited sample size. Also, the study does not consider external factors such as government policies and the entry of competitors that may affect the financial health of the companies.

A study by Shi and Li (2021) examines the key financial ratios such as leverage, liquidity, and profitability to determine if they are significantly associated with the European airline's financial distress risk. The study used the panel data regression method and employed Feasible Generalized Least Square (FGLS) regressions. The Altman Z-score was adopted as the dependent variable measuring the degree of financial distress. In this case, the dataset for testing and analyzing covers available accounting and financial data of 99 European passenger airlines during the last ten years extracted from the Amadeus database. Of the airlines sampled, 21 are flagship, which means that they offer the best services in the airline industry. Although data for ten years is available for all sampled airlines, it is still an unbalanced panel dataset since the sampling period varies slightly by the airline. Firstly, the study found that the increase in the degree of debt leverage makes European airlines more vulnerable to financial distress risk, while liquidity and profitability

have positive impacts on financial health. Secondly, the study found that flag carriers are more likely to have financial distress issues than other airlines, which is negatively related to the financial failure score. The study has two main limitations. The first limitation is its limited generalizability, the dataset used consists only of European airlines. Consequently, the findings may not generalize to airlines operating in other regions, such as the U.S. and Asia. Future studies could include global data to draw more general conclusions. The second limitation arises from the selection of dependent and independent variables. To evaluate the degree of a firm's financial distress, there are many other available models in the existing literature.

Similar to other sectors of the economy, banks also encounter financial distress in their operations. A study by Paule-Vianez, Gutiérrez-Fernández, and Coca-Pérez (2019) aimed to predict short-term financial distress in the Spanish banking system using a model of artificial neural networks. The study used information from banks, savings banks, and credit cooperatives during the 2012-2016 period. It relied on data from 148 credit institutions, including 59 banks, 16 savings banks, and 73 credit cooperatives. Since the authors used a model of artificial neural networks to predict financial distress in the Spanish banking system, the independent variables chosen for the model were a series of ratios classified according to the CAMELS framework, as well as several macroeconomic variables. Reliability of the model was crucial, and thus the authors used ROC curves to evaluate the accuracy of the model. The study found that the model was effective and robust in predicting short-term distress in credit institutions, achieving a differentiation capacity of 99.7% (Paule-Vianez et al., 2019). The study also found that incorporating macroeconomic variables improved the accuracy of the model. The study had several limitations, including the use of only accounting and macroeconomic data recorded in the 12 months prior to the event, which may not capture all relevant factors. The study also did not

consider external factors such as changes in regulations or market conditions. Additionally, the study did not consider the impact of non-financial factors such as management quality or corporate governance.

The accuracy of financial distress prediction models varies significantly, especially through comparative analysis. Dwiningsih and Yahya (2023) analyzed the Springate and Altman Z-Score methods for predicting financial distress in PT Eagle Mahkota Tbk, an Indonesian telecommunications firm. Unlike Altman's model, the Springate method uses financial ratios in the form of Working Capital of Total Assets, Net Profit Before Interest of Total Assets, Net Profit Before Taxes of Total Assets, and Sales of Total Assets (Dwiningsih & Yahya, 2023). The authors found that the Springate method calculations had an accuracy rate of 67% with an error type of 33%. On the other hand, the Altman Z-Score method predicted exactly five years running according to the real conditions of PT Elang Mahkota Teknologi Tbk. Based on their study, Altman's Z-score method had an accuracy rate of 83% with a type I error rate of 0% and a Gray Area of 17%. Nonetheless, a notable limitation of the study is the use of purposive sampling, which limits the generalizability of the findings to other companies.

Mujkić and Poljašević (2023) aim to establish the financial indicators with the greatest statistical significance in predicting the insolvency of trading companies in the Republic of Srpska. The paper uses a sample of 200 companies, 23 financial ratios, and a binomial logistic regression model. According to the study, the quick liquidity ratio, coverage level I and II, total asset turnover ratio, the coefficient of current asset turnover, net profit margin, and the coefficient of financial stability have good discriminant power, while other financial indicators in the model have insufficient diagnostic power. Also, the general model is significant and can explain variations of the dependent variable through all included predictor variables. The main limitation of the paper

is the direct focus on trading companies in the Republic of Srpska, and the results may not be generalizable to other industries or countries.

In the aviation sector, unprecedented events, such as the COVID-19 pandemic, have detrimental effects on airline operations. The suspension of international flights by governments compelled airlines to ground a significant portion of their fleet. Bahadir and Şahin (2023) analyzed the financial success situations of aviation sector businesses before and after the COVID-19 pandemic. Particularly, the Altman Z" Score model was used to measure the financial success level of the aviation industry. Using a ten-year data sample of four major airlines: Turkish Airlines Co., TAV Airports Holding Co., Pegasus Airlines Inc., and Çelebi Aviation Holding Inc., the authors intended to use the coefficients X1, X2, X3 that are based on Altman's model to find patterns and trends. A tabular representation of the Z-scores revealed that Turkish Airlines had low Z-scores, indicating that it was financially distressed over the. According to the findings, before the pandemic, the average Z" Score value for the companies in the study was 1.29 when compared to sector averages. After the outbreak of the COVID-19 pandemic, the average Z" Score value decreased to 0.69. The drop indicates that the financial health of the companies worsened during the pandemic.

COVID-19's impacts on the aviation sector signaled firms to boost their financial health to minimize the chances of future financial distress. Bahadir and Şahin (2023) also found that the probability of financial failure decreased significantly in the first year after COVID-19. Thus, the four airlines were able to improve their financial stability after the initial impact of the pandemic. Apart from establishing that the airlines had few liquidity issues in the companies, the authors noted that liquidity, profitability, and capital structure ratios are highly reliable in evaluating the financial success level of the aviation industry. Overall, since the study focuses mainly on the

aviation sector, it provides reliable findings that support this paper's research on Jet Airways financial distress.

Discriminant analysis form the bulk of most studies that research on financial distress. It allows scholars to classify objects and phenomena to identify the variables that are most important in distinguishing between different groups and categories (Mahardini & Bandi, 2023). Under financial distress, companies that are financially healthy and those that are bankrupt are grouped and their financial metrics are compared to find which ratios are the most significant predictors of financial distress. Mahardini and Bandi (2023) studied the data of one hundred and fifty manufacturing companies listed on the Indonesia Stock Exchange, between 2015 and 2019. The study identified financial ratios that are under the category of profitability, liquidity, and efficiency, as the most significant in predicting bankruptcy in the model. Moreover, the discriminant function obtained a high accuracy rate of 83.7% and can be used to predict the financial condition of manufacturing companies, especially in the basic industrial and chemical sectors in Indonesia. Nonetheless, since the study is industry-specific, its applicability is limited to the manufacturing sector. The authors' findings confirm that firms should ensure their liquidity, profitability, efficiency is high enough to sustain their operations.

Since the beginning of the 20th century, advancements in prediction of financial distressed led to more innovative methods such as the use of machine learning algorithms. Ha, Dang, and Tran (2023) postulate that some of the machine learning algorithms used for financial distress forecasting include decision tree (DT), support vector machines (SVM), artificial neural networks (ANN), random forest (RF), and Bayesian models. In their study, the authors used data between 2009 and 2020 to predict financial distress in listed firms on the Vietnam Stock Exchange. The findings show that Altman's model, and Zmejeski's model had the highest performance, at 98%,

62

in predicting financial distress. Furthermore, the study also found that the debt ratio, efficiency of asset usage, revenue, profit margin, and internal funding availability were important determinants of financial distress (Ha et al., 2023). Lastly, the main limitation of the study is that it does not consider non-financial information in the analysis, such as corporate governance to obtain more comprehensive results.

2.10.2 *Comparative Analysis of Empirical Literature*

The studies have several similarities and differences based on the variations in industry, statistical models, financial ratios, country, sample selection, and period. For instance, the first set of studies posit that companies with higher liquidity ratios are less likely to experience financial distress than companies with lower liquidity ratios (Lumbantobing, 2020; Gandhy, 2019; Ceylan, 2021; Rachmawati & Maulana, 2022). Similarly, companies with high debt ratios are more likely to experience financial distress because they have less equity to cushion them against losses (She and Li, 2021; Ha et al., 2023). Contrarily, Kamaluddin et al. (2019) indicate that the cash flow ratio enables easier identification of financial distress. Apart from liquidity and debt ratios, Isayas (2021) adds other factors, such as size, age, and the ownership structure of a company, have an impact on financial distress levels.

Another set of previous studies explores various models that can accurately detect financial distress and predict bankruptcy. The differences in the accuracy of the models further vary based on the industry under study. For example, for hospitals in the US, Altman's Z-score performs relatively better than the O-score model and the Zmijewski score when predicting financial distress (Puro et al., 2019; Perinpanathan, 2015; Gritta et al., 2008). Other recent studies such as articles by Dwiningsih and Yahya (2023), Mujkić and Poljašević (2023), Bahadir and Şahin (2023), and

Mahardini and Bandi (2023) reveal the supremacy of Altman's model. On the Pakistani Stock Exchange, the estimated logit model yielded more accurate results compared to the O-score model (Waqas and Md-Rus, 2018). Unlike other financial distress prediction models, Ahmad et al., (2018) note that the O-score method incorporates the effect of corporate governance. More research on financial distress prediction has resulted in advanced methods that use various machine learning models. For instance, the advantage of using artificial neural networks is that it allows for the inclusion of more variables, especially macroeconomic dynamics.

From the literature, the general observation is that the different financial distress prediction models each utilize various underlying methodologies to evaluate bankruptcy. A prominent approach among the models is a discriminant analysis which uses a set of independent variables to predict a categorical dependent variable. Models that use neural networks rely on machine learning techniques to analyze and recognize patterns in data (Kuizinienė et al., 2022). In this case, a clear, distinguishable pattern arises between periods of good financial health and those with financial difficulties. Another criterion used by financial prediction models is the support vector machine (SVM) which classifies data points into two or more groups. The SVM method has high accuracy and can thus be applied to several markets and industries when customized appropriately (Horak, Vrbka, & Suler, 2020). Thus, each model's procedures work differently and allow researchers to choose the most effective ones to study financial distress.

2.11 Research Gap

The financial distress of companies is one of the major issues that is faced by numerous economies around the world, which have a direct impact on the holistic growth of that country's GDP. Such financial distress also results in the accumulation of Non-Performing Assets(NPAs)

for lending Banks, as it happened in India in the past decade. Hence, an effective and timely prediction of financial distress is one of the pertinent aspects which is to be followed by all business organizations and by the relevant stakeholders of the business itself. This is how the business organizations that are likely to be facing financial distress can be identified on a timely basis, thereby allowing its management, banks and government authorities to take appropriate measures on a timely basis, thereby allowing them to save such business and the economy in general. There have been numerous studies been conducted in this field of financial distress prediction using a number of variables and tools such as financial ratios. However, all these studies were conducted in the context of different countries such as Indonesia and many more. But none of the studies were specifically dedicated to one of the fastest growing economies, such as India where there are cases of financial distress, including Jet Airways (India) Ltd, Bhushan Power and Steel Ltd, Essar Steel India Ltd, and many more. Hence, based on the research gap, this study will specifically concentrate on the context of Indian companies, which will effectively bridge the existing research gap.

2.12 Conceptual Framework

Based on the hypothesis and the literature review, it is evident that three fundamental types of ratios are reliable in predicting bankruptcy for a company such as Jet Airways. Hence, figure 6 below represents a diagrammatic view that the study uses to determine how financial ratios help in identifying Jet Airways' financial distress. Each ratio is discussed extensively in the results section of the study. The next chapter focuses on the methodology used to obtain and analyze empirical data.

Figure 6: The Conceptual Framework (Researcher).
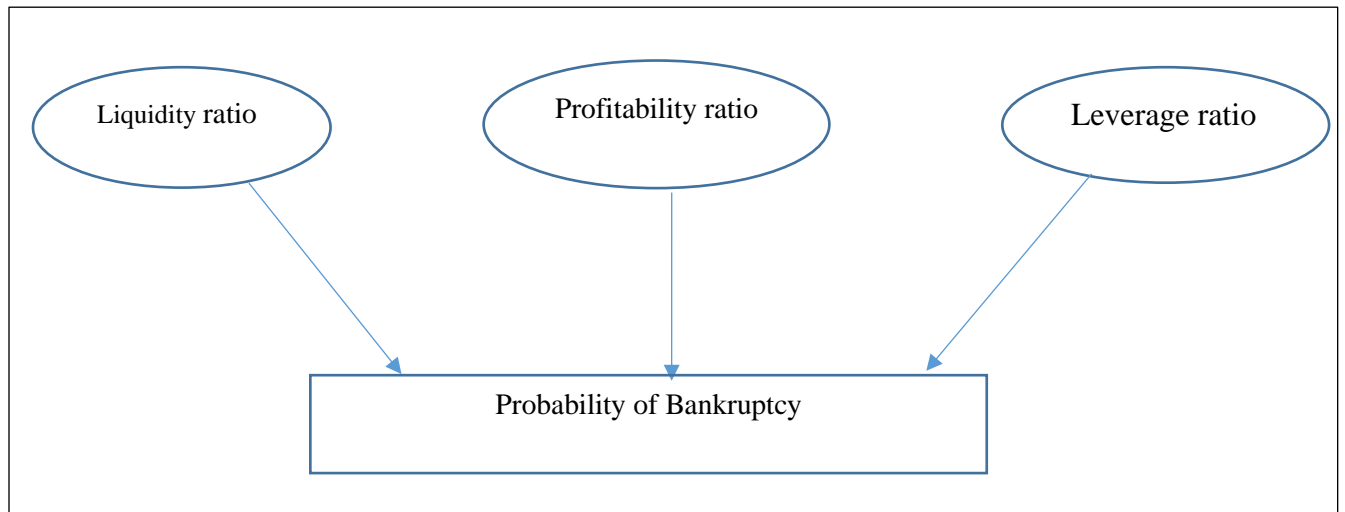
2.13 Summary

In summary, the literature review chapter explores the origin, advancements, and the broad applicability of financial distress as a topic. The chapter is guided by a clear inclusion criterion that defines the types of topics, articles, journals, scope, and limitations that the researcher observes from the first source to the last. A brief focus on the Indian economy sets the stage for the analysis of the objectives of financial ratios in identifying financial distress.

Notably, the overriding objective is to ascertain the effectiveness of financial ratios in determining and predicting bankruptcy in firms. After establishing the objectives, the chapter explains further the concept of financial distress and how liquidity ratios, profitability ratios, and financial leverage act as indicators of financial health. The general preference is that better financial health requires moderate liquidity, high profitability, and controlled financial leverage. In the case of Jet Airways, extreme financial leverage led to unsustainable debt and bankruptcy.

Theoretical concepts in this chapter offer insights on the essence of early detection of bankruptcy for the long-term success of a company. Thus, the chapter discusses the theories of

financial distress, such as the Liquid Asset theory, Altman's Z-score, and Ohlson's O-score model, in much detail. Lastly, a proper analysis of previous empirical literature allows the researcher to find a few gaps in existing publications and proceeds to conceptualize a possible framework that works for Jet Airways.

Chapter 3 RESEARCH METHODOLOGY

3.1 Methodology - Research design

This study used a quantitative research design methodology to collect and analyze financial data about Jet Airways. Financial ratios have popularity in ensuring accountability in balancing financial statements and forecasting patterns. Jet Airways needs financial ratios to analyze and explain the relative magnitude of values necessary to overcome bankruptcy. Balasubramanian et al. (2019, p. 26) explained that it is through these ratios that the study will analyze financial information and explain profits margins, leverage, efficiency, liquidity position, and debt payment. For accurate analysis, this research investigated all critical documents about financial statements, positions, and decisions Jet Airways made in the last five years and, more critically, in March and April 2019, when the company was closed due to financial distress.

3.2 Data collection technique and proposed analysis

This study used document analysis to review and analyze previous financial statements and make conclusive findings as to what led Jet Airways to bankruptcy and how best to balance those ratios and come out of debt. Kimmel et al. (2020, p. 236) explained that document analysis entails critically evaluating information on a specific aspect to gain understanding and develop an informed conclusion or decision. Document analysis is procedural and systematic; hence in this study, the researcher will analyze articles, data, and journals from five years and compare and contrast them to answer the research questions. The researcher will give special attention to the period just before the closure of Jet Airways.

The researcher using the above methodology will find:

(1) What financial ratios, including Z-score, can be used to identify the debt crisis at Jet Airways and to validate the hypothesis?

(2) The trend of financial ratios, based on the Regression analysis, are relevant for forecasting financial distress.

(3) How Jet Airways can use them as a guide for avoiding future financial distress

3.3 Data Sampling Technique and Data Type and Source

This study relied on audited and complete financial statements of Jet Airways. The research method used in this study is a quantitative approach. Notably, the quantitative research method involves systematically and precisely examining objects or subjects to comprehensively and accurately determine the underlying facts about the phenomenon under investigation. Through the quantitative methodology, researchers can provide a detailed explanation by employing rigorous and factual measures, especially under data collection. Hence, this study uses the quantitative approach since the data is obtained primarily from the financial statements of Jet Airways.

3.4 Designing the Logistic Regression Model

3.4.1 *Independent Variables*

In quantitative research, independent variables, also known as predictor variables or input variables, are the variables in a research study that a researcher seeks to use to determine their influence on a dependent variable. Based on the hypothesis, independent variables used in this research are primarily financial ratios that are necessary for evaluating the financial performance of Jet Airways. The categories of ratios included in this research are either profitability ratios, liquidity ratios, or financial leverage levels. Specifically, this study uses Net Profit Margin, Return

on Assets, Total Debt to Equity, Debt-to-assets, Total debt, Working Capital to Total Asset, Retained Earnings to Total Assets, EBIT to Total Assets, and Market Value Equity to Book Value of Total Debt ratios as independent variables.

3.4.2 *Dependent Variable*

A dependent variable, also known as the outcome variable or response variable, is the variable in a research study or experiment whose relationship with independent variables is being measured. Given that the research aims to find which financial ratios explain the financial distress at Jet Airways, the researcher chooses 'bankruptcy' as the dependent variable. In business cycles, a company is either bankrupt or not. Hence, the researcher bases the periods of bankruptcy and non-bankruptcy on when Jet Airways filed for bankruptcy protection. For instance, since logistic regression requires a two-state dependent variable, the researcher uses 0 for periods before the airline's bankruptcy and 1 for periods during financial distress.

3.4.3 *Logit Equation of the Model*

After defining the independent and dependent variables, a logit model can determine the relationship between the financial ratios. In statistics, a logit model is of the form below;

$$Y_i = \propto + \beta_1 X_1 + \beta_2 X_2 + \mu I$$

Where;

$X_1, X_2 \dots X_n$ are the independent variables (Net Profit Margin, Return on Assets, Total Debt to Equity, Debt-to-assets, Total debt, Working Capital to Total Asset, Retained Earnings to Total Assets, EBIT to Total Assets, and Market Value Equity to Book Value of Total Debt ratios), and Y_i represents the dependent variable.

$Y_i = 0$ if the patient did not die from COVID-19.

$Y_i = 1$ if the patient died from COVID-19

The initial equation based on logistic regression of the data therefore becomes;

$$\ln \frac{P}{1-P} = \propto +\beta_1 X_1 + \beta_2 X_2 \dots + \beta_n X_n + \mu(1)$$

Solving for p to find the probability of financial distress for Jet Airways, the final equation is as follows;

$$p = \frac{1}{1 + e^{-\propto +\beta_1 X_1 + \beta_2 X_2 \dots + \beta_n X_n + \mu(1)}}$$

Although the model will yield a probability value of between 0 and 1, the researcher mainly focuses on the resultant coefficient estimates. For the variables, $X_1, X_2 \dots X_n$ that will have a negative coefficient, the study will conclude that they minimize the probability of death. Contrarily, ratios that have positive coefficients increase the probability of death.

3.4.4 *Application of Z-scores and Logit Model in the Study*

The research questions in this study are; What causes financial distress for Jet Airways? How should the airline use the financial process ratio to analyze to come out of financial distress? and How can financial ratios help forecast the debt crisis? For the first research question, the researcher will use the quantitative approach and document analysis to determine why Jet Airways is bankrupt. On the second research question, the researcher will present responses from the quantitative method and document analysis. For the third research question, the researcher will incorporate both Z-scores and logistic regression analysis to determine which financial ratios can

forecast the debt crisis at Jet Airways. Table 5 below highlights the categories of ratios that are relevant in the logit model.

Table 5: Categories of relevant Financial Ratios (Researcher).

Financial Ratio	Category
1. Net Profit Margin	Profitability Ratio
2. Return on Assets	Profitability Ratio
3. Total Debt/Equity	Leverage Ratio
4. Debt-to-assets ratio	Leverage Ratio
5. Total debt ratio	Leverage Ratio
6. Working Capital to Total Assets	Liquidity Ratio
7. Retained Earnings to Total Assets	Profitability Ratio
8. EBIT to Total Assets	Profitability Ratio
9. MVE to Book Value of Total Debt	Leverage Ratio

3.4.5 *Advantages of Logistic Regression*

This study uses logistic regression to determine which ratios are reliable in identifying financial distress at Jet Airways. Logistic regression is a statistical modeling technique used for binary classification problems, where the goal is to predict the probability of an event or the likelihood of an observation belonging to one of two possible classes. For Jet Airways, the logistic regression analysis uses two classifications, bankruptcy and non-bankruptcy. In logistic regression, the target variable, also known as the dependent variable or outcome variable, is binary, meaning it can take on one of two values, 1 for true and 0 for false. Since the logistic regression model requires binary grouping, it becomes a suitable tool for this study. Unlike linear regression, which requires a continuous dependent variable, logistic regression is ideal for dependent variables with a dichotomy.

3.4.6 *Disadvantages of Logistic Regression*

A notable demerit of logistic regression is the assumption of a linear relationship between the explanatory variables and the dependent variable. Some real-world data does not follow linearity. Similar to other statistical models, logistic regression is sensitive to outliers in data. Outliers that greatly influence the model's parameter estimation can affect the coefficients and, consequently, the predictions. Preprocessing techniques or robust logistic regression versions can help mitigate the problem, but extreme outliers may still pose challenges. In the case of Jet Airways, the researcher had to remove variables with outliers, such as zero entries, to obtain meaningful interpretations. Also, logistic regression requires a large dataset to obtain reliable parameters. According to Waqas and Md-Rus (2018), the more data a researcher has, the more accurate the logistic regression model. When there are limited data points, the logistic regression method performs poorly and suffers from the issue of overfitting. For example, under the Jet Airways case, the researcher only used data from 2004 to 2023, which has only nineteen data points.

3.5 Data Analysis Limitations

Although the quantitative research design methodology and data collection technique employed in this study provide valuable insights into the financial situation of Jet Airways, there are several limitations to be acknowledged in the data analysis process. For example, the accuracy and reliability of the financial statements used for analysis depend on the quality of the data provided by Jet Airways. As a researcher, there is a reliance on the integrity and transparency of the company's financial reporting. Any errors, omissions, or intentional misrepresentation in the financial statements could introduce bias and affect the validity of the findings.

Moreover, the study bases its findings on the availability of historical financial data restricted by the scope of the analysis. Even though the study considered financial information over the years under study, other factors that contributed to Jet Airways' bankruptcy are discussed as facts that are not only based on the financial metrics. Furthermore, the researcher introduced assumptions and simplifications in the Z-score and logistic regression analysis using chosen financial ratios. For example, financial ratios provide a snapshot of Jet Airways' financial performance and health but may not capture the full complexity of the company's financial situation.

Additionally, it is important to note that the study focused solely on quantitative data and did not incorporate qualitative factors that could have influenced Jet Airways' financial situation. Qualitative factors such as management decisions, market conditions, and competitive landscape could play a significant role in understanding the company's financial performance. By neglecting these qualitative aspects, the analysis may not provide a comprehensive and holistic view of the factors contributing to Jet Airways' financial difficulties.

Another notable limitation is the dynamic nature of the aviation industry. The study's findings are based on historical data, which might not reflect the current market conditions and industry trends. Factors such as changes in fuel prices, government regulations, and global economic conditions could have substantially impacted Jet Airways' financial performance during the period under analysis (Rossi et a., 2020). Therefore, the study's findings may not be applicable in the present context, and it is essential to consider the temporal relevance of the data when interpreting the results.

Lastly, it is worth noting that the analysis in this paper focused solely on Jet Airways and may not be generalizable to other airlines or industries. Each company operates within its unique

market environment, and the factors influencing its financial situation can vary significantly. Therefore, caution should be exercised when applying the findings of this study to other contexts, as the results may not be directly transferable.

Chapter 4 RESULTS

4.1 Introduction

This section presents the results that address the three main research questions of the study. It explores the origin and development of Jet Airways' financial problems, especially in the Indian economy. The researcher also interprets both the Z-scores and explains the findings of the logistic regression model.

4.2 What causes financial distress for Jet Airways?

Several reasons and events led to the financial distress of Jet Airways. The airline underwent a series of operational changes together with a tough economic environment that can be divided into a descriptive timeline as follows;

4.2.1 *2007 Jet Airways acquires Air Sahara*

Air Sahara was a low-cost airline that was founded in September 1991. It grew and expanded its operations across India. In 2004, Air Sahara began international trips to cities and countries such as London, Colombo, Singapore, and Maldives. As it added more destinations, its market share increased significantly. However, according to an article by Pande (2021), from 2006 to 2007, Air Sahara experienced a decline in its market share from 11% to 6.5% due to a rise in competition from other newer airlines. Since Jet Airways needed to expand its customer base, it initially bid to buy Air Sahara and further cement its market presence. The first acquisition attempt in 2006 failed due to management disagreements (Pande, 2021). A later bid made in April 2007 was successful, and it cumulatively cost Jet $500M (Timmons, 2007).   Nonetheless, analysts at

the time detected the buyout was expensive and sunk Jet Airways into more debt. Some of the vital factors that led the analysts to perceive Air Sahara as a poor acquisition include the following.

Firstly, the Indian aviation sector is highly competitive due to the presence of several low-cost carriers. Some domestic airlines, such as IndiGo, Jet Airways, and SpiceJet, posed a significant risk to Air Sahara's customer base. Competition always benefits customers at the expense of companies where customers have more options and can choose from a wider range of products or services. For example, since other airlines had better services and low-ticket prices, Air Sahara lost some of its customers.

Secondly, Air Sahara faced challenges that trickled down from the global economic slowdown. Fuel costs are some of the highest contributors to airline expenses. Hence, when fuel costs increase, airlines generally increase ticket prices. Thus, both the global economic slowdown and the high fuel prices significantly impacted Air Sahara's operations. Also, the high competition left Air Sahara with few options as it could not increase ticket prices.

At the time of its acquisition by Jet Airways, Air Sahara had lost a significant market base in the Indian economy. The acquisition provided Jet Airways with an opportunity to expand its customer base and strengthen its position in the aviation industry, albeit with a considerable amount of risk involved. However, since both Air Sahara and Jet Airways struggled to compete with low-cost carriers, neither of the airlines benefitted from the buyout. Additionally, Jet Airways' operational costs increased since the carrier now had 90 aircraft and 10,000 employees (Timmons, 2007). Eventually, the acquisition increased Jet Airways' financial burden, as it inherited Air Sahara's fleet and operational challenges, such as a decline in passenger numbers.

4.2.2 2010-2012: Financial Struggles and Rising Debt

a) Competition from Low-Cost-Carriers

Jet Airways' financial struggles continued as the airline faced intense competition from low-cost carriers, impacting its profitability. Low-cost carriers gained significant market share in India, leading to a low customer base and meager profits. Customers prefer low-cost carriers due to their efficiency and affordable prices. Some prominent low-cost carriers in India include Air India Express, Jet Konnect, Go Air, and Indigo.

The concept of Low-cost carriers (LCCs) or budget airlines derives from their emphasis on low costs. According to C. Huang (2021), LCCs or no-frills airlines offer relatively low fares with reduced onboard services compared to traditional full-service airlines. The primary focus of low-cost carriers is to provide affordable air travel options to passengers by streamlining their operations and cutting costs wherever possible. The various features of LCCs which enable them to thrive include a cost-conscious approach, simple fare structure, point-to-point routes, secondary airports, fleet commonality, efficient turnaround times, minimal onboard services, and self-service.

Firstly, LCCs use a cost-conscious business model to minimize operational expenses. Compared to traditional carriers, LCCs ensure that costs in most of their operations are as low as possible. For instance, the various arrears where LCCs focus on achieving affordability include ticket distribution, marketing, customer service, aircraft operations, and maintenance. Secondly, LCCs utilize a simplified fare structure, offering a basic fare for the flight ticket. Passengers usually have the option to add extra services and amenities, such as seat selection, checked baggage, in-flight meals, or entertainment, for an additional fee. By separating these services, LCCs allow passengers to customize their travel experience based on their preferences and budget.

Thirdly, Low-cost carriers often operate on a point-to-point basis, focusing on direct flights between popular city pairs or specific regional destinations (Panduwinasari et al., 2020). The point-to-point approach avoids the complexities of hub-and-spoke networks employed by traditional airlines, which involve connecting flights through a central hub.

Another aspect of budget airlines is the use of secondary airports. LCCs frequently utilize secondary airports that are situated outside major metropolitan areas or congested hubs (Huang, 2021). The airports often have lower landing fees and operational costs compared to primary airports, enabling low-cost carriers to reduce their expenses and pass on the savings to customers. Moreover, a crucial characteristic of LCCs is fleet commonality. Flagship airlines usually have different types of aircraft and a larger fleet as compared to low-budget carriers. Low-cost carriers tend to maintain a fleet consisting of a single or limited number of aircraft models, to reduce maintenance costs and enhance operational efficiency (Panduwinasari et al., 2020). The approach allows LCCs to control costs associated with crew training, maintenance procedures, and spare parts inventory management.

LCCs have the ability to achieve efficient turnaround times by minimizing ground time between flights. By efficiently servicing the aircraft, loading and unloading passengers, and performing necessary maintenance tasks, low-cost carriers maximize aircraft utilization and reduce the time spent on the ground. Additionally, low-cost carriers offer fewer onboard services compared to full-service airlines (Panduwinasari et al., 2020). While the exact offerings may vary between carriers, the focus is generally on providing safe transportation without excessive frills. Passengers may have access to comfortable seating, but they might need to pay extra for amenities like in-flight entertainment, meals, or beverages.

The last set of features of LCCs is that the airlines emphasize minimizing costs and leveraging on high ticket sales. For instance, budget carriers often prioritize online and self-service channels for ticket booking, check-in, and managing reservations. With such channels, LCCs reduce the need for additional staff at airports and enable passengers to handle their travel arrangements independently, further minimizing costs. Furthermore, low-cost carriers typically adopt cost-effective marketing strategies, relying heavily on digital advertising, social media, and targeted promotions to reach their desired audience. Hence, LCCs can maintain profitability and provide competitive fares by reducing their advertising expenses (Huang, 2021). Also, a crucial consideration about no-frills airlines is ensuring high ticket sales. The fundamental operating principle of LCCs is generating revenue through high passenger volumes. By offering affordable fares, attracting a large customer base, and maintaining high load factors such as the percentage of seats occupied on a flight, LCCs aim to offset lower margins per passenger with increased ticket sales.

b) **A High Cost Structure**

Jet Airways had a high-cost structure, including expensive fuel prices and substantial staff expenses, which ultimately led to financial challenges for the airline. The soaring fuel prices in the global market significantly impacted Jet Airways' operational costs, putting a strain on its profitability. Additionally, the airline's workforce was relatively large, resulting in substantial staff expenses, including salaries, benefits, and training costs. These factors combined made it difficult for Jet Airways to maintain a competitive edge in the aviation industry. Despite its strong market presence and initially successful operations, the airline faced increasing financial pressure, eventually leading to the suspension of operations in April 2019. The high-cost structure played a

significant role in the airline's struggle to sustain profitability and remain viable in a fiercely competitive market.

c) Fleet Expansion

Jet Airways' debt burden increased due to the expansion of its fleet and operational costs. When Jet Airways acquired Air Sahara, it expanded its fleet and subsequent operational costs. As Jet Airways aimed to bolster its market presence and cater to a larger customer base, it sought to expand its fleet, adding more aircraft to its operations. While this expansion allowed the airline to enhance its service offerings and reach more destinations, it also brought forth a range of operational costs. Firstly, maintaining a larger fleet requires substantial financial resources for aircraft acquisition, leasing, and ongoing maintenance. Jet Airways had to allocate significant funds to purchase or lease new aircraft, as well as invest in regular maintenance and repairs to ensure their safe and efficient operation. These costs encompassed expenses related to engine overhauls, airframe maintenance, avionics upgrades, and adherence to regulatory compliance.

Secondly, the expansion necessitated an increase in operational expenses. With more flights and destinations being added to the airline's network, costs such as fuel, crew salaries, ground handling services, and airport charges also surged. The expenses associated with fuel, in particular, had a substantial impact on Jet Airways' operational costs, as fuel prices experienced volatility during the period. Moreover, the expansion required Jet Airways to train additional staff and pilots to meet the heightened operational demands. Hiring and training new employees incur expenses, such as recruitment costs, training facilities, and salaries, further contributing to the overall operational costs.

4.2.3 *2013-2018: Intense Competition and Market Challenges*

The period between 2013 and 2018 is when Jet Airways was headed towards insolvency. Notably, the main contributing factors to the depreciating value of the company include the rise and penetration of LCCs, high competition, and evolving market dynamics. The three factors are important when considering the bankruptcy of Jet Airways since the success of an airline depends on its market base and the general economic environment, such as customer preferences. Hence, the following explanations give the reasons why stiff competition and market challenges hindered Jet Airways from gaining sustainable profits to match its rising expenditures and debt levels.

Low-cost carriers, such as Go Air, Spice Jet, Air Asia India, JetLite, and Indigo, gained significant market share, putting pressure on Jet Airways' profitability. With time, Jet Airways faced intense competition in the Indian aviation industry, leading to a decline in its financial performance. The rise of these low-cost carriers brought about a paradigm shift in the way people traveled, with more passengers opting for budget-friendly options. Budget airlines reduced the available market base and interfered with Jet Airways. LCCs such as IndiGo and SpiceJet successfully tapped into the growing demand for affordable air travel by offering competitive fares, streamlined operations, and efficient service. Currently, the Indian Aviation sector is dominated by budget airlines. Their ability to attract a large customer base, especially among budget-conscious travelers, directly threatened Jet Airways' traditional business model, which focused on providing full-service flights.

Apart from the market share, LCCs also affected ticket prices in the local Indian economy. Notably, since airlines generate most of their revenue from the sale of tickets, any market changes that lower prices lead to unprecedented losses and lower profitability margins. With IndiGo and SpiceJet offering significantly lower fares, Jet Airways faced challenges in maintaining its fare

levels without compromising on profitability. The airline was compelled to introduce discounted fares and promotional offers to remain competitive, resulting in reduced revenue margins. Furthermore, the low-cost carriers' cost-efficient operations and fleet strategies enabled them to achieve higher aircraft utilization rates and minimize overhead expenses, giving them a competitive edge over Jet Airways.

Jet Airways faced stiff competition on both domestic and international routes, leading to lower fares and reduced profit margins. Although Jet Airways operated as a full-service carrier, a large proportion of competition emerged from the low-cost carriers. The high competition compelled Jet Airways to launch its own subsidiary, JetLite, to serve the increasing demand for cheaper means of air travel. However, this move proved challenging as JetLite encountered various hurdles, struggling to achieve profitability and facing tough competition from established budget carriers.

The airline struggled to adapt to changing market dynamics, including the rise of low-cost carriers and shifting consumer preferences. In an era where customers had cheaper choices, Jet Airways did not respond as quickly as possible to compete with other players in the market. Moreover, the company already had mounting debt and limited resources to serve as an LCC. Jet Airways struggled to adapt to the changing market dynamics, facing difficulties in matching the aggressive pricing strategies of its low-cost counterparts while maintaining its premium service standards. The financial strain caused by the intensified competition eventually affected the airline's operations, leading to its suspension of operations in April 2019 and subsequent filing for bankruptcy.

4.2.4 *2019: Suspension of operations and insolvency proceedings*

Insolvency occurred to Jet Airways when it could not pay its debts as they became due. It implies that the liabilities exceeded the assets and were illiquid such that the airline could not meet its financial obligations. Jet Airways temporarily suspended its operations in April 2019 due to a lack of funds to sustain operations. The airline entered insolvency proceedings in June 2019, as efforts to secure a rescue deal or financial assistance failed. Multiple lenders and lessors sought the recovery of their dues, further complicating the airline's financial situation.

4.2.5 *2020-2023: Failed revival attempts and bankruptcy*

Several attempts were made to revive Jet Airways, including potential investors expressing interest, but none materialized into a viable solution. The COVID-19 pandemic severely impacted the aviation industry, making the revival even more challenging for the already-struggling airline. In June 2020, Jet Airways' lenders-initiated bankruptcy proceedings against the airline. Despite ongoing efforts to find a buyer and revive the airline, Jet Airways remained in bankruptcy and faced several hurdles, such as the failure of the Jalan-Kalrock consortium to disburse payments to lenders (Rebello & Chowdhury, 2022). The Jalan-Kalrock consortium currently handles Jet Airways' return plans, but paying lenders is a major problem due to minimal interest by potential investors.

4.3 How should the airline use the financial process ratio to analyze to come out of financial distress?

Jet Airways should use ratios as a tool to regain good financial health by relying on the ratios to gain valuable insights into liquidity, profitability, leverage, operational efficiency, and overall health. The airline must make strategic efforts to adjust its ratios back to recommended

levels. For instance, analyzing liquidity ratios such as the current ratio and the quick ratio would provide Jet Airways with a clear picture of its ability to meet short-term obligations. By closely monitoring the ratios, Jet Airways will identify areas where it is experiencing liquidity constraints and take appropriate actions to address them.

Jet Airways should focus on improving its low liquidity ratios. The low current ratio or quick ratio indicates that the company struggles to meet its immediate financial obligations. Jet Airways should aim for a current ratio greater than 1, indicating that it has sufficient current assets to cover current liabilities. A proper way to address the issue is exploring options such as optimizing its working capital management by improving its cash flow and reducing its inventory levels. Additionally, the firm can negotiate favorable payment terms with suppliers, implement efficient cash collection processes, and explore alternative sources of short-term financing. Moreover, Jet Airways should consider selling non-core assets or entering into strategic partnerships to infuse capital into the company and enhance its liquidity position.

Profitability ratios should be a major focus for Jet Airways since profits can guarantee sustainability. Low profitability ratios such as return on assets (ROA) and return on equity (ROE) signify that the airline is not generating sufficient profits from its assets or shareholder investments. Jet Airways should analyze and compare its gross profit margin with industry peers to determine if it needs to improve cost management or pricing strategies. For example, the company should focus on cost reduction measures, including renegotiating contracts with vendors and suppliers, optimizing its route network, and implementing efficiency measures across its operations. Moreover, Jet Airways should evaluate its pricing strategies and consider revenue enhancement initiatives such as introducing premium membership services or expanding its customer base in new markets to boost profitability.

Jet Airways' financial difficulties worsened when the company continued accruing large amounts of debt. From table 2 in Chapter 1, there are negative figures from 2016 to 2021 under the Total Debt divided by Equity ratio. A company has a negative debt-to-equity ratio when its liabilities exceed its assets, resulting in a negative net worth. Some of the reasons for the negative debt-equity ratio include sustained losses and the accumulation of substantial debt that exceeds a company's assets value. It suggests a financially distressed or risky situation for the company. For this case, Jet Airways should use financial ratios to develop a comprehensive debt management plan. The company's leadership should seek ways of refinancing high-cost debt with lower interest rate options, negotiate with creditors for debt restructuring or extended payment terms, and explore debt consolidation options. Moreover, Jet Airways should focus on generating positive operating cash flows to reduce its reliance on debt financing and improve its debt-to-equity ratio. Overall, debt management will help the airline to alleviate the burden of interest payments and enhance its overall financial stability.

4.4 How can financial ratios help Forecast the Debt Crisis?

Financial ratios provide reliable methods to analyze a company's performance and determine whether it is headed in the right direction. Since Jet Airways has a significant amount of debt, it is clear that the carrier faces financial burdens. The analysis in this subsection explores the debt crisis at Jet Airways using data from its financial statements over a period of five years. Table 6 below highlights a section the various important performance metrics of Jet Airways within the study period from 2016 to 2021.

Table 6: Jet Airways Financials (jetairways.com).

Item	Mar 2021	Mar 2020	Mar 2018	Mar 2017	Mar 2016
	Amount in Crores				
Current Assets	3,190	3,190	7,053	5,335	6,198
Current Liabilities	21,618	21,618	14,189	11,704	14,725
Working Capital	-18,428	-18,428	-7,136	-6,369	-8,528
Retained Earnings	-15,693	-15,693	-7,356	-6,589	-3,128
Total Assets	6,927	6,927	12,501	12,648	19,161
EBIT	-152	-2,841	-768	1,482	1,174
Market Value Equity	1,075	252	7,311	5,899	6,070
Book Value of Total Debt	4,180	4,180	5,341	7,298	10,135
Total Sales	39	333	22,271	19,746	20,311

Table 6 above shows the trend of crucial Jet Airway's financial metrics such as current assets, current liabilities, working capital, retained earnings, total assets, EBIT, market value of equity, book value of total debt, and total sales. The value of current assets falls significantly from 6,198 in 2016 to 3,190 in 2021. Contrarily, current liabilities increase steadily from 14,725 to 21,618. Working capital is the difference between current assets and current liabilities. Jet Airway's liquidity worsens during the study period. For instance, working capital is in a negative position from 2016 to 2021. The liquidity problems imply that Jet Airways could not fulfill its immediate financial obligations. The company's book value of total debt changes throughout the study period.

A notable trend is the company's debt generally reduced from 10,135 Crores in 2016 to 4,180 Crores in 2021. The retained earnings also show an important trend in the company's financials. For instance, from 2016 to 2021, Jet Airways had negative retained earnings. Negative retained earnings imply that a company has accumulated net losses over time, surpassing its total accumulated profits. It suggests that the company has consistently experienced financial losses, causing its retained earnings, which represent the cumulative profits retained in the business, to become negative. Notably, negative retained earnings indicate a variety of financial challenges,

such as sustained operating losses, poor financial management, or significant write-offs. It signifies that the company has not generated enough profits to offset its losses and may face difficulties in meeting its financial obligations, raising concerns about its long-term viability and ability to distribute dividends to shareholders.

Also, table 6 shows a significant reduction in the company's Market Value of Equity. Between 2017 to 2018, the company's debt market value rises from 5,899 Crores to 7,311 Crores. It later dropped to 252 Crores in 2020. Lastly, it rose by a small margin to 1,075 in 2021. The general downward trend in Market Value Equity shows that the overall value of a company's outstanding shares in the market is decreasing over time. Such a declining trend indicates a decrease in investor confidence and can be influenced by various factors such as poor financial performance, negative market sentiment, or unfavorable economic conditions. When the Market Value Equity reduces, it implies that the company's perceived worth in the market is diminishing, potentially affecting its ability to attract investment, raise capital, or acquire assets. It also indicates potential challenges in meeting financial obligations or maintaining competitive positioning in the industry.

EBIT refers to the Earnings Before Interest and Taxes. It is a financial metric that signifies the total income, excluding the effect of debt, interest, and taxes. According to Table 6 above, Jet Airway's EBIT declined from positive figures in 2016 and 2017 to negative figures in 2018, 2020, and 2021. The declining EBIT shows that the company's profitability is decreasing during the study period. When the EBIT is declining, it indicates that the company is experiencing reduced profitability and potentially facing challenges in generating revenue or managing costs. This downward trend in EBIT results from various factors such as declining sales, increased operating expenses, pricing pressures, or inefficient cost management. A declining EBIT is a concerning

88

signal for investors and stakeholders, as it suggests a potential decline in the company's financial health and overall business performance.

Under the study period, Jet Airway's total sales decreased from 20,311 Crores in 2016 to a 39 Crores in 2021. Before the company filed for bankruptcy, its sales were much higher as noted in the years 2016 to 2018. The decreasing sales illustrate that Jet Airways is experiencing a decline in its revenue generated from air ticket sales and other related services. Some of the major reasons for the decline arise from various factors, such as a decrease in passenger demand, increased competition from other airlines, economic downturns, and internal issues within the airline. As the company's sales revenue reduces, it signifies a potential financial challenge as it directly impacts the company's ability to cover operating costs, invest in infrastructure and technology, and generate profits. The low sales lead to budget cuts, reduced services, and workforce downsizing to mitigate the financial strain and maintain sustainability.

Table 7 below represents the key performance ratios that determine Jet Airway's financial distress status in the company. The ratios are based on the Modified Altman's Z-score model.

Table 7: Calculation of the Corresponding Financial Ratios (Researcher).

	Calculation of the Corresponding Financial Ratio				
Ratio	Mar-21	Mar-20	Mar-18	Mar-17	Mar-16
Working Capital / Total Assets	-2.660	-2.660	-0.571	-0.504	-0.445
Retained Earnings / Total Assets	-2.266	-2.266	-0.588	-0.521	-0.163
EBIT / Total Assets	-3.935	-8.521	-0.034	0.075	0.058
MVE / Book Value of Total Debt	0.257	0.060	1.369	0.808	0.599

Figure 7 below shows the trend of the four ratios from 2004 to 2023.

Figure 7: Line Graph of the Trend of Four Jet Airways Ratios (Researcher).
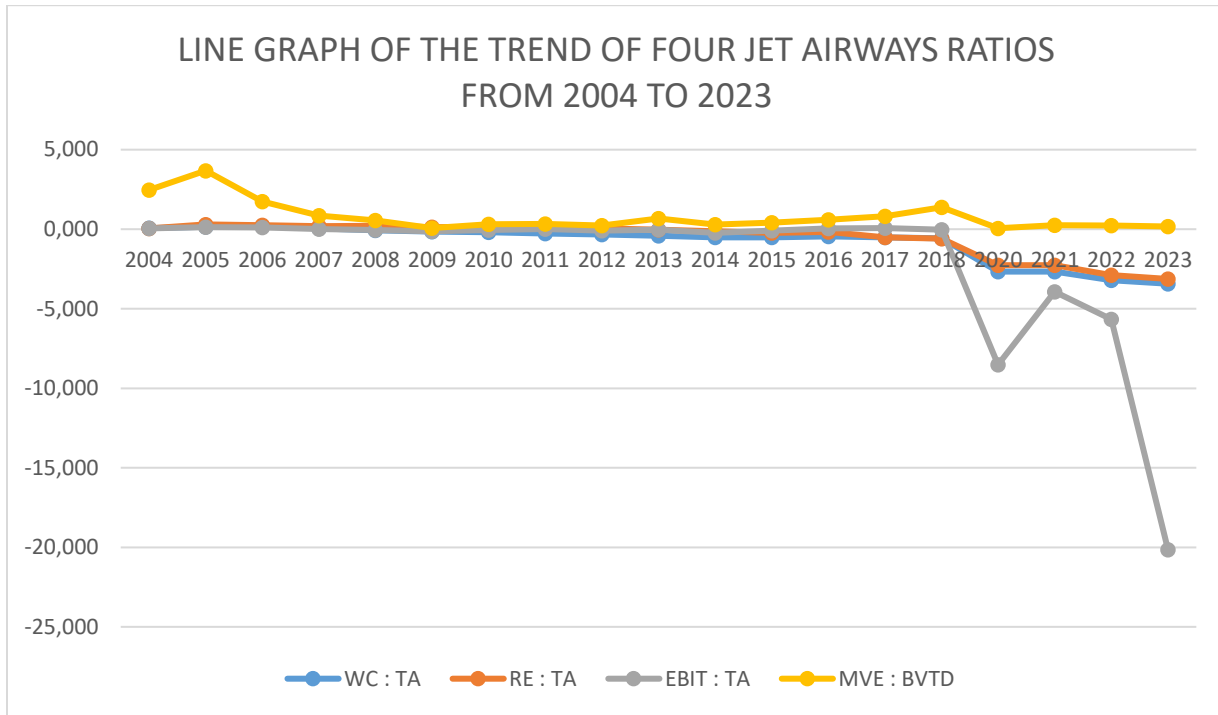
From the above graph, there is a general downward trend in each of the four types of ratios that are used in Modified Altman Z-score model. For instance, three of the ratios have negative values in the years after 2018. Hence, Jet Airway's financial health kept deteriorating throughout the study period.

4.4.1 *Working Capital to Total Assets Ratio*

The difference between current assets and current liabilities yields the working capital. Thus, the Working Capital to Total Assets ratio effectively determines a company's financial problems. A look at the financial performance of Jet Airways over the last five years reveals a concerning trend in the Working Capital to Total Assets ratio. From 2016 to 2021, the ratio has consistently negative values, indicating a persistent imbalance between the company's working capital and its total assets. In March 2017, the Working Capital to Total Assets ratio stood at -

0.445, indicating that the company had more liabilities than assets to cover its short-term obligations. Over the next four years, this ratio continued to worsen, reaching -0.504 in March 2017, -0.571 in March 2018, and -2.660 in both March 2020 and March 2021.

Such a declining trend in the Working Capital to Total Assets ratio suggests that Jet Airways has been facing significant financial difficulties over the past five years. A negative ratio implies that the company's short-term liabilities exceed its short-term assets, making it challenging to meet its immediate financial obligations. Based on the financial history of Jet Airways, the imbalance can be attributed to various factors such as poor cash flow management, high debt levels, or inefficient working capital utilization.

4.4.2 *Retained Earnings to Total Assets Ratio*

Retained earnings are the profits a business plows back into its books at the end of a financial year. When a company generates profits, it can distribute them to shareholders as dividends or retain them within the business. Retained earnings are calculated by subtracting dividends paid to shareholders from the net income earned by the company. Hence, firms that have a good financial history accumulate substantial amounts of earnings compared to those that have less income. Based on the values from Table 8, it is evident that Jet Airways' retained earnings dropped significantly from 2016 to 2021.

4.4.3 *EBIT to Total Assets Ratio*

The EBIT to Total Assets ratio reveals how effectively a company can derive revenue from its asset base and operations. It is, therefore, related to the Return on Assets ratio. For example, a ratio of 1.1 would mean that for every dollar invested in the company, it yields 0.1. A 1.1 ROA is 110% in percentage form. In the case of Jet Airways in the study period, its EBIT to Total Assets

ratio values were low and reduced continuously over the years, and thus the company did not generate substantial revenue from its assets.

4.4.4 *Market Value Equity to Book Value of Total Debt Ratio*

The Market Value Equity to Book Value of Total Debt ratio is a useful metric for investors and analysts to assess how the market perceives a company's equity value and its debt obligations. Between 2016 and 2017, Jet Airway's Market Value Equity to Book Value of Total Debt ratio improved slightly. However, the subsequent decline in the ratio in 2018 and 2020 indicates a deterioration in the company's financial position due to factors such as the increasing debt burden and declining profitability. The slight recovery in the ratio in 2021 suggests a partial improvement, but it remains relatively low compared to the earlier years. Overall, Jet Airways' market value declined substantially during the period, which affected the company's perception to investors and other shareholders.

4.5 Interpretation of Jet Airway's Zeta-scores

Z-scores sum up the total effect of the four main financial ratios to generate an interpretable value. Table 8 below represents the key performance ratios that determine Jet Airway's financial distress status in the company. The ratios are based on Altman's modified Z-score model.

Table 8: Jet Airways Z-Scores from 2016 to 2021 (Researcher).

Ratio	Coefficient	Factor	Mar-21	Mar-20	Mar-18	Mar-17	Mar-16
	1	*3.25*	3.25	3.25	3.25	3.25	3.25
Working Capital / Total Assets	X1	*6.56*	-17.453	-17.453	-3.744	-3.303	-2.919
Retained Earnings / Total Assets	X2	*3.26*	-7.386	-7.386	-1.918	-1.698	-0.532
EBIT / Total Assets	X3	*6.72*	-26.442	-57.264	-0.232	0.504	0.388
Market Value Equity / Book Value of Total Debt	X4	*1.05*	0.270	0.063	1.437	0.849	0.629
	Z-Score		-47.760	-78.789	-1.207	-0.398	0.816

The calculated Zeta-scores illustrate a declining trend from 2016 to 2021. The values dropped steadily without any increase, signifying that Jet Airways was headed to bankruptcy before its official filing in April 2019. By 2016, the company was already in the distressed zone with a Z-score of 0.816, and the situation worsened further in the succeeding years. The data reveals that the three categories of financial ratios, such as profitability, liquidity, leverage, and the Z-score, are reliable in predicting financial distress for Jet Airways a few years prior.

4.6 Logistic Regression Data, Results Analysis, and Interpretation

4.6.1 *Presentation of Collected Data*

Logistic regression requires sufficient data collection to obtain reliable results. The tables below contain the data used by the researcher to determine the ratios that are most significant in predicting bankruptcy at Jet Airways. Notably, the researcher excluded the ratios that had zeros to minimize bias and increase accuracy. Ratios that were excluded are italicized and have an asterisk symbol in the column heading. As show in table 9 below, the researcher did not include the Asset Turnover ratio and the Return on Net worth ratio. The two ratios had several zero entries.

Table 9: Jet Airways Data on ATR, RON/ 3, NPM, and ROA.

Year	*Asset Turnover Ratio **	*Return on Networth / Equity **	Net Profit Margin	Return on Assets
2023	0	0	-20.154	-0.1779
2022	0	0	-5.6625	-0.1341
2021	0	0	-3.9347	-0.0219
2020	0	0	-8.5213	-0.4102
2018	1.8627	0	-0.0329	-0.0614
2017	1.7039	-0.2289	0.0687	0.1172
2016	1.1046	-0.3524	0.0554	0.0612
2015	1.0384	0	-0.0926	-0.0962
2014	0.9419	0	-0.2119	-0.1996
2013	0.8985	0	-0.0288	-0.0258
2012	0.7096	0	-0.0834	-0.0592
2011	0.6156	0.0115	0.0007	0.0004
2010	0.5153	-0.5654	-0.0447	-0.023
2009	0.5043	-0.3107	-0.0347	-0.0175
2008	0.421	-0.1366	-0.0287	-0.012
2007	0.6557	0.0132	0.0039	0.0025
2006	0.6279	0.2108	0.0793	0.0498
2005	0.6785	0.2238	0.0903	0.0613
2004	0.7244	-4.0787	0.0473	0.0342

Source: Money Control (2023).

Under table 10 below, the researcher excluded the current ratio and the quick ratio due to a high correlation level between the two ratios.

Table 10: Jet Airways Data on CR, QR, TD/E, DTR, LTDR, and TDR.

Year	Current Ratio *	Quick Ratio *	Total Debt/Equity	Debt-to-assets ratio	Long-term debt ratio *	Total debt ratio
2023	0.13	0.12	-0.2	4.1084	0.0036	3.8980
2022	0.14	0.12	-0.21	3.8653	0.0009	3.6601
2021	0.15	0.13	-0.23	3.2493	0	3.0762
2020	0.15	0.13	-0.23	3.2493	0	3.0762
2018	0.5	0.46	-0.73	1.5793	0.4068	1.5384
2017	0.46	0.41	-1.11	1.5120	0.5509	1.4737
2016	0.42	0.35	-2.77	1.1573	0.3241	1.0912
2015	0.37	0.3	-2.33	1.2170	0.3505	1.1401
2014	0.3	0.24	-3.38	1.1213	0.3564	1.0821
2013	0.35	0.28	-9	1.0183	0.3662	0.9865
2012	0.32	0.25	-20.15	0.9434	0.4202	0.9147
2011	0.36	0.28	13.75	0.8741	0.4374	0.8636
2010	0.49	0.41	16.64	0.8628	0.4824	0.8557
2009	0.56	0.49	12.4	0.8504	0.5145	0.8426
2008	0.71	0.61	6.27	0.7628	0.4787	0.7538
2007	1.2	1.04	2.88	0.7921	0.4975	0.7691
2006	1.92	1.73	2.28	0.7457	0.4744	0.6944
2005	1.84	1.54	1.69	0.6856	0.4638	0.6327
2004	1.38	0.96	-80.27	0.9123	0.6738	0.8538

Source: Money Control (2023).

Table 11 below has data on ratios that are based on the Modified Altman Z-score. The researcher used all the ratios in table 11 to obtain more comprehensive results.

Table 11: Jet Airways Data on WC/ TA, RE / TA, EBIT / TA, and MVE / BVTD.

Year	Working Capital / Total Assets	Retained Earnings / Total Assets	EBIT / Total Assets	Market Value Equity / Book Value of Total Debt
2023	-3.4281	-3.1286	-20.1541	0.1748
2022	-3.2081	-2.8850	-5.6625	0.2257
2021	-2.6605	-2.2657	-3.9348	0.2573
2020	-2.6605	-2.2657	-8.5214	0.0602
2018	-0.5708	-0.5884	-0.0345	1.3688
2017	-0.5035	-0.5210	0.0751	0.8083
2016	-0.4450	-0.1632	0.0578	0.5989
2015	-0.5031	-0.2230	-0.0975	0.4187
2014	-0.5159	-0.1275	-0.2223	0.2892
2013	-0.4099	-0.0229	-0.0296	0.6650
2012	-0.3383	0.0524	-0.0870	0.2248
2011	-0.2761	0.1217	0.0039	0.3316
2010	-0.1937	0.1262	-0.0479	0.3097
2009	-0.1463	0.1338	-0.1346	0.0688
2008	-0.0784	0.2134	-0.0502	0.5505
2007	0.0523	0.1998	0.0038	0.8557
2006	0.2153	0.2448	0.1196	1.7449
2005	0.1460	0.3009	0.1299	3.6816
2004	0.0661	0.0579	0.0515	2.4703

Source: Researcher

Since, Jet Airways filed for Bankruptcy in 2019, the company's performance data for 2019 in not publicly available. Nonetheless, the researcher used 2019 as a threshold to separate periods of bankruptcy and non- bankruptcy for the airline. As shown in table 12 below, year before 2019 have zero values while those after 2019 have 1. Additionally, table 12 confirms that the researcher did not used the Z-scores as threshold since the model predicted the financial crisis as early as 2014 where the Z-scores are italicized.

Table 12: The Dependent Variable Data used by the Researcher.

Year	Bankruptcy	Z-score
2023	1	*-164.6889*
2022	1	*-65.0159*
2021	1	*-47.7603*
2020	1	*-78.7891*
2018	0	*-1.2071*
2017	0	*-0.3985*
2016	0	*0.8156*
2015	0	*-0.9929*
2014	0	*-1.7404*
2013	0	*0.9854*
2012	0	*0.8532*
2011	0	2.2098
2010	0	2.3944
2009	0	1.8945
2008	0	3.6719
2007	0	5.1684
2006	0	8.0966
2005	0	9.9272
2004	0	6.8122

Source: Researcher

4.6.2 Canonical Correlation Matrix

At the beginning of the analysis, the researcher gathered data on several ratios but excluded those with high correlation levels. The initial ratios included Asset Turnover Ratio(ATR), Return on Net worth to Equity(ROE:E), Net Profit Margin(NP), Return on Assets(ROA), Current

Ratio(CR), Quick Ratio(QR), Total Debt to Equity(TD:E), Debt-to-assets ratio(D:A), Long-term debt ratio(LTD), Total debt ratio(TD), Working Capital to Total Assets(WC:TA), Retained Earnings to Total Assets(RE:TA), EBIT to Total Assets(EBIT:TA), and Market Value Equity to Book Value of Total Debt(MVE:BVTD). Out of the fourteen ratios, the researcher excluded five ratios. Asset Turnover Ratio, Long-term debt ratio, and Return on Net worth to Equity ratio were excluded since they had zero entries in some of the years before and after 2019. Current and Quick Ratios were also omitted due to their multicollinearity with other ratios in the model. Table 16 in Appendix A shows the correlation matrix among the fourteen ratios.

After excluding the five ratios, this study used Net Profit Margin, Return on Assets, Total Debt to Equity, Debt-to-assets ratio, Total debt ratio, Working Capital to Total Asset, Retained Earnings to Total Assets, EBIT to Total Assets, and Market Value Equity to Book Value of Total Debt ratios as independent variables. The dependent variable is 'Bankruptcy,' which takes a value of 0 before 2019 and a value of 1 after 2019. It is meant to distinguish the period before Jet Airways was bankrupt and the years after the company filed for bankruptcy. Stepwise Logit analysis was conducted using SPSS to evaluate which financial ratios are significant in identifying Jet Airways' bankruptcy.

4.6.3 *Test Statistics*

Table 13 below illustrates that the final model was statistically significant, with a Wald score of 5.517, 1 degree of freedom, and sig value ($p < 0.05$) = 0.019. The finding indicates that the model could distinguish between periods when Jet Airways was bankrupt and when it was in good financial health.

Table 13: Logistic Regression Model Test Statistics

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.322	.563	5.517	1	.019	.267

Source: Researcher

4.6.4 *Logit Analysis and Interpretation*

The findings in table 14 below show eight predictor variables that contribute to the logistic regression model. The predictors include Net Profit Margin, ROA, Total Debt to Equity, Debt-to-assets ratio, Total debt ratio, Working Capital to Total Assets, Retained Earnings to Total Assets, EBIT to Total Assets, and Market Value Equity to Book Value of Total Debt. The dependent variable was bankruptcy. In the years before filing for bankruptcy, the dependent variable was assigned 0, and in the years after filing for bankruptcy, the dependent variable was assigned 1. Wald statistic was conducted to show the contribution of each variable to the model. The p-value is significant to the model in establishing the level of significance and contribution of each variable. Variables with sig-value $p < 0.005$ contribute significantly to the model. Two ratios, Total Debt to Equity and EBIT to Total Assets, have positive coefficients. Hence, they increase the chances of bankruptcy. Contrarily, the other seven ratios, Net Profit Margin, ROA, Debt-to-assets ratio, Total debt ratio, Working Capital to Total Assets, Retained Earnings to Total Assets, and Market Value Equity to Book Value of Total Debt, have negative coefficients. Thus, they reduce the chances of bankruptcy.

The results of the logistic regression are shown below in Table 14.

Table 14: Jet Airways Coefficients and significance values from SPSS Analysis

Binary Logistic Regression Results			
Variable	Coefficient	Wald Score	Sig.
1. Net Profit Margin	-231.721	12.212	.000
2. Return on Assets	-7.342	7.121	.008
3. Total Debt/Equity	0.055	.132	.716
4. Debt-to-assets ratio	-708.352	17.698	.000
5. Total debt ratio	-15.619	17.628	.000
6. Working Capital / Total Assets	-31.479	17.928	.000
7. Retained Earnings / Total Assets	-711.802	17.714	.000
8. EBIT / Total Assets	232.534	12.208	.000
9. MVE / Book Value of Total Debt	-0.464	2.319	.128

Source: Researcher

The figure 8 below illustrates the significant and insignificant financial ratios in the Logistic Regression for Jet Airways.

Figure 8: A Bar Graph of p-values in the Logistic Regression Model for Jet Airways.
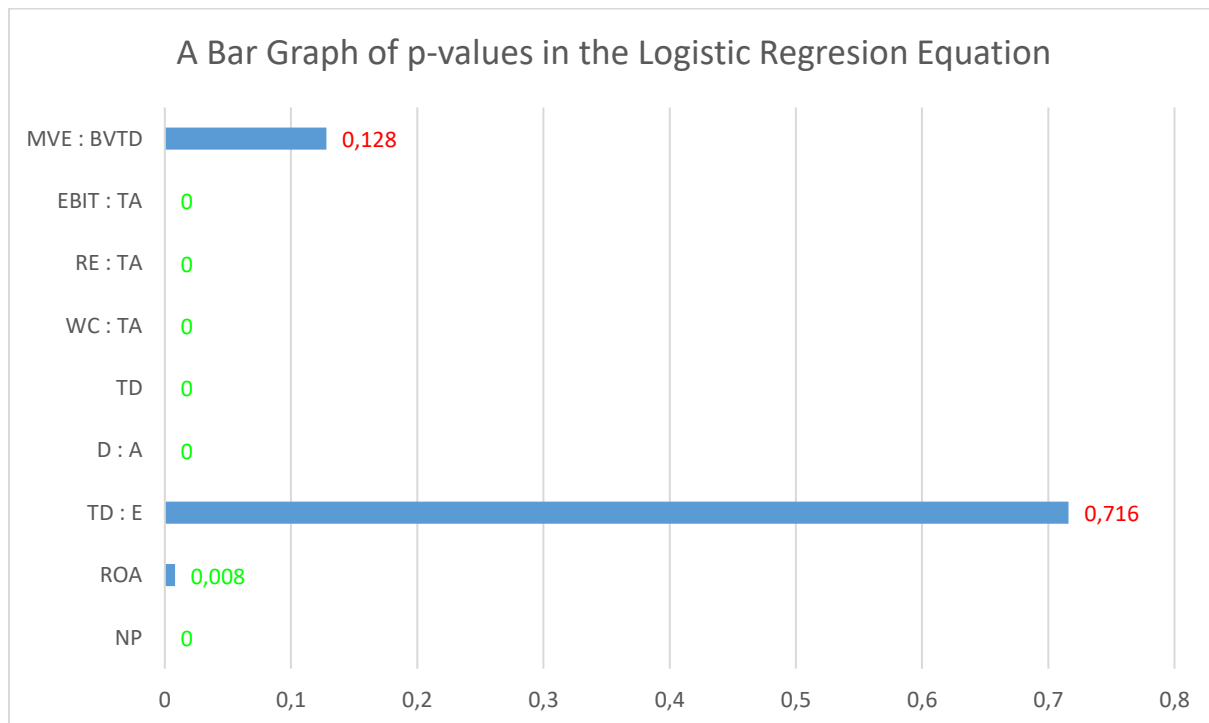
Source: Researcher

From the above graph, the predictor variables with p-values less than 0.05 include Net Profit Margin, ROA, Debt-to-assets ratio, Total debt ratio, Working Capital to Total Assets, Retained Earnings to Total Assets, and EBIT to Total Assets ratio. On the other hand, the insignificant ratios are Market Value Equity to Book Value of Total Debt ratio and Total Debt to Equity ratio as they have p-values of 0.128 and 0.716, respectively.

1.   Liquidity Ratios

a) *Working Capital to Total Assets Ratio*

The only liquidity ratio among the variables is the Working Capital to Total Assets Ratio. It measures the ability of a company to meet its short-term obligations with its current assets. A higher ratio indicates that a company has more liquid assets available to cover its short-term liabilities. The negative coefficient implies that a higher Working Capital to Total Assets ratio is associated with a lower probability of financial distress. When the Working Capital to Total Assets ratio is higher, it suggests that a larger portion of a company's total assets is dedicated to short-term liquidity, which can be seen as a protective buffer against financial distress. It indicates that the company has a relatively strong working capital position compared to its total asset base.

Since the significance value of the variable is below 0.05, it implies that there is a statistically significant negative relationship between the Working Capital to Total Assets Ratio and the chance of bankruptcy. The negative coefficient reinforces that as Jet Airways' Working Capital to Total Assets Ratio decreases, the probability of facing financial insolvency increases significantly. The implications of this relationship are profound, as it suggests that maintaining a healthy level of working capital relative to total assets is crucial for mitigating the risk of bankruptcy.

2. Profitability Ratios

a) *Net Profit Margin*

Table 14 above illustrates that Net Profit Margin has a negative coefficient of -231.721, meaning that as the Net Profit Margin ratio increases, the probability of financial distress for Jet Airways tends to decrease. The Net Profit Margin is a financial ratio that measures a company's profitability by calculating the percentage of net profit relative to its total revenue. It provides insight into how efficiently a company generates profits from its operations. A higher Net Profit Margin indicates that a greater proportion of a company's revenue is converted into profit.

Throughout the study period, Jet Airways' Net Profit Margin worsened from positive values in the early 2000s to negative ones in the late 2010s. The reduction in profitability signifies that the airline struggled to generate sustainable revenue. The negative correlation between Net Profit Margin and the probability of financial distress arises due to several reasons. Firstly, a lower Net Profit Margin implies that the airline was generating less profit from its operations. Low profitability indicates that the company has insufficient earnings to cover its expenses, including debt obligations. Thus, there's an increased likelihood of financial distress as the airline lacks the financial capacity to meet its financial obligations.

Secondly, low profitability often indicates an unhealthy financial position for a company. In this case, Jet Airway did not have additional financial resources to invest in growth, repay debt, or build cash reserves. As the airline's investment capacity dwindled, its financial position also weakened, leading to a higher probability of financial distress. Thirdly, firms with lower Net Profit Margins tend to be more susceptive to adverse events or economic downturns. Jet Airways could not withstand unforeseen financial challenges, such as declining sales or unexpected expenses, which can reduce the likelihood of financial distress during difficult periods.

b) Return on Assets

Table 14 above illustrates that Jet Airways' ROA has a negative coefficient of -7.342, which signifies that as the ROA increases, the probability of financial distress for Jet Airways tends to decrease. ROA is calculated by dividing net income by the average of total assets. Thus, the Return on Assets ratio measures the profitability of a company by comparing its net income to its assets. It indicates how efficiently a company utilizes its assets to generate profits. A higher ROA ratio suggests that a company is effectively generating more profit relative to its asset base.

The negative correlation between ROA and the probability of bankruptcy illustrates that Jet Airways must have a higher ROA to sustain its operations in the long term. However, throughout the study period, Jet Airways' ROA reduced from 0.0342 in 2004 to -0.0592 in 2012 to -0.1779 in 2023. According to Kliestik, Valaskova, Lazaroiu, Kovacova, and Vrbka (2020), a reduction in ROA shows that a company either faces poor asset management, rising costs, declining sales, or increased competition. For the case of Jet Airways, all four cases hold true. For instance, Jet Airways failed to manage its assets well, leading to the accrual of too much debt. After acquiring Air Sahara, the airline did not invest in its assets in a way that could generate adequate profits, leading to asset depletion. Another cause of the reduction in ROA was the rising costs at the airline. Since costs have a direct impact on profit, the company's net income reduces, leading to less ROA. Both declining sales and increased competition affect profitability. In the case of Jet Airways, travelers prefer low-cost carriers over traditional airlines, resulting in low sales. On the other hand, the increase in the number of LCCs led to higher competition and minimal profit margins. Eventually, the stiff competition impacted the airline's income and ROA.

The falling ROA signifies that Jet Airways' profits kept reducing in relation to its assets. It suggests that the company had operational problems, including the inability to meet expenses such

as employee remuneration. As expenses rise, ROA declines, and the financial distress situation at Jet Airways worsens. Furthermore, since a lower ROA ratio implies that a company is not efficiently using its assets to generate profits, it signifies that the company has weak financial stability, increasing the probability of financial distress. Similar to Net Profit Margin, lower ROA shows that Jet Airways has weaker financial resilience. As Jet Airways' debt mounted and profits declined, the company could not meet its crucial expenses without relying on debt, such as when there was a significant decline in sales. Moreover, the weaker financial resilience implied that Jet Airways could not compete with its rivals. Companies with higher ROAs can reinvest more of their profits back into the business, which can give them a competitive advantage. Thus, it is difficult for a company with a low ROA to grow and expand, which can further weaken its financial resilience

Figure 9 below show the trend of the two profitability ratios, Net Profit Margin and Return on Assets for Jet Airways over a selected portion of the study period, from 2004 to 2018.

Figure 9: A Line Graph of Jet Airways Profit Margin and ROA Ratio from 2004 to 2018
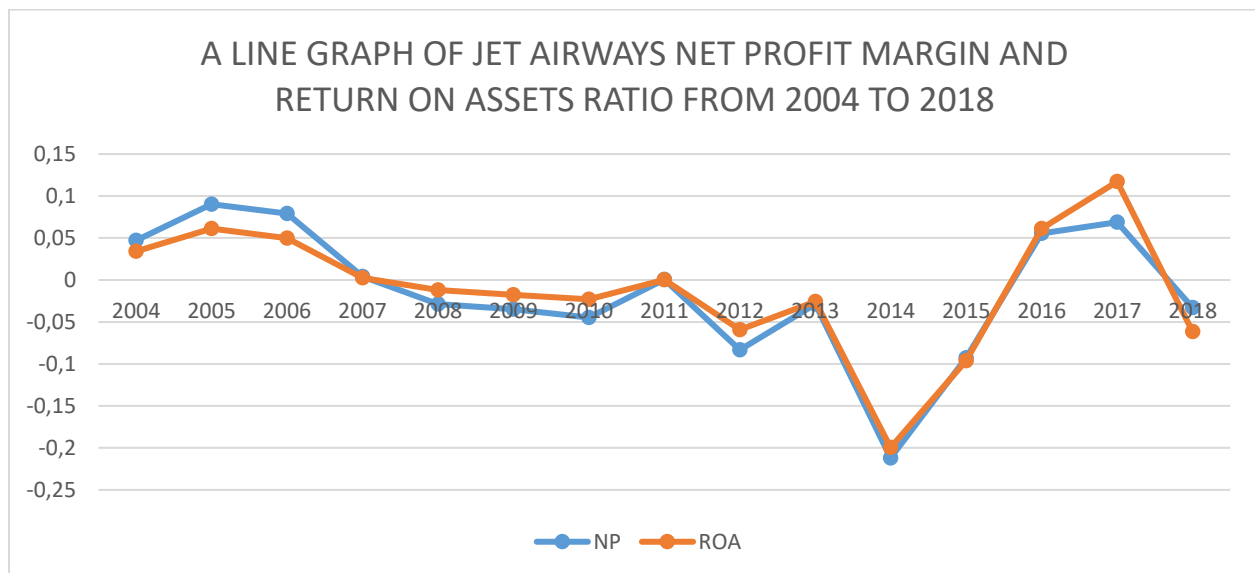
Source: Researcher

As shown in the graph above, the airline's profitability declined gradually from 2006 to 2010, before increasing slightly in 2011, and then dropping to negative values in 2012. In 2013, both ROA and NP increased, but in 2014 and 2015, the airline recorded negative profitability values. Also, although the company's profitability ratios increased in 2016 and 2017, they dropped again in 2018. Hence, there is a general fluctuation in Jet Airway's profitability in the study period, and the values generally deteriorate over time. The fluctuation in profitability corresponds to the company's efforts to solve its liquidity issues which were then counteracted with intensifying competition in the local Indian aviation sector, that eventually impacted its margins.

c) *Retained Earnings to Total Assets ratio*

Table 14 above illustrates that Jet Airway's Retained Earnings to Total Assets ratio has a negative coefficient of -711.8019, which signifies that as the Retained Earnings to Total Assets ratio decreases, the probability of financial distress for Jet Airways increases. The Retained Earnings to Total Assets ratio compares a company's retained earnings to its total assets. It indicates the proportion of a company's assets that is financed by retained earnings, which reflects the company's profitability and reinvestment of earnings. Retained earnings refer to accumulated net income minus dividends.

Several factors explain why lower Retained Earnings to Total Assets ratio increases the probability of bankruptcy for Jet Airways. During the study period, Jet Airways' retained earnings dropped from 1,923.83 Crores in 2005 to -428.86 Crores in 2013 and -17,620.10 Crores in 2023. The continuous reduction in retained earnings implies that Jet Airways had remained unprofitable over a lengthy period, which compelled the company to deplete its asset base. Low retained earnings suggest that a company faces challenges in yielding profits and accumulating profits over

time as well. Therefore, it indicates financial instability, as the company lacks a cushion of internal funds that can be used to meet financial obligations and weather potential financial challenges.

A low Retained Earnings to Total Assets ratio increases the probability of financial distress since it signifies a smaller equity base compared to total assets. For the case of Jet Airways, it implies that the airline either distributed a significant portion of its earnings to shareholders or experienced losses, resulting in a diminished retained earnings balance. As a result, the company got into a weaker financial position and potentially higher risk of insolvency or default. Additionally, a lower ratio suggests that a larger portion of the company's assets is financed through debt or external sources rather than internally generated funds. Hence, the airline became more vulnerable to economic downturns or unexpected financial challenges, as it may have had resources to rely on for future investments and the unprecedented low-ticket sales. Also, a lower Retained Earnings to Total Assets ratio signals Jet Airway's inability to effectively reinvest its profits for growth or expansion, potentially limiting its long-term sustainability and competitiveness in the market.

d) EBIT to Total Assets

EBIT is an acronym for Earnings Before Income Tax. It is, therefore, a financial metric that shows the profitability of a business entity. Accountants' investors use EBIT to assess a company's profitability solely based on its core operations, without considering the impact of interest and taxes. The EBIT to Total Assets ratio measures a company's operating profitability by comparing its earnings before interest and taxes to its total assets. It indicates how effectively a company utilizes its assets to generate operating earnings. Hence, a higher EBIT to Total Assets ratio is desirable as it shows that the company is gaining profits directly from its assets.

Jet Airways has faced operational hurdles since the early 2010s. The company, therefore, had declining profitability as observed from the Net Profit Margin, Return on Assets, and Retained earnings metrics. Similar to the three ratios, Jet Airways' EBIT to Total Assets ratio also diminished significantly and increased the chances of the company's bankruptcy. However, Table 14 fails to confirm the expected relationship between the EBIT to Total Assets ratio and the probability of bankruptcy. The positive coefficient value of 232.534 implies that there is a positive relationship between the EBIT to Total Assets ratio and the probability of financial distress, which is unexpected. Nonetheless, for Jet Airways, various factors can establish why there is an observed positive coefficient value.

Firstly, since Jet Airways was in an overleveraged position for a lengthy period of time, the EBIT to Total Assets ratio cannot depict the relationship. Although the company's EBIT to Total Assets ratio reduced over time, it does not fully reflect the financial distress problem because Jet Airways relied on debt to generate its earnings. The logistic regression model could show a genuine negative relationship between the EBIT to Total Assets ratio and bankruptcy if the company borrowed only a moderate amount of external funds.

Secondly, airline operations are capital-intensive and often require carriers to invest highly in fixed assets such as aircraft, airport facilities, and ground-handling equipment. Given the significant capital requirements involved, airlines often resort to various financing strategies to fund their investments in fixed assets. These may include a combination of debt financing, lease agreements, and partnerships with aircraft lessors or other financial institutions. However, when the airline fails to reinvest its earnings and minimize debt, it may still record a high EBIT to Total Assets ratio despite an underlying financial burden. In the case of Jet Airways, the carrier has high

debt, and most of its earnings went to debt repayments. However, since external market competition stiffened, low revenues eventually derailed the company's debt repayment plans.

A third reason for the positive relationship between the EBIT to Total Assets ratio and financial distress emanates from the challenging business environment that worsened over time for Jet Airways, especially in the local Indian aviation industry. For example, as LCCs intensified their rivalry against traditional carriers, Jet Airways experienced intense price competition, leading to lower profit margins. In this case, even with a higher EBIT to Total Assets ratio, the probability of financial distress still increased due to the challenging business environment.

Another reason why there is an unexpected positive coefficient is that the EBIT to Total Assets ratio does not consider the composition or quality of assets. Jet Airways had poor-quality of assets, such as those that were illiquid or declining in value. For instance, the acquisition of Air Sahara qualifies as a poor-quality asset since it had a negative impact on Jet Airways, leading it to face difficulties in generating sufficient cash flows to support its operations.

3.   Financial Leverage Ratios

This study considered four main leverage ratios for the logistic regression which include Total Debt to Equity ratio, Debt-to-assets ratio, Total Debt ratio, and Market Value Equity to Book Value of Total Debt ratio. The criterion for the inclusion of the four ratios is justified by their Wald score. For instance, the debt-to-assets ratio and the total debt ratio both have high Wald scores of 17.698 and 17.628, respectively. On the other hand, the Total Debt to Equity ratio has a low Wald score of 0.132, but it serves as an indicator of the company's financial leverage or the extent to which it relies on debt financing. Another vital ratio that is included in the analysis is the Market

Value Equity to Book Value of Total Debt ratio. Unlike the other three ratios, this ratio provides insights into the market's perception of a company's financial health and its ability to meet its debt obligations.

Jet Airways relied on debt to finance a significant portion of its operations, as noted in the company's financial statements data. From 2004, the company's total outstanding debt at the end of each subsequent year generally kept increasing. The financial implication of this scenario is that the airline continued leveraging on debt and worsening its financial leverage ratios. One of the key concerns with relying heavily on debt is the increased financial risk it poses. As a company accumulates more debt, its financial leverage ratios, such as the debt-to-equity ratio and interest coverage ratio, may worsen. These ratios provide insights into a company's ability to meet its financial obligations and its overall financial health.

The continuous increase in outstanding debt over the years suggests that Jet Airways was relying heavily on borrowed funds to sustain its operations, especially after 2012. Notably, this strategy was driven by various factors, such as expansion plans, high operating costs, or competitive pressures within the local Indian airline industry. However, the worsening financial leverage ratios indicate that Jet Airways was accumulating higher financial risk. A heavy debt burden can limit the company's flexibility to invest in growth opportunities, make necessary capital expenditures, or withstand economic downturns. Moreover, a high level of debt can increase the company's interest expenses, impacting its profitability and cash flow.

Table 14 above illustrates the coefficient and significance values from the logistic regression analysis of the four leverage ratios in relation to Jet Airways' bankruptcy. A quick insight from the table shows that two ratios; Total Debt to Equity ratio and MVE to Book Value of Total Debt, have an insignificant relationship to financial distress while the other two ratios;

Debt-to-assets ratio and Total debt ratio, have a significant relationship to financial distress. However, although the Debt-to-assets ratio and Total debt ratio have a significant relationship to Jet Airway's bankruptcy, the coefficients are negative. The negative coefficients mean that higher values of the Debt-to-assets ratio and Total debt ratio lead to higher chances of financial distress, which is not a desirable relationship. According to Fawzi, Kamaluddin, and Sanusi (2015), most leverage ratios should have a positive relationship to the probability of financial distress since more debt, if poorly managed, directly increases the chances of bankruptcy. Hence, the two ratios are significant predictors of Jet Airways' bankruptcy, but the negative coefficients on them do not give the expected correlation.

Similarly, despite the fact that the Total Debt to Equity ratio and MVE to Book Value of Total Debt have an insignificant relationship to the airline's bankruptcy, their coefficients are positive. The positive coefficients signify those higher values of the Total Debt to Equity and MVE to Book Value of Total Debt ratio led to higher chances of financial distress. Therefore, for the case of Jet Airways, Total Debt to Equity and MVE to Book Value of Total Debt ratio are not good predictors of the company's bankruptcy.

Figure 10 below shows the trend debt-to-asset ratio and total debt ratio for Jet Airways.

Figure 10: A Line Graph of Jet Airways DTAR and TDR.

A LINE GRAPH OF THE TREND OF JET AIRWAYS DEBT-TO-ASSET RATIO AND TOTAL DEBT RATIO
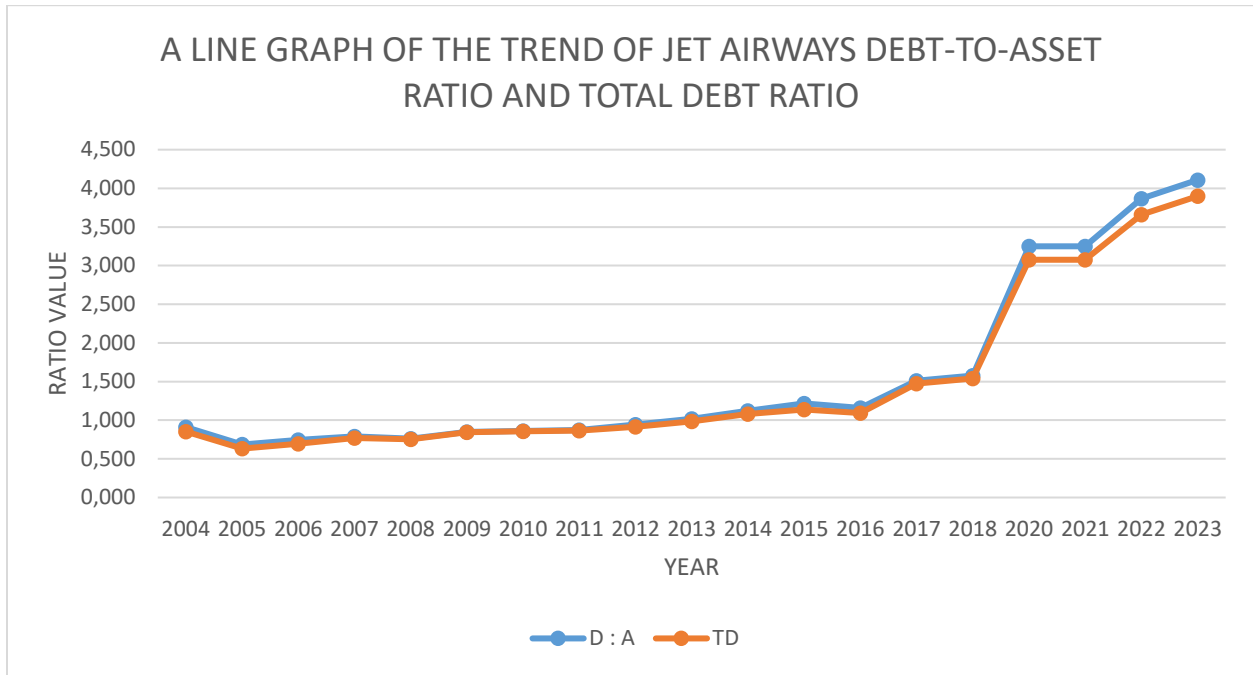
Source: Researcher

The trend of the Debt-to Asset ratio and the Total debt ratio in the graph above implies that two leverage ratios worsened in each consecutive year, as the debt levels in the airline increased. For example, in 2023, both the total debt ratio and debt-to-asset ratio were about 4, meaning that the company had debts that were approximately four times more than its asset base. Thus, the high indebtedness led to the bankruptcy of the Jet Airways.

a) Explanation on the Negative Relationship Between Debt-to-assets ratio and Total debt ratio and Probability of Bankruptcy

The two significant ratios, Debt-to-assets ratio, and Total debt ratio, offer a critical rationale about the relationship between them and the possibility of financial distress. In the instance where Debt-to-assets and Total debt ratios have a positive relationship with the probability of financial distress, various factors can give insight into the unexpected relationship. They include

110

the unsustainable growth of Jet Airways, industrial norms, long-term debt strategies, and support from lenders.

Jet Airways operated in an unsustainable growth period, especially after acquiring Air Sahara. The aftermath was that the airline had a larger fleet, a wider market base, and a bigger workforce. It is this rapid growth that necessitated the company to seek external funding over a shorter period of time to finance its growth. However, the increased growth was unsustainable and relied on factors that led to financial distress. For instance, the newly acquired fleet and the large workforce increased Jet Airway's operating costs multiple times over. The airline resorted to excessive debt to fund its expansions, which eventually outweighed profitability, causing financial distress.

Secondly, the capital-intensive nature of the airline sector implies that Jet Airways could still take on more debt while remaining operationally feasible. This industry norm explains why the company had high debt levels. For Jet Airways, the negative relationship between both the Debt-to-assets and Total debt ratios could only hold for a minimum period if the carrier had proper plans to manage the debt as well as substantial revenues to repay it. Therefore, Jet Airways still faced bankruptcy due to its inability to gain sustainable profits in an industry where its rivals also had debt.

The third reason for the company's negative Debt-to-assets and Total debt ratios relationship with bankruptcy coincides with its long-term debt strategies. From the early 2000s, Jet Airways managed to acquire long-term debt, which increased its debt ratios. The company intended to repay the loans in the long term, and in such occasions, even if the Debt-to-Asset's ratio is relatively high, the extended maturity schedule allows the company to have more time to generate cash flow and refinance or repay the debt, reducing the immediate risk of financial

distress. However, this plan failed as the airline did not have sufficient future cash flow when the long-term debts matured. Financial support from lenders also negates the relationship between Debt-to-assets and Total debt ratios. Such financial aid includes loans, lines of credit, and other forms of borrowing that increase the total debt of the airline. The support provides a safety net and reduces the probability of financial distress, even if the company has a relatively high Debt-to-Asset's ratio. When lenders provide financial support, it distorts the Debt-to-assets ratio and Total debt ratios because these ratios are calculated based on the company's own assets and debts, excluding the borrowed funds. Jet Airway's lenders include the Jalan-Kalrock consortium, which continues to make efforts to revive the airline.

4.6.5 *Classification Table*

Table 15 below tabulates the percentage of correct classifications for the logistic model. In logistic regression, the model performance can also be evaluated using the classification table that rates the model over 100%, and the figure is called percentage accuracy. The logistical model correctly classified 78.9% of overall cases, which is higher than 50%. Thus, the results imply that the model can be used when studying and comparing financial ratios during distressed and non-distressed periods.

Table 15: Jet Airways Coefficients and significance values

Logit Classification Output Table[a,b]

	Observed		Predicted		
			Bankruptcy		Percentage
			0	1	Correct
Step 0	Bankruptcy	0	15	0	100.0
		1	4	0	.0
	Overall Percentage				78.9

Source: Researcher (SPSS Statistical Results)

Figure 11: Logit Plot of the Predicted Probabilities of Bankruptcy for Jet Airways.

Predicted Logit Function of Jet Airways's Banruptcy
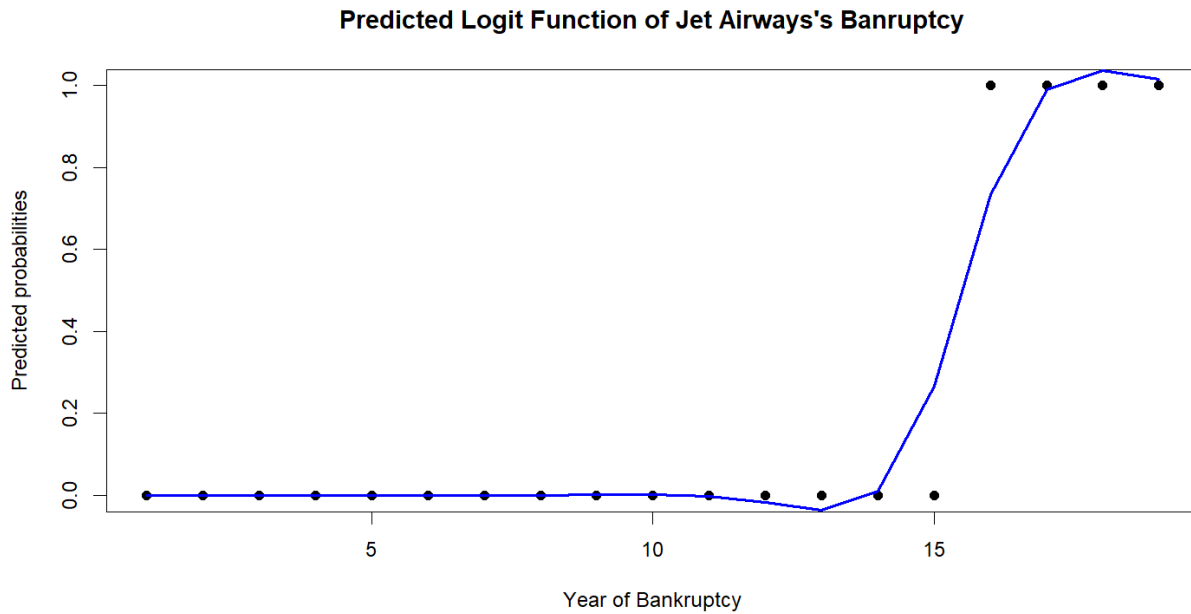
Source: Researcher

Figure 10 above shows how the logit function fits the data of the ratios on a probability of between 0 and 1. The plotted probabilities correctly classify the years when the company was bankrupt and those in which it filed for bankruptcy. It is therefore a reliable model for predicting Jet Airways' bankruptcy.

4.7 Summary

The results in this chapter offer a concise response to why Jet Airways went bankrupt. The airline's problems increased when it acquired Air Sahara to compete with other LCCs, but stiff completion hampered this approach. Hence, the mounting debt eventually impacted its profitability, as noted by the worsening of the financial ratios over the study period. The researcher

presents the data collected from publicly available platforms and conducts analysis using both the Z-scores and logistic regression. Moreover, the visual representation of the trend of the company's financial situation from 2004 to 2023 leads to the findings that liquidity, profitability, and leverage ratios have an effect on the probability of financial distress for Jet Airways.

Chapter 5 DISCUSSION, IMPLICATIONS, AND CONCLUSIONS

5.1 Introduction

This section provides a conclusive overview of the whole study. The first part discusses the main focus arrears of the study. Afterward, the second part explores the study's implications, especially for Jet Airways and other airlines in the Indian economy. In the final segment, the study concludes by suggesting topics that require further research concerning financial ratios and their role in predicting bankruptcy.

5.2 Findings and Discussion

5.2.1 *What financial ratios, including Z-score, can be used to identify the debt crisis at Jet Airways and to validate the hypothesis?*

The main financial ratios that can help to identify the debt crisis at Jet Airways are categorized based on their significance to the operational efficiency of the business and the airline's sustainability in the long term. This study applied both theoretical and empirical insights to select the ratios that clearly depict the debt crisis at Jet Airways.

The first type of financial ratios that predict the debt crisis at Jet Airways falls within the profitability category. The negative relationship means that if Jet Airways had higher profitability ratios, it would be less likely to experience financial distress than with lower profitability ratios. Previous studies with similar findings include Mujkić and Poljašević (2023), Mahardini and Bandi, 2023, Rachmawati and Maulana (2022), and Isayas (2021). Minimal profitability affected Jet Airways leading it to insolvency. Thus, the first hypothesis, H1, is validated. Under this category, the main ratios used in the study are Net Profit Margin, Return on Assets, Retained Earnings to Total Assets, and EBIT to Total Asset ratio. Results from the logistic regression reveal that Net

Profit Margin, Return on Assets, and Retained Earnings to Total Assets ratios have a negative relationship with the probability of bankruptcy for Jet Airways. However, the EBIT to Total Assets ratio shows a positive correlation with the probability of bankruptcy for Jet Airways. Thus, for Jet Airways, the three ratios of Net Profit Margin, Return on Assets, and Retained Earnings to Total Assets were able to predict the airline's financial distress.

The second hypothesis, H2, states that liquidity ratios also offer a clear depiction of the financial distress at Jet Airways. Over the study period, Jet Airways' liquidity levels are at concerning levels leading to financial distress. In this study, the applicable liquidity ratio is Working Capital to Total Assets ratio. The results of the regression illustrate that there is a negative and significant relationship between Working Capital to Total Assets ratio and the probability of bankruptcy for Jet Airways. Gandy (2019), Kuraesin (2021), Bo-Hyung and Sang-Ho Lee (2018) also obtained similar results in their research work. Thus, the Working Capital to Total Assets ratio is a reliable metric that Jet Airways should monitor to minimize the chances of financial distress.

The third hypothesis, H3, states that leverage ratios have a positive impact on the possibility of financial distress. Leverage ratios in this study included Return on Assets, Total Debt to Equity, Debt-to-assets, Total debt, and Market Value Equity to Book Value of Total Debt ratios. Only the Total Debt to Equity ratio had a positive but insignificant effect on Jet Airways' financial distress. The other three leverage ratios, Debt-to-assets, Total debt, and Market Value Equity to Book Value of Total Debt, have an unexpected negative relationship to Jet Airway's bankruptcy. Based on the results chapter, some of the reasons why there is an undesired negative relationship between Jet Airways' debt ratios, and bankruptcy include the capital-intensive nature of the aviation industry, rapid and unsustainable growth after the acquisition of Air Sahara, financial

support from local Indian banks, and the company's long-term debt strategy. The four factors skew the relationship between financial leverage ratios and the possibility of financial distress.

Altman's Z-scores also show the debt crisis at Jet Airways during the study period since ZETA values drop consistently from positive numbers to negative digits. By 2012, an analysis of the company's financial health revealed that it was in the distressed zone, where Z-scores were below 1.81. Hence, this finding validates hypothesis H4, which states that lower Z-scores for key financial ratios will be observed in periods of financial distress for Jet Airways. Altman's Z-score correctly matches the real situation of Jet Airways and is therefore a reliable method as postulated by Supriyanto and Darmawan (2018), Puro et al. (2019), and Dwingish and Yahya (2023). Extended periods of indebtedness and minimal profit margins eventually impacted the company's financial health and lowered its Z-score in each subsequent year. Hence, the years from 2016 to 2021 illustrate financial distress.

5.2.2 *The trend of financial ratios based on Regression analysis that are relevant for forecasting financial distress*

Data from Jet Airways audited financial statements-standalone depict a general decline in key financial ratios that are relevant for forecasting distress. The Modified Z-score model uses four kinds of ratios such as Working Capital to Total Assets, Retained Earnings to Total Assets, EBIT to Total Assets, and Market Value Equity to Book Value of Total Debt. For the years under study, Jet Airways' Working Capital to Total Assets ratio consistently recorded negative values from 2008 to 2023, indicating a persistent discrepancy between the company's working capital and its total assets. Similarly, Jet Airways' Retained Earnings to Total Assets ratio dropped significantly to the negative zone from 2013 to 2021. Additionally, the EBIT to Total Assets ratio values reduces from positive to negative numbers over the study period.

117

Apart from the four types of ratios utilized in the modified Z-score model, other ratios used in the logit function also exhibited financial distress. The regression analysis incorporated other ratios such as Net Profit Margin, Return on Assets, Total Debt to Equity, Debt-to-assets, and Total debt ratio, which were relevant in forecasting financial distress. Net Profit Margin and Return on Assets are profitability that illustrate whether a firm is generating sufficient revenue and income from its operations. For the case of Jet Airway, the two crucial profitability ratios decline continuously over time. Net Profit Margin directly signified financial distress when the ratio values reduced from 0.903 in 2005 to -0.0834 in 2012 and -20.154 in 2023. As used in the regression model, Net Profit Margin forecasts the airline's bankruptcy. Furthermore, the Return on Assets ratio accurately reflects the diminishing operational efficiency of the company when it starts at 0.0342 in 2004 to consistent negative values onwards from 2008.

The last crucial set of ratios that were used in the regression analysis and are relevant for forecasting financial distress include the Total Debt to Equity ratio, Debt-to-assets ratio, and Total debt ratio. Between 2012 and 2018, the three financial leverage ratios exceeded the recommended levels of debt. The airline's financial statements depicted that the Total Debt to Equity ratio has been negative since 2012. A negative total debt-to-equity ratio means that a company's liabilities exceed its assets, which is a risky situation, as it means that the company is not able to meet its financial obligations. Secondly, the company's debt-to-asset ratio also rises to high levels that depict financial distress. After 2012, Jet Airways' debt-to-asset ratio exceeded 1 and increased continuously to 3.24 in 2021. It signifies that by 2021, the company's debt had inflated to be three times more than its assets. The same trend appears on the Total debt ratio and affirms that Jet Airways' bankruptcy was imminent.

5.2.3 *How Jet Airways can use them as a guide for avoiding future financial distress*

Since this study explores a historical timeline of how Jet Airways accumulated debt to unmanageable levels, it also acts as a guide to how the company can avoid such occurrences in the future. Through financial ratios, Jet Airways can determine how to boost its liquidity, profitability, debt leverage, and operational efficiency and prevent future instances of bankruptcy. To avoid future financial distress, Jet Airways should focus on improving its overall liquidity position. If the airline's current ratio and quick ratio remain low, it will struggle to meet its immediate and future financial obligations. Once the airline resumes operations, it must monitor its working capital management by improving its cash flow.

Profitability ratios can guide the management at Jet Airways on how to improve its gross profit margin and decide to improve its cost management practices and pricing strategies. With better cost management, the airline will be sustainable in the future. Similarly, appropriate pricing strategies that emulate those of LCCs will enable the airline to attract customers and gain a substantial market base. The finding in this study also suggests that if Jet Airways renegotiates its contracts with vendors and suppliers, optimizes its route network, and implements efficiency measures across its operations, it will minimize the chances of bankruptcy.

As noted, Jet Airways' finances landed in a difficult situation after its debt grew to enormous levels. Hence, as a guide, financial ratios will help the company avoid borrowing more loans and deteriorate its leverage ratios. An important lesson that Jet Airways management can learn from this study is that leverage ratios can help the company to develop a comprehensive debt management plan. An effective debt management plan will help Jet Airways evade cases of debt traps in the future. When the company resumes operations, its management must refinance its debt with lower interest rate options and negotiate with creditors for debt restructuring or extended

payment terms while ensuring it pays current lenders on time. Currently, the bank consortium is failing to pay lenders, which hinders potential investors from helping with funds. Therefore, the various ratios will help the airline stabilize its financial position in the future.

5.3 Implications

5.3.1 *Practical implications*

A vital practical implication from the study is that Jet Airways and other airlines in the Indian economy should focus on improving their profitability ratios, such as Net Profit Margin, Return on Assets, Retained Earnings to Total Assets, and EBIT to Total Asset ratio. An improvement in profitability for airlines eventually minimizes the likelihood of financial distress and bankruptcy.

Similar to profitability, Jet Airways needs to closely monitor its liquidity levels, particularly the Working Capital to Total Assets ratio. Maintaining a healthy liquidity position can help the airline meet its immediate and future financial obligations, minimizing the chances of financial distress.

Thirdly, Jet Airways should be cautious about its leverage ratios, such as Total Debt to Equity, Debt-to-assets, and Total debt ratios. The airline should develop a comprehensive debt management plan to avoid future financial distress, including renegotiating contracts with vendors and suppliers, optimizing the route network, and implementing efficiency measures across operations.

A fourth practical implication from this study is that Jet Airways can improve its profitability and sustainability by focusing on better cost management practices and implementing

appropriate pricing strategies. Emulating successful low-cost carriers (LCCs) in the Indian context and optimizing cost structures will help attract customers and achieve a substantial market base.

5.3.2 *Theoretical implications*

This study relied on proven theoretical foundations to study how financial ratios can be used to predict financial distress. The study's findings validate the significance of financial ratios in predicting financial distress and bankruptcy in the airline industry, specifically in the case of Jet Airways. It confirms the relevance of profitability ratios, liquidity ratios, and leverage ratios as indicators of financial health and their relationship to the probability of bankruptcy.

Both Altman's modified Z-score and Ohlson's O-score model are supported by this study's findings. Hence, the research contributes to developing predictive models, such as the modified Z-score and Ohlson O-score models, that incorporate relevant financial ratios and factors to forecast financial distress. The findings demonstrate the effectiveness of these models in identifying the debt crisis at Jet Airways and potentially other airlines.

Another important theoretical implication of the study is that the aviation industry has unique features that are essential in interpreting the relationship between financial ratios and bankruptcy. Factors such as the capital-intensive nature of the industry, rapid and unsustainable growth, financial support from local Indian banks, and long-term debt strategies contribute to the relationship between leverage ratios and the possibility of financial distress.

5.3.3 *Methodological implications*

The primary methodology used in this study highlights the importance of carefully selecting financial ratios that are most relevant to the specific research objective. For instance, the

choice of ratios is informed by theoretical insights and empirical evidence. Hence, future research should prioritize the inclusion of ratios that have demonstrated predictive power in similar contexts.

The two methodological aspects of this study, which are Z-scores and the logistic regression model, yielded a proper understating of the relationship between financial ratios and the probability of bankruptcy. It is evident that the incorporation of the Z-scores offers a comprehensive approach to studying the patterns and factors that lead to bankruptcy.

Despite the fact that the researcher's methodology gave reliable results, the study still cautions on the limitations and potential biases inherent in the methodology and data used. It offers a polite reminder that future researchers should critically evaluate the strengths and weaknesses of their approach. Some of the ways that future research can improve their findings are by employing additional data sources, refining data collection methods, or adopting alternative research designs.

5.3.4 *Limitations and future directions*

This research focused solely on Jet Airways as a case study, which limits the generalizability of the findings to other airlines or industries. Future research should consider incorporating a larger sample size or conducting comparative studies across multiple airlines to enhance the external validity of the results.

Another limitation of this study is based on the provision of the O-score model. Compared to other financial distress prediction models, the O-score model also incorporates external factors and macroeconomic conditions. In this study, the researcher mostly focused on financial ratios and their influence on bankruptcy but gave minimal attention to external factors, such as changes in the economic environment or regulatory policies and managerial bottlenecks. Hence, future

research should incorporate a broader analysis of macroeconomic conditions and industry-specific factors to account for external influences on financial distress.

5.3.5 *Contribution to the field*

The findings of this study highlight some of its contributions to the field of financial distress prediction and management. For instance, by analyzing the financial ratios of Jet Airways and their relationship to the probability of bankruptcy, the research provides empirical evidence supporting the use of specific financial ratios in predicting financial distress. Additionally, this paper expands the application of Altman's model and logistic regression to the aviation industry and provides insights into the reliability of this approach in assessing the financial health of airlines. Also, the paper enhances the topic of bankruptcy by postulating that profitability ratios, liquidity ratios, and leverage ratios are relevant in predicting financial distress in the airline industry.

Moreover, the findings are recommendations from this study and act as a base for future studies. For example, the research provides practical guidelines for Jet Airways and other airlines in managing and avoiding financial distress. The findings of the relationship between financial ratio and bankruptcy necessitate the researcher to provide actions that improve liquidity, profitability, debt leverage, and operational efficiency for airline management to mitigate the risk of bankruptcy and enhance financial stability. Overall, the researcher highlights how the aviation industry has varying dynamics that future studies should also incorporate while studying bankruptcy.

5.4 Conclusion and Future Research

A corporate entity's success or failure inherently lies in its management's efforts and professional expertise that sustain the brand's value and operations strategy. Other factors, such as economic conditions and competition, still impact a firm, but the decision-making power in its leadership is the ultimate determinant of the firm's direction, strategies, and overall performance. This study explores the events and circumstances that fueled the eventual bankruptcy of Jet Airways. Since large amounts of debt contributed to the insolvency of the company, this paper focuses on how financial ratios and the Z-score highlight the looming debt crisis in the airline between 2017 and 2021.

In this study, the researcher proposed four hypotheses to evaluate the role of ratios in establishing the reasons for financial distress in Jet Airways. Additionally, this study determines which ratios are effective in determining future financial bankruptcy of the airline. Through three research questions, the study identifies the causes of financial distress for Jet Airways, how the airline should utilize financial ratios to mitigate its current financial distress, and how the financial ratios help in forecasting debt crisis.

The first hypothesis, HI postulates that profitability ratios have a negative impact on the possibility of financial distress. Based on the results, the study confirms a negative relationship between profitability ratios and financial distress. Net Profit Margin, Return on Assets, and Retained Earnings to Total Assets ratios have a negative relationship with the probability of bankruptcy for Jet Airways. The negative relationship means that if Jet Airways had higher profitability ratios, it would be less likely to experience financial distress than with lower profitability ratios. Previous studies with similar findings include Mujkić and Poljašević (2023), Mahardini and Bandi (2023), Rachmawati and Maulana (2022), and Isayas (2021).

124

Secondly, H2 states that liquidity ratios have a negative impact on the possibility of financial distress. Based on the results of the logistic regression, the study confirms that there is a negative and significant relationship between Working Capital to Total Assets ratio and the probability of bankruptcy for Jet Airways.

H3 aims to study whether leverage ratios have a positive impact on the possibility of financial distress. Leverage ratios that the researcher explored included Return on Assets, Total Debt to Equity, Debt-to-assets, Total debt, and Market Value Equity to Book Value of Total Debt ratios. From the results, Total Debt to Equity ratio had a positive but insignificant effect on Jet Airways' financial distress. H4 states that lower Z-scores for key financial ratios will be observed in periods of financial distress for Jet Airways. The paper's findings confirm H4 since Jet Airways' Z-scores reduce significantly from positive numbers to negative digits throughout the study period.

Each of the four hypotheses deduce the continuous drop in Jet Airways' financial health, and assert the role of financial ratios in predicting financial distress. As depicted in the graphical illustrations, the downward trend of the financial ratios used in the regression analysis show that profitability ratios, liquidity ratios, and leverage are reliable in forecasting financial distress. Hence, since financial ratios correspond to the financial health of Jet Airways, the airline should ensure it has high profitability and liquidity ratios to avoid future distress. Also, the results reveal that through the analysis of leverage ratios, Jet Airways should develop a comprehensive debt management plan to stabilize its indebtedness and achieve sustainable debt levels in future.

The study finds that apart from its high debt levels, the acquisition of Air Sahara, cut-throat competition from Low-Cost Carriers, and high fuel costs contributed highly to the financial distress at Jet Airways. Another aspect related to the acquisition was that it complicated Jet Airways' operational efficiency and increased costs to unsustainable levels. The stiff competition

from local LCCs hampered Jet Airways' ambitions to expand its customer base while high fuel costs exacerbated the financial burden of the airline.

In conclusion, financial ratios act as a yardstick to measure and determine the financial health of a company. Hence, this study proposes that Jet Airways should use and monitor the three groups of financial ratios, which include profitability ratios, liquidity ratios, and leverage ratios, to analyze the current debt crisis and design strategic measures to prevent future financial struggles.

Future research can also investigate how airlines in a debt crisis should restructure their operations, explore alternative revenue streams, and implement cost-saving measures to improve their financial viability and sustainability. Additionally, examining the effectiveness of government interventions and regulatory policies in supporting distressed airlines could provide valuable insights for the industry. Overall, Jet Airways must implement a proper debt management plan and monitor its profitability and liquidity ratios to evade future financial distress.

REFERENCES

a) Books and Textbooks:

1. Kimmel, P.D., Weygandt, J.J. and Kieso, D.E., 2020. *Financial accounting: tools for business decision-making*. John Wiley & Sons, pp. 237

2. Prusak, B. (2020). *Corporate Bankruptcy Prediction*. MDPI.

3. Robinson, T.R., 2020. *International financial statement analysis*. John Wiley & Sons.

4. Sriram, M., (2022). *Anomalies in the Financial Records of Jet Airways*. SAGE Publications: SAGE Business Cases Originals.

b) Scientific and Professional Articles:

5. Ahmad, S. M. H. G., Ramakrishnan, S., Raza, H., & Ahmad, H. (2018). Review of Corporate Governance Practices and Financial Distress Prediction. *International Journal of Engineering & Technology*, *7*(4.28), 30. https://doi.org/10.14419/ijet.v7i4.28.22385

6. Al-Ali, M.S., (2018). Predicting financial distress for mobile telecommunication companies listed on the Kuwait stock exchange using Altman's model. *Journal of Economics Finance and Accounting*, *5*(3), 242–248.

7. Bahadir, S., & Şahin, Y. (2023). *Analysis of Financial Success Situations of Aviation Sector Businesses Before and After Covid-19*. https://doi.org/10.30546/2616-4418.26.2023.70

8. Balasubramanian, S.A., Radhakrishna, G.S., Sridevi, P. and Natarajan, T., 2019. Modeling corporate financial distress using financial and non-financial variables: The case of Indian listed companies. *International Journal of Law and Management*. pp.13-56

9. Bo-Hyung Lee, & Sang-Ho Lee. (2018). A Study on Financial Ratio and Prediction of Financial Distress in Financial Markets. *Journal of Distribution Science*, *16*(11), 21–27. https://doi.org/10.15722/jds.16.11.201811.21

10. Ceylan, I. E. (2021). The Impact of Firm-Specific and Macroeconomic Factors on Financial Distress Risk: A Case Study from Turkey. *Universal Journal of Accounting and Finance*, *9*(3), 506–517. https://doi.org/10.13189/ujaf.2021.090325

11. Dance, M. and Imade, S., 2019. Financial ratio analysis in predicting financial conditions distress in Indonesia Stock Exchange. *Russian Journal of Agricultural and Socio-Economic Sciences*, *86*(2).

12. Divekar, V., & Sukhari, S. (2021). Assessing the financial soundness of Indian aviation sector companies by using altman's z-score model & pilarski's p-score model. *Universal Journal of Accounting and Finance*, *9*(6), 1222-1234.

13. Dwiningsih, S., & Yahya, M. Z. (2023). Analysis of Springate Method and the Altman Z-Score Method for Predicting the Financial Distress. *TGO Journal of Education, Science and Technology*, *1*(1), 59-68.

14. Fawzi, N. S., Kamaluddin, A., & Sanusi, Z. M. (2015). Monitoring Distressed Companies through Cash Flow Analysis. *Procedia Economics and Finance*, *28*, 136–144. https://doi.org/10.1016/s2212-5671(15)01092-8

15. Gandhy, F. (2019). Analysis of Financial Ratio to Predict Financial Distress Conditions (Empirical Study on Manufacturing Companies listed on the Indonesia Stock Exchange for 2014-2017). *International Journal of Business and Management Invention (IJBMI)*, *8*(6), 27-34.

16. Ghosh, P. (2020). *Failure of Jet Airways: a study on the implication of Altman's modified Z Score Vs. Fuzzy logic Z score.* (UGC Care Journal). pp.103–117.

17. Gritta, R. D., Bahram Adrangi, Davalos, S., & Bright, D. (2008). *A Review of the History of Air Carrier Bankruptcy Forecasting and the Application of Various Models to the US Airline Industry, 1980-2005*. 193–214.

18. Ha, H. H., Dang, N. H., & Tran, M. D. (2023). Financial Distress Forecasting with A Machine Learning Approach.

19. Horak, J., Vrbka, J., & Suler, P. (2020). Support Vector Machine Methods and Artificial Neural Networks Used for the Development of Bankruptcy Prediction Models and their Comparison. *Journal of Risk and Financial Management*, *13*(3), 60. https://doi.org/10.3390/jrfm13030060

20. Huang, C. (2021). Assessing the financial performance of airlines in the Asia-Pacific region. *Investment Management and Financial Innovations*, *18*(2), 234–244. https://doi.org/10.21511/imfi.18(2).2021.19

21. Huang, Y.P. and Yen, M.F., 2019. A new perspective of performance comparison among machine learning algorithms for financial distress prediction. *Applied Soft Computing*, *83*, p.105663.

22. Isayas, Y. N. (2021). Financial distress and its determinants: Evidence from insurance companies in Ethiopia. *Cogent Business & Management*, *8*(1), 1951110. https://doi.org/10.1080/23311975.2021.1951110

23. Kamal U., A., Ishak, N. and Mohammed, N.F., (2019). Financial distress prediction through cash flow ratios analysis. *International Journal of Financial Research*, *10*(3), 63–76.

24. Kliestik, T., Valaskova, K., Lazaroiu, G., Kovacova, M., & Vrbka, J. (2020). Remaining Financially Healthy and Competitive: The Role of Financial Predictors. *Journal of Competitiveness*, *12*(1), 74–92. https://doi.org/10.7441/joc.2020.01.05

25. Kourtis, E., Kourtis, G. and Curtis, P., 2019. Integrated financial ratio analysis as a navigation compass through the fraudulent reporting conundrum: a case study.

26. Kuizinienė, D., Krilavičius, T., Damaševičius, R., & Maskeliūnas, R. (2022). Systematic Review of Financial Distress Identification using Artificial Intelligence Methods. *Applied Artificial Intelligence*, *36*(1). https://doi.org/10.1080/08839514.2022.2138124

27. Kuraesin, A., Susanti, S., & Azis, Y. M. (2021). Financial Ratio Analysis in Predicting Financial Distress of Food and Beverage Companies with Logistic Regression. *Sinergi Jurnal Ilmiah Ilmu Manajemen, 11*(2).

28. Lumbantobing, R. (2020, April). The effect of financial ratios on the possibility of financial distress in selected manufacturing companies which listed in Indonesia Stock Exchange. In *6th Annual International Conference on Management Research (AICMaR 2019)* (pp. 60-63). Atlantis Press.

29. Mahardini, N. Y., & Bandi, B. (2023). Choosing Ratio in The Financial Distress Prediction Model. *Journal of Namibian Studies: History Politics Culture*, *34*, 1213-1232.

30. Mujkić, E., & Poljašević, J. (2023). Prediction of Insolvency Using Logistic Regression: The Case of the Republic of Srpska. *Ekonomski vjesnik/Econviews-Review of Contemporary Business, Entrepreneurship and Economic Issues*, *36*(1), 127-141.

31. Nair, J. and Sachdeva, J.K., 2018. Financial distress indicators of Indian manufacturing companies–a factor analysis approach. *Global Journal for Research Analysis*, *7*(3), pp.66-69.

32. Nugraha, N.M., Puspitasari, D.M. and Amalia, S., 2020. The Effect of Financial Ratios Factors on the Percentage of Income Increasing Automotive Companies in Indonesia. *International Journal of Psychosocial Rehabilitation*, *24*(1), pp.2539-2545.

33. Paul, V. R., (2019). Study of Financial Distress of Public Sector Undertakings Companies in India. *Journal of Management*, *6*(3).

34. Paule-Vianez, J., Gutiérrez-Fernández, M., & Coca-Pérez, J. L. (2019). Prediction of financial distress in the Spanish banking system. *Applied Economic Analysis*, *28*(82), 69–87. https://doi.org/10.1108/aea-10-2019-0039

35. Peppal, S., (2018). An Empirical Analysis of Financially Distressed Indian Companies.

36. Perinpanathan, R. (2015). Using Altman's Model and Current Ratio to Assess the Financial Distress of Listed Companies in the Default Board of Colombo Stock Exchange. *Scientific Research Journal (SCIRJ)*, *3*.

37. Puro, N., Nancy Borkowski, D. B. A., Hearld, L., Carroll, N., Byrd, J., Smith, D., & Ghiasi, A. (2019). Financial distress and bankruptcy prediction: a comparison of three financial distress prediction models in acute care hospitals. *Journal of Health Care Finance*.

38. Rachmawati, D., & Maulana, A.D. (2022). Forecasting Financial Distress of Airline Company: The Impact of Financial Performance. *Journal of International Conference Proceedings, 5*(4), 85-95.

39. Rafatnia, A.A., Suresh, A., Ramakrishnan, L., Abdullah, D.F.B., Nodeh, F.M. and Farajnezhad, M., 2020. Financial distress prediction across firms. *Journal of Environmental Treatment Techniques*, *8*(2), pp.646-651.

40. Rahman, M., Sa, C.L. and Kaium Masud, M., 2021. Predicting Firms' Financial Distress: An Empirical Analysis Using the F-Score Model. *Journal of Risk and Financial Management*, *14*(5), p.199.

41. Rashid, C.A., (2018). The efficiency of financial ratios analysis for evaluating companies' liquidity. *International Journal of Social Sciences & Educational Studies*, *4*(4), 110.

42. Rossi, M., Festa, G., Kolte, A. and Shams, R., 2020. The strange case of the Jet Airways bankruptcy: a financial structure analysis. *Journal of Operational Risk*, *15*(4).

43. Rossi, M., Kolte, A., Festa, G., Pawar, P. and Gunardi, A., 2019, September. Financial structure instability as failure symptom in the aviation industry-the Jet Airways bankruptcy case. In *12th Annual Conference of the EuroMed Academy of Business* (pp. 1047-1057).

44. Sayari, N., & Mugan, C. S. (2017). Industry Specific Financial Distress Modeling. *BRQ Business Research Quarterly*, *20*(1), 45–62. https://doi.org/10.1016/j.brq.2016.03.003

45. Shi, Y., & Li, X. (2021). Determinants of financial distress in the European air transport industry: The moderating effect of being a flag-carrier. *ProQuest*, e0259149. https://doi.org/10.1371/journal.pone.0259149

46. Subalakshmi, S., Grahalakshmi, S. and Manikandan, M., 2018. Financial Ratio Analysis of SBI [2009-2016]. *ICTACT Journal on Management Studies*, *4*(01), pp.2395-1664.

47. Supriyanto, J. and Darmawan, A., 2018. The effect of financial ratio on financial distress in predicting bankruptcy. *Journal of Applied Managerial Accounting*, *2*(1), pp.110-120.

48. Tikku, A. and Sherman, H., 2019. The Shut Down of Jet Airways. *Global Journal of Economics and Finance; Vol*, *3*(3).

49. Waqas, H., & Md-Rus, R. (2018). Predicting financial distress: Applicability of O-score model for Pakistani firms. *Business and Economic Horizons*, *14*(2), 389–401. https://doi.org/10.15208/beh.2018.28

50. Zainudin, E.F. and Hashim, H.A., 2016. Detecting fraudulent financial reporting using financial ratio. *Journal of Financial Reporting and Accounting*.

c) Internet Sources:

51. Timmons, H. (2007, April 12). Jet Airways agrees to take over Air Sahara. *The New York Times*. Retrieved from https://www.nytimes.com/2007/04/12/business/worldbusiness/12iht-sahara.4.5258307.html

52. Panduwinasari, E., Afandi, A., & Wahyuni, H. (2020). *Low-Cost Carrier in Airlines: In Terms of Cost Perspective*. https://www.atlantis-press.com/article/125938784.pdf

53. Pande, P. (2021, January 4). What Happened To Air Sahara? Retrieved June 16, 2023, from Simple Flying website: https://simpleflying.com/air-sahara-what-happened/

54. Luce, N. (2018, June 5). Operational Performance Can Predict Financial Distress in the Airline Industry. Retrieved May 18, 2023, from Vanderbilt Business School website: https://business.vanderbilt.edu/news/2018/06/05/operational-performance-financial-distress-airline/

55. Rebello, J., & Chowdhury, A. (2022, October 6). Jet Airways lenders, "buyer" clear runway for deal to take off. *The Economic Times*. Retrieved from https://economictimes.indiatimes.com/industry/banking/finance/banking/jet-airways-lenders-buyer-clear-runway-for-deal-to-take-off/articleshow/94667890.cms

List of Tables

List of Figures

APPENDIX A: Canonical Correlation Matrix

	ATR	ROE:E	NP	ROA	CR	QR	TD:E	D:A	LTD	TD	WC:TA	RE:TA	EBIT:TA	MVE:BVTD
ATR	1													
ROE:E	0.042	1												
NP	0.561	-0.127	1											
ROA	0.445	-0.195	0.573	1										
CR	0.124	-0.253	0.377	0.514	1									
QR	0.128	-0.147	0.366	0.507	0.993	1								
TD:E	-0.094	0.867	0.069	0.093	0.242	0.142	1							
D:A	0.532	0.161	0.840	0.589	0.542	0.527	-0.073	1						
LTD	0.590	-0.404	-0.740	0.671	0.586	0.554	0.264	0.910	1					
TD	0.527	0.165	0.840	0.589	0.551	0.536	-0.080	1.000	0.908	1				
WC:TA	0.584	-0.199	0.836	0.629	0.598	0.584	0.111	0.993	0.939	0.993	1			
RE:TA	0.534	-0.157	0.840	0.588	0.539	0.525	-0.070	1.000	0.909	1.000	0.992	1		
EBIT:TA	0.561	-0.127	1.000	0.574	0.380	0.846	-0.070	0.840	0.740	0.839	0.836	0.840	1	
MVE:BVTD	0.262	-0.341	0.294	0.466	0.574	0.810	0.399	0.379	0.462	0.389	0.444	0.377	0.297	1

Figure 12 : Canonical Correlation Matrix

Figure 13: Excel Calculations Part 1

Ratio or Calculation	Expression	Location in Excel
Book Value of Total Debt	Obtained in cell B66 through summation of Long-Term Borrowings (B10), Short Term Borrowings (B16), and Other Long-Term Liabilities (B12)	
Total Liabilities	Obtained in cell B67 through summation of Total Non-Current Liabilities (B14) and Total Current Liabilities (B20).	
Total Debt	Obtained in cell B68 through summation of Short-Term Borrowings (B16), Trade Payables (B17), Other Current Liabilities (B18), Long Term Borrowings (B10), and Deferred Tax Liabilities [Net] (B11)	
Working Capital/Total Assets	Calculated on cell X3 as division of Working Capital/Total Assets	
Retained Earnings/Total Assets	Calculated on cell X4 as division of Retained Earnings/Total Assets	
EBIT/Total Assets	Calculated on cell X5 as division of EBIT/Total Assets	
Market Value of Equity/ Book Value of Total Debt	Calculated on cell X6 as division of Market Value of Equity/ Book Value of Total Debt.	

Source: Researcher

Figure 14: Excel Calculations Part 2

Ratio or Calculation	Expression	Location in Excel
Debt-to-assets ratio	Calculate as a division of Total Liabilities (B67) with Total Assets (B42) which are found in the Balance Sheet.	D17 ='BALANCE SHEET'!B67/'BALANCE SHEET'!B42 1 Ratio — Mar_2023 17 Debt-to-assets ratio — 4.108387399
Long-term debt ratio	Calculate as a division of Long-Term Borrowings(B10) with Total Assets (B42) which are found in the Balance Sheet.	D18 ='BALANCE SHEET'!B10/'BALANCE SHEET'!B42 1 Ratio — Mar_2023 18 Long-term debt ratio — 0.003551124
Total Debt ratio	Calculate as a division of Total Debt (B68) with Total Assets (B42) which are found in the Balance Sheet.	D19 ='BALANCE SHEET'!B68/'BALANCE SHEET'!B42 1 Ratio — Mar_2023 19 Total debt ratio — 3.897976215
Asset Turnover Ratio (from % to decimals)	Calculate as a division of Asset Turnover Ratio (%) by 100	D25 =D21/100 1 Convert to decimals — Mar_2023 25 Asset Turnover Ratio (%) — 0
Return on Net worth / Equity (from % to decimals)	Calculate as a division of Return on Net worth / Equity (%) by 100	D26 =D22/100 1 Convert to decimals — Mar_2023 26 Return on Networth / Equity (%) — 0
Net Profit Margin (from % to decimals)	Calculate as a division of Net Profit Margin (%) by 100	D26 =D22/100 1 Convert to decimals — Mar_2023 27 Net Profit Margin (%) — -20.154
Return on Assets (from % to decimals)	Calculate as a division of Return on Assets (%) by 100	D28 =D24/100 1 Convert to decimals — Mar_2023 28 Return on Assets (%) — -0.1779

Source: Researcher

APPENDIX D: Balance Sheet Data Part 1

Table 16: Balance Sheet Data Part 1

Balance Sheet of Jet Airways (in Rs. Cr.)	Mar_2023	Mar_2022	Mar_2021	Mar_2020	Mar_2018	Mar_2017	Mar_2016	Mar_2015	Mar_2014
EQUITIES AND LIABILITIES									
SHAREHOLDER'S FUNDS									
Equity Share Capital	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6
Total Share Capital	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6
Reserves and Surplus	-17,620.10	-16,618.04	-15,693.46	-15,693.46	-7,355.60	-6,589.47	-3,442.97	-4,519.25	-2,656.74
Total Reserves and Surplus	-17,620.10	-16,618.04	-15,693.46	-15,693.46	-7,355.60	-6,589.47	-3,127.60	-4,203.88	-2,341.37
Total Shareholders Funds	-17,506.50	-16,504.44	-15,579.86	-15,579.86	-7,242.00	-6,475.87	-3,014.00	-4,090.28	-2,227.77
NON-CURRENT LIABILITIES									
Long Term Borrowings	20	5	0	0	5,085.56	6,967.85	6,210.33	6,607.30	6,546.07
Deferred Tax Liabilities [Net]	0	0	0	0	0	0	0	0	0
Other Long Term Liabilities	555.65	575.99	593.28	593.28	46.32	78.06	903.53	1,148.41	365
Long Term Provisions	295.55	295.55	295.55	295.55	422.1	374.32	336.35	247.92	214.26
Total Non-Current Liabilities	871.2	876.54	888.83	888.83	5,553.98	7,420.23	7,450.21	8,003.63	7,125.33
CURRENT LIABILITIES									
Short Term Borrowings	3,541.21	3,541.22	3,586.67	3,586.67	209.56	252.52	3,021.06	3,644.29	2,039.72
Trade Payables	9,124.41	8,509.07	8,200.03	8,200.03	6,433.33	4,667.45	5,872.01	5,427.82	4,840.46
Other Current Liabilities	9,267.86	9,027.32	9,521.16	9,521.16	7,503.70	6,751.34	5,806.37	5,811.37	6,451.85
Short Term Provisions	333.84	310.39	309.78	309.78	42.66	32.6	25.74	52.39	139.53
Total Current Liabilities	22,267.32	21,388.00	21,617.64	21,617.64	14,189.25	11,703.91	14,725.18	14,935.87	13,471.56
Total Capital And Liabilities	5,632.02	5,760.10	6,926.61	6,926.61	12,501.23	12,648.27	19,161.39	18,849.22	18,369.12
ASSETS									
NON-CURRENT ASSETS									
Tangible Assets	890.94	1,070.97	1,891.06	1,891.06	2,891.27	4,859.55	8,775.60	9,218.44	9,609.46
Intangible Assets	0	0	0	0	19.5	35.89	29.05	12.77	25.5
Capital Work-In-Progress	0	0	0	0	24.74	709.3	4.1	0	0
Other Assets	0	0	0	0	697.27	0	0	0	0
Fixed Assets	890.94	1,070.97	1,891.06	1,891.06	3,632.78	5,604.74	8,808.75	9,250.63	9,634.96
Non-Current Investments	696.17	696.17	696.17	696.17	696.7	696.67	696.19	696.17	1,641.21
Deferred Tax Assets [Net]	134.42	134.22	201.05	0	0	0	0	0	0
Long Term Loans And Advances	17.13	17.02	19.6	19.6	71.7	92.13	3,420.68	3,449.50	3,098.39
Other Non-Current Assets	932.94	932.94	929.04	1,130.09	1,046.60	919.79	38.23	0	0
Total Non-Current Assets	2,671.60	2,851.32	3,736.92	3,736.92	5,447.78	7,313.33	12,963.85	13,396.30	14,374.56
CURRENT ASSETS									
Current Investments	0	0	0	0	0	534	500	0	0
Inventories	370.59	374.17	387.27	387.27	481.1	498.76	1,049.71	927.02	803.76
Trade Receivables	5.28	4.21	11.62	11.62	1,279.35	1,333.62	1,625.48	1,374.48	1,209.22
Cash And Cash Equivalents	347.18	308.01	119.2	119.2	1,360.44	1,537.54	1,477.65	2,068.60	1,145.41
Short Term Loans And Advances	234.54	213.18	378.27	378.27	26.98	6.15	1,518.82	1,082.82	836.17
OtherCurrentAssets	2,002.83	2,009.21	2,293.33	2,293.33	3,905.58	1,424.87	25.88	0	0
Total Current Assets	2,960.42	2,908.78	3,189.69	3,189.69	7,053.45	5,334.94	6,197.54	5,452.92	3,994.56
Total Assets	5,632.02	5,760.10	6,926.61	6,926.61	12,501.23	12,648.27	19,161.39	18,849.22	18,369.12
OTHER ADDITIONAL INFORMATION									
CONTINGENT LIABILITIES, COMMITMENTS									
Contingent Liabilities	0	0	0	0	58,930.26	42,517.61	42,959.63	39,649.18	41,685.72
CIF VALUE OF IMPORTS									
Raw Materials	0	0	0	0	0	0	0	0	0
Stores, Spares And Loose Tools	0	0	0	0	0	0	0	0	0
Trade/Other Goods	0	0	0	0	0	0	0	0	0
Capital Goods	0	0	0	0	312.23	136.23	12.39	1,725.09	63.16
EXPENDITURE IN FOREIGN EXCHANGE									
Expenditure In Foreign Currency	0	0	0	0	11,726.62	10,644.65	10,260.53	9,731.28	9,748.38
REMITTANCES IN FOREIGN CURRENCIES FOR DIVIDENDS									
Dividend Remittance In Foreign Currency	--	--	--	--	--	--	--	--	--
EARNINGS IN FOREIGN EXCHANGE									
FOB Value Of Goods	--	--	--	--	--	--	--	--	--
Other Earnings	--	--	--	--	9,935.94	11,604.20	9,984.16	11,800.17	8,421.00
BONUS DETAILS									
Bonus Equity Share Capital	--	--	--	--	9.4	9.4	9.4	9.4	9.4
NON-CURRENT INVESTMENTS									
Non-Current Investments Quoted Market Value	--	--	--	--	--	--	--	--	--
Non-Current Investments Unquoted Book Value	--	--	--	--	2,354.25	2,354.22	696.19	696.17	1,641.21
CURRENT INVESTMENTS									
Current Investments Quoted Market Value	--	--	--	--	--	--	--	--	--
Current Investments Unquoted Book Value	--	--	--	--	--	--	--	500	--
Book Value of Total Debt	4,116.86	4,122.21	4,179.95	4,179.95	5,341.44	7,298.43	10,134.92	11,400.00	8,950.79
Total Liabilities	23,138.52	22,264.54	22,506.47	22,506.47	19,743.23	19,124.14	22,175.39	22,939.50	20,596.89
Total Debt	21,953.48	21,082.61	21,307.86	21,307.86	19,232.15	18,639.16	20,909.77	21,490.78	19,878.10

Source: Money Control

Table 17: Balance Sheet Data Part 2

Balance Sheet of Jet Airways (in Rs. Cr.)	Mar_2013	Mar_2012	Mar_2011	Mar_2010	Mar_2009	Mar_2008	Mar_2007	Mar_2006	Mar_2005	Mar_2004
EQUITIES AND LIABILITIES										
SHAREHOLDER'S FUNDS										
Equity Share Capital	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	72.09
Total Share Capital	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	141.92
Reserves and Surplus	-1,066.83	-625.78	750.37	740.68	1,208.32	1,765.42	2,018.48	2,057.53	1,664.56	-112.08
Total Reserves and Surplus	-428.86	1,094.53	2,518.01	2,555.65	3,070.62	4,465.32	2,150.92	2,219.55	1,923.83	275.49
Total Shareholders Funds	-342.53	1,180.86	2,604.34	2,641.98	3,156.95	4,551.65	2,237.25	2,305.88	2,010.16	417.41
NON-CURRENT LIABILITIES										
Long Term Borrowings	6,868.60	8,773.58	9,047.95	9,772.27	11,802.77	10,018.48	5,355.03	4,300.82	2,964.84	3,206.45
Deferred Tax Liabilities [Net]	0	0	33.63	0	0	383.46	368.91	334.44	306.72	317.31
Other Long Term Liabilities	365	422.39	30.41	0	0	0	0	0	0	0
Long Term Provisions	125.18	98.71	96.06	0	0	0	0	0	0	0
Total Non-Current Liabilities	7,358.78	9,294.68	9,208.05	9,772.27	11,802.77	10,401.94	5,723.94	4,635.26	3,271.56	3,523.76
CURRENT LIABILITIES										
Short Term Borrowings	1,952.59	2,094.17	2,452.74	3,987.21	4,245.76	1,584.06	701.27	594.78	0	3.54
Trade Payables	4,752.45	3,744.81	2,090.04	1,725.55	1,423.26	1,739.77	749.77	251.52	234.79	150.41
Other Current Liabilities	4,928.13	4,484.70	4,241.38	1,848.00	1,858.24	2,049.31	1,102.87	814.1	538.38	385.28
Short Term Provisions	105.13	79.94	90.83	144.21	178.83	189.24	248.16	465.15	337.76	278.53
Total Current Liabilities	11,738.30	10,403.62	8,874.99	7,704.97	7,706.09	5,562.38	2,802.07	2,125.55	1,110.93	817.76
Total Capital And Liabilities	18,754.55	20,879.16	20,687.38	20,256.72	22,940.81	20,928.47	10,763.26	9,066.69	6,392.65	4,758.93
ASSETS										
NON-CURRENT ASSETS										
Tangible Assets	10,743.11	13,595.13	13,444.57	14,121.90	16,067.96	13,870.88	3,099.56	1,890.37	2,532.92	3,076.82
Intangible Assets	33.93	187.32	171.24	308.02	193.98	213.29	197.93	172.12	36.41	3.85
Capital Work-In-Progress	0	2.07	31.98	299.6	583.17	1,223.28	3,994.52	2,725.66	71.32	46.12
Other Assets	0	0	0	0	0	0	0	0	0	0
Fixed Assets	10,777.04	13,784.52	13,647.79	14,729.52	16,845.11	15,307.45	7,292.01	4,788.15	2,640.65	3,126.79
Non-Current Investments	1,646.01	1,645.96	1,645.09	1,745.00	1,745.00	1,475.35	68.93	187.23	1,595.73	233.42
Deferred Tax Assets [Net]	0	0	0	0	0	223.29	37.85	13.78	111.87	266.56
Long Term Loans And Advances	2,281.37	2,108.50	2,231.35	0	0	0	0	0	0	0
Other Non-Current Assets	0	0	0	0	0	0	0	0	0	0
Total Non-Current Assets	14,704.42	17,538.98	17,524.23	16,474.52	18,590.11	17,006.03	7,398.79	4,989.16	4,348.25	3,626.77
CURRENT ASSETS										
Current Investments	0	0	80	0	0	0	0	0	0	0
Inventories	786.67	778.35	711.18	584.79	595.67	545.03	438.99	405.25	332.52	347.44
Trade Receivables	1,184.58	1,266.44	965.77	810.77	732.25	1,313.73	603.9	433.15	252.31	234.44
Cash And Cash Equivalents	837.07	497.88	587.71	772.83	1,394.50	855.14	1,096.64	2,104.25	1,224.24	369.94
Short Term Loans And Advances	1,241.81	797.51	818.49	1,613.81	1,628.28	1,208.54	1,224.94	1,134.88	235.33	176.09
OtherCurrentAssets	0	0	0	0	0	0	0	0	0	4.25
Total Current Assets	4,050.13	3,340.18	3,163.15	3,782.20	4,350.70	3,922.44	3,364.47	4,077.53	2,044.40	1,132.16
Total Assets	18,754.55	20,879.16	20,687.38	20,256.72	22,940.81	20,928.47	10,763.26	9,066.69	6,392.65	4,758.93
OTHER ADDITIONAL INFORMATION										
CONTINGENT LIABILITIES, COMMITMENTS										
Contingent Liabilities	21,778.48	18,915.17	16,000.63	14,656.19	16,325.90	14,284.97	6,624.43	9,736.40	3,097.06	121.1
CIF VALUE OF IMPORTS										
Raw Materials	0	0	0	191.23	235.07	245.28	126.28	131.41	81.6	75.85
Stores, Spares And Loose Tools	0	0	0	0	0	0	0	0	0	0
Trade/Other Goods	0	0	0	0	0	0	0	0	0	0
Capital Goods	195.81	156.85	64.38	270.67	1,696.31	8,611.23	1,408.71	10.64	28.72	423.18
EXPENDITURE IN FOREIGN EXCHANGE										
Expenditure In Foreign Currency	8,002.52	6,897.39	5,430.85	4,456.19	5,545.69	3,453.09	2,326.14	1,540.18	839.6	836.05
REMITTANCES IN FOREIGN CURRENCIES FOR DIVIDENDS										
Dividend Remittance In Foreign Currency	--	--	--	--	--	41.44	41.44	20.72	--	--
EARNINGS IN FOREIGN EXCHANGE										
FOB Value Of Goods	--	--	--	--	--	--	--	--	--	--
Other Earnings	7,693.27	6,753.01	5,696.05	4,083.56	4,894.46	2,596.68	1,862.99	1,372.66	605.82	514.21
BONUS DETAILS										
Bonus Equity Share Capital	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
NON-CURRENT INVESTMENTS										
Non-Current Investments Quoted Market Value	--	--	--	100.01	100.02	10.35	69.01	190.06	1,603.68	--
Non-Current Investments Unquoted Book Value	1,646.01	1,645.96	1,645.09	1,645.00	1,645.00	1,465.00	--	--	--	233.42
CURRENT INVESTMENTS										
Current Investments Quoted Market Value	--	--	80	--	--	--	--	--	--	--
Current Investments Unquoted Book Value	--	--	--	--	--	--	--	--	--	--
Book Value of Total Debt	9,186.19	11,290.14	11,531.10	13,759.48	16,048.53	11,602.54	6,056.30	4,895.60	2,964.84	3,209.99
Total Liabilities	19,097.08	19,698.30	18,083.04	17,477.24	19,508.86	15,964.32	8,526.01	6,760.81	4,382.49	4,341.52
Total Debt	18,501.77	19,097.26	17,865.74	17,333.03	19,330.03	15,775.08	8,277.85	6,295.66	4,044.73	4,062.99

Source: Money Control

APPENDIX F: Income Statement Data Part 1

Table 18: Income Statement Data Part 1

Profit & Loss account of Jet Airways (in Rs.	Mar_2021	Mar_2020	Mar_2018	Mar_2017	Mar_2016	Mar_2015	Mar_2014
INCOME							
Revenue From Operations [Gross]	38.64	333.45	22,271.09	19,745.78	20,310.86	18,602.92	16,498.07
Less: Excise/Sevice Tax/Other Levies	0	0	0	0	754.36	558.7	503.37
Revenue From Operations [Net]	38.64	333.45	22,271.09	19,745.78	19,556.50	18,044.22	15,994.70
Total Operating Revenues	38.64	333.45	23,286.53	21,552.35	21,167.33	19,573.43	17,301.89
Other Income	243.14	20.75	671.84	1,488.52	743.63	707.3	411.58
Total Revenue	281.78	354.2	23,958.37	23,040.87	21,910.96	20,280.73	17,713.47
EXPENSES							
Cost Of Materials Consumed	0.34	0	0	0	0	0	0
Purchase Of Stock-In Trade	0	0	0	0	0	0	0
Operating And Direct Expenses	0	0	0	0	0	0	0
Changes In Inventories Of FG,WIP And Stock-I	0	0	0	0	0	0	0
Employee Benefit Expenses	23.67	471.52	2,995.35	2,890.01	2,388.13	2,243.00	1,899.59
Finance Costs	28.8	301.86	842.86	851.09	868.11	884.06	997.16
Depreciation And Amortisation Expenses	196.29	295.74	620.57	670.9	995.09	762.5	875.75
Other Expenses	252.9	1,399.59	10,997.75	9,394.77	9,424.39	8,801.20	8,035.43
Total Expenses	502	2,468.71	24,725.99	21,558.55	20,816.24	21,335.94	20,659.45
Profit/Loss Before Exceptional, ExtraOrdinary I	-220.22	-2,114.51	-767.62	1,482.32	1,094.72	-1,055.21	-2,945.98
Exceptional Items	68.18	-726.94	0	0	78.84	-758.5	-721.99
Profit/Loss Before Tax	-152.04	-2,841.45	-767.62	1,482.32	1,173.56	-1,813.71	-3,667.97
Tax Expenses-Continued Operations							
Current Tax	0	0	0	0	0	0	0
Less: MAT Credit Entitlement	0	0	0	0	0	0	0
Deferred Tax	0	0	0	0	0	0	0
Tax For Earlier Years	0	0	0	-0.2	0	0	-0.12
Total Tax Expenses	0	0	0	-0.2	0	0	-0.12
Profit/Loss After Tax And Before ExtraOrdinar	-152.04	-2,841.45	-767.62	1,482.52	1,173.56	-1,813.71	-3,667.85
Profit/Loss From Continuing Operations	-152.04	-2,841.45	-767.62	1,482.52	1,173.56	-1,813.71	-3,667.85
Profit/Loss For The Period	-152.04	-2,841.45	-767.62	1,482.52	1,173.56	-1,813.71	-3,667.85
OTHER ADDITIONAL INFORMATION							
EARNINGS PER SHARE							
Basic EPS (Rs.)	-19.39	-250.13	-67.57	130.5	103.31	-159.66	-381.3
Diluted EPS (Rs.)	-13.38	-250.13	-67.57	130.5	103.31	-159.66	-381.3
VALUE OF IMPORTED AND INDIGENIOUSS, SPARES AND LOOSE TOOLS							
Imported Raw Materials	0	0	0	0	0	0	0
Indigenous Raw Materials	0	0	0	0	0	0	0
STORES, SPARES AND LOOSE TOOLS							
Imported Stores And Spares	0	0	125.03	113.69	173.87	121.13	116.63
Indigenous Stores And Spares	0	0	19.43	19.22	14.68	18.77	4.94
DIVIDEND AND DIVIDEND PERCENTAGE							
Equity Share Dividend	0	0	0	0	0	0	0
Tax On Dividend	0	0	0	0	0	0	0
Equity Dividend Rate (%)	0	0	0	0	0	0	0
Issued Shares	113597383	113597383	113597383	113597383	113597383	113597383	113597383
Quote	94.66	22.16	643.6	519.31	534.35	420.15	227.85
Market Value Equity	1075.312827	251.7318007	7311.12757	5899.225697	6070.076161	4772.794047	2588.316372

Source: Money Control

APPENDIX G: Income Statement Data Part 2

Table 19: Income Statement Data Part 2

Profit & Loss account of Jet Airways (in Rs.	Mar_2013	Mar_2012	Mar_2011	Mar_2010	Mar_2009	Mar_2008	Mar_2007	Mar_2006	Mar_2005	Mar_2004
INCOME										
Revenue From Operations [Gross]	16,389.73	14,432.11	11,983.49	10,438.57	11,571.15	8,811.10	7,057.78	5,693.73	4,338.01	3,447.42
Less: Excise/Sevice Tax/Other Levies	507.87	450.26	196.77	0	0	0	0	0	0	0
Revenue From Operations [Net]	15,881.86	13,981.85	11,786.72	10,438.57	11,571.15	8,811.10	7,057.78	5,693.73	4,338.01	3,447.42
Total Operating Revenues	16,852.59	14,815.91	12,736.76	10,438.57	11,571.15	8,811.10	7,057.78	5,693.73	4,338.01	3,447.42
Other Income	550.58	357.17	195.51	180.61	197.92	638.44	317.67	386.22	62.89	117.69
Total Revenue	17,403.17	15,173.08	12,932.27	10,619.18	11,769.07	9,449.54	7,375.45	6,079.95	4,400.90	3,565.11
EXPENSES										
Cost Of Materials Consumed	0	0	0	3,151.65	4,915.01	3,293.03	2,427.64	1,742.05	1,123.69	791.85
Purchase Of Stock-In Trade	0	0	0	0	0	0	0	0	0	0
Operating And Direct Expenses	0	0	0	2,114.04	2,531.47	1,836.89	1,239.56	777.67	570.57	553.39
Changes In Inventories Of FG,WIP And Stock-I	0	0	0	0	0	0	0	0	0	0
Employee Benefit Expenses	1,544.24	1,599.49	1,339.69	1,226.55	1,410.50	1,205.18	938.55	567.81	374.74	282.24
Finance Costs	1,118.98	971.23	1,119.71	993.01	738.03	492.75	240.15	17.38	46.15	49.81
Depreciation And Amortisation Expenses	926.57	939.88	910.62	961.96	899.81	777.8	414.1	406.41	457	515.15
Other Expenses	6,181.32	5,454.33	4,493.84	2,671.82	2,831.91	2,286.58	2,088.58	1,887.38	1,265.44	1,195.07
Total Expenses	17,995.21	16,501.60	13,074.92	11,119.03	13,326.73	9,892.23	7,348.58	5,398.70	3,837.59	3,387.51
Profit/Loss Before Exceptional, ExtraOrdinary	-592.04	-1,328.52	-142.65	-499.85	-1,557.66	-442.69	26.87	681.25	563.31	177.6
Exceptional Items	106.54	73.19	189.19	0	0	0	0	0	0	0
Profit/Loss Before Tax	-485.5	-1,255.33	46.54	-499.85	-1,557.66	-442.69	26.87	681.25	563.31	177.6
Tax Expenses-Continued Operations										
Current Tax	0	0	20.62	0.09	0.09	0.08	0.07	133.99	46	15
Less: MAT Credit Entitlement	0	-20.62	20.62	0	0	0	0	0	0	0
Deferred Tax	0	-33.63	33.63	0	-80.54	-170.83	13.69	125.81	144.1	0
Tax For Earlier Years	0	-6.22	3.22	0	0	0	0	0	0	0
Total Tax Expenses	0	-19.23	36.85	78.97	22.21	-160.73	23.42	270.22	190.14	15.03
Profit/Loss After Tax And Before ExtraOrdinar	-485.5	-1,236.10	9.69	-578.82	-1,579.87	-281.96	3.45	411.03	373.17	162.57
Profit/Loss From Continuing Operations	-485.5	-1,236.10	9.69	-467.64	-402.34	-253.06	27.94	452.04	391.99	163.11
Profit/Loss For The Period	-485.5	-1,236.10	9.69	-467.64	-402.34	-253.06	27.94	452.04	391.99	163.11
OTHER ADDITIONAL INFORMATION										
EARNINGS PER SHARE										
Basic EPS (Rs.)	-56.23	-143.18	1.12	-54.17	-46.6	-29.31	3.24	52.36	45.41	22.63
Diluted EPS (Rs.)	-59.23	-143.18	1.12	-54.17	-46.6	-29.31	3.24	52.36	45.41	22.63
VALUE OF IMPORTED AND INDIGENIOUS										
Imported Raw Materials	0	0	0	0	0	0	0	0	0	0
Indigenous Raw Materials	0	0	0	0	0	0	0	0	0	0
STORES, SPARES AND LOOSE TOOLS										
Imported Stores And Spares	118.35	114.51	119.61	94.6	85.89	88.18	62.87	56.11	66.96	45.06
Indigenous Stores And Spares	3.98	19.5	9.03	1.11	7.03	6.82	5.88	7.01	5	5.01
DIVIDEND AND DIVIDEND PERCENTAGE										
Equity Share Dividend	0	0	0	0	0	0	51.8	51.8	25.9	0
Tax On Dividend	0	0	0	0	0	0	8.8	7.27	3.63	0
Equity Dividend Rate (%)	0	0	0	0	0	0	60	60	30	0
Issued Shares	113597383	86,334,011	86,334,011	86,334,011	86,334,011	86,334,011	86,334,011	86,334,011	86,334,011	72,088,900
Quote	537.75	294	442.9	493.65	127.95	739.85	600.3	989.45	1264.3	1100
Market Value Equity	6108.699271	2538.219923	3823.733347	4261.878453	1104.643671	6387.421804	5182.63068	8542.318718	10915.20901	7929.779

Source: Money Control