

Exploring the financial performance of select aviation companies in India using camel model

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Abstract

The financial performance of three prominent Indian airline companies—Air India, SpiceJet, and Jet Airways—was examined over the period from 2004–05 to 2018–19 using the CAMEL model. The study evaluated the financial performance of the selected airlines across five key dimensions: Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity. Ratio analysis was employed to assess the financial trends and relative performance of the selected airlines over the study period. The selected timeframe encompasses significant developments in the Indian aviation industry, including rapid market expansion, increasing competition, rising operating costs, and persistent financial challenges. Given the capital-intensive nature of the aviation industry, coupled with high fuel costs, substantial fixed operating expenses, regulatory complexities, and intense competitive pressures, systematic financial performance assessment is essential for evaluating the financial soundness and sustainability of airline companies. The CAMEL-based analysis provides a comprehensive framework for assessing the financial strengths and weaknesses of the selected airlines and identifying variations in their financial performance over time. The findings of the study are expected to provide valuable insights for airline management, investors, financial institutions, and policymakers in making informed decisions, strengthening financial stability, improving operational and strategic efficiency, and enhancing the long-term sustainability of the aviation sector in an increasingly uncertain and competitive business environment.

Keywords: Financial performance, airline industry, CAMEL model

Introduction

The period from 2004–05 to 2018–19 may be regarded as a transformative phase in the Indian aviation industry, characterized by a complex interplay of remarkable growth, increasing competition, greater affordability, and severe financial distress. During this period, the industry witnessed substantial expansion in passenger traffic and market size, accompanied by significant structural and operational changes. The entry and expansion of private and low-cost carriers intensified competition and contributed to more affordable air travel, thereby stimulating demand. However, the growth of the industry was accompanied by persistent financial pressures arising from high operating costs, fuel price volatility, intense competition, regulatory constraints, and substantial capital requirements. The study period thus represents both expansion and turbulence in the Indian aviation sector. Although several airlines attempted to navigate these challenges through different business and operational strategies, their financial outcomes varied considerably. The experiences of the selected airlines provide an important basis for understanding the financial vulnerabilities and strengths of the Indian aviation industry. In particular, Jet Airways, which had remained one of the leading airlines in the Indian market, ceased operations in April 2019 following prolonged financial difficulties. Air India, the national carrier, also experienced persistent financial challenges during the study period, while SpiceJet pursued a relatively lean and cost-conscious business model. The contrasting financial experiences of these airlines provide a meaningful backdrop for evaluating their financial performance and sustainability.

The developments during this period also highlight the importance of a supportive policy environment, effective cost management, and operational efficiency, sound financial planning, and continued investment in aviation infrastructure for maintaining the long-term financial health of the sector. The capital-intensive nature of airline operations, coupled with exposure to fluctuations in aviation turbine fuel prices, foreign exchange movements, regulatory requirements, and competitive pressures, makes financial performance assessment particularly important. The importance of systematic financial analysis in the aviation sector is also consistent with the broader perspective of financial performance evaluation discussed by Metcalf and Titard (1976) ^[11]. In the present study, three major Indian airline companies—Air India, SpiceJet, and Jet Airways—have been selected using convenience sampling. Their financial performance has been evaluated to identify their respective financial strengths and weaknesses during the period from 2004–05 to 2018–19. Ratio analysis has been employed as the principal analytical technique, with the financial indicators subsequently assessed within the CAMEL framework comprising Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity. This approach facilitates a structured assessment of the financial merits and demerits of the selected airlines and provides comparative insights into their financial stability and performance during a critical phase of transformation in the Indian aviation industry.

Past Studies

The existing literature applied CAMEL model primarily to banks and financial institutions. Rao and Dutta (1998) ^[14] is one of the pioneers in application of the CAMEL model in India banks , developing 21 parameters to analyze nationalized banks. Their findings of the study highlighted important variations in inter-bank performance, and concluded that Corporation Bank as the best. Sisodiya *et al.* (2008) ^[16] analyzed 68 private and public sector banks across all CAMEL dimensions, demonstrating varying strengths and weaknesses across different components. Kumar *et al.* (2012) ^[7] has drawn-out a comparative framework over a period of 11-years, emphasizing relatively higher financial soundness of private banks over public sector banks. Jaffar and Manarvi (2011) ^[6] made a similar study on Islamic banks in Pakistan and found that conventional banks outperform in terms of capital adequacy and liquidity. Yakob *et al.* (2012) ^[19] applied CAMEL Model to Malaysian Life Insurance Company and proposed it a superior alternative to traditional indicators like

solvency margin. Although CAMEL model is frequently applied to banks and financial institutions, the model's core indicators are equally relevant in the aviation sector. By applying the CAMEL model to these aviation companies in the current study an effort has been taken to bridge a gap in literature and to apply CAMEL-based diagnostics to explore the financial soundness of this sector.

Objectives of the Study

The main objectives of the study are to measure the financial performance of the select airlines using CAMEL Model as follows:

1. To calculate the Capital Adequacy (C);
2. To compute the Asset Quality (A);
3. To compute the Management Efficiency (M);
4. To analyze the Earnings (E);
5. To calculate the Liquidity (L).

Research Methodology

1. Data Set

Table 1: Summary of Data Set

Sample Drawn	Basis of Sampling	Time Period of Survey
Financial data of three airline companies, Air India, Jet Airways & Spice Jet has been selected. Financial Data has been acquired from their respective Financial Statements like, Profit & loss Account, Balance Sheet & Cash Flow Statement. Based on the absolute figures of the financial statement, financial ratios have been constituted.	Convenience Sampling is used to select three airline companies. Only in the case of these three companies' continuous financial data is available for the selected period of study.	Secondary data for the chapter has been collected from 2004-05 to 2018-19 from the financial statements of respective airlines. Financial Statements of the select airline companies were collected from Capitaline Database and DGCA website.

Method of Analysis

2.1 CAMEL Model

For analyzing the comparative performance of the select airline companies and their overall performance, CAMEL

Model has been used, and thereafter comprehensive rank tests and statistical measures have been used. CAMEL stands for Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity.

Table 2: Description of Components of CAMEL Model used for the Study

Category	Ratios	Formula	Significance	Evaluation Criteria
Capital Adequacy (C)	1. Proprietary Ratio	Shareholder's Equity ÷ Total Tangible Fixed Assets	This ratio is a general indicator of financial stability and is useful to assess the ratio of shareholder's funds employed out of the total assets of the company.	Higher the better
	2. Debt Equity Ratio	Long-term Debt ÷ Shareholder's Equity	This ratio indicates the airline company's financial leverage. The ideal debt to equity ratio will vary depending on the industry because some industries use more debt financing than other. Higher debt-equity ratio, however, indicates high risk.	Lower the better
Asset Quality (A)	1. Total Investment to Total Asset Ratio	Total Investment ÷ Total Asset	This ratio is used as a tool to measure the percentage of total assets locked up in investments, which does not form part of the core income of the airline industry. A higher ratio means the airline company has conservatively kept a high cushion of investment to guard future loss if any.	Higher the better
	2. Fixed Asset to Total Asset Ratio	Fixed Asset ÷ Total Asset	It indicates how much fixed assets are held by a company in comparison to total asset. It shows the extent to which company funds are frozen in the form of fixed assets and cannot be used as working capital.	Lower the better
Management Efficiency (M)	1. Return on Asset Ratio	Net Income ÷ Total Assets	The ratio is a metric that indicates a company's profitability in relation to its total assets. Return on Assets can be used to determine whether a company uses its assets efficiently to generate a profit. A higher	Higher the better

			Return on Assets means a company is more efficient and productive at managing its balance sheet to generate profits while a lower Return on Assets indicates there is room for improvement.	
	2. Return on Net Worth Ratio	Net Profit after tax ÷ Net Worth	The ratio is expressed as the relationship between net profit after tax to net worth, where Net worth refers to the residual value of a business obtained by deducting total liabilities from total assets, indicating the owners' funds or shareholders' equity. High Return on Net Worth Ratio is desirable. Net Worth = Equity and Preference Share Capital + Reserves & Surplus – Accumulated Losses.	Higher the better
Earnings (E)	1. Net Profit Margin Ratio	Net Profit after tax ÷ Revenue	The ratio signifies the percentage by which a company's total sales revenue exceeds or is less than the sum of its expenses. If a company has a positive net profit margin during a certain period of time, it means the company made more money during that period than it spent whereas a negative net profit margin means the company spent more than it made.	Higher the better
	2. Return on Equity (ROE) Ratio using Average Shareholders' Equity	$ROE = \frac{\text{Net Profit After Tax}}{\text{Average Shareholders' Equity}}$ $\text{Average Shareholders' Equity} = \frac{\text{opening shareholders' equity} + \text{closing shareholders' equity}}{2}$	ROE using average Shareholders' equity is widely preferred in financial analysis because it captures the firm's true earning performance over a period, rather than relying on a single-point (year-end) equity figure. Shareholders' equity refers to the residual ownership interest of shareholders in a company's assets after deducting all liabilities, representing the net worth of the business. A high ROE suggests better returns to equity investors, making the firm more attractive for investment	Higher the better
Liquidity (L)	1. Current Asset to Total Asset Ratio	Current Asset ÷ Total Asset	The proportion of liquid asset to total assets indicates the overall liquidity position of the company.	Higher the better
	2. Current Ratio	Current Asset ÷ Current Liability	It is an efficiency ratio that measures the company's ability to pay off its short-term liabilities with its current assets.	Higher the better

[Source: Rostami (2015) ^[15] & Srinivasan & Saminathan, 2016] ^[17]

2.2 Application of Statistical Tools

The statistical tests on different parameters with objectives are mentioned here:

Table 3: Application of Statistical Tools

Objectives	Statistical Tools
To measure the financial performance of the select airlines using CAMEL Model.	
i) To calculate the Capital Adequacy (C) of select airline companies	Different financial ratios, mean and Coefficient of Variation (CV %)
ii) To compute the Asset Quality (A) of select airline companies	
iii) To calculate the Management Efficiency (M) of select airline companies	
iv) To analyze the Earnings (E) of select airline companies	
v) To calculate the Liquidity (L) of select airline companies	

[The statistical software SPSS version 25 has been used for the analysis.]

Results and Discussions

Measuring the Financial Performance of the Select Airlines using CAMEL Model

1. Capital Adequacy (C) Analysis

Capital adequacy analysis reflects the overall financial conditions of the airline companies and also the ability of the management to meet the need for additional capital. To analyze the capital adequacy of the select airline companies, the following ratios have been used:

- (i) Proprietary Ratio (Srinivasan & Saminathan, 2016) ^[17];
- (ii) Debt- Equity Ratio (Venkatesh & Suresh, 2014) ^[18].

The empirical findings of capital adequacy of the select airline companies on the basis of the above-mentioned ratios are highlighted in Table 4 & 5.

Analysis of Proprietary Ratio

The proprietary Ratio provides an estimate of the amount of capitalization currently supporting a business. If the ratio is high, it indicates that a company has a sufficient amount of equity to support a business and has room for additional debt if necessary. Thus, a higher ratio is desirable.

Table 4: Statement Showing Proprietary Ratios of Select Airlines Companies

Year	Proprietary Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.2048	-0.2563	-1.6479	-0.5665
2005-06	0.2048	0.3202	-1.6136	-0.3629
2006-07	-0.0143	0.2698	0.2993	0.1849
2007-08	0.2399	0.2747	0.0500	0.1882
2008-09	0.0067	0.1621	-7.3368	-2.3893
2009-10	-0.1320	0.1597	-3.8257	-1.2660
2010-11	-0.3004	0.1601	0.7445	0.2014
2011-12	-0.5366	0.0797	-0.1541	-0.2037
2012-13	-0.4611	-0.0301	-0.1390	-0.2100
2013-14	-0.4970	-0.2532	-1.2102	-0.6534
2014-15	-0.5564	-0.4442	-2.6819	-1.2275
2015-16	-0.5301	-0.3335	-1.9601	-0.9412
2016-17	-0.7219	-2.1203	-0.6744	-1.1722
2017-18	-0.7585	-4.4441	-0.0271	-1.7432
2018-19	-0.9318	3.1564	-0.2032	0.6738
Mean	-0.3189	-0.2199	-1.3587	-0.6325
CV %	-115.2529	-687.1515	-146.9298	-126.7798

[Source: Compilation of secondary data using MS Excel 2019]

In Table 4, the Proprietary ratio of all three airline companies, Air India, SpiceJet, and Jet Airways showed a fluctuating and negative trend during the period of study, indicating a high dependence on borrowed capital rather than to fixed assets.

- Air India recorder a positive Proprietary ratio for only 4 years, with a lowest value of -0.9318 in 2018–19. The mean Proprietary Ratio of -0.3189 of Air India was better than Spice Jet's but worse than Jet Airways;
- SpiceJet had a positive ratio for only 3 years, with the lowest at -2.6819 recorded in 2014–15 and the highest at 0.7445 in 2010–11. Its mean ratio of Spice Jet is -1.3587 was the poorest among the three airlines, demonstrating significant financial instability;
- Among all the airline companies, Jet Airways performed the best, showing positive ratios in 8 years, with a mean of -0.2199, which is above the overall industry average of -0.6325. In spite of this, there are sharp fluctuations, with a low of -4.4441 in 2017–18 and a high of 3.1564 in 2018–19;
- Analysis of overall performance reflected that, Jet Airways outperformed the other two airlines in terms of proprietary ratio, signifying comparatively better financial arrangement with higher shareholder funding of fixed assets during the period.
- CV% indicates the average deviation from the mean of the respective ratios as a percentage of the mean. In case of Jet Airways the computed CV% is -687.1515 for and has the minimum deviation from the mean value.

Analysis of Debt-Equity Ratio

The debt Equity ratio helps to understand the financial leverage of the company and measures how much of the company's operations are financed by debt compared to equity. Generally, a good debt-equity ratio is around 1 to 1.5. A low debt-equity ratio indicates financial stability of the business and reduced risk, as it suggests the company is

less reliant on debt financing and more on its equity. Thus, a lower ratio is desirable.

Table 5: Statement Showing Debt-Equity Ratios of Select Airlines Companies

Year	Debt-Equity Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	3.8826	-1.3148	-0.0782	0.8299
2005-06	11.1457	2.1231	-0.2997	4.3230
2006-07	-70.8878	2.7070	2.3413	-21.9465
2007-08	3.1676	2.6397	18.9996	8.2690
2008-09	92.3563	5.1707	-1.1224	32.1349
2009-10	-5.5933	5.2601	-1.2161	-0.5164
2010-11	-4.1986	5.1976	0.2647	0.4212
2011-12	-2.7783	11.1094	-6.8504	0.4936
2012-13	-3.0708	-32.8408	-7.5719	-14.4945
2013-14	-2.8700	-4.6900	-1.6232	-3.0611
2014-15	-2.5420	-2.9100	-0.9148	-2.1222
2015-16	-2.6769	-3.5875	-1.1864	-2.4836
2016-17	-2.2740	-1.4018	-1.8970	-1.8576
2017-18	-2.2156	-1.1603	-30.3163	-11.2307
2018-19	-1.9770	-0.6053	-3.1646	-1.9156
Mean	0.6312	-0.9535	-2.3090	-0.8771
CV %	4805.3398	-990.2089	-407.9942	-1301.4433

[Source: Compilation of secondary data using MS Excel 2019]

In Table 5, the Debt-Equity Ratio of Air India, Jet Airways, and SpiceJet reflected the financial position of all three airlines. Like Proprietary Ratio, Debt Equity Ratio also showed heavy reliance on debt.

- Air India showed a ratio below 1 for the first two years of study i.e., 2004–05 and 2005–06. However, from 2006–07 onward, the fall of shareholder's equity lead to negative debt-equity ratios in the subsequent years. The mean ratio of Air India of 0.6312 is well above the overall average of -0.8771, depicts Air India's severe dependence on debt caused by years of accumulated losses and depleted reserves;
- Analysis shows, Jet Airways experienced abnormally high debt-equity ratios from 2008–09 to 2011–12, with values above 5 in most of those years. From the year 2012–13 onwards, equity turned negative, subsequently giving negative ratios. Thus, the mean debt-equity ratio of Jet Airways of -0.9535 signifies high debt reliance and poor financial health;
- Lastly, SpiceJet showed a high debt-equity ratio of 1.0758 only in the year 2008–09 and took a negative turn from 2011–12 due to continuous erosion of equity. The company recorded the lowest mean ratio at -2.3090, indicating the worst financial position among the three;
- Regardless of some initial positive years, the selected airline companies showed unsustainable capital structures with negative equity and high or negative debt-equity ratios, indicating a critical over-dependence on debt financing throughout the study period;
- CV% indicates the average deviation from the mean of the respective ratios as a percentage of the mean. In the case of Debt Equity Ratio the computed CV% of Jet Airways is -990.2089, Spice Jet is -407.9942, and Air India is 4805.3398. Thus Jet Airways has the lowest value of the coefficient of variation from the mean in case of Debt Equity Ratio.

2. Asset Quality (A) Analysis

Asset quality assesses the relative risks associated with assets held in a portfolio. Asset quality is an important determinant of risk that profoundly impacts liquidity and can greatly affect the overall condition of the company. To analyze the asset quality of select airline companies, the following ratios have been used:

- Total investment to Total Asset Ratio (Muralidhara & Lingam);
- Fixed Asset to Total Asset Ratio (Alemu & Aweke, 2017)^[1].

The empirical findings of asset quality of the select airline companies on the basis of the above-mentioned ratios are highlighted in Table 6 & 7.

Analysis of Total Investment to Total Asset Ratio

The ratio of total investment to total assets is used as a tool to measure the percentage of total assets locked up in investment. This ratio is used as a proxy to measure the quality of assets. If the ratio is high, it indicates that a significant portion of asset is actively generating returns, potentially outpacing inflation and contributing towards growth of wealth. Thus, a higher ratio is desirable.

Table 6: Statement Showing Total Investment by Total Asset Ratios of Select Airlines Companies

Year	Total Asset Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.0367	0.1865	0.0000	0.0744
2005-06	0.0367	0.0260	0.0000	0.0209
2006-07	0.0120	0.0083	0.1317	0.0507
2007-08	0.0037	0.0891	0.0006	0.0311
2008-09	0.0040	0.0896	0.0000	0.0312
2009-10	0.0036	0.1055	0.0000	0.0364
2010-11	0.0039	0.1060	0.0000	0.0367
2011-12	0.0044	0.1111	0.0000	0.0385
2012-13	0.0039	0.1444	0.0000	0.0494
2013-14	0.0038	0.1865	0.0000	0.0634
2014-15	0.0327	0.0756	0.0000	0.0361
2015-16	0.0449	0.1323	0.0386	0.0720
2016-17	0.0585	0.4029	0.1548	0.2054
2017-18	0.0532	0.4275	0.0639	0.1815
2018-19	0.0295	-0.1731	0.0002	-0.0478
Mean	0.0221	0.1279	0.0260	0.0587
CV %	89.2321	109.6271	190.4293	101.7115

[Source: Compilation of secondary data using MS Excel 2019]

Table 6 reflects the Investment to Total Asset Ratio across the selected airline companies. Analysis shows consistently poor liquidity and limited surplus funds for investment.

- From Table 6 it's clear that Air India had minimal investment between 2007–08 and 2013–14, with ratios around 0.0037 to 0.0044. A slight improvement was observed in 2016–17, with the peaking up of the ratio at 0.0585. However, its mean ratio of Air India 0.0221 remained below the overall industry average of 0.0587;
- Jet Airways also showed fluctuating investment trends, with the ratio reaching maximum of 0.4275 in 2017–18. Even though investments were low compared to total assets, the company achieved a mean ratio of 0.1279,

which is above the industry average, representing comparatively better investment capabilities;

- SpiceJet made no investments from 2004–05 to 2014–15, except in the year 2006–07. However from 2015–16 onwards, investments were done regularly, giving rise to higher ratio in 2016–17 at 0.1548. Although, mean ratio dropped to 0.0587 due to long periods of investment gap. Even though it could matched the overall industry average but could not exceed Jet Airways;
- Thus, Jet Airways outperformed the other two airlines in terms of the Investment to Total Asset Ratio, indicating a better capacity to allocate funds for investment, irrespective of the overall feeble investment trend across the airline industry during the study period;
- Table 6 also shows the CV% of Total Investment/Total Asset Ratio. The lowest deviation from the mean value i.e. CV% is found in case of Air India.

Analysis of Fixed Asset to Total Asset Ratio

The ratio is used to determine the proportion of fixed assets that are likely to be required as other asset level changes. A lower fixed asset to total asset ratio is generally considered better as it indicate that a company utilizes the assets more efficiently in generating revenue and a small portion of their assets are tied up in fixed assets. Thus, a lower ratio is desirable.

Table 7: Statements Showing Fixed Asset to Total Asset Ratios of Select Airlines Companies

Year	Fixed Asset to Total Asset Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	1.3263	1.0490	1.9701	1.4485
2005-06	1.3263	0.2947	1.9701	1.1970
2006-07	0.2785	0.3976	0.0784	0.2515
2007-08	0.7386	0.8501	0.1163	0.5684
2008-09	0.7223	0.8348	1.1381	0.8984
2009-10	0.8733	0.8725	0.7112	0.8190
2010-11	0.9108	0.8370	0.2011	0.6496
2011-12	1.0210	0.9300	0.8901	0.9470
2012-13	0.9969	0.9456	1.0474	0.9967
2013-14	0.9310	1.0949	2.1572	1.3944
2014-15	0.9205	1.0024	2.8459	1.5896
2015-16	0.7644	0.9741	3.0708	1.6031
2016-17	0.9491	1.6028	1.7934	1.4484
2017-18	0.8378	2.2141	1.0071	1.3530
2018-19	0.8218	-0.8312	0.9294	0.3066
Mean	0.8946	0.8712	1.3284	1.0314
CV %	26.8285	72.0762	68.2171	41.9917

[Source: Compilation of secondary data using MS Excel 2019]

Table 7 shows that the Fixed Assets to Total Asset Ratio of selected companies. The ratio remained consistently high for all companies, reflecting the capital-intensive nature of the airline industry. Nevertheless, such high ratios are generally detrimental as they portray financial inflexibility.

- Air India reflected a high fixed asset proportion throughout the study period. The highest ratio was recorded in 2004–05 and 2005–06 at 1.3263. Its mean ratio of the company is 0.8946 which was below the industry average of 1.0314;

- Jet Airways also showed high proportion of fixed assets resulting into peaking up of the ratio at 2.2141 in 2017–18. The mean ratio of Jet Airways is 0.8712 is lesser than the industry average, signifying comparatively more stable asset management;
- SpiceJet demonstrated the most concerning situation, where the fixed asset ratios often exceeded the total assets ratio, representing risky capital lock-in. The highest ratio of 3.0708 was noted in 2015–16. The mean ratio of the airline is 1.3284 which is considerably higher than the industry average, indicating to inefficient asset structuring;
- Thus, comparing the airlines we found that Jet Airways maintained the most judicious balance between fixed and total assets ratio;
- CV% of Fixed Asset/ Total Asset Ratio showed the lowest value of the coefficient of variation from the mean value. Air India's CV% is 26.8285 and has minimum deviation from the mean.

3. Management Efficiency (M) Analysis

Management efficiency ratio is a financial ratio designed to measure the efficiency of management in controlling the working capital or other resources used by the business. To analyze the management efficiency of select airline companies, the following ratios have been taken into consideration:

- Return on Asset Ratio (Venkatesh & Suresh, 2014)^[18];
- Return on Net worth Ratio (Kumar & Malhotra, 2017)^[8].

The empirical findings of asset quality of the select airline companies on the basis of the above-mentioned ratios are highlighted in Table 8 & 9

Analysis of Return on Asset Ratio

Return on assets indicates how profitable a company is relative to its total assets and also gives an idea of how efficiently the company management is utilizing its assets to generate earnings. A high Return on Asset ratio indicates how efficiently a company uses its assets to generate profit. Thus, a higher Return on Asset ratio is desirable.

Table 8: Statement Showing Return on Asset Ratios of Select Airlines Companies

Year	Return on Asset Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.0607	0.0445	-0.0330	0.0241
2005-06	0.0094	0.0628	-0.0476	0.0082
2006-07	-0.0593	0.0034	-0.1147	-0.0569
2007-08	-0.0919	-0.0153	-0.2386	-0.1152
2008-09	-0.1782	-0.0207	-5.9395	-2.0461
2009-10	-0.1636	-0.0283	0.6523	0.1535
2010-11	-0.2036	0.0006	0.2345	0.0105
2011-12	-0.2467	-0.0834	-0.6342	-0.3214
2012-13	-0.1582	-0.0426	-0.1116	-0.1041
2013-14	-0.1768	-0.4168	-1.1532	-0.5823
2014-15	-0.1613	-0.1970	-1.1409	-0.4997
2015-16	-0.1031	0.1298	0.7683	0.2650
2016-17	-0.2112	0.4854	0.4769	0.2504
2017-18	-0.1626	-0.4711	0.3572	-0.0922
2018-19	-0.2680	1.3763	-0.1832	0.3084
Mean	-0.1410	0.0552	-0.4738	-0.1865
CV %	-61.9409	747.3557	-329.1722	-298.3289

[Source: Compilation of secondary data using MS Excel 2019]

Table 8 depicted The Return on Asset Ratio (ROA) of select airlines. Analysis shows an overall poor performance of the airlines, arising due to persistent financial losses, and consequently leading to negative returns on assets in most years.

- Air India suffered losses for almost throughout the study period, consequently giving consistent negative ROA, with the lowest being recorded at -0.2680 in 2018–19. However, the mean ROA of Air India is 0.1410 is better than the industry average of -0.1865;
- Jet Airways scored relatively better, recording profits in six years during the study period. The highest of 1.3763 in 2018–19 and lowest of -0.4168 in 2013–14. Jet Airways mean ROA of 0.0552 was the highest among the three select airlines;
- SpiceJet recorded profits in only five years, with highest ROA of 0.7683 in 2015–16 but an alarming low ratio of -5.9395 in 2008–09. Thus, the mean ROA of SpiceJet of -0.4738 became the lowest, representing poorer asset efficiency;
- While all three airlines displayed dissatisfactory performance, Jet Airways portrayed the most favourable ROA trend, with several years of profitable, in contrast to Air India's constant losses and SpiceJet's high volatility and alarming negative returns;
- CV% of the Return on Asset Ratio shows the lowest deviation from the mean value. Spice Jet who's computed CV% is -329.1722 has minimum deviation from the mean.

Analysis of Return on Net worth Ratio (RONW)

RONW emphasizes on the return generated on the total net worth of shareholders, thereby focusing on wealth creation and the residual claim of owners. A high RONW is often interpreted as a sign of good managerial performance. However, a high RONW may also result from heavy dependence on debt financing. Debt can increase available profits to shareholders and escalates financial risk.

Table 9: Statement Showing Return on Net worth Ratios of Select Airlines Companies

Year	Return on Net worth Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.2965	-0.1738	0.0200	0.0476
2005-06	0.0460	0.1960	0.0295	0.0905
2006-07	4.1425	0.0125	-0.3832	1.2573
2007-08	-0.3830	-0.0556	-4.7716	-1.7367
2008-09	-26.6295	-0.1274	0.8096	-8.6491
2009-10	1.2389	-0.1770	-0.1705	0.2971
2010-11	0.6778	0.0037	0.3150	0.3322
2011-12	0.4597	-1.0468	4.1144	1.1758
2012-13	0.3432	1.4174	0.8028	0.8545
2013-14	0.3559	1.6464	0.9529	0.9851
2014-15	0.2900	0.4434	0.4254	0.3863
2015-16	0.1945	-0.3894	-0.3920	-0.1956
2016-17	0.2925	-0.2289	-0.7072	-0.2145
2017-18	0.2144	0.1060	-13.1871	-4.2889
2018-19	0.2876	0.4360	0.9013	0.5417
Mean	-1.2115	0.1375	-0.7494	-0.6078
CV %	-566.7895	469.5622	-498.4798	-416.3937

[Source: Compilation of secondary data using MS Excel 2019]

Table 9 shows return on Net worth (RONW) ratio of the airline companies remained low or negative throughout the period of study, principally because of high debt burdens surpassing total assets.

- Air India consistently recorded negative RONW for all years of study, with the highest at 4.1425 in 2006–07 and lowest at -26.6295 in 2008–09. The mean RONW of the airline was -1.2115, which is considerably below the industry average of -0.6078;
- Jet Airways also reported negative RONW in considerable number of years, but showed comparatively better performance with a highest of 1.6464 recorded in 2013–14. As a result, making it the only airline with a positive average mean RONW of 0.1375, and exceeded the industry average;
- In case of SpiceJet there is wide fluctuation in RONW ratio, highest being recorded in 2011–12 at 4.1144 and least at -13.1871 in 2017–18. Thus mean RONW of the airline plunged at -0.7494, making it lower than the industry average;
- All select airlines writhed with profitability, yet, Jet Airways showed relatively stronger RONW, resulting a positive average, unlike Air India and SpiceJet;
- CV% of the Return on Net Worth Ratio signify the lowest value of the coefficient of variation from the mean value. The computed CV% of Air India is -566.7895 with smallest deviation from the mean.

4. Earnings (E) Analysis

Earning level and volume ratio help to evaluate an institution's long-term viability. To analyze the earning level and volume of select airline companies, the following ratios have been used:

- Net Profit Margin Ratio (Muralidhara & Lingam);
- Return on Equity (ROE) (Rostami, 2015) ^[15].

The empirical findings of asset quality of the select airline companies on the basis of the above-mentioned ratios are highlighted in Table 10 & 11

Analysis of Net Profit Margin Ratio

Net profit margin typically expresses how much net income or profit is generated as a percentage of revenue. Net Profit margin illustrates how much of revenue collected by a company translates into profit. Thus, higher ratio is desirable which is seen as a positive sign by investors and lenders.

Table 10: Statement Showing Net Profit Margin Ratios of Select Airlines Companies

Year	Net Profit Margin Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.0127	0.0904	-14.2836	-4.7268
2005-06	0.0017	0.0798	-0.0987	-0.0057
2006-07	-0.0531	0.0040	-0.1099	-0.0530
2007-08	-0.1632	-0.0286	-0.1031	-0.0983
2008-09	-0.4195	-0.0348	-0.2087	-0.2210
2009-10	-0.4236	-0.0447	0.0282	-0.1467
2010-11	-0.4882	0.0007	0.0352	-0.1508
2011-12	-0.5151	-0.0810	-0.1536	-0.2499
2012-13	-0.3425	-0.0280	-0.0341	-0.1349
2013-14	-0.3418	-0.2060	-0.1591	-0.2357
2014-15	-0.2959	-0.0901	-0.1310	-0.1724
2015-16	-0.1898	0.0535	0.0800	-0.0188
2016-17	-0.2878	0.0688	0.0696	-0.0498
2017-18	-0.2326	-0.0330	0.0731	-0.0642
2018-19	-0.3315	-0.2401	-0.0347	-0.2021
Mean	-0.2714	-0.0326	-1.0020	-0.4353
CV %	-59.3322	-282.1289	-354.3581	-264.0483

[Source: Compilation of secondary data using MS Excel 2019]

Table 10, shows the Net Profit Margin (NPM) of airline companies depicting pitiable or adverse situation across most of the years, primarily due to constant fiscal losses.

- Air India logged losses in almost all years except 2004–05 and 2005–06, leading to a consistently negative NPM, with the lowest recorded at -0.5151 in 2011–12. However, the mean NPM of Air India -0.2714, is healthier than the overall industry average of -0.4353.
- Jet Airways showcased a slightly improved performance, accomplishing positive NPM in six years and the highest ratio was 0.0904 recorded in 2004–05. The mean NPM -0.0326 of Jet Airways out performed both the industry average as well as its peers.
- SpiceJet documented positive NPM in five years, however, with extreme volatility. The lowest NPM being -14.2836 in 2004–05 and the highest at 0.0800 in 2015–16. Consequently, the mean NPM of the airline -1.0020, was most unsatisfactory among the three airlines, regardless of a few profitable years.
- Although, all three airlines struggling with profitability, Jet Airways performed comparatively better in terms of Net Profit Margin, representing better financial efficiency compared to the rest.
- CV% of Net Profit Margin Ratio states the lowest deviation from the mean value. Spice Jet has the lowest deviation from the mean.

Analysis of Return on Equity Ratio (ROE) using Average Shareholders' Equity

ROE calculated using average shareholders' equity is frequently chosen in financial research since it captures the firm's genuine earning performance over time, as opposed to depending on a single-point (year-end) equity statistic. A high ROE indicates higher returns for equity investors, making the company more appealing for investment.

Table 11: Statement Showing Return on Equity Ratios of Select Airlines Companies

Year	Return on Equity Ratio			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.2048	-0.2563	-1.6479	-0.5665
2005-06	0.2048	0.3202	-1.6136	-0.3629
2006-07	-0.0143	0.2698	0.2993	0.1849
2007-08	0.2399	0.2747	0.0500	0.1882
2008-09	0.0067	0.1621	-7.3368	-2.3893
2009-10	-0.1320	0.1597	-3.8257	-1.2660
2010-11	-0.3004	0.1601	0.7445	0.2014
2011-12	-0.5366	0.0797	-0.1541	-0.2037
2012-13	-0.4611	-0.0301	-0.1390	-0.2100
2013-14	-0.4970	-0.2532	-1.2102	-0.6534
2014-15	-0.5564	-0.4442	-2.6819	-1.2275
2015-16	-0.5301	-0.3335	-1.9601	-0.9412
2016-17	-0.7219	-2.1203	-0.6744	-1.1722
2017-18	-0.7585	-4.4441	-0.0271	-1.7432
2018-19	-0.9318	3.1564	-0.2032	0.6738
Mean	-0.3189	-0.2199	-1.3587	-0.6325
CV %	-115.2529	-687.1515	-146.9298	-126.7798

[Source: Compilation of secondary data using MS Excel 2019]

Table 11, represented The Return on Equity (ROE) ratios of the airline companies which depicted consistent financial deficit due to recurrent losses.

- Air India recorded adverse ROE in 11 out of 15 years, with only 4 years showing low but positive ROE. The lowest ROE was recorded at 2018-19 at -0.9318 and the highest 0.2399 in 2007–08. However, the mean ROE of

the company -0.3189 is better than the industry as a whole;

- Jet Airways performed comparatively better as it recorded positive ROE in 8 fiscal years. The company achieved the highest ROE in 2018-19 at 3.1564 and lowest in 2017-18 at -4.4441, resulting into mean ROE of -0.2199 making it superior to its peers.
- SpiceJet data exhibited positive ROE only in 3 years, and highly adverse results in other years. The lowest ROE was recorded in 2008-09 at -7.3368 and the highest was recorder in 2010-11 at 0.7445. The mean ROE of the airline was -1.3587 was the worst among the three airlines.
- All three select airlines performed below the bar in equity returns. But Jet Airways performance was comparatively better in ROE, suggesting relatively stronger shareholder value generation than Air India and SpiceJet.
- CV% of the Return on Equity (ROE) showed the lowest value of the coefficient of variation from the mean value. Jet Airways, the computed CV% is -687.1515 and thus have minimum deviation from the mean value.

5. Liquidity (L) Analysis

For analyzing the health of a company, understanding the company's liquidity is important as it can estimate a firm's ability to pay off its short-term debts and current liabilities. The following ratios have been selected in order to analyze the liquidity of select airline companies:

- Current Asset to Total Asset (Dincer *et al.*, 2011) ^[4];
- Current Ratio (Gupta, 2014) ^[5].

The empirical findings of asset quality of the select airline companies on the basis of the above-mentioned ratios are highlighted in Table 12 & 13.

Analysis of Current Asset to Total Asset Ratio

The ratio signifies the portion of total assets occupied by current assets, as current assets signify liquidity. A higher Current Asset to Total Asset Ratio is desirable as it indicates a greater portion of a company's assets can be readily convertible into cash, suggesting better short-term liquidity and ability to meet immediate obligations.

Table 12: Statement Showing Current Asset to Total Asset Ratios of Select Airlines Companies

Year	Current Asset to Total Asset Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	1.5488	0.2793	2.8248	1.5510
2005-06	1.5488	0.3412	2.8248	1.5716
2006-07	0.5803	0.5287	7.1103	2.7398
2007-08	0.2597	0.3798	11.2432	3.9609
2008-09	0.1847	0.2952	96.8784	32.4527
2009-10	0.1620	0.3325	58.3677	19.6207
2010-11	0.1245	0.2582	9.7363	3.3730
2011-12	0.1409	0.2913	4.5203	1.6508
2012-13	0.1590	0.4840	3.2213	1.2881
2013-14	0.1793	0.7234	7.3175	2.7401
2014-15	0.1459	0.5753	8.7972	3.1728
2015-16	0.3396	1.3986	23.8519	8.5300
2016-17	0.2100	2.0450	6.9155	3.0568
2017-18	0.1801	3.6273	3.7260	2.5111
2018-19	0.1720	-1.3519	3.1509	0.6570
Mean	0.3957	0.6805	16.6991	5.9251
CV %	117.6140	152.8619	152.2765	141.9974

[Source: Compilation of secondary data using MS Excel 2019]

In Table 12, the Current Asset to Total Asset Ratios of select airlines reflected inadequate liquidity positions, essentially due to high current liabilities.

- Air India showed a inconsistent trend, with ratio varying from 1.5488 (2004-05 & 2005-06) to 0.1245 (2010-11). Its mean ratio of Air India was 0.3957, representing weak liquidity position and pushing it below the overall industry mean score of 5.9251;
- Jet Airways performed slightly better in spite of having a fluctuating trend. The lowest ratio being -1.3519 in 2018-19 and the highest being 3.1509 in 2017-18. The average ratio stood at 0.6805, which is much less than the industry average.
- Abnormally high ratios were recorded in case of SpiceJet, signifying very high current assets or disproportionate liabilities. The lowest ratio of 2.8248 was found in 2004-05 & 2005-06 and the highest ratio of 96.8784 in 2008-09. Consequently, the mean ratio of the airline became high at 16.6991, exceeding the industry mean.
- Thus, SpiceJet exhibited the highest liquidity position among the three select airlines based on the Current Asset to Total Asset Ratio even though there is signs of financial imbalance due to excessive current liabilities.

Analysis of Current Ratio

The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or dues within one year. Therefore, the current ratio of 1:1 is also reasonable (Venkatachalam & Natarajan, 2015). A higher Current Ratio is desirable as it indicates that the company has more liquid assets available to cover its short-term liabilities, suggesting better financial health and the ability to meet obligations easily.

Table 13: Statement Showing Current Ratios of Select Airlines Companies

Year	Current Ratios			
	Air India	Jet Airways	Spice Jet	Mean Score
2004-05	0.9756	0.2606	1.1896	0.8086
2005-06	0.9756	2.3061	1.1896	1.4904
2006-07	2.8504	2.3670	6.7745	3.9973
2007-08	1.4679	1.6605	8.7181	3.9488
2008-09	1.3601	1.7525	10.1653	4.4259
2009-10	0.9914	1.5388	7.3900	3.3067
2010-11	0.5999	0.9776	6.2155	2.5976
2011-12	0.3661	0.7222	4.2811	1.7898
2012-13	0.4574	0.7605	4.0758	1.7646
2013-14	0.5383	0.6751	3.0815	1.4316
2014-15	0.4571	0.5521	3.2488	1.4193
2015-16	0.9561	1.2521	6.4885	2.8989
2016-17	0.3870	0.6532	3.2097	1.4167
2017-18	0.3118	0.5473	2.6629	1.1740
2018-19	0.2647	0.3610	1.8983	0.8414
Mean	0.8640	1.0924	4.7060	2.2208
CV %	74.7293	60.3702	56.8090	52.7926

[Source: Compilation of secondary data using MS Excel 2019]

Table 13 depicts the Current Ratio of all three airline companies, indicating the liquidity position during the period of study.

- Air India had a favourable Current Ratio i.e., above 1 for only three years (2006–07 to 2008–09), with the highest being in 2006–07 at 2.8504 and lowest in 2018–19 at 0.2647. Its mean ratio of the airline fell to 0.8640 due to pitiable liquidity position and also fell below the industry average of 2.2208;
- Jet Airways performed better than Air India, since their Current Ratio is above 1 for six years, including the highest in 2006–07 at 2.3670 and the lowest in 2004–05 at 0.2606. In spite of that the mean Current Ratio of the airline was below the overall mean of 1.0924;
- SpiceJet showcased the best liquidity position, upholding a Current Ratio above 1 (Maverick, 2015)^[10] in all the years of study. The highest ratio was recorded in 2008–09 at 10.1653 and the lowest was recorded in two years (2004–05 & 2005–06) at 1.1896. Consequently, average ratio shoot up to 4.7060 which was well above the industry average of 2.2208.
- Thus, SpiceJet overtook both Air India and Jet Airways in terms of liquidity, which was mirrored through their strong and consistent Current Ratios;
- CV% of the Current Ratio reflects the lowest value of the coefficient of variation from the mean value. Spice Jet's computed CV% is 56.8090 and has the minimum deviation from the mean.

Conclusion

A humble attempt has been made to undertake a CAMEL-based financial performance analysis of three selected Indian airline companies—Air India, Jet Airways, and SpiceJet—over a period of 15 years. The study reveals a persistently challenging financial landscape in the Indian aviation sector, marked by financial distress, recurrent losses, high levels of indebtedness, rising operating costs, and uncertain business conditions. The assessment of the selected airlines across the major CAMEL dimensions provides important insights into their respective financial strengths and weaknesses. The findings indicate that several key financial indicators, particularly Net Profit Margin Ratio, Return on Equity (ROE), Current Asset to Total Asset Ratio, and Current Ratio, reflected considerable financial weaknesses among the selected airlines. The poor profitability and return indicators can largely be attributed to high debt burdens, recurring losses, substantial operating expenses, fuel price volatility, and an unpredictable operating environment. Although all three airlines experienced difficulties in maintaining sustainable profitability during the study period, their financial performance varied across individual CAMEL parameters. Among the selected airlines, Jet Airways demonstrated comparatively better performance in certain profitability indicators, particularly Net Profit Margin and ROE, with intermittent periods of positive returns. However, its relatively stronger performance on selected financial ratios was not sufficient to ensure long-term financial sustainability. The airline ultimately succumbed to prolonged financial distress and ceased operations in April 2019, highlighting the limitations of relying solely on individual profitability indicators when assessing the overall financial viability of an airline. Air India, the national carrier during the study period, exhibited persistent financial

weakness, as reflected in recurring negative profits and negative ROE. These outcomes indicate the presence of structural inefficiencies, high operating costs, and an unsustainable cost structure that adversely affected its financial performance.

Policy Implications

The findings underscore the importance of comprehensive financial restructuring and operational reforms for improving the long-term viability of large, capital-intensive airline enterprises. SpiceJet, despite recording relatively modest profitability indicators, demonstrated comparatively stronger liquidity performance. Its consistently higher Current Ratio and Current Asset to Total Asset Ratio indicate a relatively better short-term liquidity position than the other selected airlines. This suggests that the airline was comparatively more capable of maintaining short-term financial obligations, even though its profitability remained under pressure. Overall, the findings emphasize the need for strategic and structural reforms in the Indian aviation sector to strengthen long-term financial stability. Greater emphasis should be placed on operational efficiency, prudent financial management, effective cost control, debt management, fuel-cost risk mitigation, and sustainable business strategies. The study demonstrates that financial strength in the airline industry cannot be evaluated solely on the basis of profitability; rather, a comprehensive assessment of capital adequacy, asset quality, management efficiency, earnings, and liquidity is essential. In this context, the CAMEL framework has proved to be a useful analytical tool for identifying major areas of financial stress and facilitating a comparative assessment of the financial performance and sustainability of airline companies in India.

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