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A Study on Financial Distress of Selected Finance Companies in India

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Abstract

The Indian finance industry has experienced significant growth and transformation in recent years, driven by technological advancements, increased mobile penetration, and the adoption of digital services. However, this rapid expansion has also led to intense competition, mounting debt, and regulatory challenges, which have put several finance companies in India under financial distress. This paper aims to provide a comprehensive analysis of the financial distress faced by finance companies in India, its underlying causes, and the potential implications on the industry's overall stability. This research employs a mixed-method approach, incorporating both qualitative and quantitative analyses. This study utilizes financial ratios, liquidity indicators, profitability measures, and solvency metrics to assess the Altman's Z-Score for financial health of selected finance companies. By comparing the financial performance of distressed firms with their healthier counterparts, this research aims to identify key financial markers that indicate the onset of distress. The findings reveal that finance companies in India are grappling with a myriad of issues, including high debt levels, intensified price wars, capital-intensive infrastructure investments, and regulatory uncertainties.

Keywords: Financial distress, accounting ratios, descriptive statistics, Altman's Z-score, ANOVA

1. Introduction

Financial distress refers to a situation in which a company or individual faces significant difficulties in meeting their financial obligations or sustaining their operations due to an inability to generate sufficient cash flow or access necessary funding. It is a critical stage in the financial health of an entity and can have severe consequences if not addressed promptly and effectively. For businesses, financial distress can arise from various factors such as: When a company's sales or revenues decrease over time, it may struggle to cover its operating expenses and debt payments. Companies with substantial debt burdens may find it challenging to make interest and principal payments, leading to a downward spiral of increasing debt and financial strain. Inadequate financial management, inefficient operations, or strategic errors can lead to financial instability. During economic downturns or recessions, businesses may experience reduced consumer spending, lower demand for products or services, and increased competition, all of which can contribute to financial distress. Technological advancements, changes in consumer preferences, or shifts in industry regulations can negatively impact companies, leading to financial difficulties. Even profitable companies can face financial distress if they encounter cash flow problems, such as delayed payments from customers or difficulties in collecting accounts receivable. Signs of financial distress in a business may include increasing debt, declining profits, liquidity issues, missed loan payments, layoffs, and asset sales to raise cash. For individuals, financial distress can stem from similar issues, such as high levels of debt, job loss, medical emergencies, or inadequate financial planning. It is crucial to address financial distress promptly to avoid bankruptcy or insolvency. Potential solutions include cost-cutting measures, debt restructuring, seeking new sources of funding, improving operational efficiency, and seeking professional financial advice. It is essential to note that financial distress can be a natural part of the business or economic cycle, but identifying it early and taking appropriate action can often help mitigate the impact and lead to a path of recovery.

2. Methodology

The main objective of this research is to evaluate financial distress of selected finance companies of India. Thus, the descriptive part of the selected firm is examined and the nature of this research descriptive in design. To evaluate the company's financial health an application of Altman's Z-score is evaluated which is explain in detail for each of the company. The inferential analysis supporting to examine the final comparison and conclusions. The latest financial reports of each company evaluated for financial year 2019 to 2023.

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3. Application on Data

These applications play a crucial role in data analytics, helping businesses make informed decisions based on valuable insights. In the area of financial distress, data applications are instrumental in managing complex datasets and extracting meaningful patterns and trends.

3.1. Shree Ram Finance

Table 1: Parameters for Shree Ram Finance

	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19
Working Capital	1,94,877.94	1,37,902.67	1,25,835.35	1,12,260.74	1,03,940.27
Total Assets	2,03,663.86	1,42,106.09	1,29,678.86	1,14,128.64	1,05,292.48
Retained Earnings (Income-Div.)	29802.89	19274.23	17436.4	16575.76	15556.66
Operating Income	29,772.16	19,255.17	17,420.45	16,555.49	15,529.15
Market Capital	374.43	270.52	253.06	226.88	226.9
Total Liabilities	75,468.83	48,054.70	46,851.63	43,894.70	38,425.38
Sales	29,421.19	19,185.95	17,324.86	16,474.76	15,467.50

The table presents financial data for a company over a five-year period, from March 2019 to March 2023. The company's working capital has demonstrated a consistently positive trend over the five years, increasing from 1,03,940.27 in March 2019 to 1,94,877.94 in March 2023. This signifies the company's ability to meet its short-term financial obligations and indicates improved liquidity, which can be beneficial for day-to-day operations and maintaining financial stability. The total assets of the company have experienced significant growth during the period, rising from 1,05,292.48 in March 2019 to 2,03,663.86 in March 2023. This robust expansion suggests the company's commitment to investment and expansion, which could potentially lead to increased operational capacity and competitive advantage. The company's retained earnings, representing the portion of profits not distributed as dividends but retained for reinvestment, have shown consistent growth over the years. The value increased from 15,556.66 in March 2019 to 29,802.89 in March 2023. This growth indicates the company's financial strength and capacity to generate and retain profits. The company's operating income, which reflects the profits generated from its core business activities, has displayed a positive trajectory. Starting at 15,529.15 in March 2019, it reached 29,772.16 in March 2023. This steady increase in operating income suggests the company's ability to maintain profitability and effective cost management. Market capitalization, representing the total value of the company's outstanding shares, has increased over the years. This indicates growing investor confidence in the company and its future prospects. The market's positive perception can result from strong financial performance and potential growth opportunities. The company's total liabilities have also increased over the years but have not seen as significant growth compared to its assets and earnings. This suggests that the company has been managing its debt levels relatively well, which is a positive sign for its financial stability. The company's sales revenue has steadily increased from 15,467.50 in March 2019 to 29,421.19 in March 2023. This growth in sales revenue indicates the company's ability to attract customers and generate higher revenues from its products or services. In conclusion, the data from the table highlights a positive financial trajectory for the company over the five-year period. The company has shown consistent growth in working capital, total assets, retained earnings, operating income, and sales, contributing to its overall financial health. Additionally, the market capitalization's upward trend reflects growing investor confidence in the company's performance and potential.

Table 2: Z score for Shree Ram Finance

Original Z-Score Model	Coefficient	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19	Variable (Avg.)
X_1 = Working Capital ÷ Total Asset	1.20	0.957	0.970	0.970	0.984	0.987	0.974
X_2 = Retained Earnings ÷ Total Assets	1.40	0.146	0.136	0.134	0.145	0.148	0.142
X_3 = EBIT ÷ Total Assets	3.30	0.146	0.135	0.134	0.145	0.147	0.142
X_4 = Market Capitalization ÷ Total Liabilities	0.60	0.00	0.01	0.01	0.01	0.01	0.01
X_5 = Sales ÷ Total Assets	0.99	0.144	0.135	0.134	0.144	0.147	0.141
Altman Z-Score							1.40

Based on the Altman Z-Score model, the calculated Z-Score for the year Mar-23 is approximately 1.396. The Altman Z-Score is used to assess the likelihood of a company going bankrupt. Generally, a higher Z-Score is considered favourable as it suggests a lower risk of bankruptcy, while a lower Z-Score indicates a higher risk of financial distress. The conclusion based on the calculated Z-Score of approximately 1.396 is derived as-The company's financial health, as indicated by the Z-Score, falls into a grey area. The score is neither significantly high nor significantly low, which means the company's risk of bankruptcy is not strongly pronounced at the moment. It is essential to compare the calculated Z-Score with industry benchmarks to gain a more accurate understanding of the company's financial position. Different industries may have varying average Z-Score levels, so context is crucial. To assess the company's financial stability further, it is advisable to monitor its Z-Score over time and identify trends. If the Z-Score shows a consistent decline over several periods, it could be a cause for concern. The Altman Z-Score model is not a guarantee of bankruptcy, but it serves as a useful tool for investors, creditors, and analysts to assess the financial risk of a company and make more informed decisions. Additional analysis and consideration of other factors, such as market conditions, management efficiency, and industry outlook, are necessary for a comprehensive evaluation of the company's financial health. The formula to calculate the Altman Z-Score is as follows:

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Altman Z-Score = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.99X5
Where: X1 = Working Capital ÷ Total Assets X2 = Retained Earnings ÷ Total Assets X3 = EBIT (Earnings before Interest and Taxes) ÷ Total Assets X4 = Market Capitalization ÷ Total Liabilities X5 = Sales ÷ Total Assets
To calculate the Altman Z-Score for a specific year, you multiply the corresponding coefficients with the values of the variables for that year and sum up the results.
Based on the given data:
Altman Z-Score = 1.2 (0.957) + 1.4 (0.146) + 3.3 (0.146) + 0.6 (0.00) + 0.99 (0.144) Altman Z-Score (Mar-23) ≈ 1.396
So, the Altman Z-Score for the year Mar-23 is approximately 1.396. This score indicates the financial health of the company and can be used to assess the likelihood of bankruptcy. Generally, a higher Z-Score suggests a lower risk of bankruptcy, while a lower Z-Score indicates a higher risk of financial distress.

3.2. Mahindra and Mahindra Finance

Table 3: Parameters for Mahindra and Mahindra Finance

	Mar-23	**Mar-22**	**Mar-21**	**Mar-20**	**Mar-19**
Working Capital	-1,135.44	-1,744.51	-1,271.15	-944.81	-902.09
Total Assets	96,216.55	75,288.73	77,036.45	74,071.21	67,077.99
Retained Earnings (Income-Div.)	11056.09	9718.8	10516.81	10245.14	8809.81
Operating Income	10,928.80	9,657.97	10,456.11	10,097.85	8,722.91
Market Capital	246.72	246.6	246.4	123.07	122.98
Total Liabilities	96,216.55	75,288.73	77,036.45	74,071.21	67,077.99
Sales	11,056.09	9,718.80	10,516.81	10,245.14	8,809.81

The company's working capital has consistently remained negative throughout the five-year period, indicating potential short-term liquidity challenges. Negative working capital suggests that the company may have more short-term liabilities than current assets, which can impact its ability to meet immediate financial obligations. M & M Finance has experienced steady growth in total assets over the years. The total assets have increased from Rs. 67,077.99 million in Mar-19 to Rs.96,216.55 million in Mar-23. This growth is a positive sign and indicates the company's expansion and investment in its asset base. The retained earnings have shown a positive trend, reflecting the company's ability to generate profits and retain them for future growth. Retained earnings increased from Rs.8,809.81 million in Mar-19 to Rs.11,056.09 million in Mar-23, showcasing the company's financial strength and profitability. M & M Finance's operating income has consistently improved over the years, demonstrating efficiency in its core operations. Operating income rose from Rs.8,722.91 million in Mar-19 to Rs.10,928.80 million in Mar-23, indicating improved profitability and effective cost management. The market capitalization of M & M Finance has experienced fluctuations over the years, influenced by changes in the stock price and the number of outstanding shares. As of Mar-23, the market capitalization stands at Rs.246.72 million. Total liabilities have increased over the years, reaching Rs.96,216.55 million in Mar-23. This growth in liabilities may be attributed to increased borrowing or other financial obligations, and it necessitates careful debt management and financial planning. The company's sales revenue has consistently grown, showcasing a positive revenue trend. Sales increased from Rs.8,809.81 million in Mar-19 to Rs.11,056.09 million in Mar-23, indicating the company's ability to increase its revenue and expand its customer base.

Table 4: Z – score for Mahindra and Mahindra Finance

Original Z-Score Model	**Coefficient**	**Mar-23**	**Mar-22**	**Mar-21**	**Mar-20**	**Mar-19**	**Variable (Avg.)**
X_1 = Working Capital ÷ Total Asset	1.20	-0.012	-0.023	-0.017	-0.013	-0.013	-0.016
X_2 = Retained Earnings ÷ Total Assets	1.40	0.115	0.129	0.137	0.138	0.131	0.130
X_3 = EBIT ÷ Total Assets	3.30	0.114	0.128	0.136	0.136	0.130	0.129
X_4 = Market Capitalization ÷ Total Liabilities	0.60	0.00	0.00	0.00	0.00	0.00	0.00
X_5 = Sales ÷ Total Assets	0.99	0.115	0.129	0.137	0.138	0.131	0.130
Altman Z-Score							0.38

The table presents the financial data and coefficients used to calculate the Altman Z-Score for M & M Finance for the years Mar-23, Mar-22, Mar-21, Mar-20, and Mar-19.
The calculated Z-Score for Mar-23 is 0.38. A Z-Score below 1.80 indicates a higher risk of financial distress and potential bankruptcy within the next two years. In this case, the Z-Score of 0.38 suggests that M & M Finance is facing financial challenges and should be closely monitored for signs of potential financial instability. The working capital ratio measures the company's ability to cover short-term obligations with its current assets. The average X1 value over the five years is-0.016, which indicates that the company's working capital has been negative, signifying potential liquidity challenges. This ratio shows the proportion of retained earnings to total assets, indicating the company's profitability and reinvestment capacity. The average X2 value is 0.130, reflecting positive profitability and the company's ability to retain earnings for future growth. This ratio measures the company's operating profitability in relation to its total assets. The average X3 value is 0.129, indicating that the company generates a reasonable operating profit relative to its asset base. This ratio compares the market value of the company's equity to its total liabilities. In this case, the average X4 value is 0.00, suggesting that the market capitalization is not significantly influenced by the

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total liabilities. This ratio represents the company's revenue generation relative to its total assets. The average X5 value is 0.130, indicating that the company generates a reasonable amount of sales relative to its asset base.

The Altman Z-Score model assesses a company's financial health and potential risk of bankruptcy. In the case of M & M Finance, the Z-Scores for all the years (ranging from 0.27 to 0.38) are well below the critical threshold of 1.80. This suggests that the company is at a higher risk of financial distress and bankruptcy compared to financially healthier companies. The negative working capital (X1) and consistently low Z-Scores over the years indicate potential liquidity challenges and financial instability. However, the positive retained earnings (X2), reasonable operating profitability (X3), and decent sales generation (X5) imply that the company has profitability potential and revenue growth opportunities. In conclusion, while M & M Finance shows some positive financial indicators, the consistently low Altman Z-Scores raise concerns about the company's overall financial health. It is crucial for stakeholders to closely monitor the company's financial performance, liquidity management, and debt obligations to mitigate potential risks and make well-informed financial decisions. Additional analysis and contextual considerations are advised to gain a comprehensive understanding of M & M Finance's financial position and prospects. The Altman Z-Score model is a formula developed by Edward Altman in 1968 to assess the financial health of a company and predict its likelihood of bankruptcy. It uses multiple financial ratios to calculate a single score that can be used to classify companies into different categories based on their risk of bankruptcy. The formula for the Altman Z-Score is as follows:

Altman Z-Score = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.99X5

The model assigns specific coefficients to each ratio, and the sum of the weighted ratios produces the Z-Score. The Z-Score is then compared to a critical threshold to assess the company's financial risk. Generally, a Z-Score below 1.80 indicates a higher risk of bankruptcy, while a Z-Score above 2.99 suggests a lower risk.

The Altman Z-Score model is widely used by investors, creditors, and analysts as an early warning system to identify financially distressed companies and make informed decisions based on their risk profile. It is essential to note that the model has been primarily designed for manufacturing companies, and its application to other industries may require adjustments or additional considerations. Additionally, while the Altman Z-Score provides valuable insights, it should be used alongside other financial metrics and qualitative assessments to obtain a comprehensive view of a company's financial condition.

3.3. Power Finance

Table 5: Parameters for Power Finance

	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19
Working Capital	4,33,915.98	3,81,954.33	3,82,877.14	3,55,930.84	3,37,862.58
Total Assets	4,44,833.06	3,94,410.01	3,92,084.07	3,61,787.26	3,44,725.68
Retained Earnings (Income-Div.)	39665.63	38591.17	37766.57	33371.06	28766.31
Operating Income	39,651.75	38,545.40	37,744.87	33,362.90	28,748.73
Market Capital	2,640.08	2,640.08	2,640.08	2,640.08	2,640.08
Total Liabilities	3,75,929.78	94,872.66	87,159.69	85,091.04	86,178.12
Sales	39,651.75	38,545.40	37,744.87	33,362.90	28,748.73

Working capital represents the company's current assets minus its current liabilities. The data shows a consistent increase in working capital over the five-year period, from 3,37,862.58 in Mar-19 to 4,33,915.98 in Mar-23. This indicates an improvement in the company's ability to cover short-term obligations and manage its day-to-day operations.

Total assets represent the sum of all assets owned by the company. The company's total assets have increased from 3,44,725.68 in Mar-19 to 4,44,833.06 in Mar-23. This growth signifies the company's expansion and investment in its asset base. Retained earnings are the accumulated profits of the company that have not been distributed as dividends. The data indicates a consistent increase in retained earnings over the years, from 28,766.31 in Mar-19 to 39,665.63 in Mar-23. This reflects the company's ability to generate profits and retain them for future growth and investment. Operating income, also known as operating profit, represents the company's earnings before interest and taxes (EBIT). The data shows a steady rise in operating income from 28,748.73 in Mar-19 to 39,651.75 in Mar-23. This suggests improved profitability and efficiency in the company's core operations. Market capitalization is the total value of a company's outstanding shares in the stock market. The data indicates a constant market capitalization of 2,640.08 for all the years. This value does not seem to change over the period, potentially due to stable stock prices and the number of outstanding shares. Total liabilities represent the total debt and obligations owed by the company. The data shows an increase in total liabilities over the years, reaching 3,75,929.78 in Mar-23. This suggests that the company has taken on more debt or financial obligations. Sales, also known as revenue, represent the total income generated by the company from its primary business activities. The data shows consistent sales revenue growth over the five-year period, from 28,748.73 in Mar-19 to 39,651.75 in Mar-23. This indicates the company's ability to increase its revenue and expand its customer base. The financial data for the company indicates positive trends in working capital, total assets, retained earnings, operating income, and sales over the five-year period. These trends suggest improved financial health and operational efficiency for the company. However, the increase in total liabilities may raise concerns about the company's debt levels and financial obligations. It is essential for the company to manage its debt prudently to maintain financial stability. Additionally, the consistent market capitalization may indicate stable investor confidence in the company, but further analysis is needed to understand its stock performance in relation to its financial performance. Overall, the company's positive financial indicators and growth in revenue and profits are promising signs of a well-performing business. However, it is advisable to conduct a comprehensive financial analysis, including profitability ratios, liquidity ratios, and debt ratios, to gain a more in-depth understanding of the company's financial condition and performance.

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Table 6: Z-score for Power Finance

	Coefficient	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19	Variable (Avg.)
X_1 = Working Capital ÷ Total Asset	1.20	0.975	0.968	0.977	0.984	0.980	0.977
X_2 = Retained Earnings ÷ Total Assets	1.40	0.089	0.098	0.096	0.092	0.083	0.092
X_3 = EBIT ÷ Total Assets	3.30	0.089	0.098	0.096	0.092	0.083	0.092
X_4 = Market Capitalization ÷ Total Liabilities	0.60	0.01	0.03	0.03	0.03	0.03	0.03
X_5 = Sales ÷ Total Assets	0.99	0.089	0.098	0.096	0.092	0.083	0.092
Altman Z-Score							1.28

Based on the provided coefficients and financial data, the Altman Z-Score for the company for the years Mar-23, Mar-22, Mar-21, Mar-20, and Mar-19 is determined as 1.28. The Altman Z-Score model is used to assess the financial health of a company and predict its likelihood of bankruptcy. The Z-Score is calculated by summing the weighted ratios (X1, X2, X3, X4, and X5) based on the provided coefficients. The Z-Score for Mar-23 is 1.28. A Z-Score above 1.80 is generally considered a safe zone, indicating a lower risk of bankruptcy. In this case, the Z-Score of 1.28 suggests that the company falls within the safe zone and has a relatively lower risk of financial distress compared to companies with Z-Scores below 1.80.

The X1 ratio measures the company's ability to cover short-term obligations with its current assets. The average X1 value over the five years is 0.977, indicating that the company's working capital is in good shape and it can comfortably meet its short-term financial obligations.

These ratios assess the company's profitability and operational efficiency in relation to its total assets. The average values for X2, X3, and X5 are 0.092, indicating that the company is generating a reasonable amount of profit and sales relative to its asset base.

The X4 ratio compares the market value of the company's equity to its total liabilities. The average value for X4 is 0.03, suggesting that the market capitalization is relatively higher than the total liabilities, indicating a healthy financial position from an equity perspective.

Based on the Altman Z-Score analysis, the company's financial health appears to be in good standing. The Z-Score of 1.28 indicates a relatively lower risk of financial distress or bankruptcy. However, it is essential to consider other financial metrics and conduct a comprehensive financial analysis to gain a holistic view of the company's financial condition and performance. Additionally, external factors such as industry trends, economic conditions, and management decisions should also be considered when making any significant financial decisions related to the company.

3.4. Muthoot Finance

Table 7: Parameters for Muthoot Finance

	Mar-23	**Mar-22**	**Mar-21**	**Mar-20**	**Mar-19**
Working capital	69,908.02	67,543.76	61,120.96	48,483.56	36,932.59
Total assets	72,619.81	70,554.69	63,464.92	50,459.65	38,068.70
Retained earnings (income-div.)	10543.75	11098.39	10574.36	8722.79	6880.63
Operating income	10,514.85	11,082.32	10,557.21	8,714.64	6,878.21
Market capital	401.45	401.35	401.2	401.04	400.66
Total liabilities	51,075.90	38,980.14	33,686.33	28,150.80	19,557.26
Sales	10,514.85	11,082.32	10,557.21	8,714.64	6,878.21

Working capital represents the company's current assets minus its current liabilities. The data shows a consistent increase in working capital over the five-year period, from 36,932.59 in Mar-19 to 69,908.02 in Mar-23. This indicates a positive trend and suggests that the company has been able to improve its liquidity position and meet its short-term financial obligations more effectively.

Total assets represent the sum of all assets owned by the company. The company's total assets have been growing over the years, reaching 72,619.81 in Mar-23. This growth indicates the company's expansion and investment in its asset base.

Retained earnings are the accumulated profits of the company that have not been distributed as dividends. The data shows fluctuations in retained earnings over the years. While there have been variations, the retained earnings have generally shown an upward trend, reflecting the company's ability to generate profits and retain them for future growth and investment.

Operating income, also known as operating profit, represents the company's earnings before interest and taxes (EBIT). The data indicates consistent growth in operating income over the five-year period, from 6,878.21 in Mar-19 to 10,514.85 in Mar-23. This suggests improved profitability and efficiency in the company's core operations.

Market capitalization is the total value of a company's outstanding shares in the stock market. The data shows relatively stable market capitalization over the five-year period, ranging from 400.66 to 401.45. This may indicate stable investor confidence in the company's performance.

Total liabilities represent the total debt and obligations owed by the company. The data shows a steady increase in total liabilities over the years, reaching 51,075.90 in Mar-23. While increased liabilities may be attributed to growth and expansion, it also requires careful debt management to maintain financial stability.

Sales, also known as revenue, represent the total income generated by the company from its primary business activities. The data shows consistent sales revenue growth over the five-year period, from 6,878.21 in Mar-19 to 10,514.85 in Mar-23. This indicates the company's ability to increase its revenue and expand its customer base.

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The financial data suggests positive trends in working capital, total assets, retained earnings, operating income, and sales for the company. These trends indicate a well-performing business with improving profitability and revenue generation capabilities.

Table 8: Z – score for Muthoot Finance

Original Z-Score Model	Coefficient	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19	Variable (avg.)
X_1 = working capital ÷ total asset	1.20	0.963	0.930	0.866	0.764	0.732	0.851
X_2 = retained earnings ÷ total assets	1.40	0.145	0.153	0.150	0.137	0.136	0.144
X_3 = ebit ÷ total assets	3.30	0.145	0.153	0.150	0.137	0.136	0.144
X_4 = market capitalization ÷ total liabilities	0.60	0.01	0.01	0.01	0.01	0.02	0.01
X_5 = sales ÷ total assets	0.99	0.145	0.153	0.150	0.137	0.136	0.144
Altman z-score							1.30

Based on the provided coefficients and financial data, the Altman Z-Score for the company for the years Mar-23, Mar-22, Mar-21, Mar-20, and Mar-19 is calculated as 1.30. The Altman Z-Score model is used to assess the financial health of a company and predict its likelihood of bankruptcy. The Z-Score is calculated by summing the weighted ratios (X1, X2, X3, X4, and X5) based on the provided coefficients. The Z-Score for Mar-23 is 1.30. A Z-Score above 1.80 is generally considered a safe zone, indicating a lower risk of bankruptcy. In this case, the Z-Score of 1.30 suggests that the company falls within the safe zone and has a relatively lower risk of financial distress compared to companies with Z-Scores below 1.80.

The X1 ratio measures the company's ability to cover short-term obligations with its current assets. The average X1 value over the five years is 0.851, which indicates that the company's working capital has been relatively stable and adequate to meet its short-term financial obligations. These ratios assess the company's profitability and operational efficiency in relation to its total assets. The average values for X2, X3, and X5 are 0.144, which indicates that the company is generating a reasonable amount of profit and sales relative to its asset base. The X4 ratio compares the market value of the company's equity to its total liabilities. The average value for X4 is 0.01, suggesting that the market capitalization is relatively stable and not significantly influenced by the total liabilities.

Based on the Altman Z-Score analysis, the company's financial health appears to be in good standing. The Z-Score of 1.30 indicates a relatively lower risk of financial distress or bankruptcy. However, it is essential to consider other financial metrics and conduct a comprehensive financial analysis to gain a holistic view of the company's financial condition and performance. Additionally, external factors such as industry trends, economic conditions, and management decisions should also be considered when making any significant financial decisions related to the company.

3.5. Sundaram Finance

Table 9: Parameters for Sundaram Finance

	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19
Working capital	39,870.17	34,360.62	34,100.62	32,671.27	29,997.46
Total assets	41,058.70	35,287.52	34,952.46	33,419.51	30,649.18
Retained earnings (income-div.)	4046.45	3870.03	3953.73	3842.09	3397.61
Operating income	4,110.19	3,890.46	4,014.20	3,926.94	3,418.17
Market capital	111.1	111.1	111.1	111.1	111.1
Total liabilities	33,254.03	7,851.06	7,370.88	27,824.60	525.1
Sales	4,046.45	3,870.03	3,953.73	3,842.09	3,397.61

The comparative analysis will focus on the financial data for the company for the years Mar-23, Mar-22, Mar-21, Mar-20, and Mar-19. The company's working capital has shown a consistent upward trend over the five-year period, increasing from 29,997.46 in Mar-19 to 39,870.17 in Mar-23. This indicates an improvement in the company's liquidity position and its ability to cover short-term obligations. The increasing working capital suggests that the company has been managing its current assets and liabilities more efficiently. Total assets have also displayed a steady growth, rising from 30,649.18 in Mar-19 to 41,058.70 in Mar-23. The growth in total assets indicates the company's investment in its asset base and potential business expansion. This expansion may have contributed to the company's ability to generate higher revenue and profitability. Retained earnings have been increasing over the years, with a gradual rise from 3,397.61 in Mar-19 to 4,046.45 in Mar-23. The growth in retained earnings reflects the company's ability to generate profits and retain them for reinvestment or to support future growth initiatives. It indicates positive financial performance and the company's capacity to create value for shareholders. Operating income has consistently grown from 3,418.17 in Mar-19 to 4,110.19 in Mar-23. This shows an improvement in the company's operational efficiency and profitability. The increasing operating income signifies effective cost management and strong revenue generation from its core business activities. The market capitalization remains constant at 111.1 for all the years. This indicates that the stock price and the number of outstanding shares has not changed significantly over the period. A stable market capitalization suggests a consistent level of investor confidence in the company's performance. Total liabilities have shown fluctuations, ranging from 525.1 in Mar-19 to 33,254.03 in Mar-23. The significant increase in total liabilities in Mar-23 may require further investigation to understand the reasons behind the surge in debt or financial obligations. It is crucial for the company to manage its debt levels responsibly to maintain financial stability. Sales revenue has increased from 3,397.61 in Mar-19 to 4,046.45 in Mar-23,

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demonstrating consistent growth. The increasing sales revenue indicates the company's ability to expand its customer base or sell more products/services, which contributes to higher revenue and profitability.

The comparative analysis reveals several positive trends in the company's financial performance over the five-year period. The increasing working capital, total assets, retained earnings, and operating income all suggest that the company is managing its resources effectively and experiencing growth in its core operations. The stable market capitalization also indicates stable investor confidence. However, the significant increase in total liabilities in Mar-23 is a potential concern. It calls for a thorough examination of the company's debt management and financial obligations. While the company has been growing its sales revenue and profitability, it is crucial to ensure that the increasing liabilities are manageable and do not pose a risk to the company's financial stability. To gain a more comprehensive understanding of the company's financial condition, it is advisable to conduct a deeper financial analysis, including liquidity ratios, profitability ratios, and debt ratios. Furthermore, considering industry trends and economic factors will provide valuable context for assessing the company's overall financial performance and health.

Table 10: Z-Score for Sundaram Finance

	Coefficient	Mar-23	Mar-22	Mar-21	Mar-20	Mar-19	Variable (avg.)
X_1 = working capital ÷ total asset	1.20	0.971	0.837	0.966	0.935	0.898	0.921
X_2 = retained earnings ÷ total assets	1.40	0.099	0.094	0.112	0.110	0.102	0.103
X_3 = ebit ÷ total assets	3.30	0.100	0.095	0.114	0.112	0.102	0.105
X_4 = market capitalization ÷ total liabilities	0.60	0.00	0.01	0.02	0.00	0.21	0.05
X_5 = sales ÷ total assets	0.99	0.099	0.094	0.112	0.110	0.102	0.103
Altman z-score							1.28

The Altman Z-Score is a single numeric value that is used to categorize a company into one of three zones. It is calculated as:
Z-Score = 1.2 * X1 + 1.4 * X2 + 3.3 * X3 + 0.6 * X4 + 0.99 * X5
1. Safe Zone (Z-Score > 2.99): Companies with Z-Scores above 2.99 are considered financially healthy and have a low risk of bankruptcy.
2. Grey Zone (1.81 < Z-Score < 2.99): Companies in this zone have a moderate risk of financial distress and should be monitored closely. Further analysis and investigation may be needed to understand the company's financial position.
3. Distress Zone (Z-Score < 1.81): Companies with Z-Scores below 1.81 are at a high risk of bankruptcy or financial distress.

The Altman Z-Score model is widely used in financial analysis and is especially popular for predicting bankruptcy risk. However, it is important to note that the model has its limitations and may not be appropriate for all types of companies, especially those in unique industries or with complex financial structures. Additionally, the model's coefficients were originally derived for manufacturing companies, and caution should be exercised when applying it to other industries. As such, the Z-Score should be used in conjunction with other financial metrics and qualitative analysis to make well-informed decisions about a company's financial health. The provided financial data is subjected to the Altman Z-Score model, which evaluates a company's financial health and bankruptcy risk. The model considers five financial ratios (X1, X2, X3, X4, and X5) with specific coefficients to calculate the Z-Score. The financial data for the years Mar-23, Mar-22, Mar-21, Mar-20, and Mar-19 was analysed using this model.

The Z-Score for Mar-23 is 1.28, which falls within the "safe zone" of the Altman Z-Score. This suggests a relatively lower risk of financial distress or bankruptcy for the company. The model examines various aspects of the company's financial performance, such as working capital, retained earnings, operating income, market capitalization, and sales in relation to total assets and liabilities. The trends and fluctuations in these financial metrics over the years provide valuable insights into the company's liquidity, profitability, and overall financial stability. It is important to note that while the Z-Score provides an indication of the company's financial health, it should not be the sole basis for making crucial financial decisions. A comprehensive analysis, including other financial metrics, industry trends, competitive landscape, and external factors, is necessary for a holistic understanding of the company's financial condition. Additionally, the Z-Score model is designed to be applicable to certain industries and may not be suitable for all types of companies. Therefore, it is advisable to use the Z-Score in conjunction with other financial tools and expert judgment to make informed decisions.

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4. Statistical Analysis of Finance Sector

Table 11: Descriptive Statistics For Financial Companies

Company	Variable	Mean	Standard Deviation	CV
Shree ram finance	X1	0.973	0.011	1.13
	X2	0.142	0.006	4.23
	X3	0.14	0.006	4.29
	X4	0.005	0.000707	14.14
	X5	0.143	0.006	4.20
Mahindra & mahindra finance	X1	0.974	0.007	0.72
	X2	0.13	0.013	10.00
	X3	0.129	0.013	10.08
	X4	0.0028	0.000516	18.43
	X5	0.13	0.013	10.00
Power finance	X1	0.977	0.004	0.41
	X2	0.092	0.005	5.43
	X3	0.092	0.005	5.43
	X4	0.025	0.011313	45.25
	X5	0.092	0.005	5.43
Muthoot finance	X1	0.843	0.081	9.61
	X2	0.144	0.007	4.86
	X3	0.144	0.007	4.86
	X4	0.011	0.005163	46.94
	X5	0.144	0.007	4.86
Sundaram finance	X1	0.921	0.068	7.38
	X2	0.103	0.007	6.80
	X3	0.104	0.007	6.73
	X4	0.05	0.089102	178.20
	X5	0.103	0.007	6.80

The table presents a comparative analysis of different finance companies across various variables, including Mean, Standard Deviation, and Coefficient of Variation (CV). The coefficient of variation is a measure of relative variability, expressed as a percentage, and allows for comparing the dispersion of data between variables.

i). **Shree Ram Finance:** This company exhibits relatively low variability (low CV) in all variables, ranging from 1.13% (X1) to 4.29% (X3), except for X4, which has a CV of 14.14%. Overall, the data for this company is relatively stable.

ii). **Mahindra & Mahindra Finance:** Similar to Shree Ram Finance, this company also has low variability in most variables, with CV ranging from 0.72% (X1) to 10.08% (X3). However, variable X4 shows higher variability with a CV of 18.43%.

iii). **Power Finance:** This company has a moderate level of variability, with CV ranging from 0.41% (X1) to 45.25% (X4). Variable X4 stands out with relatively high variability.

iv). **Muthoot Finance:** Muthoot Finance exhibits moderate variability in most variables, with CV ranging from 4.86% (X2 and X3) to 46.94% (X4). Variable X4 has the highest variability.

v). **Sundaram Finance:** Among the companies listed, Sundaram Finance has the highest variability in all variables, with CV ranging from 6.73% (X3) to an exceptionally high 178.20% (X4). Variable X4 shows significant variation, contributing to the overall higher variability.

In conclusion, Shree Ram Finance and Mahindra & Mahindra Finance seem to have relatively stable and consistent performance across most variables, with low to moderate variability. Power Finance and Muthoot Finance have moderate to high variability in some variables, indicating that their performance might be subject to more fluctuations. Sundaram Finance exhibits the highest variability, particularly in variable X4, indicating a higher level of distress or inconsistency in their financial data. Further investigation may be required to understand the factors contributing to the observed variability and distress in the companies' financial metrics.

Null Hypothesis (H0): There is no significant difference between the means of the groups (Ratios and Years) for finance sector companies under study.

Alternative Hypothesis (Ha): There is a significant difference between the means of the groups for finance sector companies under study.

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Table 12: ANOVA of Finance Companies

ANOVA of finance companies						
Source of variation	Ss	Df	Ms	F	P-value	F CRIT
Ratios	12.19418	24	0.508091	542.2184	8.28e-92	1.63128
Years	0.000594	4	0.0001485	0.158493	0.958699	2.466476
Error	0.089958	96	0.0009371			
Total	12.28473	124				

The ANOVA table provided represents the results of an analysis of variance for finance companies, considering two sources of variation: "Ratios" and "Years." Ratios: The "Ratios" factor shows a significant difference among the finance companies. It has a sum of squares (SS) of 12.19418, degrees of freedom (df) of 24, and mean square (MS) of 0.508091. The F-statistic is calculated as 542.2184, and the p-value is extremely low (8.28E-92), indicating that the variation in ratios among the finance companies is significant. The p-value is well below the common significance level of 0.05, leading to the rejection of the null hypothesis, suggesting that there are substantial differences in the ratios of these finance companies. Years: On the other hand, the "Years" factor has a sum of squares (SS) of 0.000594, degrees of freedom (df) of 4, and mean square (MS) of 0.0001485. The F-statistic is 0.158493, and the p-value is 0.958699. Here, the p-value is much higher than 0.05, leading to the acceptance of the null hypothesis. This implies that the variation in years does not significantly affect the finance companies' performance, as the differences in years are likely due to random chance. Error: The "Error" term accounts for the random variation within the groups, which is not explained by the factors considered. It has a sum of squares (SS) of 0.089958 and degrees of freedom (df) of 96. In summary, the ANOVA results indicate that the variations in ratios among the finance companies are significant and not due to random chance. However, the years do not seem to have a significant effect on the companies' performance.

Conclusion
The tables provide a comprehensive overview of key financial parameters for several companies in the finance sector over a span of five years. The companies include Shree Ram Finance, Mahindra and Mahindra Finance, Power Finance, Muthoot Finance, and Sundaram Finance. The financial indicators encompass various aspects such as Working Capital, Total Assets, Retained Earnings, Operating Income, Market Capital, Total Liabilities, and Sales. Analysing these tables reveals important trends and variations in the financial health and performance of the respective companies across the specified years. Shree Ram Finance shows consistent growth in Working Capital, Total Assets, and Sales, accompanied by an increase in Market Capital. Mahindra and Mahindra Finance demonstrate variations in Working Capital and Operating Income, with consistent Total Assets and Retained Earnings. Power Finance exhibits an increase in Working Capital, Total Assets, and Sales, contributing to a steady Market Capital. Muthoot Finance displays a growth in Working Capital, Total Assets, and Sales, along with an increase in Market Capital. Sundaram Finance presents a pattern of growth in Working Capital, Total Assets, and Sales.

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