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An Empirical Investigation into Financial Distress in the FMCG Sector in India: A Comparative Analysis Using Altman Z-Score and Descriptive Statistics

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Abstract

India's Fast Moving Consumer Goods (FMCG) industry is essential to the country's economic development because it generates a large number of jobs, consumer spending, and generic growth in industrial production. This study leverages the renowned Altman Z-Score model, in conjunction with descriptive statistics, to assess the financial distress of the top five FMCG firms in India. The results from the study clearly show that all the top five companies in the FMCG sector were in the safe zone or in a too healthy zone. The minimum Z-score value among the selected top five companies was 3.36, which shows the strong financial performance of the FMCG sector. The Z-score value of ITC is significant, as the value surges from 4.35 in 2014 to 6.04 in 2023 with steady growth. It implies a healthy financial environment in ITC. In contrast, the Z-score value of Britannia had significantly dropped from the values of 6.1 in 2017 to 3.77 in 2023. Between 2020-2021, almost all the companies saw a sharp downtrend in the Z-score values, which was resulted from the impact of the Covid-19 pandemic (Prasad, V, 2022). It reflects the global economic slowdown due to the Covid-19 pandemic, which also hit the FMCG sector. Britannia and ITC experienced high volatility in the Z-score values for the time period of the last ten years. The highest range was observed in ITC (2.38), followed by Britannia (2.37). The lowest range was observed in Nestle India (0.70). The financial performance of the top five companies in the FMCG sector is in a good position. It clearly shows that there is huge potential for the growth of the FMCG sector and that it will further increase the valuation of companies in the FMCG sector and benefit the shareholders, promoters, and investors.

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Introduction

The fast-moving consumer goods (FMCG) sector of the stock markets has been dormant for a significant period of time. Stocks from the pharmaceutical and information technology sectors first dominated the Indian stock markets throughout the past two years. Due to US regulatory concerns, both of these industries have fallen out of favor, and in the past year, the focus has turned to industries like banking, capital goods, and autos. However, FMCG has been the one industry in the entire churn that has been remarkably quiet. All of that, though, might be changing; at least, that seems to be the case.

India's Fast Moving Consumer Goods (FMCG) industry is essential to the country's economic development because it generates a large number of jobs, consumer spending, and generic growth in industrial production. Nevertheless, just like any other industry, the FMCG industry is not immune to economic challenges and uncertainty. Because of the constantly changing market dynamics, knowing about and foreseeing the economic downturn becomes crucial for stakeholders, investors, and regulators.

This study leverages the renowned Altman Z-Score model, in conjunction with descriptive statistics, in order to assess the financial distress of the top five FMCG firms in India. The Altman Z-Score, devised by Edward I. Altman in 1968, is a well-known technique for predicting bankruptcy that combines several financial ratios to assess the overall financial health of a company. By using this model, we attempt to estimate the likelihood of financial distress among those selected FMCG companies.

Review of Literature

Initial research on the use of ratio analysis techniques to predict future bankruptcies dates back to the 1930s, and studies up to the middle of the 1960s concentrated on univariate techniques (Bellovary et al., 2007). Since the 1970s, accounting, banking, and financial analysts, as well as scholars, have shown a keen interest in research on forecasting bankruptcy (Taffler and Agarwal, 2007). Scholars tend to employ bankruptcy models to assess the financial health of companies since they usually incorporate indicators of financial distress (Grice, J.S. and Dugan, M.T., 2001).

More recent research incorporates genetic algorithms into 3100 SMEs in Italy, resulting in a total prediction performance of 84.4% (Gordini, 2014). Another study adopting a two-step genetic algorithm classification approach was carried out in 2017. It comprised 912 Russian company values, and the model's accuracy was 93.4% (Zelenkov et al., 2017).

In Turkey, some studies examined retrospectively the Altman Z score to assess the MDA performance rates and coefficients. In one of them, 70 listed companies on the Borsa Istanbul underwent screening, and 35 of them were categorized as distressed and 35 as non-distressed (Muzir & Caglar, 2009). The Muzir and Caglar (2009) study indicated that the X3 and X5 coefficients are found to be negative with respect to the Altman score. The model's accuracy was

73.3% in addition.

Gerantonis, Vergos, and Christopoulos (2009) investigated whether Z-score models might predict bankruptcies up to three years ahead of time. The findings indicated that the Altman model predicted failures accurately. They concluded that the findings might be used by regulatory authorities, portfolio managers, and corporate management to make financial decision-making.

Sanesh (2016) found to make use of the Altman Z-score to analyze the NIFTY 50 companies, eliminating banks and financial firms. The score attempts to estimate the possibility of a company defaulting due to liquidity issues by using the company's most recent financial data.

The Altman Z Score Modification in foreseeing financial distress in the automotive sector and components for go-public companies from 2012 to 2016. The investigation's outcomes, which used the Altman Z Score Modifications approach, indicate that almost every year, organizations in the automotive sector and its sub-components will likely encounter financial distress. Ningsih, S., & Permatasari, F. F. (2018).

Objectives of the study

To assess the financial stability of the top five FMCG companies in India by computing their Altman Z-Score values.

Research Methodology

Sampling method

The sample for the study was the top five companies in the FMCG sector. The selection of the companies was based on the market capitalisation of the companies. The top five market leaders of the FMCG sector were taken into account for the research purpose.

Data Collection

The data required for the study was collected from stock exchanges of India such as NSE (www.nseindia.com) and BSE (www.bseindia.com), and also from the annual reports of the concerned companies from their official websites and Moneycontrol (www.moneycontrol.com). The financial statements, such as balance sheets and profit and loss statements, are used to analyse the financial distress of the companies using the Altman methodology. Altman Z-score values were calculated for the past 10 financial years (2014-2023).

Tools and Techniques

There were various tools to analyse the financial performance of the companies, and one of the most familiar models to

analyse the financial distress of the companies was the Altman Z-score model (Altman, E. I., 1968), which was incorporated in the study to analyse the financial distress of the top five companies in the FMCG sector. Descriptive statistics were also carried out on the outcomes of the Altman model for the better understanding of the results.

Altman Model

The Z-Score formula, which Altman created and published in 1968, is widely accepted. The Z-Score for forecasting bankruptcy is a multivariate formula for assessing a company's financial condition and an effective diagnostic tool that forecasts the likelihood that a company will be filing for bankruptcy within a short period of span. According to studies assessing the Z-Score's performance, the model has a 70–80% reliability percentage. Most bankruptcy prediction models have been rooted in Z-score analysis (Mushafiq et al., 2023).

Edward Altman (1968) developed a 'Z' Score model which comprises financial ratios used to predict bankruptcy of the publicly listed companies in the stock exchanges. The specification of this model is given below (Altman, E. I. 2013):

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5$$

Where Z = overall index

- X1 = Working capital / Total Assets
- X2 = Retained Earnings / Total Assets
- X3 = Earnings before Interest and Tax /Total Assets
- X4 = Market value of Equity to Book value / Total Liabilities
- X5 = Sales / Total Assets

Elements of the Altman Z Score model for Prediction of Bankruptcy (Milašinović et al., 2019)		
Z Score	Status	Zone
Above 3.00	Will not fail	"Safe" Zone or Too Healthy Zone
1.8 to 2.9	May or may not fail	"Gray" zone or Healthy Zone
Below 1.8	Failure is certain	Distress Zone or Bankruptcy Zone

Descriptive statistics

Descriptive statistics encompass concise informative values that provide a summary of a specific dataset, which may either represent an entire population or a subset of it. These statistical measures are divided into two categories: measures of central tendency and measures of variability. Measures of central tendency, such as the mean, median, and mode, offer insights into the data's typical or central values. On the other hand, measures of variability, including standard

deviation, variance, minimum and maximum values, kurtosis, and skewness, reveal the extent of dispersion or spread within the dataset (Rovai et al., 2013).

Results and Discussion

The results of the Altman Z score model for the selected top five companies of the FMCG sector for the past ten financial years (2014-2023) were depicted in the below Table 1.

Table 1. Results of Altman Z score model for top five companies in FMCG sector					
Year	Britannia	ITC	HUL	Nestle India	Dabur India
2014	5.529751	4.352675	3.976774	3.3697104	4.5375555
2015	5.348729	4.557689	4.269742	4.071021	4.3637155
2016	5.393775	4.107737	5.039811	3.418938	4.2976021
2017	6.089329	6.316378	4.817294	3.473462	4.3601068
2018	5.804567	5.790615	4.616688	3.7591264	4.5230058
2019	5.702232	5.927544	5.029335	3.965348	4.6241151
2020	4.259128	6.489425	4.726074	3.8357318	5.0624014
2021	3.981689	5.746717	3.59749	3.6873264	4.3651942
2022	3.716496	5.754863	3.729378	3.6234918	3.9819622
2023	3.772809	6.036415	3.879087	3.7393944	3.7199183

From the above Table 1, it clearly shows that all the top five companies in the FMCG sector were in the safe zone or in the healthy zone. The minimum Z-score value among the selected top five companies was 3.36, which shows the strong financial performance of the FMCG sector. The graphical representation for the comparison among the selected companies is given below in Figure 1.

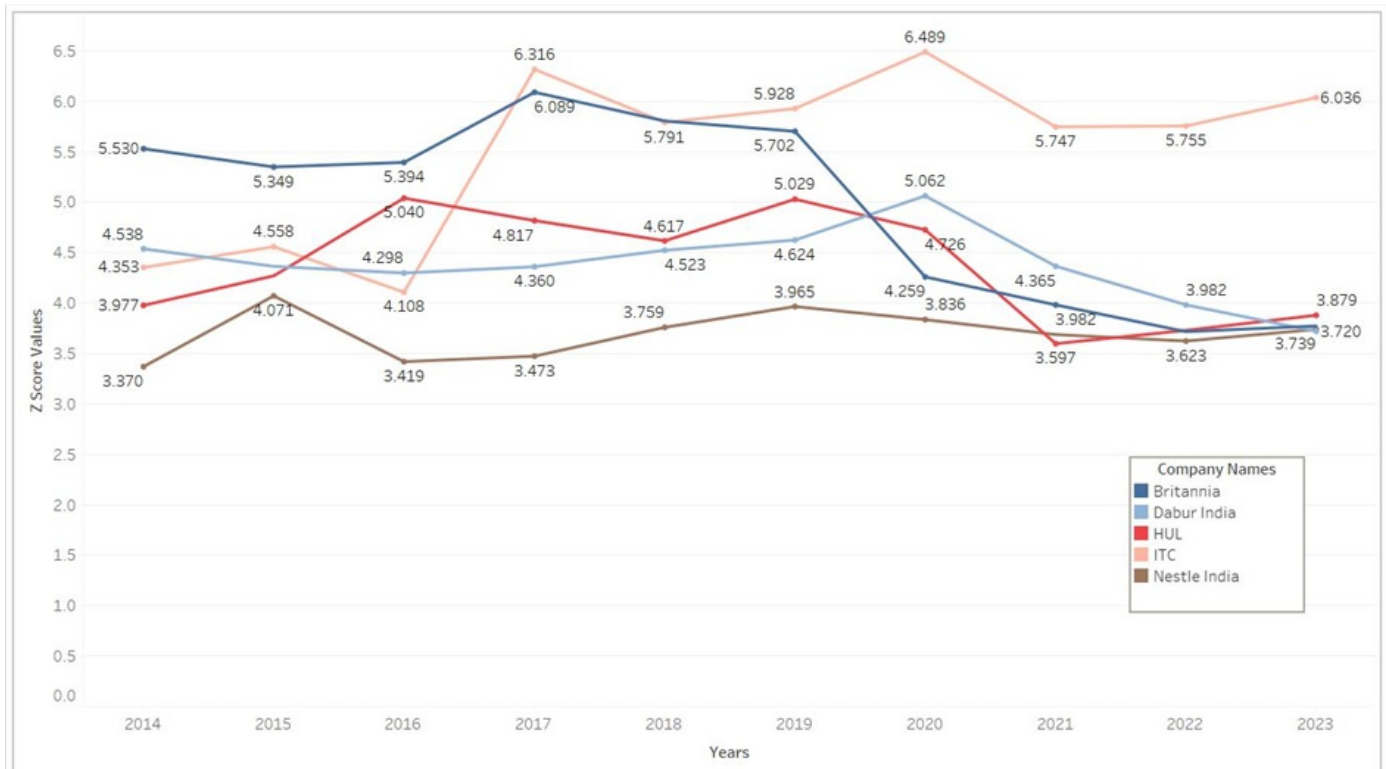


Figure 1. Graphical representation of Z-score values of top five companies in the FMCG sector

From the above Figure 1, it clearly shows that the Z score value of ITC surged from 4.35 in 2014 to 6.04 in 2023, with a steady growth in the Z score values. It implies a healthy financial environment in ITC. In contrast, the Z score value of Britannia had significantly dropped from 6.1 in 2017 to 3.77 in 2023. It experienced a sharp fall in the Z score value over the past ten years. In between 2020-2021, almost all the companies saw a sharp downtrend in the Z score values, which was resulted by the impact of the Covid-19 pandemic (Prasad, V, 2022). It reflects the global economic slowdown due to the Covid-19 pandemic, which also hit the FMCG sector. Nestle India maintained the same level of Z score values over the past ten years. The Z score values of HUL and Dabur India were significantly less volatile in the past ten years.

The range of the Z score values for each company is plotted in the box plot in the figure below, Figure 2.

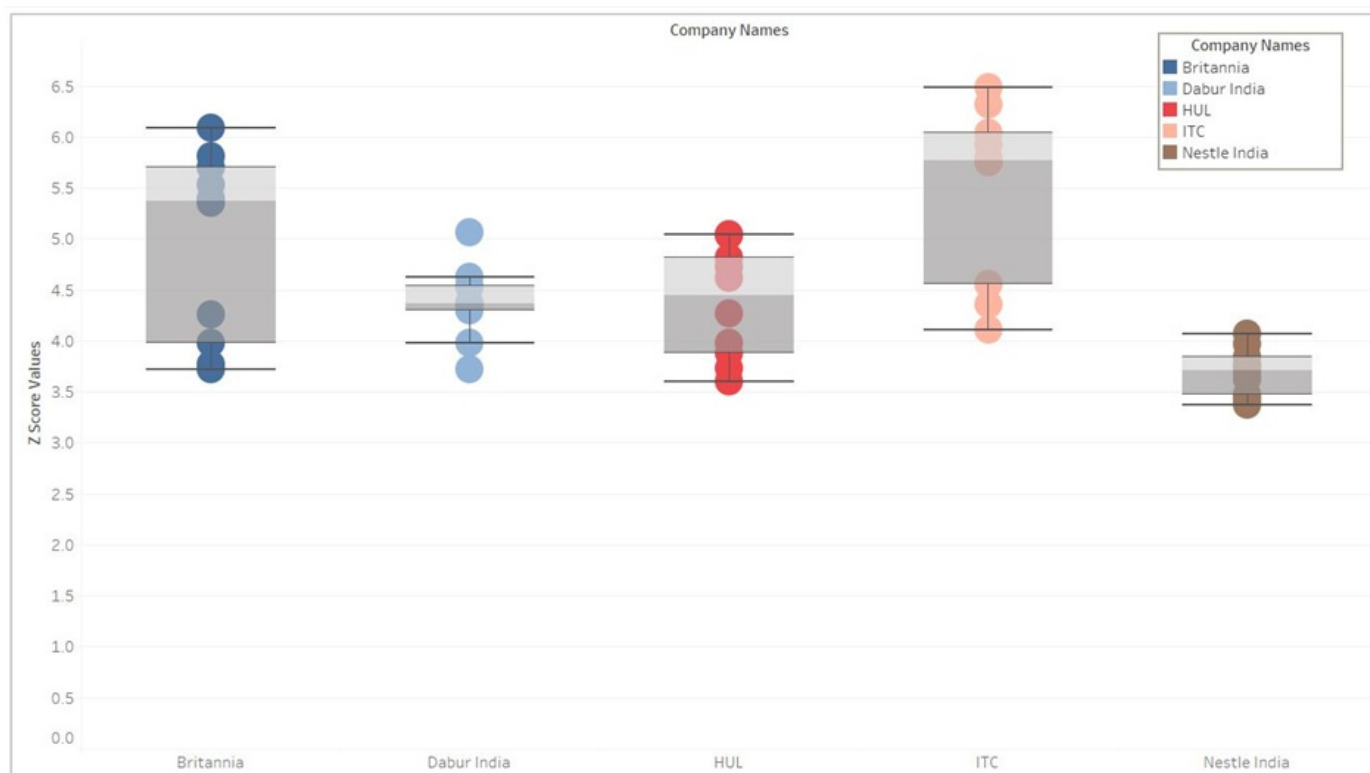


Figure 2. Box plot of top five companies in the FMCG sector

From the above Figure 2, it shows that Nestle India is concentrated in the Z score values between 3.4 and 3.6, which shows the financial stability of the company over the years. Britannia and ITC experienced high volatility in the Z score values over the period of time. The Z score value of ITC is concentrated between the range of 4.5 and 5.7. Similarly, for Britannia, it was between 4 and 5.5. The Z score value of Dabur India is ranged between 4.35 and 4.55. The Z score value of HUL is ranged between 3.6 and 4.5.

The descriptive statistics for the calculated Z score values give the inferential values for the given dataset in the following Table 2.

Table 2. Descriptive statistics for the calculated Z score values

<i>Descriptive Statistics</i>	Britannia	ITC	HUL	Nestle India	Dabur India
Minimum	3.716496098	4.107737	3.59749	3.369710354	3.719918274
Maximum	6.089329379	6.489425	5.039811	4.071020988	5.062401428
Sum	49.59850576	55.08006	43.68167	36.94355012	43.83557713
Mean	4.959850576	5.508006	4.368167	3.694355012	4.383557713
Standard Error	0.290736845	0.268086	0.172688	0.072773553	0.114125818
Median	5.371252136	5.772739	4.443215	3.713360361	4.364454872
Standard Deviation	0.919390629	0.847762	0.546087	0.23013018	0.360897526
Sample Variance	0.845279129	0.718701	0.298211	0.0529599	0.130247024
Kurtosis	-1.853989704	-0.99328	-1.7487	-0.821134192	1.278894549
Skewness	-0.374650501	-0.775	-0.13006	0.117246334	-0.072668557
Range	2.37283328	2.381688	1.442321	0.701310634	1.342483153

From the above Table 2, we conclude that Nestle India had a Z-score value of 3.36 and ITC had the highest Z-score value of 4.68. Similarly, ITC had the highest mean value of 5.77. The highest standard deviation was observed in Britannia (0.92), and the lowest one was in Nestle India (0.23). The highest range was observed in ITC (2.38), followed by Britannia (2.37). The lowest range was observed in Nestle India (0.70).

Conclusion

The research concluded that the overall financial distress of the selected top five FMCG companies was in the safe and healthy zone. The financial performance of the top five companies in the FMCG sector is in a good position. It clearly shows that there is huge potential for the growth of the FMCG sector, and it will further increase the valuation of companies in the FMCG sector and benefit the shareholders, promoters, and investors. In the future, the FMCG sector will contribute more towards the economic development of our country.

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