FINANCIAL PERFORMANCE OF MAHINDRA AND MAHINDRA FINANCIAL SERVICE LTD THROUGH Z SCORE ANALYSIS

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Introduction

Financial services are the economic services provided by the finance industry, which encompasses a broad range of businesses that manage money, including credit unions, banks, credit-card companies, insurance companies, accountancy companies, consumer-finance companies, stock brokerages, investment funds, individual asset managers, and some government-sponsored enterprises.

The term "financial services" became more prevalent in the United States partly as a result of the Gramm–Leach–Bliley Act of the late 1990s, which enabled different types of companies operating in the U.S. financial services industry at that time to merge.

Mahindra & Mahindra Financial Services Limited (**MMFSL**) is an Indian rural non-banking financial company headquartered in Mumbai. It is amongst the top tractor financers in India, with 1000+ offices across the country.

Mahindra Finance started on 1st January, 1991, as Maxi Motors Financial ServicesLimited. They received the certificate of commencement of business on 19th February, 1991. On 3rd November, 1992, Mahindra Finance changed their name to Mahindra & Mahindra Financial Services Limited. Mahindra Finance is registered with the Reserve Bank of India as asset finance, deposit taking NBFC.

In 1993 it commenced financing M&M Utility vehicles and in 1995 started its first branch outside Mumbai, in Jaipur. The company began financing Non M&M vehicles in 2002 and got into the business of

financing commercial vehicles and construction equipment in 2009. In 2011 they had a joint venture with Rabobank subsidiary for tractor financing in the US and consolidated the product portfolio by introducing small and medium enterprises (SME) financing.

Product Portfolio : Vehicle Financing, SME Financing, Personal Loans, Insurance Broking, Housing Finance, Mutual Fund Schemes, Investments

Review of Literature

This part represents the review of those studies that have been carried out in the financial performance.

The mathematical model of Z-Score, developed by **Altman (1968),** became a well-known tool of financial analysis. Altman used Multi Discriminant Analysis (MDA), for carrying out the analysis. The original model was again revised by Altman in 2000 and in 2002, so that it can be used for improving the prediction accuracy under different economicscenarios.

Ebiringa (2011), applied the Altman's Z-Score model to three Nigerian banks for predicting distress. Considering the data, four years prior to the banks declaring their distress, the author found that the model could predict financial distress at 1% level of significance.

Cole and Gunther (1998), in their research study, have compared the application of CAMEL rating and econometric forecasts for predicting bank failures. The authors observed that the accuracy of econometric analysis is more compared to CAMEL analysis because there will be a progressive loss of information provided by CAMEL rating, from the second or third quarter.

Zhang and Zhang (2016) studied a sample of 629 bank holding companies in the U.S., to determine the impact of factors on the financial distress, with regard to the recent financial crisis. The authors found that housing price index and regulatory capital requirements were positively related to the Z-Score measure. In addition, non-performing loans are significant in predicting financial distress.

Sahut and Mili (2009) predicted the financial distress, in banks of MENA countries, by means of bank specific and macro variables. The authors found that while indicators of monetary policy did not affect bank distress, bank capitalization and regulatory supervision need to be given due consideration for preventing distress.

Niresh and Pratheepan (2015), in their research study, considered the firms operating in the trading sector of Sri Lanka from 2010 to 2014. The authors applied Altman's original model for bankruptcy prediction. They found that all the firms were in distress or in the grey zone, with none being in the safe zone.

Chandra and Selvaraj (2013) analyzed the financial health of select Indian steel companies using the Altman's Z-Score. The authors found that small companies, were in the 'grey zone' while the medium and large companies were in the 'distress zone'. None ofthe select companies was in the safe zone because their profits were not enough to cover their non-operating activities.

Balachandran and Sriram (2005), analyzed the financial solvency position of LMW company, (a manufacturer of textile machinery), using the Altman's Z-Score model. The authors did not find any significant difference between the actual and the projected Z-Scores. They concluded that the company's financial position

was sound even though the industry was facing difficulties.

Bandyopadhyay (2006), developed a model, to predict bankruptcy for Indian corporate bond sector, based on MDA and the logistic regression model. The ratios considered were leverage, turnover, liquidity and such other financial variables. The results of the study indicated that the default risk can be predicted more accurately by including the financial and non-financial parameters, in the logistic regression analysis.

Bhunia and Sarkar (2011), analyzed 64 private companies in the pharmaceutical sector, using sixteen financial ratios and MDA. The ratios pertained to solvency, liquidity, profitability and efficiency of the firms. The authors concluded that MDA can act as a reliable statistical tool even though many advanced statistical tools are available.

Jan and Marimuthu (2015), analyzed the bankruptcy aspect of 25 select Islamic banks, using the Altman's model. The Altman's Z-Score indicated that liquidity, insolvency and profitability (considered as performance indicators) recorded significant relationship while productivity does not have significant relationship with bankruptcy.

Ongore and Kusa (2013), analyzed the financial performance of commercial banks in Kenya, using the multiple regression and Generalized Least Square models. The research findings revealed that the performance of the banks was significantly influenced by the bank specific variables (except the liquidity variable), along with the decisions of the management. However, macroeconomic factors did not have any significant influence.

Statement of the Problem

Every organization needs the financial resources for its better development expansion of the business. In some cases, the organization is not get sufficient funds it leads it not maintain the optimum capital structure then it is impossible to achieve targeted profits and also it is not possible to maintain liquidity, solvency, and optimum capital structure. In the financial market, to rate credit risk, analyses use components of financial reporting along with other firm - specific daily news on firm - specific operations in order to measure its business risk.

Objectives of the Study

Primary Objective

➢ To study the overall financial performance of the Mahindra & Mahindra Financial Services Limited through Z Scores Analysis during 2012-2013 to 2021-2022.

Secondary Objectives

➢ To evaluate the financial soundness of Mahindra and Mahindra Finance Services Ltd during the study period.

➢ To measure turnover of working capital to total assets of the during the study period.

➢ To examine the profitability of the Mahindra & Mahindra Financial Services Limited during study period.

> ➤ To measure the return (EBIT) on total assets of Mahindra & Mahindra FinancialServices Limited during study period.

Research Methodology

Sources of Secondary Data

The present study depends on secondary data. The secondary data was collected from the various annual reports of Mahindra & Mahindra Financial ServicesLimited.

Period of the Study

The period of the study is ten years i..e. 2011-12 to 2020-21.

Data Tools and Techniques

Definition of Altman Z-Score

The Altman Z-Score is used to calculate the probability and likelihood of a businessbeing bankrupt in the coming two years. From an investor's perspective, Altman Z-Score reflects the relative safety of the given investment of the company. The Altman Z-Score iscalculated using components in the financial statements of the company, which help investors (and other stakeholders) to get an idea regarding the financial position of the company.

Formula for Altman Z-Score

Altman Z-Score Is Calculated Using the Following Formula

$$\text{Altman Z-Score} = 1.2Z1 + 1.4Z2 + 3.3Z3 + 0.6Z4 + 1.0Z5$$

$Z1$ = Working Capital / Total Assets (In order to measure the relative amount of liquid assets)

$Z2$ = Retained Earnings / Total Assets (In order to determine cumulative profitability)

$Z3$ = Earnings before interest and tax / Total Assets (In order to measure earnings after discounting leverage, and taxes)

$Z4$ = Market Value of Equity / Book Value of Total Liabilities (In order to incorporate theimpact of the decline in the market value of the company's shares)

$Z5$ = Income / Total Assets (In order to measure the total asset turnover of the company)

Conceptual Model
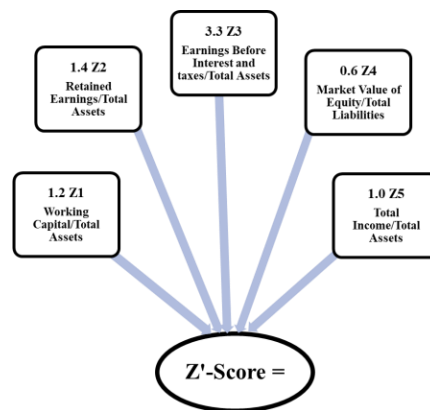
SCOPE OF THE STUDY

The mainly attempts to check financial position of the Mahindra and Mahindra Financial Service Limited and to study the overall financial performance of the Mahindra & Mahindra Financial Services Limited during the study period.

Need for the Study

➢ The study has great significance and provides benefits to various parties whom directly or indirectly interact with the company.

➢ The study is also beneficial to employees and offers motivation by showing how actively they are contributing for company's growth.

➢ It is also useful to the stakeholders and shareholders.

Limitations of the Study

➢ The study is being done from the annual reports provided by the company.

➢ The study is completely based on secondary data.

➢ The study is confined to only specific period.

Data Analysis

Working Capital to Total Asset Ratio

The following table presents the working capital to total assets of Mahindra and Mahindra Financial Services Limited during 2012-13 to 2021-22.

Working Capital to Total Asset Ratio = Working Capital / Total Assets

Table No. 1

Working Capital to Total Assets of Mahindra and Mahindra Financial ServicesLimited during 2012-13 to 2021-22

(Crores)

Years	Working Capital to Total Assets Ratio		
	Working Capital	**Total Assets**	**Z1**
2012-13	4242.814	25492.417	0.16643
2013-14	5715.5748	31665.7228	0.1805
2014-15	2566.0405	35074.1454	0.07316
2015-16	4140.5664	39579.4792	0.10461
2016-17	5787.5921	44318.4882	0.13059
2017-18	8856.8539	52792.7437	0.16777
2018-19	10319.7939	67077.9858	0.15385
2019-20	10456.2145	74071.2127	0.14116
2020-21	13375.27	77036.45	0.17362
2021-22	13976.86	75288.73	0.18564
Average	7943.75801	52239.73748	
Rxy	0.93		

Source: Various Annual Reports of Mahindra & Mahindra Financial Service Ltd.

Interpretation

➢ The values of working capital and total assets are gradually increasing year by yearduring the study period 2012-13 to 2020-21 but in the year 2014-15 the working capital decreased and for the financial year 2021-22 the total assets decreased slightly.

➢ There is a high positive relationship between working capital and total assets duringstudy period.

Retained Earnings to Total Assets Ratio

The following table presents the Retained Earnings to Total Assets Ratio ofMahindra and Mahindra Financial Services Limited during 2012-13 to 2021-22.

Retained Earnings to Total Assets Ratio = Retained Earnings / Total Assets

Table No. 2

Retained Earnings to Total Assets Ratio of Mahindra and Mahindra FinancialServices Limited during 2012-13 to 2021-22

(Crore)

	Retained Earnings to Total Assets Ratio		
Years	Retained Earnings	Total Assets	Z2
2012-13	4341.9748	25492.417	0.17032
2013-14	4981.511	31665.7228	0.15732
2014-15	5556.5809	35074.1454	0.15842
2015-16	5975.187	39579.4792	0.15097
2016-17	6499.4009	44318.4882	0.14665
2017-18	9499.0182	52792.7437	0.17993
2018-19	10785.0475	67077.9858	0.16078
2019-20	11240.79	74071.2127	0.15176
2020-21	14465.11	77036.45	0.18777
2021-22	15381.49	75288.73	0.2043
Average	8872.61103	52239.73748	
Rxy	0.96		

Source: Various Annual Reports of Mahindra & Mahindra Finance Service Ltd.

Interpretation

➢ The values of retained earnings and total assets are gradually increasing year by year during the study period 2012-13 to 2021-21 but in the financial year 2021-22the total assets decreased slightly.

➢ There is a high positive relationship between retained earnings and total assetsduring study period.

Earnings before Interest and Tax to Total Assets Ratio

The following table presents the Earnings Before Interest and Tax to Total AssetsRatio of Mahindra and Mahindra Financial Services Limited during 2012-13 to 2021-22.

EBIT to Total Assets Ratio = Earnings before Interest / Tax to Total Assets

Table No. 3

Earnings Before Interest and Tax to Total Assets Ratio of Mahindra and MahindraFinancial Services Limited during 2012-13 to 2021-22

(Crore)

Earnings Before Interest and Tax to Total Assets Ratio			
Years	EBIT	Total Assets	Z3
2012-13	1279.1988	25492.417	0.05018
2013-14	1345.7684	31665.7228	0.0425
2014-15	1253.644	35074.1454	0.03574
2015-16	1358.9308	39579.4792	0.03433
2016-17	620.0683	44318.4882	0.01399
2017-18	1666.8235	52792.7437	0.03157
2018-19	2382.4419	67077.9858	0.03552
2019-20	1343.7624	74071.2127	0.01814
2020-21	422.43	77036.45	0.00548
2021-22	1356.91	75288.73	0.01802
Average	1302.99781	52239.73748	
Rxy	0.01		

Source: Various Annual Reports of Mahindra & Mahindra Finance Service Ltd.

Interpretation

➢ The values of earnings before interest and tax were literally fluctuating year by year, but the total assets gradually increasing during the study period 2012-13 to 2020- 21 and the financial year 2021-22 the total assets decreased slightly.

➢ There is a low positive relationship between EBIT and total assets during the studyperiod.

Market Value of Equity to Total Liabilities Ratio

The following table presents the Market Value of Equity to Total Liabilities Ratio of Mahindra and Mahindra Financial Services Limited during 2012-13 to 2021-22.

Market Value of Equity to Total Liabilities Ratio = Market Value of Equity / TotalLiabilities

Table No. 4

Market Value of Equity to Total Liabilities Ratio of Mahindra and MahindraFinancial Services Limited during 2012-13 to 2021-22

(Crore)

Market Value of Equity to Total Liabilities Ratio			
Years	Market Cap	Total Liabilities	Z4
2012-13	22095.53	25492.417	0.86675
2013-14	28886.72	31665.7228	0.91224
2014-15	29724.29	35074.1454	0.84747
2015-16	29573.26	39579.4792	0.74719
2016-17	38275.95	44318.4882	0.86366
2017-18	56195.88	52792.7437	1.06446
2018-19	51616.5	67077.9858	0.7695
2019-20	10953.27	74071.2173	0.14787
2020-21	24913.41	77036.45	0.3234
2021-22	19678.52	75288.73	0.26137
Average	31191.333	52239.73794	
Rxy	-0.10		

Source: Various Annual Reports of Mahindra & Mahindra Finance Service Ltd.

Interpretation

➢ The Market value of equity of the company was fluctuating, hence the liabilities of the company was increasing rapidly during the study period 2012-13 to 2020-21 but in the financial year 2021-22 the total liabilities decreased slightly.

➢ There is a low negative relationship between the market value of equity and total liabilities during the study period.

Total Income to Total Assets Ratio

The following table presents the Total Income to Total Assets Ratio of Mahindraand Mahindra Financial Services Limited during 2012-13 to 2021-22.

Total Income to Total Assets Ratio = Total Income / Total Assets

Table No. 5
Total Income to Total Assets Ratio of Mahindra and Mahindra Financial ServicesLimited during 2012-13 to 2021-22

(Crore)

Years	Total Income to Total Assets Ratio		
	Total Income	Total Assets	Z5
2012-13	3894.699	25492.417	0.15278
2013-14	4953.0045	31665.7228	0.15642
2014-15	5584.706	35074.1454	0.15923
2015-16	6225.85	39579.4792	0.1573
2016-17	6237.5382	44318.4882	0.14074
2017-18	6685.201	52792.7437	0.12663
2018-19	8809.8117	67077.9858	0.13134
2019-20	10245.1379	74071.2127	0.13831
2020-21	10516.81	77036.45	0.13652
2021-22	9718.8	75288.73	0.12909
Average	7287.15583	52239.73748	
Rxy	0.98		

Source: Various Annual Reports of Mahindra & Mahindra Finance Service Ltd.

Interpretation

➤ The value of total income and total assets are gradually increasing year by year during the study period 2012-2013 to 2020-21 but in the financial year 2021-22 thetotal income and total assets decreased slightly.

➤ There is a high positive relationship between total income and total assets during the study period.

Table No. 6

Altman Z Score Analysis of Mahindra and Mahindra Financial Services Limited during 2012-13 to 2021-22

Z = 1.2Z1 + 1.4Z2 + 3.3Z3 + 0.6Z4 + 1.0Z5	Coefficient		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	AVERAGE	CORREL
Z1 Working Capital/Total Assets	Z1	1.2	0.17	0.18	0.07	0.10	0.13	0.17	0.15	0.14	0.17	0.19		
Working Capital			4,242.81	5,715.57	2,566.04	4,140.57	5,787.59	8,856.85	10,319.79	10,456.21	13,375.27	13,976.86	7,943.76	0.93
Total Assets			25,492.42	31,665.72	35,074.15	39,579.48	44,318.49	52,792.74	67,077.99	74,071.21	77,036.45	75,288.73	52,239.74	
Z2 Retained Earnings/Total Assets	Z2	2.4	0.17	0.16	0.16	0.15	0.15	0.18	0.16	0.15	0.19	0.20		
Retained Earnings			4,341.97	4,981.51	5,556.58	5,975.19	6,499.40	9,499.02	10,785.05	11,240.79	14,465.11	15,381.49	8,872.61	0.96
Total Assets			25,492.42	31,665.72	35,074.15	39,579.48	44,318.49	52,792.74	67,077.99	74,071.21	77,036.45	75,288.73	52,239.74	
Z3 EBIT/Total Assets	Z3	3.3	0.05	0.04	0.04	0.03	0.01	0.03	0.04	0.02	0.01	0.02		
Earnings Before interest and Tax			1,279.20	1,345.77	1,253.64	1,358.93	620.07	1,666.82	2,382.44	1,343.76	422.43	1,356.91	1,303.00	0.02
Total Assets			25,492.42	31,665.72	35,074.15	39,579.48	44,318.49	52,792.74	67,077.99	74,071.21	77,036.45	75,288.73	52,239.74	
Z4 Market Value of Equity/Total Liabilities	Z4	0.6	0.87	0.91	0.85	0.75	0.86	1.06	0.77	0.15	0.32	0.26		
Market Value of Equity			22,095.53	28,886.72	29,724.29	29,573.26	38,275.95	56,195.88	51,616.50	10,953.27	24,913.41	19,678.52	31,191.33	-0.11
Total Liabalities			25,492.42	31,665.72	35,074.15	39,579.48	44,318.49	52,792.74	67,077.99	74,071.21	77,036.45	75,288.73	52,239.74	
Z5 Total Income/Total Assets	Z5	1	0.15	0.16	0.16	0.16	0.14	0.13	0.13	0.14	0.14	0.13		

Total Income		3,894.70	4,953.00	5,584.71	6,225.85	6,237.54	6,685.20	8,809.81	10,245.14	10,516.81	9,718.80	7,287.16	
Total Assets		25,492.42	31,665.72	35,074.15	39,579.48	44,318.49	52,792.74	67,077.99	74,071.21	77,036.45	75,288.73	52,239.74	0.99
Z Score		0.87	0.84	0.69	0.70	0.99	0.89	0.18	0.12	0.17	1.06		
Zone		Distress	Distress	Distress	Distress	Distress	Distress	Distress	Distress	Distress	Distress		

Interpretation

➢ It is observed that the Z Score value of Mahindra and Mahindra Financial Services Limited from 2012-13 to 2021-22 falls under "Distress Zone" which indicates a strong possibility of failure and bankruptcy in the distress Zone.

Findings

➢ The values of working capital and total assets are gradually increasing year by year during the study period 2012-13 to 2020-21 but in the year 2014-15 the working capital decreased and for the financial year 2021-22 the total assets decreased slightly.

➢ The values of retained earnings and total assets are gradually increasing year by year during the study period 2012-13 to 2021-21 but in the financial year 2021-22 the total assets decreased slightly.

➢ The values of earnings before interest and tax was literally fluctuating year by year, but the total assets gradually increasing during the study period 2012-13 to 2020- 21 and the financial year 2021-22 the total assets decreased slightly.

➢ The Market value of equity of the company was fluctuating, hence the liabilities of the company was increasing rapidly during the study period 2012-13 to 2020-21 but in the financial year 2021-22 the total liabilities decreased slightly.

➢ There is a low negative relationship between the market value of equity and total liabilities during the study period.

➢ The value of total income and total assets are gradually increasing year by year during the study period 2012-2013 to 2020-21 but in the financial year 2021-22 the total income and total assets decreased slightly.

➢ It is observed that the Z Score value of Mahindra and Mahindra Financial Services Limited from 2012-13 to 2021-22 falls under "Distress Zone" which indicates a strong possibility of failure and bankruptcy in the distress Zone.

Suggestions

❖ The company should try to collect the loans from customers to increase the working capital and also to maintain good liquidity position.

❖ The company did not earn sufficient earnings due to non-recovery of loans from the customers. So the company should take necessary steps to collects the same from its customers with due due date.

❖ Even though the total assets are increasing year by year the earnings before interest and tax of the company is fluctuating during the study period due to non-payment of the customers, covid. So the company should identify the right customers and issued and disbursement loans to others.

❖ There is negative relation between market value of equity to total liabilities due to loss earnings of the

company. So the company should frame new strategies to increase the market value of the equity.

❖ Even though there is high positive relation total income to total assets, the company did not earn minimum income from its business operations so the company identified the new business strategies to earn maximum incomes on its total assets.

Conclusion

If the above the suggestion followed by the company, then the company come out from distress and also its performance will be increase.

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