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Performance Analysis of FMCG Sector in India

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Abstract

For the performance analysis of Fast Moving Consumer Goods (FMCG) industry, discriminatory power of financial ratios are examined by using Wilks' lambda and Multiple discriminant function analysis. For this purpose sample of eighteen FMCG companies listed with Bombay Stock Exchange is taken in to account. Market capitalization is taken as basis for selecting these companies. Data is collected for twelve years ranges from 1 April 2006 to 31 March 2017. For effective implementation of discriminant analysis, firstly average stock market returns are computed from the annual stock prices of the selected companies and average stock market returns are classified in to three groups viz. 'Market Under-Performers', 'Market Average-Performers' and 'Market Out-Performers'. It has been found that revenue from operations/share is the most important ratio and having impact to assess the company's market performance. Debt equity ratio and inventory turnover ratio having moderate impact in assessing the company's stock market performance of companies and dividend payout ratio is the ratio having less impact in assessing the company's stock market performance.

Keywords: Multiple Discriminant Analysis, FMCG, Average Stock Market Return, Financial Ratios

Introduction

Indian economy is one of the world's largest and fastest growing economy. Indian businesses are promising about the growth of rural sector. Rural sector is contributing to the growth of Fast Moving Consumer Goods (FMCG) sector. According to the government survey, FMCG is the fourth largest sector in India. FMCG market in India is estimated to grow by US$74 billion in 2018. Changing lifestyles, new economic orders, changing consumer consumption patterns are some of the important factors for driving the growth in this segment. Generation of demand from the rural sector is one of the major contributors to this sector. Government linked Indian rural sector growth with the growth of this sector. Recently rural areas contribute around 16% as against the 12% growth from urban sector. Companies are also making efforts to attract more and more rural consumer by creating products according to their market requirements. Government is also taking various initiatives in order to improve the infrastructure in the rural areas. As with the ease of access in facilities, will give multiplier effect in the FMCG sector. As far as contribution from the urban sector, demand patterns are urban consumer has been changing with the rise in income. With the increasing spending power consumer is shifting its demand to the premium products and companies also started upgrading their premium product range. Digitalization is also playing key role in growth of this sector. Internet users are the major contributors to the growth prospect. Government is also trying to make India as a digital economy. This sector is not only contributing to the growth of country GDP but also helping government in the overall development of the country.

As FMCG is one of the fastest growing sectors. So, many people seek opportunity to invest into the lap of share market. But making investment in the stock market is not always easy because of volatility in the stock market. Investors do not have in depth information about the changing market scenario; investor is able to access financial statements of the company and can execute research about company through Internet. Lack of technical analysis always left investor in to dilemma for making investment in the stock market. To overcome this dilemma, investor tries to seek information from family and friends and try to invest in the popular stock but this kind of decision proves detrimental in the long run. It

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is very difficult for the common man to make rational investment decision for investing in the stock market. There are many internal and external factors because of which investor will not able to follow a disciplined investment approach. For making rational investment decision, lot of credit rating agencies like CARE, ICRA, etc. provides information about the financial instruments, but no information is provided for equity investors. Availability of incomplete information left the investor indecisive for analyzing risk and return relationship. After analyzing all the information, if an investors had made the right investment decision, than he started to time the market and out of anxiety he ended up by panic selling. This led to drain of his hard earned money.

This research paper will analyse the financial ratios and discriminate the performance of FMCG companies on the basis of Ratios. With the help of discriminant analysis, Stock market performance of FMCG companies can be analyzed and classified as Marker Under-Performers, Market Average-Performers and Market Out-Performers. This paper is to test the discriminatory power of the ratios and differentiate companies' performance.

Review of Literature

Theoretical and empirical research suggests financial ratios possess discriminatory power and having impact on stock market performance of companies.

Maricica Moscalu and Georgeta Vintila (2012) conducted research on Business Failure Risk Analysis using Financial Ratios. Purpose of this paper is to investigate the predictive power of financial ratios for a sample of Romanian listed companies. For this purpose t test is applied and result shows financial ratios can discriminate between failed and non-failed companies especially with regard to profitability, financial position and leverage both in 2010 and 2009.

Altman I. Edward (1968), in his paper investigated the relevance of economic and financial ratios for predicting bankruptcy of sixty-six manufacturing concerns by using multiple discriminant analysis. It had been found that traditional ratios are not an analytical tool, while when ratios are combined with discriminant analysis approach than rations are considered to be important tool for discrimination company's performance. The discriminant-ratio model proved to be extremely accurate in predicting bankruptcy correctly in 94% of the initial sample with 95% of all firms in the bankrupt and non-bankrupt groups assigned to their actual group classification.

Khatri Kumar Dhanesh (2016), purposed the to develop a model for predicting corporate failure using financial ratios on the principles of discriminant model. For this purpose sample of two groups of stock broking companies/investment bankers are considered. Group 'A' companies were labeled as 'Healthy Companies' and group 'B' companies were labeled as 'Sick Companies. 20 companies for Group A and 10 companies for Group B listed with NSE for five years are identified. It has been seen that by applying the discriminant model to the financial ratios of Lehman Brothers, Bear Sterns, and Freddie Mac, would have helped in raising an alarm about the bankruptcy of these companies well in advance and acted as 'Whistle Blower.'

Ayinla S. Alayande and Adekunle Kehinde Bashiru (2015), conducted study on the usefulness of discriminant analysis for investigating on various aspects of multivariate research problem. For this purpose component analysis of the 30 ratio set used for the superior 17 and futile 13 firms in Nigeria considered both together and separately. It also developed a simple linear discriminant model for the identification of potential Nigeria bankrupt concerns which uses only accounting statement-based financial ratios as variables. The derived model appeared outperform than the previous model build concerning failed company in Nigeria. Since the model can exhibit true ex ante predictive ability for a period of about 3 years subsequent.

Taffler (1983) claimed there are only four out of eighty potential useful ratios in evaluating the financial performance and financial condition of a company. Green (1978) stated that financial ratios have long been regarded as barometers of corporate health, being used for reporting liquidity, leverage, activity and profitability and that an investor may use financial ratios to appraise a company's performance and its future prospect of success. Koh and Killough (1986) claimed it is not necessitated to have a huge number of ratios to predict business failures but desirable is a set of dominant ratios derived from a larger set of correlated ratios.

Banerjee Sougata and Pawar Sarwat (2013), the primary objective of the study is to identify the potential customers within the target segment of a brand which will help the marketer to assess the market potentiality by identifying the consumer purchase intention. The secondary objectives include understanding the perception of the existing customers about the brand. For the study, researcher has chosen the brand Cherokee, an Arvind Retail brand of kidswear, and the primary data was collected from Mega Mart Stores in Delhi. The study is based on primary data. Data is collected through questionnaire and for that sample of 100 people as taken as sample. It has been found that discriminant analysis is the useful tool for identifying the potential customer and with the help of this analysis marketer to assess the real market positioning of a brand in terms of the customers' purchase intention. Also marketers can find the market potentiality of their brand in a new market.

Bhunia Amalendu (2011) aims to build up a model to develop the predictive abilities for company failures in a later time frame with different financial, business and operating conditions in the Indian context. A total of sixty-four private sector pharmaceutical companies were analyzed with sixteen financial ratios using multiple discriminant analysis. A strong discriminant function was constructed with seven ratios found to be significant in discriminating power and the classification results showed high predictive accuracy rates of between 86% and 96% for each of the five years prior to actual failure. This study also indicated that even with more advanced statistical tools more popularly used recently, MDA is still a very reliable and potent statistical tool.

Ben Chin-Fook Yap, David Fie-Gun Yong, and Poona Wai-Ching (2010), purposed to develop a model to improve the predictive abilities for company failures in a later time frame with different financial, business and operating conditions in the Malaysia context. A total of 64 companies listed with Bursa Malaysia for ten years were analyzed with 16 financial ratios using multiple discriminant analysis. A strong discriminant function was constructed with seven ratios found to be significant in discriminating power and the classification results showed high predictive accuracy rates of between 88% and 94% for each of the five years prior to actual failure. This study also indicated that even with more advanced statistical tools more popularly used recently, MDA is still a very reliable and potent statistical tool.

Jain Himmath (2003), the study aimed at identifying the financial ratio, which significantly discriminates between Market Under-Performers, Market Average-Performers and Market Out-Performers. Sample of 14 companies cement companies are taken for five years. Six ratios are used to study the discriminatory power of ratios. It was found that dividend payout ratio has a power to significantly discriminate the Market Under-Performers, Market Average-Performers and Market Out-Performers. The other five variables (financial ratios) failed to discriminate across Market Under-Performers, Market Average-Performers and Market Out-Performers. Fourteen companies from cement sector have been selected for five years. Chen and Shimerda (1981) claimed that there are too many (41 ratios) financial ratios to be helpful in evaluating the financial performance and financial condition of a company.

Importance of Study

The study is to find the discriminatory power of ratios and their impact on the stock market performance of FMCG sector in India. This research will help investors for taking rational investment decision and also for the government authorities for designing regulatory norms for the companies of FMCG sector. Moreover, it is also important to analyse the financial performance of the companies for the investors, shareholders, management and Government.

Research Objective

- To examine and make a comparative analysis of performance of selected FMCG companies.
- To find out financial ratios, which have major impact on company's performance in stock market.
- To assess the discriminatory power of most significant ratios.

Research Question

The paper investigates the impact of important ratios on the FMCG company's performance in the stock market. With the help of this discriminatory power of most significant ratios can be assessed and Market Under-Performers, Market Average-Performers and Market Out-Performers can be explained.

Hypotheses

H_0: A selected financial ratio does not discriminate among Market Under-Performers, Market Average-Performers and Market Out-Performers.

$H_{1:}$ At least one Selected financial ratio discriminate among Market Under-Performers, Market Average-Performers and Market Out-Performers.

Research Methodology

Period of Study

The scope of the study is time specific. This study covers period of twelve years ranging from April 1, 2006 to March 31, 2017. For this purpose Annual stock prices are taken in to account for specific period.

Data Collection

This research is based on secondary data. Secondary data is collected from CMIE PROWESS database. Financial information is collected from PROWESS database and through published sources like annual reports from Bombay Stock Exchange website and Money Control website. Other publications like journals, newspapers, magazines, company's websites helps in supplementing the information so collected.

Sample Size

Sample is selected on the basis of market capitalization. Eighteen private sector FMCG companies listed on Bombay Stock Exchange are selected as sample. For selecting sample, only those companies are selected which remain in BSE list for at least three years ranging from 2010–11 to 2012–13.

Tools of Analysis

Companies are classified in to three categories Market Under-Performers, Market Average-Performers and Market Out-Performers in the stock market and multiple discriminant function analysis is used to analyse the selected company's performance. Independent variable is used in the form of financial ratios, to find their impact on stock market performance.

Discriminant Analysis

Discriminant analysis is used in social science research which helps in finding the variables that can discriminate two or more groups. (Altman, 1968) used discriminant analysis in finance and predict corporate bankruptcy. R. A. Fisher (1936) developed the technique of discriminant analysis. This technique is helpful in studying the diff-erences between or among groups. The main purpose of discriminant analysis is to develop the linear combinations of predictor variable, which will discriminate between the categories of the depen-dent variable. With this researcher can easily exam-ine whether significant difference exist among the groups or not. Also accuracy of classification can be evaluated with the help of discriminant analysis. The significance of discriminant analysis is to determine the variables, which contributes for major portion of inters group difference. In discriminant analysis statistical value of the variables discriminant coefficient for each of the significant variables is arrived at which is used to calculate 'Z Score' for each of the observations as well as for each of the groups. 'Z Score' of each of the groups is further used to arrive at a benchmark score called 'Cut Off Point' which serves the basis for assigning new individuals to one of the groups, assuming that it belongs to one of the groups defined a priori.

This paper will analyse the performance of FMCG companies in India. Using multiple discriminant analysis the companies are divided into three groups that are Market Under-Performers, Market Average-Performers and Market Out-Performers in stock market. With the help of discriminant analysis calculating discriminate score and cutoff rate.

Procedure for using multiple discriminate analysis:

D= x+b1x1+b2x2+…..bnvn

D=Discriminant Score

'x' is the constant term, which is in the following table viz 'Canonical Discriminant Function Coefficient'.

b1b2= are the discriminant function coefficient

v1v2=are the Predictor (independent variables)

For analysis, set of variables to be used are identified and then these variables are classified in to three groups that are "Market Under-Performers, Market Average-Performers and Market Out-Performers" among the eighteen FMCG companies in India. Discriminant variable is none but Ratios are used and then by using ratios discriminant coefficients can also be derived. Ratios can be obtained from the financial statements of the sample companies for twelve years ranging from April 1, 2006 to March 31, 2017. Discriminant analysis is combined with financial ratios to construct a model, which can be used for analyzing the performance of stocks of companies selected as a sample.

Procedure for Classification of Under Stock Market Performers, Average Stock Market Performer and Out Stock Market Performers of Selected FMCG Companies in India

A simple test is done for the classification of stock market performance of selected companies. Classification is done on the basis of average stock market returns and for this unadjusted stock price is considered for calculating returns on particular stock. To invalidate the effect of uncontrollable market factors on the stock price, adjusted return is calculated in excess of stock specific return on BSE Sensex. Selected sample companies are classified in to three categorical Groups.

- For categorical group One, Market "Under-Performers", Average market return must be below 10% of benchmark Index.
- For categorical group Two, Market "Average-Performers", Average market return must be between 10% to 15% of benchmark Index.
- For categorical group Three, Market "Out-Performers", Average market return must be above 15% of benchmark Index.

Which means, selected sample companies are divided in to three categorical groups, that is "One", "Two" and "Three", companies whose average stock market returns are below 10% are classified under category "One" and called them as "under" stock market performers, companies whose average stock market return is between 10% and 15% are classified under category "Two" and named as average-performers and companies whose average stock market return is above 10% to 15% are classified under this category Three and named as Out performers. With the help of this classification, weights in the form of 1, 2 and 3 on the basis of average stock market returns are assigned to each company in the sample. The entire sample is classified in to three mutually exclusive categories.

Table 1: Categorization of Sample FMCG Sector Companies on the Basis of Average Stock Market Returns

S.No	*Company's Name*	*Average Stock Market return*	*Performance Groups*
1.	ITC	0.036576	1
2.	Nestle India	0.175633	3
3.	Dabur	0.078561	1
4.	Britannia	0.133007	2
5.	Procter and Gamble	0.217445	3
6.	Marico	-0.0469	1
7.	Colgate Palmolive	0.094251	1
8.	Godrej Consumer	0.172428	3
9.	Pidilite	0.181853	3
10.	Wipro	-0.05973	1
11.	Future consumer	0.352787	3
12.	United breweries	0.163702	3
13.	GlaxoSmithKline	0.224093	3
14.	Emami	0.147403	2
15.	Tata Global Beverages	-0.075	1
16.	United spirits	0.131517	2
17.	Jubilant Food works	0.14816	2
18.	Himalaya International	0.088413	1

Wilks' Lambda

Wilks' lambda is multivariate statistic, which is used to test the significance of the variable in discriminant function. Wilks' lambda is used for stepwise approach. It is the ratio of within-groups sum of squares to the total sum of squares. It plays the same role as F-Test plays in the one way of analysis of variance. Wilks' lambda depicts the values of two or more variables. Wilks' lambda is closed to zero, than that variable contributes to the discriminant function. It can also be derived from 1- canonical correlation. Wilks' lambda is a direct measure of the proportion of variance in the combination of dependent variables that is unaccounted for by the independent variable (the grouping variable or factor). If a large proportion of the variance is accounted for by the independent variable then it suggests that there is an effect from the grouping variable and that they have different mean values.

Table 2: Wilks' Lambda

Step	*Number of Variables*	*Lambda*	*df1*	*df2*	**df3**	*Exact F*			
						Statistic	*df1*	*df2*	*Sig.*
1	1	.816	1	2	213	24.052	2	213.000	.000
2	2	.723	2	2	213	18.670	4	424.000	.000
3	3	.682	3	2	213	14.810	6	422.000	.000
4	4	.650	4	2	213	12.638	8	420.000	.000

Wilks' lambda shows the percent variance in dependent variables which is not explained by differences in levels of the independent variable. Wilks' lambda depicts the values of two or more variables. At each step, the variable that minimizes the overall Wilks' lambda is entered. Table 2 presents univariate ANOVA which is carried out for the ratios in the form of predictor variable. SPSS has grouped the data in to three groups that is Under, Average and Out performers. Observations are distributed in to different groups by the group statistics. The function indicates the first canonical linear discriminant function. In present study, it can be seen in Table 2, lambda shows the values of each variables in the model, df3 shows total number of observations that is 213 which is 99% of the total observations viz. 216. 213 observations are grouped in to three categories for discriminant analysis. df1 shows the number of important predictor variables are used for discriminant function and df2 values shows the numbers allocated to the predictor variables. On the other side, F-statistic is used to test significance of MANOVA and statistics shows that it is significant, as insignificant values are not considered by F-statistics.

Wilks' lambda tests the level of contribution of predictor variable to the model. The range of scale for this is o to 1, 0 means total discrimination and one means no discrimination. Smaller the Wilks' lambda, the more important is the variable to the discriminant function. Wilks' lambda is significant by the F test for all independent variable. F-statistics values are used to test the significance and in table 2 it can be seen that these four predictor variable are significant and has the discriminatory power, which helps in analyzing the stock market performance of the companies.

Summary of Canonical Discriminant Functions

Canonical discriminant function reflects the joint contribution of the variables to the function (Rencher, 1992). It does not show the effect of individual variable but it shows the influence of individual variable in presence of the other variable. So, it is linear combination that separates group of observations. Canonical correlation shows correlation between weighted linear composite and multiple predictor variable.

Eigen Value

Eigen value provides statistics of between and within group variability for the predictor variable. In simple words, Eigen value is linear mapping of distortion induced by the transformation. Eigen values are related with canonical correlations and explains the discriminating ability of function. The canonical correlation is the measure of association between the discriminant function and the categorical. Percentage of variance in categorical is explained by the square of canonical correlation coefficient. The larger the Eigen value, the more is the variance explained by that function in dependent variable.

Table 3: Eigen Values

Function	*Eigen Value*	*% of Variance*	*Cumulative %*	*Canonical Correlation*
1	.392[a]	78.8	78.8	.531
2	.106[a]	21.2	100.0	.309

Table 3 shows that first 2 canonical discriminant functions were used in the analysis. With the help of

SPSS, it can be seen that there are two functions; since there are three discriminating variables are used in the research and number of functions depend on the number of used discriminating variables. The maximum number of discriminant functions generated by the total number of groups minus one, here it can be 3-1=2 discriminating functions. With the help of function best discriminant between the groups can easily be assessed. As already stated Higher the Eigen value, better it is. Table 3, shows that function 1 Eigen value is greater than function 2 and % of variance depicts the discriminating ability of all the three groups. As there are two function and we can see function one is higher % of variance than the function 2, but cumulative % represents the current and proceeding cumulative total of the % of variance. Canonical correlations are the multiple correlations between the predictors and the discriminant function. One is considered to be perfect value for canonical correlation, Higher or closer to one considers being the best fit value for the discrimination. Here, it can be seen that value for the function 1 is higher than the function 2, but value for function 1 is 0.531 is comparatively low from the ideal value one, but higher than the function 2.

Table 4: Wilks' Lambda

Test of Function(s)	*Wilks' Lambda*	*Chi-square*	*df*	*Sig.*
1 through 2	.650	91.237	8	.000
2	.904	21.234	3	.000

Wilks' lambda is the proportion of the total variance in the discriminant scores not explained by differences among groups. Table 4 shows the significance of Wilks' lambda and significant values are 0.000 for both the function, which means that both the functions are significant. So, we can use both the functions for analysis. For better results Wilks' lambda value should be smaller and function one value is smaller than the function Two. Small Wilks' lambda occurs only when within group variability is small as compared to total variability. Chi-square value is also higher in function one as compare to function two with the eight degree of freedom. Here, we can see Wilks' lambda is 0.650 and 0.904, which means that group means differ. Also here we can conclude from Wilks' Lambda that function one is to be considered for the further analysis.

Table 5: Standardized Canonical Discriminant

Function Coefficients	*Function*	
	1	*2*
Revenue from Operations/Share (Rs.)	.938	-.321
Total Debt/Equity (X)	.435	.564
Dividend Payout Ratio (NP) (%)	-.469	.169
Inventory Turnover Ratio (X)	.007	.714

Observing the Comparative Significance of Each Predictor Variable

The standardized canonical discriminant function coefficients Table 5 indicates the significant importance of each independent variable. The interpretation of standardized coefficients is similar to multiple regressions. The standardized discriminant function coefficients should be used to assess the importance of each independent variable's unique contribution to the discriminant function. More difference among coefficients of variables depicts that there might be difference in mean among groups. With the help of coefficients, it can be easily identified that which variable bears more discriminating power than the other variable. Higher standardized discriminant coefficient means higher discriminating power, that variable possesses. If we analyse the values of function one, than revenue from operations/share is the strongest predictor variable with the highest coefficient of 0.938, which is followed by total debt equity, inventory turnover ratio and dividend payout ratio. This shows that revenue from operations/share is the most significant ratio, bearing impact on stock market performance of FMCG sector selected companies.

Table 6: Unstandardized Canonical Discriminant Coefficients

Function Coefficients	***Function***	
	1	***2***
Revenue from Operations/Share (Rs.)	.004	-.001
Total Debt/Equity (X)	.522	.677
Dividend Payout Ratio (NP) (%)	-.016	.006
Inventory Turnover Ratio (X)	.000	.035
(Constant)	-.465	-.676

Unstandardized canonical discriminant function is used to calculate Z-score. Formulating discriminant function on the basis of standardized canonical discriminant coefficients. Since function 1 coefficients are used to ranking the variables because of their highest discriminating power. Coefficients of function 1 are also used for calculating discriminant score.

Procedure for using multiple discriminate analyses:

D= x+b1v1+b2v2+…..bnvn

D=Discriminant Score

'x' is the constant term, which is in the following table viz 'Canonical Discriminant Function Coefficient'.

b1b2= are the discriminant function coefficient

v1v2=are the Predictor (Independent variables)

Where,

D = -0.465 + 0.004 (Revenue from Operations/Share) + 0.522 (Total debt/Equity) -0.16 (Dividend Payout Ratio) + 0.000 (Inventory Turnover Ratio).

It can also be seen that unstandardized canonical coefficients follows the same pattern as standardized coefficients.

On the basis of above coefficients, following table shows the ranking of significant predictor variable.

Table 7: Ranking of the Predictor Variables

Ranking of the Variable	*Predictor Variable*
1.	Revenue from Operations/Share (Rs.)
2.	Total Debt/Equity (X)
3.	Inventory Turnover Ratio (X)
4.	Dividend Payout Ratio (NP) (%)

Table 7 shows the ranking of the independent variables, according to their discriminatory power to analyse the stock market performance of the companies. This ranking is done on the basis of function one only, as function one is more significant for analysis than the function 2 (ref. Table 5 and 6).

Table 8: Structure Matrix

Function Coefficients	*Function*	
	1	*2*
Revenue from Operations/Share (Rs.)	.735*	-.361
Book Value [ExclRevalReserve]/Share (Rs.)[b]	.612*	-.286
Dividend Payout Ratio (NP) (%)	-.294*	-.113
Retention Ratios (%)[b]	.186*	.141
Return on Net Worth / Equity (%)[b]	-.122*	.116
Net Profit Margin (%)[b]	-.111*	-.026
EV/EBITDA (X)[b]	-.093*	.043
Current Ratio (X)[b]	-.063*	-.030
Earnings Yield[b]	-.043*	-.024

The standardized canonical discriminant functions disclose the pooled within-groups correlations between discriminating variables. With the help of structure matrix correlations can be compared easily and can be assessed that how closely variable is related to each function. Values of function 1 and 2 in structure matrix are computed by pooled within 'groups' correlations between discriminating variables and standardized canonical discriminant functions variables ordered by absolute size of correlation with in function. Values with * represents the values which shows the largest absolute correlation between each variable and any discriminant function.' b' denotes the variables not used in the analysis. In present research it has been seen that there were eleven predictor variables were considered and only four variables possess the discriminating power and having impact on the stock market performance of the selected sample companies. Structure matrix represents the correlations between the observed variables and the dimensions created with the unobserved discriminant functions. Usually variables correlation value 0.3 or more is considered significant. In the structure matrix, it can be easily seen revenue from operations/share, debt equity ratio plays significant role in discriminant function analysis.

Structure matrix reveals that pattern of variables in matrix and pattern of variables in canonical discriminant function is same.

Table 9: Functions at Group Centroids

Performance Group	Function	
	1	2
1.0	-.669	.208
2.0	.967	.336
3.0	.116	-.400

Table 8 represents standardized discriminant function evaluated at group means. Group centroids are called canonical observation means. The extreme point to formulate the decision rule is centroids. A function at group centriod indicates the average discriminant score for three performance groups. For classifying observations, predictive power of canonical discriminant function depends on the larger difference between the canonical group means.

Classification Statistics

Table 10: Prior Probabilities for Groups

Performance Group	Prior	Cases Used in Analysis	
		Unweighted	Weighted
1.0	.333	84	84.000
2.0	.333	48	48.000
3.0	.333	84	84.000
Total	1.000	216	216.000

The starting point of this research is the distribution of observations in to performance groups. Table 10, prior probabilities for groups shows the performance groups and number of observations used for discriminant analysis. The total number of observations used for analysis are 216. Out of 216 observations 84 observations are allocated in performance group one, 48 observations are allocated in performance group two and lastly, 84 observations are allocated in performance group three. Centriod value is calculated with the help of weighted value. As under-performers, average-performers and out-performers group are not equal, so dividing points need to be calculated.

The dividing rule:

Mean values of group centroids.

Centriod values of function 1 from performance group 1, 2 and 3 are -0.669, 0.967 and 0.116.

Mean values 0.149 and 0.5415

Table 11: Classification Function Coefficients

	Performance Group		
	1.0	2.0	3.0
Revenue from Operations/Share (Rs.)	.000	.006	.003
Total Debt/Equity (X)	.639	1.579	.637
Dividend Payout Ratio (NP) (%)	.052	.027	.036
Inventory Turnover Ratio (X)	.045	.050	.024
(Constant)	-2.574	-3.700	-2.369

It represents the Fisher's linear discriminant functions. Classification functions are called linear discriminant function for each observations. Coefficients helps in depicting the discriminatory power of the independent variables and by comparing the coefficient values it can be easily assessed that which variable plays important role in analyzing the stock market performance of the sample selected companies. After analyzing the performance group coefficients, total debt equity ratio is the most significant ratio with the highest discriminating power due to higher coefficient 0.639 of Total debt equity ratio from the Group one and this is followed by dividend payout ratio (NP), inventory turnover ratio and revenue from operations/share. If we analyse performance group 2 than total debt equity ratio coefficient of 1.579 is highest and is followed by inventory turnover ratio, dividend payout ratio (NP) and Revenue from operations/share. From the performance group 3, 0.637 is the coefficient value for Total debt equity ratio is the highest among all other variables from the respective performance group. Overall analysis of Fisher's linear discriminant function shows that total debt equity ratio in all the three performance groups plays significant role and having impact on stock market performance of FMCG companies. All these four ratios have the discriminatory power to analyse the performance of FMCG sector in India.

Table 12: Classification Results

		Performance Group	*Predicted Group Membership*			*Total*
			1.0	*2.0*	*3.0*	
Original	Count	1.0	62	3	19	84
		2.0	14	32	2	48
		3.0	30	17	37	84
	%	1.0	73.8	3.6	22.6	100.0
		2.0	29.2	66.7	4.2	100.0
		3.0	35.7	20.2	44.0	100.0

a. 60.6% of original grouped cases correctly classified.

After observation from Table 12, 60.6% Data is correctly classified in to three groups that is under-performers, average-performers and out-performers by discriminant function analysis. From the performance group one that is Market Out-Performers, there are 84 observations in total and out of these 84 observations, 62 observations are correctly classified as 'Market Under-Performers', 3 and 19 observations wrongly classified under performance group 2 and 3. Similarly, In performance group 2 that is 'Market Average-Performers', there are 48 observations in total and out of 48 observations, 32 observations are correctly classified as Market average-performers, 14 and 2 observations are wrongly classified under performance group 1 and 3. Lastly, there are 84 observations in performance group 3 that is 'Market Out-Performers' and out of these 84 observations 37 observations are correctly classified under performance group 3, 30 and 17 observations are wrongly classified under performance group 1 and 2.60. 6% correctly classified data means that model is accurate and provide adequate results, which means the model has capacity to predict the performance of the company in the stock market.

Conclusion

The research is to examine and make the comparative analysis of selected companies and to find the important set of financial ratios which bears significant impact on FMCG companies listed with Bombay Stock Exchange in India, performance in stock market. For achieving the objective of this research paper, Wilks' Lambda and multiple discriminant function analysis model is used. sample of eighteen FMCG companies listed with Bombay Stock Exchange is taken in to account. Market capitalization is taken as basis for selecting these companies. Financial data for the companies are taken from CMIE prowess and money control website and stock market return data of selected companies is collected from Bombay Stock Exchange. Data is collected for twelve years ranges from 1 April 2006 to 31 March 2017. For effective implementation of Discriminant analysis, Firstly Average stock market returns are computed from the annual stock prices of the selected companies and average stock market returns are classified in to three groups (Table 1) viz. 'Market Under-performers', 'Market Average-Performers' and 'Market Out-Performers'.

As explained earlier, paper focuses on the finding the important sets of financial ratios, so financial ratios are taken as predictor or independent variable. With the help of ratios relationship between financial ratios and stock returns can easily investigated. Group statistics shows the distribution of observations in to three performance groups. It shows the identified predictor variables in the form of ratios which are used for the discriminant analysis. Eleven ratios viz. book value, revenue on operations/share, net profit margin, total debt/equity ratio, inventory turnover ratio, return on net worth/equity, dividend payout ratio (NP), current ratio, retention ratios, earning yield ratio, EV/EBITDA are taken in the form predictor variable but only four ratios are used in analysis that are Total debt/equity ratio, inventory turnover ratio, dividend payout ratio (NP) and, revenue on operations/ share. To check the statistical significance of MANOVA, F-statistic is used and Table 2 shows that F-statistics shows that it is significant, as insignificant values are not considered by F-statistics. The model shows good enough Eigen values after testing and it also shows the significance of Wilks' lambda and significant values are 0.000 for both the function, which means that both the functions are significant. The analysis of the model shows that 60.6% of original grouped cases correctly classified. Correctly classified data means that model is accurate and provides adequate results, which means the model has capacity to predict the performance of the company in the stock market. standardized canonical discriminant function helps in providing the ranking of the predictor variables according to their significance. From the canonical coefficients, it has been observed that revenue from operations/share is the most significant variable with the highest coefficient of 0.938 and this followed by total debt/ equity ratio, inventory turnover ratio and dividend payout ratio (NP). Centriod values are used to calculate Z cut off rate viz. 0.149 and 0.542. Decision rule classification will be as under:

Predict and classify as Market Out-Performers, if discriminant function value is more than 0.149.

Predict and classify as Average Market-Performer, if discriminant function value is between 0.149 and 0.542.

Predict and classify as Under Market-Performer, if discriminant function value is less than 0.542.

This shows that 60.6% original groups are classified correctly, which indicates that a good predictive capacity of discriminant function. Discriminant model has the capacity to estimate the potential to classify the companies in Market Under-Performers, Market Average-Performers and Market Out-Performers.

In Nut shell, it has been found that on the basis of ratios comparative analysis of company's performance can be done and discriminant function analysis help in realizing the significant financial ratios, which have major impact on company's performance in stock market. Revenue from operations/share is the most important ratio and having impact to assess the company's market performance. Debt equity ratio and Inventory turnover ratio having moderate impact in assessing the company's stock market performance of companies and Dividend payout Ratio is the ratio having less impact in assessing the company's stock market performance. Discriminant analysis shows that out of eighteen sample selected companies from FMCG sector, Seven companies that are ITC, Dabur, Wipro, Marico, Tata Global Beverages, Colgate Palmolive and Himalaya International ltd. are classified in to Performance Group one that is 'Market Under- Performers'. Britannia, Emami, Jubilant Food Work and United Spirits are classified in to performance group two that is Market Average-Performers and Nestle India, Procter and Gamble, Godrej consumer Ltd, Pidilite, Future Consumer ltd, GlaxoSmithKline and United Breweries are classified in to Performance group three that is Market Out-Performers.

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