

Firm Size and Profitability: An empirical analysis of selected FMCG Indian Companies

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Abstract: In a market economy, business enterprise varies widely in size, profitability, and survival. Relationship between firm size and profitability has been studied in many different sectors, however, no researches are found in FMCG companies in India. The objective of this study is to examine the relationship between firm size and profitability of selected eight FMCG companies. Data has been obtained from the annual reports of selected eight FMCG Indian Company under study for eight years. The study period is limited, from 2012-13 to 2019-20. Return on assets and Return on Equity have been used as firm profitability (dependent variable) while firm size has been determined through Total sales and Total assets (independent variable) and control variable is treated as Asset Turnover. Multiple regressions and correlation have been used in empirical analysis by using SPSS. The result of analysis indicates that the ROA has negative and significant relationship with two variables (Log of Total Assets or Log of Total Sales) and control variable (Asset turnover). Other findings portray that ROE has negative and insignificant relationship with two variables (Log of Total Assets or Log of Total Sales) and control variable (Asset turnover)

Keywords: Fast moving consumer goods (FMCG) companies, Firm size, Net Profit.

Introduction

In the Indian economy, the Fast-moving consumer goods segment is the fourth largest segment. For the growth of segment, changing lifestyles and easier access have been the main key point. But, in last two or three years, FMCG market is growing at faster rate in rural area compared to urban area in India. The market size of FMCG is reached Rs. 3.4 lakh core (US\$ 52.75 billion) in 2018 and it is estimated to reach US\$ 103.7 billion) in 2020. The most common items are detergents, toilet soaps, shoe polish, fresh wash, amul items, shampoos, toothpaste, shaving products, packaged foodstuff, and household accessories. These items are very essential for daily consumption and have a high return.

The size of the firm is the key determinant of its profitability. It is a general concept, in the field of industrial economics; the big firm has more competitive power and capacity in relation to small firms. . The large size may bring economies or diseconomies. Firms of different size distinguish themselves along different observable and unobservable dimensions. Micro-sized companies are also often defined to have up to 49 employees and hence SMEs to have between 50 and 2492 employees.. In this study, the firm size on financial performance in the Indian FMCG Companies, are treated as total assets and total sales.

Profitability is a measure of overall firm's efficiency in achieving the objectives. There are several methods of business firms of which 'profit-earning' is the main aim. Therefore, as a measure of efficiency in achieving these main objectives, profitability analysis is considered. These help in decision making and internal accounting in the fields of sales, marketing, budgeting, and controlling and product management for a business enterprise. For the purpose of measuring the relationship between the firm size and the overall profitability of the selected eight FMCG companies, the financial performance have been measured using various standards including, net profit, return on equity and return on assets among other measures.

Reviews of Literature:

Many researchers have studied on the effect of firm size on its profitability from different views and in different environments as given below

Becker et al. (2010) have studied the effects of firm size on profitability in the firms operating in manufacturing sector in USA using the data of years 1987 to 2002. In this analysis, various statistical techniques are used, that is multiple regressions and correlation etc. The findings of the paper revealed that a statistically negative significant association between the total sales, total assets and number of employees of the business enterprise and their profitability.

Mesut Doğan(2013) have to investigate the affect of firm size on profitability of 200 firms in Istanbul Stock Exchange (ISE) between the years 2008-2011. The result of the study showed that a positive association between firm size and profitability of the industry. Control variables as the age of the firms and leverage rate have been established in a negative association with ROA, but liquidity rate and ROA have been ascertained to have a positive relation.

J. Aloy Niresh & T. Velnampy(2014) in their article " Firm Size and Profitability: A Study of Listed Manufacturing Firms in Sri Lanka" In this study, there are so many ratios are employed in order to achieve the objectives of the study. From analysis of the study, there is no indicative association between firm size and profitability of selected manufacturing firms in Sri Lanka. Moreover, the findings found that firm size has no profound impact on profitability of the selected manufacturing firms during the study period.

Majundar (1997) examined the effect of size and age on firm performance level of 1020 Indian firms. It was found out that older firms are more productive but less profitable. In the same vein, **Coad, Segarra and Teruel (2007)** using a sample of Spanish firms from 1998 to 2006 found that firm performance improves with the age of the firm and that older firms have a lower level of production capacity and financial growth.

Niresh and Velnampy (2014) explored the effects of firm size on profitability for 15 manufacturing companies active in Colombo Stock Exchange (CSE) for the period from 2008 to 2012. It was found no relationship between firm size and profitability, and size has no profound impact on profitability. Again in this study, **Banchuenvijit (2012)** studied the factors affecting performances of Vietnamese companies; the results indicated a significant negative relation between total assets and profitability and no significant relationship between number of employees and profitability.

Jonsson (2007) in their work investigated the relation between company size and its profitability for 250 companies consisting of banks, fish processing companies, and civil engineering consulting companies in Iceland over the period between 2000 and 2004. **Jonsson (2007)** also revealed a negative and weak relation between the company size and its profitability for all the companies of the study irrespective of the proxies used for size and profitability, except a weak positive relation was found for the bank companies.

Azhar, K.A & Ahmed, N(2020), in their paper, "Relationship between Firm Size and Profitability: Investigation from Textile Sector of Pakistan". The main objective of the paper is to study the relationship between firm size and profitability of selected textile firms in Pakistan. In this paper regression and correlation methods are used. The result of the study portrayed that there is no indicative relationship between the two and also found a negative relationship between total asset and profitability of the Pakistan textile industry. (firm size pdf)

Objective of the Study

The main objective of this study is to conduct into the following way:

- To identify the profitability of selected eight FMCG Indian Companies over the 8 years during 2013-2020
- To study the effect of firm size on profitability of the companies during the study period.

Hypotheses of the study:

The following hypotheses were formulated for the study.

H₁: Firm size and profitability is significantly correlated.

H₂: The effect of firm size on profitability is significantly associated.

Limitations of the study:

The study suffers from certain limitations which are stated as follows:

- The study has been conducted over a very limited period of eight years only.
- The study is based on secondary data.

Research Methodology:

The present study is mainly based on secondary data. The study concentrates on FMCG Indian Companies. Thus eight companies are selected namely ITC, HUL, Britannia, Dabur, Marico, Godrej, Glaxco and Colgate. Data has been obtained from the annual reports of selected eight FMCG Indian Company under study for eight years. The study period is limited, from 2012-13 to 2019-20. In the empirical analysis, Multiple regression and correlation methods have been used. Variance Inflation Factor (VIF) has also been used to determine multi-collinearity.

Table-1: below presents the variables, abbreviations and their measurements as used in the analysis

Variables	Abbreviation	Measurement
Dependent Variables		
Return on Assets	ROA	Net Income/Total Assets
Return on Equity	ROE	Net Income/Total Equity
Independent variable		
Firm Size-1	Log(T.A)	Logarithm of Total Assets
Firm Size-2	Log(T.S)	Logarithm of Total Sales
Control Variable		
Asset Turnover	AT	Sales/Total Assets

In the research studies, the Return on Assets and Return on Equity have been used as dependent variable which is measured by the profitability of the company. The independent variable is Natural Logarithm of Total asset and Total sales which are used for indicating the firm size. Asset turnover has been used as the control variable. Size indicators have been tested by developing four models as considering as one or two model. This is in order to avoid multi collinearity and auto correlation problems in the study. The following models will be tested:

$$ROA_{it} = B_0 + B_1(A.T)_{it} + B_2(\text{Log of T.A})_{it} + e_{it} \quad (1)$$

$$ROA_{it} = B_0 + B_1(A.T)_{it} + B_2(\text{Log of T.S})_{it} + e_{it} \quad (2)$$

$$ROE_{it} = B_0 + B_1(A.T)_{it} + B_2(\text{Log of T.A})_{it} + e_{it} \quad (3)$$

$$ROE_{it} = B_0 + B_1(A.T)_{it} + B_2(\text{Log of T.S})_{it} + e_{it} \quad (4)$$

Where:

ROA_{it} = Return on Asset counted yearly of each firm

ROE_{it} = Return on Equity counted yearly of each firm

A.T_{it} = Asset Turnover counted yearly of each firm

Log of T.A_{it} = Logarithm of Total Asset counted yearly of each firm

Log of T.S_{it} = Logarithm of Total Sales counted yearly of each firm

I=1, 2, 3,.....n, where n is the total number of firms; n=8

e_{it} = estimated of yearly residual for each firm

B₀ = Constant

Result and Analysis:

Table-2. The descriptive statistics for the 5 variables have been obtained from 8 FMCG Companies of India.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Return on Assets	8	.05	.91	.3366	.26645
Return on Equity	8	5.83	47.97	21.4201	16.04393
Log of Total Sales	8	4.37	5.49	4.7840	.43238
Log of Total Assets	8	4.13	5.66	4.6919	.45528
Asset Turnover	8	.34	4.39	1.6155	1.31443
Valid N (listwise)	8				

From the above table, it shows descriptive statistics for all variables used in the present analysis for all 8 firms over the 8-year period. In total, 64 firm year observations were used. The average value of return on assets and return on equity are .3366% and 21.42% respectively. The maximum value of ROA and ROE are .91% and 47.97%, while the minimum value is .05% and 5.83%. It is obvious from the table that an average firm has a size of 4.78% and 4.69% as measured by the natural logarithm of its total sales and total assets respectively. The table also shows the average value of assets turnover is 1.61%. The maximum value of Asset Turnover is 4.39%, while the minimum value is .34%.

Table 3. Pearson Correlations for all variables tested for all firms over the 8-year period.

Correlations

		Return on Assets	Return on Equity	Log of Total Sales	Log of Total Assets	Asset Turnover
Return on Assets	Pearson Correlation	1				
	Sig. (2-tailed)					
Return on Equity	Pearson Correlation	.495	1			
	Sig. (2-tailed)	.212				
Log of Total Sales	Pearson Correlation	.583	.233	1		
	Sig. (2-tailed)	.129	.579			
Log of Total Assets	Pearson Correlation	-.122	-.275	.684	1	
	Sig. (2-tailed)	.773	.510	.061		
Asset Turnover	Pearson Correlation	.961**	.609	.458	-.284	1
	Sig. (2-tailed)	.000	.109	.253	.495	

** . Correlation is significant at the 0.01 level (2-tailed).

It is observed that from the above table-3, there is a positive relation between the indicators of firm size (log of total sales) with the measures of ROA and ROE, while it is insignificant association. But the indicators of firm size are also statistically insignificant negative relation (log of total assets) with the measures of ROA and ROE and the p-value is greater than .05. Hence, the Null Hypothesis (H_0) is rejected and the Alternative Hypothesis (H_1) is accepted. Positive and significant relations have been observed between Asset Turnover and profitability measure of ROA. But positive and insignificant association with profitability measures of ROE.

Test of Collinearity:

Co linearity is a linear association between two explanatory variables. Two variables are perfectly collinear if there is an exact linear relationship between them. More commonly, the issue of multi-co linearity arises when there is an approximate linear relationship among two or more independent variables. In order to indicate the problem of multi-collinearity among independent variables used in the data set, two important methods are used i.e., namely one is Variance Inflation Factor (VIF) and other is Tolerance. If $VIF > 10$ and $Tolerance = 1/VIF$ or less than equal to 0.1 which is indication of the problem of multi collinearity.

Table-4: Co linearity statistics for the 4 models

Model 1-ROA		Model 2-ROA		Model 3-ROE		Model 4-ROE	
Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
.790	1.266	.919	1.088	.919	1.088	.790	1.266
.790	1.266	.919	1.088	.919	1.088	.790	1.266

From the above table, it can be observed that both VIF is less than 10 and all the tolerance level is greater than and equal to 0.1. But the tolerance is the reciprocal of VIF (i.e., $Tolerance = 1/VIF$) which does not indicate the existence of multicollinearity among the independent variables in the data set.

Table 5. Result of regression analysis

Model	R	R ²	Adjusted R ²	Std.Error of the Estimate	Durbin-Watson
I	.974	.949	.928	.07150	1.660
II	.973	.947	.926	.07232	1.627
III	.619	.383	.136	14.91662	2.966
IV	.612	.374	.124	15.01992	2.953

The information that needs to be taken from the above table-5 is the R² values of model I, II, III and IV are 94.9%, 94.7%, 38.3% and 37.4% which are explained by the variations in the independent variables used in the study. Remaining 5.1 %, 5.3%, 61.7% and 62.6% variation in the model I,II, III and IV are related to other variable which are not expressed in the model respectively. In order to indicate the auto correlation and multi co linearity in the residuals in the regression, Durbin-Watson value of each model is to be computed. According to C.R.Kothari, the value of D lies between 0 and 4. When it is near 2, residuals are uncorrelated. For positively correlated residuals, D approaches 0 and for negatively correlated residuals, it approaches 4. In practice a value of D between 1 and 3 usually considered to be accepted. The value of D in the model I, II, III and IV are 1.660, 1.627, 2.966 and 2.953 respectively. From the above analysis, there is no autocorrelation problem in the model.

Table-6.Coefficient for predictors of profitability

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
I - ROA (Constant)	-.484	.322		-1.504	.193
Asset Turnover	.178	.023	.878	7.690	.001
Log of Total Sales	.112	.070	.181	1.586	.174
II-ROA (Constant)	-.443	.397		-1.446	.208
Assets turnover	.204	.022	1.007	9.413	.000
Log of Total Assets	.096	.063	.164	1.532	.186
III-ROE (Constant)	28.381	63.255		.449	.672
Assets Turnover	7.052	4.474	.578	1.576	.176
Log Total Assets	-3.912	12.916	-.111	-.303	.774
IV-ROE (Constant)	19.339	67.646		.286	.786
Assets Turnover	7.767	4.859	.636	1.598	.171
Log of Total Sales	-2.188	14.773	-.059	-.148	.888

From the Table-6, it is observed that the result of regression models can be shown mathematically as bellow:.

$$ROA = -.484 + .178(\text{Assets Turnover}) + .112(\text{Log of Total Sales}) + e_{it} \quad \text{Model I}$$

$$ROA = -.443 + .204(\text{Assets Turnover}) + .096(\text{Log of Total Assets}) + e_{it} \quad \text{Model II}$$

$$ROE = 28.381 + 7.052(\text{Assets Turnover}) - 3.912(\text{Log of Total Assets}) + e_{it} \quad \text{Model III}$$

$$ROE = 19.339 + 7.767(\text{Assets Turnover}) - 2.188(\text{Log of Total Sales}) + e_{it} \quad \text{Model IV}$$

Model-I: It indicates a overall significant relationship between firm size and profitability of the company (since the p-value is less than .01), but in individually, it is insignificant positive relationship between firm size (Log of Total Assets) and Return of Assets (ROA) (greater than .05), while positive and significant association between Asset Turnover and ROA. It means that one unit increase of ROA, then the Assets Turnover and Log of Total Sales of the company is increased by .178 units and .112 units respectively at 1% significant level.

Model-II: It also describes a overall significant relationship between firm size and profitability of the company (since the p-value is less than .01), but in individually, it is insignificant positive relationship between firm size (Log of Total Assets) and Return of Assets (ROA)(greater than .05), while positive and significant association between Asset Turnover and ROA(greater than .05).The study also shows that one unit increase of ROA, then the Assets Turnover and Log of Total Assets of the company is increased by .204 units and .096 units respectively at 1% significant level

Model-III: The study discloses that when ROE increased by one unit, Asset turnover of the company stepped up by 7.052 units and decreased by 3.912 units of Log of Total assets, which was found to be statistically insignificant at 10% level.

Model-IV: The study also reveals that for one unit increase in ROE, Asset turnover of the company improved by 7,767 units and decreased by 2.188 units of Log of Total assets, which was found to be statistically insignificant at 10% level.

Findings: The summary of the findings are given bellow-

1. In table-3, it is find that there is a negative and insignificant relationship between Log of Total Assets with Return on Assets, in which the p-value is greater than .05
2. In Table-3, it is also observed that there ia a negative and insignificant association between Asset turnover with Log of Total Assets,(p-value >.05) and all the remaining each variable is positive and insignificant relationship with each other except one variable(Return on Asset) is positive and significant relationship with Asset Turnover.
3. In table-5, it is observed that the value of R² in model I, II, III and IV are 94.9%, 94.7%, 38.3% and 37.4% which are explained by the variations in the independent variables used in the study. Remaining 5.1 %, 5.3%, 61.7% and 62.6% variation in the model I, II, III and IV are related to other variable which are not expressed in the model respectively.

4. In table-6, it is found that the two combined mode (I &II), which has two variables (log of total assets and log of total sales) and one dependent variable (Return on Assets), the relationship is negative and significant.
5. In table-6, it is also observed that the two combined mode (III &IV), which has two variables (log of total assets and log of total sales) and one dependent variable (Return on Equity), the relationship is positive and insignificant

Conclusion:

FMCG companies hold an important position in the market as it brings into home the necessities for the consumers. Hence its sustenance in the market is an important aspect to be looked into seriously. For analyzing the relationship between firm size and profitability of eight FMCG companies, there are four models are tested. Out of it, two models are significant relationship between them and the other two models is insignificant relationship. In correlation analysis, first I and II models are significant relationship between firm size and profitability of eight selected FMCG companies during the study period since the p-value is less than .01. Furthermore, in multiple regression analysis, the value of R^2 in model I, II, III and IV are 94.9%, 94.7%, 38.3% and 37.4% which are explained by the variations in the independent variables used in the study. Remaining 5.1%, 5.3%, 61.7% and 62.6% variation in the model I, II, III and IV are related to other variable which are not expressed in the model respectively. But in Model III and IV, 61.7% and 62.6% of the variations in the Return on Equity to the variables which are not shown in two models. Therefore, other factors are probably found to be better predictors of profitability. Another more studies could examine impact on the relationship between firm size and profitability to other sectors which are listed in NSE and BSE

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