

**DETERMINANTS OF COST, REVENUE AND PROFIT OF FIRMS: EVIDENCE FROM  
FIRM LEVEL DATA OF CONSUMER GOODS INDUSTRY LISTED IN BSE**

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**Abstract**

As the main goal of an organization is to earn a profit, the efficiency of a firm indicates the possible ways for earning income by dint of different approaches. The present study investigated the determinant of cost, revenue and profit of selected firms in industry that are associated with the production of consumer goods enlisted in BSE. The data is extracted for eleven years from the CMIE Prowess IQ database. The study is considered dependent variables i.e. cost, revenue and profit of the firm. The outcome of the study revealed that the variables labour, capital, and energy cost are significant determinants of earning profit level of a firm but materials costs are not statistically significant determinants for the profit maximization level of the firm. The results of the study is also indicated that labour, capital, material and energy are the statistically significant inputs to determine the level of costs during the study period. The suggestions to be made in the study as an addition to the area of research.

**Keywords:** Firm, Capital, BSE, labour, Revenue, Cost.

**Introduction**

In economic literature, the efficiency of any firm is defined in various ways. Farrell (1957) introduced both technical and allocative efficiency in their discussion. Allocative efficiency refers to a company's capacity to use its inputs in the most effective ways feasible, given the costs and technological capabilities of its resources, while technical efficiency refers to a company's ability to maximize output from a given set of inputs. The combined efficiency is known as the overall economic efficiency. This combined economic efficiency can be studied from two different perspective-input perspective (overall cost efficiency) or output perspective (overall revenue efficiency). Following Farrell (1957), Aigner et al. (1977) introduced the Stochastic Frontier Approach (SFA), and Charnes et al., (1978) introduced Data Envelopment Analysis (DEA) for measuring the input and output efficiency. How closely a company's costs match what a best-practice company would pay to produce the same bundle of the product under the same circumstances is determined by their cost efficiency. The majority of research has been done on the input side, where it matters most: determining how efficient a system is financially (Berger et al., 1993; Resti, 1997). Only a small number of studies have evaluated revenue and profit efficiency from the output side (Maudos et al., 2002; Bader et al., 2008).

The company is efficient if it maximizes (minimizes) the value of the objectives function given the available restrictions. To give just one example, a company is considered to be input-efficient when it can maximize the margin between revenue and expenses given a fixed set of costs. In the same vein, a company is said to be cost-efficient if it is able to create the required output while incurring the smallest possible cost as a result of doing so. The firm is said to be revenue efficient when the firm can generate maximum revenue from the given output whereas the amount of output which can be produced that again depends on the cost efficiency nature of the firm. Hence, the efficiency of a firm can be traced from three different viewpoints. Optimal utilization of inputs are related to the cost efficiency nature of the firm. Once the output is produced, the next important decision is to generate maximum revenue from the output already produced i.e. revenue efficiency comes just after the concept of cost efficiency. Finally combining these two efficiency concepts, the concept of profit efficiency is the most important one for any firm to survive in the long term.

**Review of literature:**

Nguyen et al. (2019) investigated the productivity and cost efficiency of Vietnamese manufacturing firms covering the period from 2010 to 2016 using stochastic frontier analysis (SFA). The results inferred that firms belonging to competitive environment, larger firms with longer history and firms with more expert-orientation perform better than their counterparts. The study also suggested to put emphasis on R &D and technological up gradation for enhancing the productivity of Firms. Fahmy et al. (2018) used a stochastic frontier analysis (SFA) approach to evaluate the levels of efficiency and inefficiency among the 1,010 textile manufacturing enterprises in Malaysia in 2015. Empirical findings indicated that businesses are technically efficient to a high degree. The result also indicated that the level of inefficiencies can be reduced by the factors like capital-labour ratio, the educational level ratios, wages rate, ICT expenses etc. Workforce efficiency, employee motivation by rewards and expansion of cooperation and appointing expert in this sector may improve the efficiency of this sector. Fahmy et al. (2017) studied the technical efficiency of 130 transport manufacturing firms in Malaysia for 2010 using the stochastic frontier analysis (SFA) approach suggested a moderate level of efficiency. Rates and information and communication technology costs were identified as determining or influencing factors. The study also showed that boosting pay and communication costs increases employee motivation and strengthens the production market web. Idris et al. (2019) studied the sources of efficiency and inefficiency of 118 firms belonging industry in Malaysia covering the period of 2015 using stochastic frontier Analysis (SFA) approach. The empirical result showed high level of technical efficiency. The findings inferred that salary rates alleviate the level of inefficiencies. This research also recommended that companies raise salaries as a means of boosting employee engagement and fortifying the production market web. Silambarasan et al. (2018) used Data Envelopment Analysis to study small manufacturing enterprises in India (DEA). They also used CRS and VRS, two economic techniques. Their study compared pre- and post-merger firm efficiency. Cost, revenue, and profit efficiency for VRS were deemed statistically negligible. But they found that CRs boost revenue and profit efficiency. The results also demonstrated a considerable mean change between pre- and post-merger cost, revenue, and profit efficiency. Yadav et al. (2022) examined relationships among company size, growth, profitability as well as macroeconomic factors like GDP growth and business cycles. Between 1995 and 2016, a panel dynamic fixed effects model was used to evaluate 12,001 non-financial listed active enterprises in 12 industrial and emerging Asia-Pacific economies. The association between small, medium, and large enterprises' total assets, net sales, and MCR has also been examined. The profitability coefficient was marginally positive. Size and growth had opposite effects on profitability. While initial profitability improved with company development, gains in profit rates eventually dropped as size increased, demonstrating that great scale begets inefficiency. Profitability associated negatively with leverage ratio and asset tangibility. Both the business cycle and stock market growth boost corporate profitability. Forgione and Migliardo (2022) examined the factors influencing small to medium-sized exporting Italian businesses' technological efficiency (SMEs). They discovered that profit efficiency falls as export intensity rises, unless and until a firm reaches a medium scale. Their research also reveals another pattern that, regardless of the size of the company, the link between a company's profit and cost-efficiency rating is not monotonic. Debt sustainability was also found to have a positive correlation with expenses but a negative correlation with efficiency and profit. Additionally, they discovered that for medium-sized businesses, increased financial costs result in better profit efficiency, but this has the opposite effect for smaller businesses. Alarussi and Gao (2021) used financial ratios to estimate Chinese enterprises' profitability. Eight characteristics were empirically studied for their relationships to profitability: liquidity, intangible assets, working capital, business leverage, firm size, and corporate efficiency. The collection includes 100 2017-2019 firms. Profitability was linked to firm size, working capital, and intangible assets. A company's profitability and cost of capital improve with positive working capital. Intangible assets can be maintained cheaply, improving profits. Results demonstrated a negative link between liquidity and profitability, highlighting the necessity to maximize cash on hand. Both debt and leverage ratios were connected with ROA, but only debt with EPS. These results supported the inverse U-shaped link between profits and leverage expected based on perceived borrowing benefits and expenses. In the context of India, Neog and Sahoo (2021) provided a paper on the variables influencing self-employment performance in emerging nations. The India Human Development Survey (IHDS) panel data for the years 2004–2005 and 2011–2012 were used in the

study. They analyzed the variables that influence profits using ordinary least squares (OLS) regression, which accounts for endogeneity and selection bias in the earnings function. The findings demonstrated that a firm's performance is significantly influenced by its human resources, market environment, role models, and capital restrictions. The profitability of enterprises does not, however, seem to be significantly impacted by social media. Furthermore, it has been found that enterprises run by women and owned by socially excluded groups earn much less money. In order to understand the profitability performance, the influences on profitability based on the DuPont Analysis, and the effect on the firm's value, Aryantini and Jumono (2021) conducted a study. Twenty firms were selected from the LQ-45 index of the Indonesian Stock Exchange (IDX) during the years of 2014 and 2018. The study of panel data via the GLS Regression test was performed by the data analysis tools. The growth sales ratio had a negative impact on return on equity (ROE), while financial leverage multiplier, net profit margin, and total assets turnover all had favorable impacts. Both return on equity and business sector had substantial positive effects on the correlation with company value. In order to maximize product results, sales, net income, profit rate, and return on equity—and thereby increase investors' and the market's trust in the firm—management must be more efficient and effective in managing the company's operational activities and minimizing the operational costs and other costs, both in the assets and debt usage. The Vietnamese oil and gas sector was studied by Bui et al. (2021), who looked into the interrelationships between several factors affecting firm profitability. The Vietnam Stock Exchange collected 203 samples from 29 different companies between 2012 and 2018. Independent variables in this analysis were the ratio of fixed to total assets (FA), dividend payout (DIV), financial leverage (FL), exchange rate (EXR), and government ownership (GOV), and the return on assets (ROA) was used to characterize profit (ROA). Results showed that ROA is affected by four factors: leverage, government ownership, dividends, and exchange rate. Both government ownership and dividend payments boost ROA, but leverage and exchange rate have the opposite effect. The study found that a company's profit might be hurt by a number of factors, including a high debt ratio in its capital structure and the unfavorable effect of an exchange rate. Using data collected from a survey administered in Tasmania between 2007 and 2008, Marsden and Sibly (2020) analyze what elements are most important to B&B owners when it comes to turning a profit. They found that by switching to online sales, their earnings improved. Additionally, enterprises with a high star rating and those that make a larger percentage of their sales directly to customers have a better profit margin than those whose owner-operators are motivated by lifestyle considerations. Kotey et al. (2020) explore the factors of profitability under different corporate ownership forms using annual data from 23 Ghanaian companies between 2003 and 2013. The authors use static models (OLS, Random Effects, and 3-Stage Least Squares) to show that a company's ownership structure affects its profitability, even when profit determinants vary across listed businesses. To better understand the elements that influence the liquidity of Indian listed firms, Al-Homaidi et al. (2020) conducted an empirical study. From 2010 to 2016, the researchers used (pooled, fixed, and random) effect models on a panel of 2154 Indian listed enterprises that were actively participating in the Indian market. Liquid assets to total assets is the assessment of liquidity (LQD) for Indian firms as opposed to bank size, capital adequacy, profitability, leverage, and company age as internal factors. Pieri and Verruso (2019) used the dynamic panel technique to examine the profitability of 140 Italian household appliance businesses between 2007 and 2016. Size, financial structure, and market share also affect profit rates. Managers and policymakers should analyze the home appliances industry's maturity to make smart judgments and devise effective interventions that will sustain the sector's global competitiveness. Lee and Torm (2017) studied the effects of social security, a formality factor, on Vietnamese SMEs. According to enterprise census statistics from 2006 to 2011, firms that boost social security coverage by 10% see a revenue increase of 1.4 to 2.0% per worker and a profit increase of up to 1.8%, depending on the firm's longevity. Given the discrepancy between "investment" (in social security contributions) and "returns" (higher company performance), initial social insurance subsidies for small businesses could improve program participation. Since the Indian pharmaceutical and drug sector spends little on R&D, Tyagi and Nauriyal (2017) investigated firm-level predictors of profitability in this field. Inflation-adjusted panel data from 2000-2013 were analyzed with cluster standard errors. Higher export intensity, A&M intensity, firm market dominance, and a more rigorous patent regime also boosted profitability. R&D intensity and raw material imports have a negative, statistically significant impact on enterprises. According to the report, firms should optimize their operational costs, advertising and marketing budgets, and export focus. This study analyzes a current dataset to compare pre- and

post-TRIPS profitability in the Indian pharmaceutical business. Batra and Kalia (2016) explored firm-specific drivers of corporate profitability. It analyzed the link between firm-specific factors such as size, liquidity, and capital structure including the financial leverage of the firm considering fifty BSE-listed firms. Accordingly, multiple regression and correlation analysis were used to examine the relationship between firm-specific factors and corporate profitability. The study documented a strong link between business size and profitability. Furthermore, the level of investment positively influenced firms' profitability. However, it established a negative relationship between debt-equity and firms' profitability. Monik and Sirec (2015) study the link between a business's profitability and firm size, leverage ratio, and labor expenses using a sample of 782 Slovenian fast-growing firms between 2008 and 2009. Profitability is negatively linked to firm size and leverage ratio, but positively to labor expenses. The leverage ratio's negative coefficient shows that the more debt used as a source of financing, the lower the profits, and the positive link between labor costs and profitability says that the higher the labor cost, the higher the profit of fast rising firms. Filzmoser et al. (2012) compared profit persistence between 1950 and 1966, 1967 and 1983, and 1984 and 1999. This study allows enterprises to enter and leave the sample, providing a more full view of the US economy during the past half-century. The statistics suggest a consistent increase in competitiveness since the 1960s and 1980s. Size, sector growth, risk, advertising, and exports appear to predict profit persistence. From 1993 to 2001, Goddard et al. (2005) used new methods in panel data econometrics to investigate what factors affect a company's profitability in the service and industrial sectors in the United Kingdom, Belgium, France, and Italy. In the paper, we built empirical models using data from the fields of strategic management, industrial economics, accounting, and finance. Despite the established negative correlation between company size and profitability, we also discovered a positive correlation between profitability and market share, which was seen to be more apparent in the manufacturing sector than in the service sector. There was a negative relationship between a company's gearing ratio and its profitability, but it was also discovered that more liquid companies tend to be more profitable overall.

From the above-mentioned brief review of literature, it is evident that there is a scope to study the determinant of cost, revenue and profit of firms. Assume this study will make an effort to address such a gap in the current literature. Accordingly, this study has attempted to investigate the determinant of cost, revenue and profit of selected firms under the Consumer Goods industry listed in BSE.

## **Data & Methods**

### ***Data***

The study focused on examining the determinant of cost, revenue and profit level for the firms the under consumer goods industry listed in BSE during 2011 to FY 2021 (i.e. w.e.f 1-4-2011 to 31-03-2021). To conduct the analysis, the firms' level data has been extracted from CMIE ProwessIQ Database. From the said data base the information related to BSE listed firms under consumer goods industry was extracted. In first stage data related to 1825 firms were found. After which giving the constructions of balance panel using the R Package "dplyr", all the firms with at least one sell having more information were deleted ultimately we end the with a balanced panel of 34 firms. Further the outlier test has been performed to eradicate the problems of influencing variables on the estimation process. For each selected independent and dependent variables, the data corresponding to the  $(Q1-3*IQR, Q3+3*IQR)$  only considered after ignoring the extreme lower outlier and extreme upper outlier values, respectively.

### ***Variable Descriptions***

In this study considers cost, revenue and profit as dependent variables, whereas labour, capitals and materials and energy are taken as the inputs to determine the level of cost, revenue and profit in the first stage. After which, this study determine cost, revenue and profit efficiencies based on Stochastic Frontier analysis. Finally, the return on assets, return on capital used, and return on net worth are each regressed independently to determine the cost, revenue, and profit efficiency. These are described in detail below:

*Cost:* From CMIE ProwessIQ data base total expenses of which of the selected firm and taken as a proxy of cost.

*Revenue:* The sales data with selected firm and taken as the proxy for revenue of the firm.

*Profit:* The data on profit after tax is taken as a proxy and taken as a profit.

*Labour:* Actually the item “Labour” is used to denote the cost relate to labour inputs. In CMIE ProwessIQ data base, it is appeared as salaries, wages, bonus ex gratia pf and gratitude’s paid.

*Capital:* There is no universal accepted method to calculate the capital employed. From CMIE ProwessIQ data base, there are two options: total capital and fully paid up capital. Since, this study considers the firms listed under BSE, the fully paid up capital may be the best option to consider as capital.

*Material:* These variable captures the total raw material purchased and used. Hence, From CMIE ProwessIQ data base this study aggregate the items under short term raw materials, packing materials and stores and short term finished and semi – finished goods to represent materials.

*Energy:* The expenses on fuel, power and energy is taken as “energy” and directly extracted from the said data base.

## **Methods**

In this research, the Methods are presented corresponding to the objective. These are presented in the following subsections.

### *Panel Regression*

As mentioned above objectives this study is to investigate the determinant of cost revenue and profit of selected firms under Consumer Goods based industry listed in BSE. During 2021-2021 using a panel data analysis which contains both a cross-sectional and a time series dimension.

General panel regression based on the above mention explanatory variables may be represented as

$$Y_{it} = \beta_0 + \beta_1.x_{1it} + \beta_2.x_{2it} + \dots + \beta_n.x_{nit} + \alpha_i + U_{it}$$

Following (Baltagi, et al, 2005) the present study consider the following panel regression model.

$$Y_{it} = \alpha + \beta X_{it} + u_{it} \dots \dots \dots (1)$$

Where  $Y_{it}$  is the dependent variable in year  $t$ ;  $X_{it}$  denotes the determinants of the dependent variables  $i$  in the year  $t$ ,  $\alpha$  is a constant,  $u_{it}$  in the error term, and  $\beta$  the firm parameters related to determinants of the dependent variable.

$$u_{it} = \mu_i + v_{it} \dots \dots \dots (2)$$

Where  $\mu_i$  denotes the unobservable individual-specific effect and  $v_{it}$  denotes the remainder disturbance. Fixed effects and random effects models are then used to estimate the panel data model. In fixed effects model the  $\mu_i$  are assumed to be fixed parameters to be estimated and the remainder disturbances stochastic  $v_{it} : IID(0, \sigma_v^2)$ . The  $X_{it}$  are assumed independent of the  $v_{it}$  for all  $i$  and  $t$ . Since the inside transformation eliminates time-invariant variables, a Fixed Effect (FE) estimator cannot be used to calculate their impact. FE has less degree of freedom and takes into calculation only the variation ‘within’ units, not between

units. An advantage of Random Effects (RE) is that we can estimate individual and time invariant variables. RE model is suitable as differences across economic groups (entities) have some influence on our dependent Variable.

**Results & Discussion**

The descriptive statistics of output and input used in the study are presented below as a 5-point summary statistics for the selected firms during 2011-2021. The left panel of the table describes the three different outputs that is cost, revenue and profit whereas the right part of the panel describes the inputs used the study.

**Table 1: Descriptive Statistics of Outputs and Inputs used in the Study**

		Outputs			Inputs			
		Revenue	Profit	Cost	Labour	Capital	Material	Energy
2011	N	34	34	34	34	34	34	34
	Min	6.87	0.12	6.67	0.61	0.33	1.36	0.07
	Max	1852.82	47.26	2026.75	58.95	50.00	344.35	15.97
	Mean	277.80	10.54	280.98	13.70	11.26	62.99	2.78
	SD	400.41	11.38	422.27	15.80	10.88	92.19	3.51
2012	N	34	34	34	34	34	34	34
	Min	7.95	0.23	7.80	0.72	0.33	1.66	0.08
	Max	2115.50	41.17	2096.55	62.69	50.00	415.37	19.59
	Mean	306.81	9.71	305.84	15.48	11.73	69.63	3.05
	SD	439.14	10.72	440.55	16.81	10.87	101.54	4.00
2013	N	34	34	34	34	34	34	34
	Min	8.33	0.12	8.38	0.73	0.33	0.96	0.06
	Max	2460.35	43.07	2488.02	60.76	50.00	514.89	24.27
	Mean	367.80	11.88	370.23	17.04		81.12	3.88
	SD	543.90	11.79	553.74	17.14	10.96	122.39	4.93
2014	N	34	34	34	34	34	34	34
	Min	14.10	0.50	13.60	0.79	0.33	0.83	0.08
	Max	2686.96	53.16	2768.20	90.46	50.00	649.67	24.23
	Mean	420.07	15.77	414.24	20.48	12.38	89.20	4.54
	SD	597.11	15.46	596.95	22.13	11.20	132.97	5.65
2015	N	34	34	34	34	34	34	34
	Min	23.31	0.34	21.09	1.05	0.33	1.81	0.08
	Max	2873.81	77.76	3007.40	105.44	50.00	801.40	24.44
	Mean	461.42	18.13	465.22	23.04	12.49	107.66	4.89
	SD	650.42	18.16	681.35	25.10	11.26	174.93	6.00
2016	N	34	34	34	34	34	34	34
	Min	23.56	0.42	21.10	1.59	0.33	1.56	0.08
	Max	2852.03	58.71	3018.95	103.30	50.00	886.36	28.18
	Mean	467.90	17.03	461.92	23.83	12.68	114.09	4.85
	SD	658.90	15.32	667.77	23.89	11.13	178.36	5.96
2017	N	34	34	34	34	34	34	34
	Min	30.55	0.60	27.03	1.78	0.33	1.76	0.08
	Max	2958.59	81.33	2900.33	111.08	50.00	877.78	27.76
	Mean	513.70	19.43	503.04	25.99	12.71	119.25	5.04
	SD	738.29	21.57	732.96	25.86	11.19	185.87	6.28
2018	N	34	34	34	34	34	34	34
	Min	28.11	0.65	22.85	2.48	0.33	2.47	0.27
	Max	3144.91	100.15	3697.43	129.04	50.00	1081.02	33.97
	Mean	533.33	19.84	538.12	28.52	13.57	130.96	5.42
	SD	785.49	23.90	833.94	28.73	11.58	211.91	7.17
2019	N	34	34	34	34	34	34	34

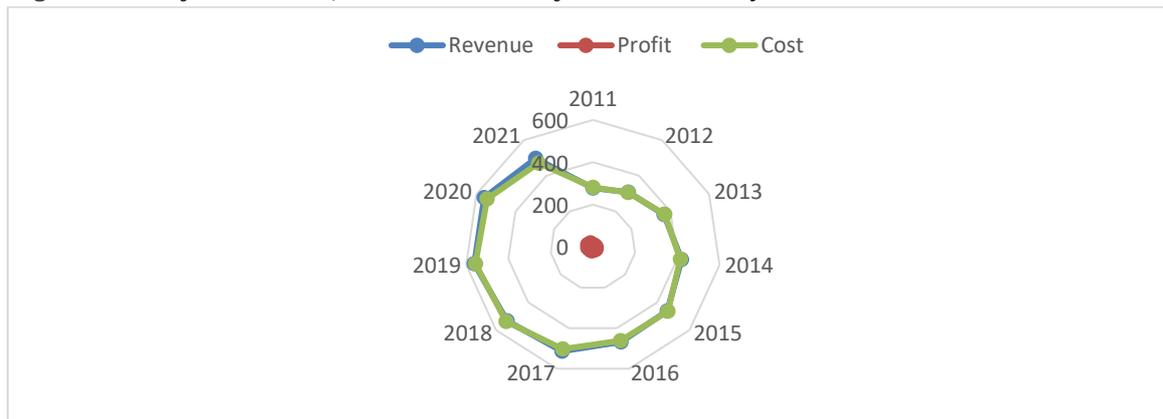
	Min	33.95	1.22	26.82	3.05	0.33	3.40	0.24
	Max	3096.99	109.02	3251.09	152.61	50.00	1031.75	45.00
	Mean	561.62	23.50	556.42	31.28	13.52	143.87	5.89
	SD	772.81	27.92	785.26	32.43	11.53	218.87	8.83
2020	N	34	34	34	34	34	34	34
	Min	33.86	0.07	27.87	3.37	0.33	3.17	0.18
	Max	3006.72	127.37	2922.91	158.33	50.00	1054.44	41.80
	Mean	560.82	26.92	545.16	33.13	13.49	154.55	6.14
	SD	774.14	28.74	786.07	32.57	11.51	219.24	8.83
2021	N	34	34	34	34	34	34	34
	Min	21.17	0.04	20.18	3.18	0.33	4.01	0.14
	Max	2832.65	112.94	2669.54	159.92	50.00	849.26	23.24
	Mean	496.92	21.81	471.32	30.99	13.54	144.99	4.89
	SD	672.40	26.56	641.59	32.64	11.64	214.03	5.93

Source: Researcher's calculation based on CMIE ProwessIQ database

Notes: 'N' denotes the number of firms used in the study [Figures are in INR "Crores"]

After which the trend of mean of cost, revenue and profit over the study period that is during 2011-2021 is presented as Radar chart. Then, the trend of means of inputs used in the study are presented as figure 2. It may be noted that for better understanding the chart is prepared using - Logarithmic scale. From this chart it is evident that capital used by the firms are more or less fixed over the study period.

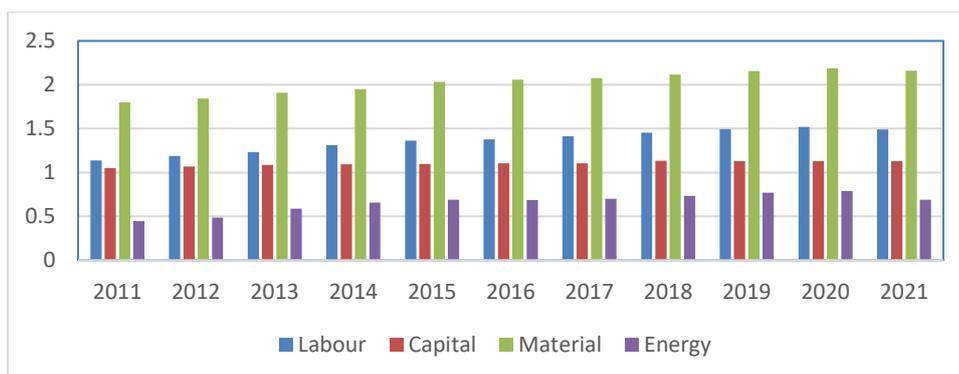
Fig 1: Trend of Mean Cost, Revenue and Profit over the Study Period



Source: Prepared by the researcher

For remaining three inputs that is labour, material and energy the trend is increasing over time. Moreover material cost supersedes all other inputs causes in each period.

Fig 2: Trend of Mean of Inputs (Logarithmic)



Source: Prepared by the researcher

*Determinants of Cost, Revenue and Profit Level*

This section deals with the investigation of determinants of Cost, Revenue and Profit. This study first run a Pooled OLS model and F test is applied to decide either fixed effect or a pooled ordinary least square regression (OLS) model is appropriate, with the null hypothesis of there is no significant firm-specific effects. If the resultant p-value < 0.05 then it is clear from the rejection of the Pooled OLS model that there are important firm-specific effects, suggesting that omitted variable bias can result from overlooking unobserved heterogeneity. With the pooled OLS estimates being incorrect and biased, the fixed effects model might be used instead.

The Hausman test is utilized to evaluate whether fixed effects are superior to random effects under the null hypothesis that the random effects model is the preferable model and that individual effects are uncorrelated with any model regressor. By rejecting the null hypothesis at the 1% level of significance, the fixed effects model is valid since it shows that the fixed effects are specific to the companies. In light of this, we opt to dig deeper by using a fixed effects model. On being affirmed about the estimation technique for the present study, this study further considers the usual specification tests like presence of heteroskedasticity, serial autocorrelation and cross-sectional dependence. Finally, the chosen model is again performed with robust estimation technique to correct the bias. The Estimated Regression summary results for Profit, revenue and Cost are presented below.

*Determinants of Profit Level*

To determine the level of profit, this study first apply the two pooled OLS model the resultant P-Value is < 2.2e-16 with adjusted R- square = 0.5408 and  $F(4,336) = 110.8$ . Hence this model is ok. Then to compare it with the fixed effect model to examine the appropriateness of panel setting, this study further applied the F- test. The resultant in p- value < 2.2e-16. To prove that OLS model cannot be accepted, then the fixed effect model is compared to Random Effect Model, Hausman test is applied the p-value 0.2681 > 0.05 indicates that Random Effect Model cannot be rejected. After performing the usual specification test, to rectify the estimation bias the Robust Estimation Technique is applied and the result is presented below:

**Table 2: Regression Results of Determinants of Profit**

Coefficients	Estimate	Std. Error	t value	Pr(> t )	Decision
Labour	0.381	0.133	2.865	0.004***	Significant
Capital	0.405	0.143	2.829	0.005***	Significant
Material	0.004	0.020	0.196	0.845	Insignificant
Energy	1.268	0.365	3.469	0.001***	Significant
Adj. R-Squared: 0.36118, F-statistic: 214.89 on 4 and 336 DF, p-value: < 2.22e-16					

Source: Estimated by the Researcher

Note: ‘\*’, ‘\*\*’ and ‘\*\*\*’ signifies significant at 10%, 5% and 1% level, respectively.

From the above table it is evident that the profit level of the firms during the study period is mainly depending on Labour, capital and Energy.

*Determinants of Revenue Level*

To determine the level of revenue, this study first apply the pooled OLS model and the resultant p-value is < 2.2e-16 with adjusted R- square = 0.8878 and  $F(4,336) = 738.9$ . Hence this model is ok. Then to compare it with the fixed effect model to examine the appropriateness of panel setting, this study further applied the F- test. The resultant p- value < 2.2e-16. It proves that OLS model cannot be accepted, then the fixed effect model is compared to Random Effect Model, Hausman test is applied and the p-value is < 0.05 indicates that Random Effect Model cannot be accepted. After performing the usual specification test, to rectify the estimation bias the Robust Estimation Technique is applied and the result is presented below. From the below table it is evident that the revenue level of the firms during the study period is mainly depending on Capital and Material.

**Table 3: Regression Results of Determinants of Revenue**

Coefficients	Estimate	Std. Error	t value	Pr(> t )	Decision
Labour	2.908	2.425	1.199	0.231	Insignificant
Capital	17.843	8.557	2.085	0.038**	Significant
Material	1.520	0.402	3.783	0.000***	Significant
Energy	12.552	14.145	0.887	0.376	insignificant
Adj. R-Squared: 0.62398					
F-statistic: 163.994 on 4 and 336 DF, p-value: < 2.22e-16					

Source: Estimated by the Researcher

Note: ‘\*’, ‘\*\*’ and ‘\*\*\*’ signifies significant at 10%, 5% and 1% level, respectively.

### Determinants of Cost Level

To determine the level of Cost, this study first apply the polled OLS model and the resultant P-Value is <2.2e-16 with adjusted R- square= 0.8946 and F(4,36) =792.9. Hence this model is ok. Then to compare it with the fixed effect model to examine the appropriateness of panel setting, this study further applied the F- test. The resultant p- value<2.2e-16. It proves that OLS model cannot be accepted, then the fixed effect model is compared to Random Effect Model, Hausman test is applied and the p-value is <0.05 indicates that Random Effect Model cannot be accepted. After performing the usual specification test, to rectify the estimation bias the Robust Estimation Technique is applied and the result is presented below:

**Table 4: Regression Results of Determinants of Cost**

Coefficients	Estimate	Std. Error	t value	Pr(> t )	Decision
Labour	2.096	2.212	0.948	0.344	Insignificant
Capital	15.477	7.536	2.054	0.041**	Significant
Material	1.703	0.381	4.468	0.000***	Significant
Energy	12.252	13.176	0.930	0.353	Insignificant
Adj. R-Squared: 0.61972					
F-statistic: 161.214 on 4 and 336 DF, p-value: < 2.22e-16					

Source: Estimated by the Researcher

Note: ‘\*’, ‘\*\*’ and ‘\*\*\*’ signifies significant at 10%, 5% and 1% level, respectively.

From the above table it is evident that the revenue level of cost of the firms during the study period is depending on Capital and material.

### Discussions

During 2011 to 2021 the logarithmic trend of mean of inputs shows an increasing trend for all the inputs. The logarithmic trend of mean of ratios rather is not monotonous over the study period. From 2011 to 2018 and 2019 the curve is U shaped, again the same trend is continuing during 2018 and 2021. Almost all the ratios considered the study reached their minima during 2016. The trend of mean of cost efficiencies shows that the level of revenue and profit efficiencies are more or less same and higher than that of cost efficiency score.

From the analysis of trend of profit efficiencies, it is found that majority of the firms’ score lies within the interval 0.25 and 0.75. However, the trend of revenues efficiency, profit of the firm shows that majority of the firms exhibit the efficiency score greater than 0.50, the same trend is continuing for the cost efficiency score of the firms also. The Robust regression results shows that except material cost, labour capital and energy cost are the statistically significant determinants of profit level of the firm during the study period. when the same VCE Robust regression results are interpreted it is found that except capital, labour materials and energy cost are statistically significant determinants of revenue level of the firms, during the study period. The result is more interesting when the determinants of cost are estimated using the VCE Robust Regression techniques, all the inputs are statistically significant determinates of cost.

### Conclusions

The success of any firm depends on three important functions – cost, revenue as well as profit. In reality it may happen that a firms experiencing high revenue complied with in that case it will hardly show any positive profit.

As a result, the available capital may run out as that firm may go out of business over time. Hence it is the economic imperative to simultaneously manage cost and revenue such that the profit is maximised. The present study has attempted to understand and interpret the most significant determinants of cost revenue and profit efficiency of consumer goods based firms listed under BSE during 2011-2021. In the first stage, the relevant data are extracted from the CMIE ProwessIQ database which consists of 1825 firms later in the data cleaning process firms with at least one missing data, are removed to make the panel balanced. After which corresponding to every variable selected for the study, Outliers are removed to avoid the problem of influential observations. Before running the regressions, the usual specification tests are performed to make the estimation unbiased. Finally only 34 numbers of firms were eligible to be the sample firms on the basis of which results are derived, interpreted and conclusions are drawn. The results so derived reveals that labour, capital and energy cost are the significant determinants of profit level of a firm but materials costs are not statistically significant determinants of profit level of that firm. Again labour, material and energy cost are the significant determinants of revenue level of the selected firm during the study period. But under costs labour, capital, material and energy are the statistically significant inputs to determine the level of costs during the study period.

There is always room for more research and development because no study ever collects every possible response. The scope of this research goes much beyond the three profitability ratios chosen for this analysis, therefore there is room to expand and refine it by incorporating other relevant aspects.

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