

DETERMINANTS OF PROFITABILITY: AN EMPIRICAL STUDY OF SMEs IN INDIA

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INTRODUCTION:

Small & medium-sized enterprises perform a crucial function in the Indian economy, causative necessary to exports, GDP, poverty alleviation, and holistic development. To promote and ensure sustainable growth of Indian SMEs, (Prasad & Mondal, 2020) It is imperative to investigate the connections between firm-specific factors as well as the financial performance of these enterprises. Thriving in a dynamic business environment poses a considerable challenge, particularly for SMEs (Singh et al., 2016). However, SMEs are instrumental in driving economic growth, employment generation, poverty reduction, and inclusive development, especially in developing nations. In recent years, the assessment of financial performance and its determinants has garnered substantial attention within the research community. Indian SMEs face numerous obstacles, including financial constraints, marketing barriers, limited R&D, technological limitations, and the COVID-19 pandemic effect. (Bhat & Meher, 2020; Shivganga C. Maindargi & Pritam P. Kothari, 2020). The function of SMEs in the Indian economy is significant and thus it is necessary to research the determinants of financial performance of Indian SMEs.

LITERATURE REVIEWS AND HYPOTHESIS DEVELOPMENT

Existing literature suggests that a range of firm-level characteristics can influence the profitability of SMEs. Leverage, firm size, liquidity, and asset tangibility are some of the key factors that have been explored in before research (Ahinful et al., 2023; Baker et al., 2019). Existing research in Indian context has extensively focused on empirical analysis of SMEs (Prasad & Mondal, 2020). SMEs are impacted by the dynamic process of economic development on a national and worldwide scale, as well as at the macro and micro levels. (Bekeris, 2012). According to the data, working capital components and profitability have a positive as well as statistically significant association, meaning that raising each variable improves act in terms of ROE (return on equity) as well as ROA (return on assets). (Alvarez et al., 2020). Furthermore, studies have investigated the effect of profitability along with firm-specific properties on the growth of SMEs across different industries,

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demonstrating that profitability and size have a positive & notable link to growth, while age has an adverse & notable relationship, and industry affiliation also affects SME growth(Slávík et al., 2023).

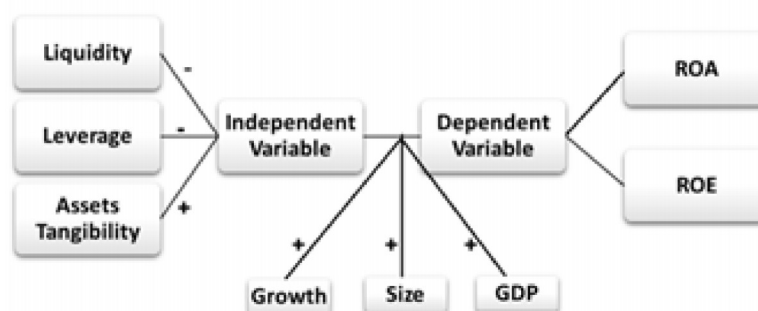


Figure 1: Framework of the study

Liquidity:There is an inverse relationship between liquidity and profitability, which is consistent with existing literature. SMEs with higher liquidity ratios may not be utilizing their resources efficiently, leading to a negative impact on profitability. (Bakhtiari et al., 2020). Higher liquidity provides SMEs with the flexibility and resources to capitalize on growth opportunities, potentially enhancing their profitability. SMEs with ample liquidity can invest in new projects, technologies, and innovative initiatives that can improve their competitiveness and long-term financial performance.(Kumarjay&Swaty, 2024).

H01: There is an inverse relationship between the liquidity and profitability of SMEs in India.

Leverage:The negative association between leverage and profitability suggests that highly leveraged SMEs in India face higher interest expenses and debt servicing obligations, which can significantly impact their overall profitability and financial performance. The negative association between leverage and profitability may not always hold true for SMEs in India.(Singh et al., 2016). While highly leveraged firms can face higher interest expenses and debt servicing obligations, the strategic use of leverage can also enhance profitability by providing access to necessary capital for investments, expansion, and innovation.(Margaretha&Supartika,2016). Depending on the specific circumstances and the way leverage is managed, it is possible for SMEs to leverage their capital structure to improve their overall financial performance and profitability.(Demirgüç-Kunt&Maksimovic, 1998). This finding underscores the importance for SMEs to carefully manage their capital structure, striking a balance between liquidity and leverage, to optimize their profitability and monetary performance.

H02: There is a negative association between the leverage and profitability of SMEs in the Indian context.

Asset Tangibility: The greater the proportion of tangible assets, such as land, buildings, and equipment, the more profitable the SMEs tend to be (Slávik et al., 2023). This is due to tangible assets being utilized as the collateral to secure financing, which can improve SMEs' access to capital and enable them to invest in growth opportunities and operational efficiency. (Eggink, 2021).

H03: There is a positive correlation between the asset tangibility and profitability of SMEs in India.

Growth Opportunities: The literature reveals a positive relationship between growth opportunities and profitability, indicating that SMEs with better growth prospects are likely to invest in novel projects, methodologies, and innovative initiatives that can elevate their overall competitiveness, productivity, and profit (Prasad & Mondal, 2020;).

H04: There is a positive relationship between the growth opportunities and profitability of SMEs in India.

Firm Size: Larger SMEs often have advantages over smaller counterparts, such as greater economies of scale, stronger bargaining power with suppliers and customers, and better access to financial resources and capital markets (Meghana Ayyagari et al., 2011). These factors can contribute to enhanced profitability for larger SMEs compared to their smaller peers. The findings show that firm size is a notable element of profitability for SMEs in the Indian context. As SMEs grow in size, they can leverage their scale, market power, and access to capital to improve their overall financial performance and profitability. (Shivganga C. Maindargi & Pritam P. Kothari, 2020). This highlights the importance of supporting the growth and expansion of SMEs in India, as larger firms are more likely to achieve higher levels of profitability and be responsible for the environmental growth of the country.

H05: There is a direct positive relationship between the firm size and the profitability of SMEs in India.

Gross Domestic Product: The results indicate a clear positive correlation between India's small and medium-sized businesses' profitability and the GDP (gross domestic product) of the country. It is also important to take into account that corporate earnings and GDP are directly correlated, but the study will determine whether or not profits and profitability are directly correlated. (Bekeris, 2012).

H06: There is a direct positive relationship between the GDP and the profitability of SMEs in India.

There is considerable research on the factors influencing financing decisions and capital structure in India, with mixed results. Some factors show both positive and negative effects depending on the firm's circumstances. In response to these mixed findings, this study develops a hypothesis to examine the relationship between various financial factors

and capital structure decisions, considering both positive and negative predictions for key variables. This approach reflects the complexity and contradictions in previous research, where factors influencing capital structure may affect firms differently. By integrating these hypotheses into a detailed model, the study aims to test the relationships between financial factors and capital structure, providing clearer insights into how these factors interact in Indian SMEs. This will offer a deeper understanding of the positive and negative influences that shape firms' financing decisions.

AIM OF THE STUDY

This study aims to identify the key factors affecting the profitability of Small and Medium Enterprises (SMEs) in India. It looks at how factors like liquidity, leverage, growth, firm size, GDP, and asset tangibility impact SME profitability. Understanding these factors is important for creating strategies and policies to support the growth and success of SMEs, which are crucial to India's economy.

METHODOLOGY

This study analyzes the factors influencing the profitability of selected SMEs in India, specifically focusing on textile manufacturing companies within the MSME sector. It uses secondary data, including audited reports, balance sheets, and profit and loss statements from 17 SMEs in Tamil Nadu, covering financial years 2011-2020. Additional data was sourced from official records, reports from the CAG and RBI, the Economic Survey, and government websites. The study applies panel data regression analysis, comparing random-effects, pooled OLS, and fixed-effects models. Key variables such as growth, liquidity, leverage, firm size, GDP, and asset tangibility are assessed, with profitability measured using ROA and ROE. The analysis aims to identify the most significant factors impacting SME profitability.

$$ROA = \alpha + \beta_1 (LIQ) + \beta_2 (LEV) + \beta_3 (GROWTH) + \beta_4 (SIZE) + \beta_5 (GDP) + \beta_6 (TAN) + e \dots (1)$$

$$ROE = \alpha + \beta_1 (LIQ) + \beta_2 (LEV) + \beta_3 (GROWTH) + \beta_4 (SIZE) + \beta_5 (GDP) + \beta_6 (TAN) + e \dots (1)$$

Empirical Results and discussions: Table 1 discusses the dependent & independent variables' mean, median, along with standard deviation values as they relate to target estimate.

Table1. Summary of Descriptive Statistics

The below table presents the descriptive statistics for various financial and economic variables, summarizing their central tendencies and distributions. Liquidity exhibits moderate variability, with a mean of 0.668 and a coefficient of variation of 0.802, indicating less than one unit of variation per unit of mean liquidity. The distribution has a moderate positive skewness and slight kurtosis, suggesting a somewhat right-skewed distribution with

relatively normal tails. Leverage demonstrates substantial fluctuation, with an average ratio of 11.626 and a coefficient of variation of 0.903. The distribution is right-skewed with moderately heavy tails. Growth rates are highly volatile, with a negative mean of -0.170 and an extremely high coefficient of variation. The distribution is heavily left-skewed with extreme outliers, as evidenced by the negative skewness and extremely high kurtosis. Firm size exhibits relatively low variation, with an average of 2.062 and a low coefficient of variation. The distribution has a slight left skew and a fairly normal kurtosis. GDP growth has a mean of 2.030 and low variability, as indicated by the coefficient of variation. The distribution has a slight negative skewness and low kurtosis, suggesting a distribution with a few smaller values and thinner tails. Tangibility has an average of 0.464 and relatively low variation, with a skewness close to zero and a kurtosis indicating a distribution with lighter tails than normal.

Variable	Mean	Min	Max	Std. Dev.	C.V.	Skewness	Kurtosis
Liquidity	0.668	0.000	2.874	0.536	0.802	1.299	2.246
Leverage	11.626	0.000	55.957	10.501	0.903	1.535	2.882
Growth	-0.170	-14.182	0.674	1.255	7.377	-9.538	100.930
Size	2.062	-0.795	3.473	0.712	0.345	-0.633	0.902
GDP	2.030	-0.420	3.529	0.844	0.415	-0.963	0.608
Tangibility	0.464	0.000	0.964	0.197	0.424	0.279	-0.304
ROA	0.164	-0.493	9.947	1.015	6.194	8.879	78.568
ROE	-0.118	-16.558	3.493	1.464	12.313	-9.415	103.38

The profitability measures, ROA and ROE, display significant variability. ROA has a mean of 0.164 and a high coefficient of variation, with a right-skewed distribution and significant outliers. ROE has a negative mean and a very high coefficient of variation, with a heavily left-skewed distribution and significant outliers.

Determinants of Profitability - Return on Assets: Three distinct regressions models-FE (Fixed Effects), Pooled Ordinary Least Squares, & RE (Random Effects) have been applied in this analysis to look at the factors that affect profitability. The key findings reveal that liquidity does not have a statistically significant effect on effectiveness, as coefficient is negative and non-significant across all models. In contrast, the Pooled OLS & RE models indicate a positive & significant correlation between leverage & profitability at the 10% level, implying that higher leverage may slightly improve profitability. However, this relationship is non-significant in FE model. Additionally, the Pooled OLS and RE models show a negative & notable effect of growth on profitability at the 10% level, proposing that higher development is related to a slight reduction in profitability. In the FE model, the relationship is non-significant. Firm size is negatively as well as highly significantly linked to profitability across all models, indicating that longer firms tend to have lesser profitability. The Pooled OLS and

RE models also show a positive & significant connection among GDP & profitability at the 5% level, suggesting that higher GDP positively impacts profitability. However, this relationship is non-significant in FE model. Lastly, the proportion of tangible assets does not appear to have a remarkable effect on profitability, as the coefficient is negative and non-significant across all models.

Table 2. Determinants of Profitability (Return on Assets)- Pooled "OLS, Fixed Effects and Random Effect Model

Variables	Pooled OLS				Fixed-effects				Random Effect			
	Coefficient	t-ratio	p-value	Sig.	Coefficient	t-ratio	p-value	Sig.	Coefficient	z	p-value	Sig.
const	1.4162	4.010	<0.0001	***	1.4197	3.611	0.0004	***	1.4162	4.010	<0.0001	***
Liquidity	0.1670	1.037	0.3016	NS	0.1935	1.134	0.2590	NS	0.1670	1.037	0.2999	NS
Leverage	0.0210	1.851	0.0662	*	0.0186	1.554	0.1226	NS	0.0210	1.851	0.0642	*
Growth	0.1162	1.687	0.0937	*	0.0977	1.309	0.1929	NS	0.1162	1.687	0.0916	*
Size	1.2555	3.610	0.0004	***	1.1213	3.042	0.0028	***	1.2555	3.610	0.0003	***
GDP	0.6052	2.027	0.0445	**	0.5038	1.619	0.1080	NS	0.6052	2.027	0.0427	**
Tangibility	0.0651	0.1492	0.8816	NS	0.1211	0.2580	0.7968	NS	0.0651	0.1492	0.8814	NS
Regression Result	R ²	0.1593	Adjusted R ²	0.1248	LSDV R-squared	0.2293	Within R-squared	0.1484	Sum Squared Resid	146.53	441.59	0.9984
	F Value (6, 146)	4.6132	P-value (F)	0.0002	LSDV F (22, 130)	1.7284	P-value (F)	0.0276	Log-likelihood	-213.79	Akaike criterion	
	rho	-0.089	Durbin-Watson	2.088	Rho	-0.2083	Durbin-Watson	2.2817	rho	-0.208	Durbin-Watson	2.281
Note: Variables using 153 observations, included 17 cross-sectional units												
Hint: ***, **, and * indicate significant at 1%, 5% and 10% levels. NS – Not Significant												

Hypothesis Testing

Breusch-Pagan LM Test for Pooled OLS Regression	Hausman Test for Random Effects Regression
Null hypothesis: Ho: Pooled OLS model is appropriate F-test statistic: = 3.377 with p-value = 0.0016	Null hypothesis: Ho: Random effects model are consistent Chi-square(6)statistics =6.3745with p-value = 0.3825
Result: Ho is being rejected and the (p value =0.0001) highly significant. The Pooled OLS is not appropriate. Hence, further testing with the result supports the fixed effects and random effect method.	Result: Ho is being accepted (P value > 0.01) and is not significant. Hence, the results support the most appropriate model Random effect method.

Table 3. Determinants of Profitability (Return on Equity) - Pooled OLS, Fixed Effects and Random Effect Model

Variables	Pooled OLS				Fixed-effects				Random Effect			
	Coefficient	t-ratio	p-value	Sig.	Coefficient	t-ratio	p-value	Sig.	Coefficient	z	p-value	Sig.
const	1.3197	2.095	0.0381	**	1.4053	2.106	0.0374	**	1.334	2.115	0.0344	**
Liquidity	0.5646	2.275	0.0245	**	0.6289	2.406	0.0177	**	0.5703	2.302	0.0213	**
Leverage	0.0020	0.1129	0.9103	NS	0.0076	0.4198	0.6754	NS	0.0027	0.1528	0.8786	NS
Growth	0.0562	0.4786	0.6330	NS	0.0581	0.4717	0.6380	NS	0.0564	0.4810	0.6305	NS
Size	2.2114	3.323	0.0012	***	2.1123	3.108	0.0024	***	2.2006	3.325	0.0009	***
GDP	1.7720	3.045	0.0028	***	1.6414	2.755	0.0068	***	1.7560	3.033	0.0024	***
Tangibility	0.3506	0.4537	0.6508	NS	0.2698	0.3234	0.7470	NS	0.3377	0.4364	0.6626	NS
Regression Result	R ²	0.1026	Adjusted R ²	0.062	LSDV R-squared	0.2191	Within R-squared	0.111	Sum Squared Resid	288.575	S.E. of regression	1.4842
	F Value (6, 130)	2.478	P-value (F)	0.026	LSDV F (22, 114)	1.454	P-value (F)	0.104	Log-likelihood	-245.425	Akaike criterion	504.850

	rho	-0.033	Durbin-Watson	1176	Rho	-0.232	Durbin-Watson	1.355	rho	-0.232	Durbin-Watson	1.355
Note: Variables using 137 observations, included 17 cross-sectional units												
Hint: ***, **, and * indicate significant at 1%, 5% and 10% levels. NS – Not Significant												

Hypothesis Testing

Breusch-Pagan LM Test for Pooled OLS Regression	Hausman Test for Random Effects Regression
Null hypothesis: Ho: Pooled OLS model is appropriate F-test statistic: = 15.0002 with p-value = 0.0202	Null hypothesis: Ho: Random-effects model is appropriate Chi-square(6)statistics = 5.963with p-value = 0.4273
Result: Ho is being rejected and the (p value =0.0001) highly significant. The Pooled OLS is not appropriate. Hence, further testing with the result supports of the fixed effects and random effect methods.	Result: Ho is being accepted (P value > 0.01) and is not significant. Hence, the results support the most appropriate model Random effect method.

In terms of model fit, the Pooled OLS model explains 15.93% of the variation in profitability and is statistically significant overall, but the Breusch-Pagan LM Test indicates that it is not the most suitable model for this data. The FE model explains a larger percentage of the variation in profitability compared to Pooled OLS, but the overall model fit is not as strong. The RE model is supported as the most suitable model, as indicated by Hausman Test, and it has a best overall fit compared to the additional 2 models.

Return on Equity (ROE): The analysis examines the determinants of profitability using FE, Pooled OLS, and RE regression models. The table described the outcomes of a regression analysis on determinants of profitability (calculated by ROE) using three different models: Fixed Effects, Pooled OLS, & RE. Liquidity: Positive & significant at the level of 5 percent in both Pooled OLS and FE models, & also in the RE model. This indicates that liquidity has a positive impact on profitability (ROE), meaning that as liquidity increases, ROE improves. Leverage: The coefficient is negative in all models, but non-significant. This suggests that leverage does not significantly impact ROE in this dataset.

Liquidity exhibits a positive and statistically significant influence on profitability, as measured by return on equity, across all three models. In contrast, leverage does not have a significant impact on ROE. Growth also lacks a statistically significant effect on ROE. Firm size, however, is positively and strongly associated with higher profitability. Interestingly, the GDP coefficient is negative & significant at the 1 percent level, suggesting a countercyclical relationship where profitability declines as the economy grows, potentially due to industry-specific factors. The proportion of tangible assets does not significantly affect ROE. The Pooled OLS model explains only a small portion (10.26%) of the variability in ROE, though the overall model is significant at the 5% level. However, the Breusch-Pagan LM Test suggests that Pooled OLS may not be the most suitable model. The FE model accounts for a larger share (21.91%) of the variation in ROE, but the within R-squared is lower at 0.111, and the F-value is not significant, indicating a weaker overall model fit. In contrast, the RE model appears to be the most appropriate, as evidenced by

its lower Sum Squared Residual, Akaike criterion, and the Hausman Test supporting it as the most suitable for the data.

CONCLUSION

The study analyzed the profitability of SMEs using a sample of 17 textile manufacturing firms in India. The relevant data were collected and analyzed using a panel regression model. The sample exhibited substantial heterogeneity, especially in growth rates, profitability measures, and leverage. The data also exhibited non-normal distributions for several variables, which may need to be addressed in further analysis. The RE model was found to be the best fit for this data, as supported by the Hausman test. The key insights from the RE model are: Leverage and GDP positively and significantly impact profitability, while Firm Size has a strong, negative impact on profitability. Growth negatively affects profitability but with weak significance. Liquidity and Tangibility are not significant determinants of profitability. The findings also show that the RE model is the most suitable for explaining the determinants of profitability, as supported by the Hausman test. Liquidity and size have a positive & notable impact on ROE, while GDP has an adverse & notable effect on ROE. Leverage, growth, and tangibility are not statistically significant in explaining ROE. The research's outcomes have different important implications for policymakers, SMEs, and researchers in the Indian context.

REFERENCES

1. Ahinful, G. S., Boakye, J. D., & Osei Bempah, N. D. (2023). Determinants of SMEs' financial performance: evidence from an emerging economy. *Journal of Small Business and Entrepreneurship*, 35(3), 362-386. <https://doi.org/10.1080/08276331.2021.1885247>
2. Alvarez, T., Sensini, L., & Vazquez, M. (2020). Working Capital Management and Profitability: Evidence from an Emergent Economy. *International Journal of Advances in Management and Economics*, 11, 32-37. www.managementjournal.info
3. Baker, H. K., Kumar, S., & Singh, H. P. (2019). Working capital management: evidence from Indian SMEs. *Small Enterprise Research*, 26(2), 143-163. <https://doi.org/10.1080/13215906.2019.1624386>
4. Bakhtiari, S., Breunig, R., Magnani, L., & Zhang, J. (2020). Financial Constraints and Small and Medium Enterprises: A Review (Discussion Paper Series). www.iza.org
5. Bekeris, R. (2012). The impact of Macroeconomic indicators upon SME's Profitability. *Ekonomika*, 91(3), 117-128. http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_en.pdf
6. Bhat, S. A., & Meher, S. (2020). Impact of Covid-19 Crisis on MSME Sector in India. *Anusandhan - NDIM's Journal of Business and Management Research*, 2(2), 40-48. <https://doi.org/10.56411/anusandhan.2020.v2i2.40-48>

7. Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, Finance, and Firm Growth. In *The Journal of Finance* (Vol. 53, Issue 6).
8. Eggink, M. (2021, June 27). Determinants of Small, Medium and Micro Enterprises' Performance: A Structured Literature Review. 5th International Conference on Business, Management and Economics.
9. Kumarjay, S., & Swaty, P. (2024). A Study on Financial Performance using Financial Ratios of Selected Public Listed Micro, Small and Medium Enterprises of India. In *Accent Journal of Economics Ecology and Engineering* (Vol. 9, Issue 2). <https://www.researchgate.net/publication/374170762>
10. Margaretha, F., & Supartika, N. (2016). Factors Affecting Profitability of Small Medium Enterprises (SMEs) Firm Listed in Indonesia Stock Exchange. *Journal of Economics, Business and Management*, 4(2), 132-137. <https://doi.org/10.7763/joebm.2016.v4.379>
11. Meghana Ayyagari, Asli Demirguc-Kunt, & Vojislav Maksimovic. (2011). Small vs. Young Firms across the World Contribution to Employment, Job Creation, and Growth (5631; Policy Research Working Paper). <http://econ.worldbank.org>.
12. Prasad, R., & Mondal, A. (2020). Determinants of profitability and productivity of Indian SMEs: An empirical study. *Business Spectrum*, 10(2). www.iaasouthbengalbranch.org
13. Shivganga C. Maindargi, & Pritam P. Kothari. (2020). A Study On Covid-19 Impact on Indian SMEs and Challenges and in Crises. In *IJMER* (1st ed., Vol. 9, pp. 130-136). Sucharitha Publications.
14. Singh, C., Poornima, K., & Wasdani. (2016). Finance for Micro, Small, and Medium-Sized Enterprises in India: Sources and Challenges (581; ADBI Working Paper Series). <http://www.adb.org/publications/finance-micro-small->
15. Slávik, Š., Jankelová, N., Hudáková, I. M., & Mišún, J. (2023). Determinants of the growth of Small and Medium Enterprises. *Entrepreneurship and Sustainability Issues*, 11(2), 480-497. [https://doi.org/10.9770/jesi.2023.11.2\(32\)](https://doi.org/10.9770/jesi.2023.11.2(32))