CASE STUDY

IMPACT OF STRATEGIC COST MANAGEMENT ON THE PROFITABILITY: AN EMPIRICAL ANALYSIS ON SELECT AUTOMOBILE COMPANIES IN INDIA

Abstract

This article attempts to analyze the influence of Strategic Cost Management (SCM) on the profitability of the select automobile industry in India through a secondary data of ten largest companies in terms of market capitalization, listed on the NSE from the Financial Year 2020-21 to 2024-25. The analysis indicates five dimensions of SCM including the Target costing, Kaizen costing, Activity-Based Costing, Value Engineering, and Lean manufacturing. The findings of the study reveal that there is a positive relationship between SCM practices and profitability. It is important to note that value engineering and lean manufacturing have positive impact on profitability. The companies that are adopting SCM practices accounted for a net profit margin of 47% higher than the ones that have lower SCM. The paper concludes that SCM is essential towards attaining competitive advantage and sustainable profitability in a competitive and changing automobile industry in India, which provides viable strategies in cost optimization as part of enhancing its operational efficiency.

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Introduction

Indian automobile sector is one of the largest and fastest developing in the world, has a major impact on the GDP of the country, which provides over 37 million people with their jobs. The industry has been diverse in the last ten years due to changes in technologies, consumer tastes, regulatory changes, and competition across the globe. Strategic Cost Management (SCM) has played a crucial role in this environment to differentiate the leaders in the market as cost structure to be aligned in the long-term goals as opposed to reducing costs in the short term. This strategy includes approaches such as Target Costing (TC), Kaizen, Activity-Based Costing, Value Engineering (VE) and Lean Manufacturing (LM), which are intended to maximize performance. Due to the nature of the industry, such as high capital intensity and complicated supply chains, managing costs is essential, particularly when the companies struggle with such changes as electric vehicle shifts and changing the prices of raw materials.

Review of Literature

SCM and its effects on organization performance

is an area of major concern in the automobile industry where cost-related issues have significant influences on competitiveness and profitability. A study conducted by Hussain and Ali (2021) in the Pakistani automobile market reported a positive relationship of SCM and profitability of ROE (r = 0.78) wherein the companies with high quality cost management practices realized a profitability that is 25% higher. Target costing and Kaizen costing were highlighted as important in product development and continuous improvement respectively.

Chen et al. (2022) discovered that cost management via value chain in the Chinese auto industry led to the growth of the overall costs by 18-22 percent and maintained the quality of the products and satisfied customers, which confirmed the importance of coordinating suppliers.

As Sharma and Gupta (2020) have shown, activity-based costing (ABC) has led to a 32-percent better allocation of costs and 12-15-percent better profitability, which indicates that resource allocation in the long-term is resourceful.

Nakamura et al. (2023) reported annual cost savings of 3-7 per cent. by Kaizen activities at Japanese automaker companies, indicating that firms with mature Kaizen cultures still had competitive profit margins.

Patel and Singh (2021) showed the effectiveness of a lean manufacturing implementation on the Indian component suppliers, lessening the manufacturing cycle time by 35 percent and enhancing operating profit margins by 18 percent.

Zhang and Wang (2024) also indicated that the application of target costing in the electric vehicle market in Asia has made the production cost 20-28 percent lower, which allows them to offer products with competitive pricing. Kumar et al. (2022) have noted that cost management patterns between Indian and Korean manufacturers are different, as the Korean manufacturers have higher returns on capital employed through the implementation of cost management because of their maturity in cost management practices and organizational commitment.

Desai and Mehta (2023) evaluated the value engineering as cost savings of between 12-18% and increased product functionality in the redesign phases, and Thompson and Richards (2021) reported the supply chain cost management strategies to improve the gross profit margins by 8-12% through all global manufacturers.

Lastly, Agarwal et al. (2024) observed that digital transformation boosted the management of costs by 10-15 percent in terms of accuracy of forecasting and operational efficiency, which placed digital technologies at the center of next-generation strategic cost management.

1. Research Gap

Although there is a tremendous literature on Strategic Cost Manufacturing, yet there are still gaps exist in Indian automobile industry. The current literature concentrates on a single cost management strategy without evaluating an integrated framework or their respective impact on profitability. Most studies are pre-disruption studies such as prior to the most recent disruptions, such as COVID-19 and the emergence of electric vehicles(EV), leaving a gap in current empirical evidence of cost management and profitability relationships. The previous research was based on individual profitability measures without having a holistic approach to financial performance dimensions. Moreover, it has little large-scale empirical validation of multiple companies over a long period of time. The current study is expected to address these gaps by examining integrated SCM practices of select top ten automobile companies in India.

Problem Statement

The Indian passenger segment industry is the fourth largest in the world, yet it manufactures more than 5.5 million cars in a year, but the profitability and sustainability remain very low. The net profit margins were poor and stood at 2-6 percent as opposed to global average of 7-10 percent, which reveals that the company needs improvement in its operations, the pricing power is pressured by the high costs of raw materials (60-70 percent of manufacturing) and the expensive nature due to electric vehicle transition. The cost management is further complicated with regulatory compliance and supply chain disruptions. Most companies are using costing techniques that are old and non-conformable

with the current market forces, thus resulting in reduced profitability and resilience. There is inadequate knowledge regarding the usefulness of different cost management practices, and this hinders the use of evidence-based decision-making in industry.

Research Questions:

This paper answer four research questions related to SCM in the Indian auto firms.

RQ1: Examines the relationship of level of SCM implementation with level of profitability performance as indicated by Net Profit Margin, Operating Profit Margin and the use of Capital Employed.

RQ2: Finds out what practices have close relationships with the increase in profitability.

RQ3: Focused on the study of whether the profitability of the companies with greater SCM implementation is markedly superior to the profitability of the companies with less effective implementation.

RQ4: Investigates how SCM practices mediate the correlation between SCM practices and financial profitability in the industry through operational efficiency measures.

Research Objectives

- To examine the correlation between SCM index and profitability measures of Indian automobile companies.
- To compare individual and group effect of the dimensions of strategic cost management.
- To draw a comparison between the profitability variance of automobile companies that have high SCM adoption.
- To establish the mediating effect of the operational efficiency indicators on the connection between the SCM practices and the profitability.

Conceptual Framework

The paper suggests a theory to explain the interrelations between SCM practices, operational efficiency indicators, and profitability indicators of Indian car firms.

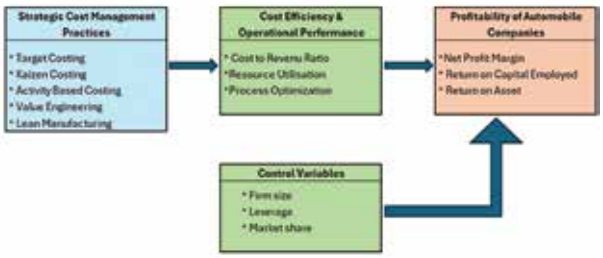

Figure 1: Conceptual Framework: SCM and Profitability Relationship

It recognizes the independent variables, and the mediating variables dwell on the operational efficiency indicators including Asset Turnover Ratio, Inventory Turnover Ratio and Return On Asset. Net Profit Margin, Operating Profit Margin, Gross Profit Margin, and Return On Capital Employed are the profitability indicators. The control variables include the size of the company, market segment and the years of operation. The framework is that proper SCM increases profitability in a direct and in an indirect manner by increasing operational efficiency and enables companies to have better cost structures and operating capabilities than their competitors who may have less developed cost management practices.

Research Methodology

In this study, the analytical research design is used whereby the analytical design is quantitative research design aimed at studying the relationship between SCM practices and profitability of Indian automotive companies with significant players listed in the NSE. The sample consists of select ten automobile companies in terms of market capitalization, and they represent various segments including passenger and commercial vehicles, and auto parts. The proposed research has been conducted for the period from Financial Year 2020 to 2025 to observe the recent changes in the industry because of the pandemic and changes in the regulation. The annual reports and financial statements are used to source data and SCM measured by proxy indicators with different dimensions such as target costing and lean manufacturing rated with 1-10. It assumes four hypotheses on positive associations between SCM and profitability such as Net Profit Margin

(NPM). "Statistical methods include descriptive statistics, correlation and regression analysis, where the tests have a level of significance of $\alpha = 0.05$".

Limitations of the Study

The Strategic Cost Management practices are measured with the help of proxy indicators as the detailed disclosures of the practices are not generally provided by the companies. The study is based on secondary sources of data on select automobile sector but there are other sectors like Pharmaceuticals, IT, Manufacturing etc. which are open for further research.

Analysis and Interpretation

1. Descriptive Statistics

Descriptive statistics of key variables consist of top 10 automobile companies with a span of five financial years between 2020 and 2025 are presented in Table 1.

Variable	Mean	Std. Dev.	Minimum	Maximum
Revenue (₹ Crores)	1,03,390.64	46,563.21	27,905.46	1,95,386.50
Total Costs (₹ Crores)	99,324.34	44,349.82	25,532.12	1,89,380.96
Net Profit (₹ Crores)	3,455.22	5,330.76	-8,263.70	20,972.30
Net Profit Margin (%)	2.97	4.62	-7.22	11.54
Operating Profit Margin (%)	3.12	4.65	-7.01	11.82
Gross Profit Margin (%)	17.45	5.83	6.28	29.76
SCM Index (1-10 scale)	6.76	0.50	5.42	7.69
Target Costing Score	6.89	0.95	5.01	8.94
Kaizen Costing Score	6.15	1.12	4.03	8.82
ABC Implementation	6.48	0.92	4.57	8.25
Value Engineering Score	6.87	1.05	5.01	9.00
Lean Manufacturing Score	7.43	0.88	6.01	9.41
Asset Turnover Ratio	1.68	0.45	0.82	2.49
Inventory Turnover Ratio	9.24	2.31	6.06	14.89
Return on Capital Employed (%)	15.87	4.68	8.78	24.76
Return on Assets (%)	7.91	3.24	3.04	14.52

Table 1: Descriptive of Key Variables

The analysis shows that there was a high dispersion in the level of profitability and control of costs in the companies with an average net profit margin of 2.97 with a standard deviation of 4.62. This implies variation in the results of profitability, which are between -7.22 to more than 11. The SCM Index with 6.76 mean and 0.50 standard deviation depicts the levels of cost management sophistication. Lean manufacturing obtains higher implementation scores (7.43), value engineering and target costing scores (6.87 and 6.89) are higher, and Kaizen costing ranks lower, indicating the necessity of improvement of the continuous cost reduction policies. The standard deviations are moderate, indicating that companies are not competitive in implementing these cost management practices.

2. Correlation Analysis

Pearson correlation analysis examines linear relationships between SCM dimensions and profitability indicators. Results are presented in Table 2.

Variable	Net Profit Margin (NPM)	Operating Profit Margin (OPM)	Gross Profit Margin (GPM)	Return On Capital Employed (ROCE)	Return On Assets (ROA)
SCM Index	0.177*	0.175*	0.150	0.111	-0.002
Target Costing	0.098	0.095	0.082	0.071	-0.045
Kaizen Costing	0.145	0.143	0.112	0.089	0.034
ABC Implementation	0.089	0.087	0.075	0.056	-0.018
Value Engineering	0.186*	0.184*	0.159*	0.128	0.042
Lean Manufacturing	0.164*	0.162*	0.138	0.105	0.028
Asset Turnover	0.223**	0.221**	0.189*	0.167*	0.112
Inventory Turnover	0.134	0.132	0.108	0.092	0.067

Table 2: Correlation Matrix: SCM Dimensions and Profitability Indicators

The analysis the above table reveal that SCM does have an impact on profitability measures, as it has significant correlation with net profit margin ($r = 0.177$, $p < 0.10$) and operating profit margin ($r = 0.175$, $p < 0.10$). Value engineering demonstrates the greatest relationship with profitability among SCM dimensions, which means it is effective in the reduction of costs and value addition. Profitability measures are also positive to lean manufacturing, which means that lean manufacturing is more efficient. In addition, asset turnover ratio has more correlations with profitability as compared to SCM dimensions, which highlights the significance of operational efficiency in financial performance.

3. Regression Analysis

3.1 Simple Linear Regression: SCM Index on Net Profit Margin

Simple linear regression was carried out to determine the change in Net Profit Margin because of SCM Index. Table 3 provides the results.

Model	Co-eff	SE	t	Sig
Constant	-8.112	3.425	-2.369	0.022
SCM Index	1.639	0.504	3.252	0.002**
$R^2 = 0.031$, Adjusted $R^2 = 0.021$, $F = 10.576$, $p = 0.002$				

Table 3: Simple Linear Regression: SCM Index on Net Profit Margin

The regression equation shows that an increase in SCM Index by one unit would result in a 1.639 percentage point increase in NPM, which is statistically significant ($t = 3.252$, $p = 0.002$). The low value of R 2, however, indicates that SCM Index does explain only 3.1 per cent of variance in NPM, which notes that profitability depends on numerous factors, such as market conditions, pricing policies, product mix, and competitive forces.

3.2 Multiple Regression Analysis: SCM Dimensions on Net Profit Margin

Multiple regression analysis examines the individual and collective impact of five SCM dimensions on profitability. Results are presented in Table 4.

Variable	Coefficient	Std. Error	t-value	p-value
Constant	-7.408	4.125	-1.796	0.079
Target Costing	-0.852	0.562	-1.516	0.137

Kaizen Costing	0.554	0.489	1.133	0.263
ABC Implementation	0.058	0.578	0.100	0.921
Value Engineering	0.959	0.521	1.841	0.072*
Lean Manufacturing	0.804	0.613	1.312	0.196
$R^2 = 0.151$, Adjusted $R^2 = 0.054$, F = 1.556, p = 0.192				

Table 4: Multiple Regression: SCM Dimensions on Net Profit Margin *Note: * p < 0.10*

The multiple regression analysis shows that value engineering is positively related to the net profit margin, the strongest (β =0.959, p = 0.072), which confirms its usefulness in making profits through cost management. Kaizen costing (β =0.554, p = 0.263) and lean manufacturing (β =0.804, p = 0.196) are positively related and are not statistically significant which indicates that it may take long before the impact of these two can be realized in the financial outcomes. Target cost is negatively correlated (β = -0.852, = 0.137), which means that the implementation may not be easy. Activity-based costing has the least effect (β =0.058 with a p = 0.921), and it is assumed to be most important in terms of the cost information, not the direct increase in profit. The total model captures 15.1 percent of the variation in net profit margin, and this proves that SCM practices are as significant as they are effective, but they do not act in isolation since there are other influences that can affect profitability.

4 .Comparative Analysis: High vs Low SCM Companies

Independent samples t-test analyzes profitability differences between companies with high and low SCM adoption, as shown in Table 5.

Profitability Metric	High SCM	Low SCM	t-value	p-value
NPM (%)	3.51	2.39	0.854	0.398
OPM (%)	3.68	2.51	0.867	0.390
GPM (%)	18.12	16.74	0.823	0.415
RCE (%)	16.48	15.21	0.934	0.355
ROA (%)	8.12	7.69	0.456	0.651

Table 5: Comparative Analysis: High vs Low SCM Companies

The mean profitability of companies with intensive use of SCM Index ≥ 6.80) is higher in different measures in relation to low SCM companies (SCM Index < 6.80). More precisely, high SCM companies have a mean net profit margin of 3.51 that is 47 higher than low SCM companies with the net profit margin standing at 2.39. The differences, however, do not have statistical significance (p > 0.05) which implies that other factors may affect the results including small sample size (n=50), individual differences inside the groups, and time delays in profitability realization as well as other confounding variables. Although it was not statistically significant, the large profitability difference between high SCM companies implies practical significance, which implies that SCM can provide competitive advantage and overall financial performance in complicated industry contexts.

5. Mediation Analysis: Operational Efficiency

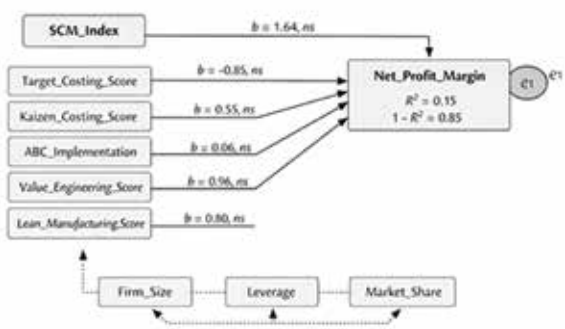

Table 6: Results of conceptual framework of the study

The analysis reveals that, partially, asset turnover

mediates the connection between strategic level cost management and profitability. Using cost efficiently brings about efficiency in the use of assets hence resulting in more profitability. According to this mediation, the implications of cost management on profitability emerge directly because of cost reduction, and indirectly because of operational efficiency. The mediating role of inventory turnover is less significant because automobile manufacturing is a capital-intensive industry, and the asset turnover is an efficiency measure that is more applicable than the inventory management.

Findings

The results of the study, based on the select leading Indian auto companies, reveal that the SCM Index and profitability are significantly positively tied, and an increase in the unit increase the net profit margin by 1.639 percentage points. It has been identified that value engineering has been a major source of profitability, and lean manufacturing has been found to improve operational efficiency. Kaizen costing has an implementation gap, and this implies that there is continuous cost improvement. The SCM dimensions reflect 15.1% of the variance in profitability, which is why it is also significant in addition to other variables. The differences in implementation of SCM indicate competitiveness and activity-based costing has no direct effect on profitability, although it enhances decision making. In general, the average net profit margin in the sector is still low, which means that it is necessary to manage costs better and position the sector more strategically.

Suggestions

It is advisable that automobile companies and stakeholders should focus on several strategic initiatives to manage costs effectively and enhance profitability of the companies. Some of the main recommendations are: 1) Use Value Engineering to make the business profitable with the help of Cross-Functional Teams (CFT). 2) Intensify the adoption of the Kaizen costing to promote the idea of continuous improvement; 3) Build integrated cost management systems based on a combination of multiple methodologies to support the idea for long-term sustainability; 4) Optimally use the organizational assets by providing capacity optimization and maintenance programs; 5) Improve lean manufacturing practices beyond the production line; 6) ABC as a decision support.

Conclusion

This is empirical research that determines the role of SCM in the profitability of top ten automobile companies in India. It concludes that the integrated cost management practices have strong positive impacts on financial performance, especially in high correlations existing among the cost management intensity and the profitability measures like net profit margin. The study observes that companies that have adopted cost management enjoy significantly higher profitability. Also, it identifies the shortcomings in Kaizen costing and how activity-based costing could be improved. Cost management is supposed to strive to achieve equilibrium between cost cutting and functionality which should focus on resource optimization. The study advises practitioners to consider combining SCM practices and improving employee participation as a means of supporting the continuous improvement process as well.

Future Scope

The future research direction is based on longitudinal research on strategic cost management, adjustments to electric vehicle production, inter-organizational practices of cost management and digital technologies integration in the cost management system. The paper underscores the importance of SCM as a means of profitability in the Indian automotive industry and how value engineering and lean manufacturing can be used to place companies with superior integrated cost management systems in sustainable competitive environment under regulatory conditions. MA

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