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Relation Between Profitability And Inventory Management Ratio Special Reference To Automobile Companies In India

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Abstract: Inventory is key part of working capital. proper use of inventory is necessity of every type of business units. It is more important where big manufacturing activities are concern. Effective use of inventory also results into profitability of the companies. In this research study examined profitability and inventory management of selected automobile companies in India. This study analysed three years data of 2022 to 2024. Data was collected from secondary sources. Statistical analyses of the data were done using SPSS and Ms- Excel while the relation was tested using correlation analysis at 0.05 level of significance.

Key Words: Raw Material Turnover Ratio, Work in Progress Turnover Ratio, Finished Goods Turnover Ratio

I. INTRODUCTION

The relationship between profitability and inventory management has been a critical area of focus for businesses seeking to optimize their operational efficiency and financial performance. Inventory management, the process of overseeing and controlling the flow of goods in and out of a company, directly impacts a firm's ability to meet customer demands while minimizing operational costs. At the same time, profitability the ability of a company to generate earnings relative to its revenue, assets, or equity is a key indicator of business success. An effective inventory management system ensures that a company maintains the right balance of stock, reduces costs associated with overstocking or stock outs, and enables timely delivery of products, all of which are essential for sustaining and improving profitability.

In recent years, the complexity of global supply chains, fluctuations in consumer demand, and advancements in technology have added layers of challenge and opportunity to the way firms manage their inventory. As a result, the dynamic interplay between inventory management practices and profitability has become even more nuanced, requiring businesses to adopt more sophisticated strategies. This research aims

to explore the various methods of inventory management, such as just-in-time (JIT), economic order quantity (EOQ), and demand forecasting, and evaluate their direct and indirect effects on profitability across different industries.

By investigating this relationship, the study seeks to contribute to the body of knowledge on how businesses can refine their inventory practices to not only optimize operational costs but also enhance overall profitability in an increasingly competitive marketplace. The paper will review existing literature, examine case studies, and propose best practices for integrating inventory management strategies with profitability goals.

Review of Literature:

(Gołaś, 2020) : This research paper evaluated causative link between inventory performance and profitability of food companies. The study used inventory mix like raw and other material, work in progress, finished products and commodities to test inventory. Through the analysed data researcher found that there was declined in the share od inventories in total assets and current assets. It implied improvement in inventory management efficiency. As well as study revealed that the days sales of inventory for total stocks clearly tends to became shorter due to a reduction in the days in inventory ratio for materials and finished products. Regression model applied to evaluate data, it demonstrated that inventory management efficiency was positively correlated with financial performance, measured as the return on operating assets.

(Adebola Daniel Kolawole, 2019) Researcher evaluated the degree of relationship between inventory management and profitability of manufacturing firms. In this case study researcher took Plc company data. Secondary data were collected from company annual report of ten years. To test data simple regression model was applied to shown correlation between variables. Stock turnover ratio was used to capture the relationship between costs of sales incurred in generating total revenue and the inventory utilized in for production and distribution. The result generated from the study showed that the company operates an efficient Inventory Management System which has strong influence on its profitability.

(Prof. Prayag P. Gokhale, 2018) This research study discussed different inventory control techniques, and it also focused on various costs incurred due to the storage of inventory, economic order quantities, stock levels, shortage costs, inventory methods. This study undertaken secondary data. The data analysed with Ms-Excel. They concluded that for functioning smoothly business should be maintained optimum inventory. It also found that organization should not have over stock nor under stock.

(Eginiwin Joseph Ese, 2024) Researcher examined the impact of inventory management on small and medium-scale enterprises profitability with a focus on supermarkets and bottled/sachet water producers. The study investigated impact of inventory management as inventory turnover, inventory ordering frequency, and inventory level. Data were collected via a self-designed structured questionnaire administered to ninety

respondents from the selected sampled SMEs used for the study. Data gathered for the study were analysed using the multiple regression model technique via the IBM statistical package for social sciences (SPSS) version 23. The study examined that inventory turnover had a positive and significant relationship with SMEs profitability. The study also revealed that both inventory ordering frequency, and inventory level had positive relationships with profitability, however, these positive relationships were not statistically significant. The study concludes that there was a relationship between inventory management and SMEs profitability. On the strength of the above findings, the study suggested that managers of SMEs endeavour to keep an adequate level of inventory, taking into consideration the business turnover rate coupled with the delivery lead time of their various suppliers, and knowing full well that inventory management directly impacts its profitability.

Research Methodology:

Objective:

To analysis relation between profitability and inventory management of selected automobile companies in India.

Hypothesis:

There is no significant relationship between profitability and inventory management of selected automobile companies in India.

Period of the Study: The period of the study selected is three years from 2022, 2023 and 2024.

Sources of Data

This study collected secondary data for this research paper. Study collected Two years data for established relation between profitability and inventory management. Researchers gather secondary data from companies' website, newspaper, various reports. For this research paper research used SPSS software to analysed data. Pearson correlation techniques used for analysis data. To analysis data researcher used ratio like EBITDA ratio, operating profit ratio, net profit ratio, raw material turnover ratio, work in progress turnover ratio, finished goods turnover ratio.

Sample Selection:

This research paper is focused on Automobile Industry. Since an automobile industry is segmentized mainly in four segments i.e. Two-wheeler, Three-wheeler, Commercial Vehicle and Passenger vehicle. For the purpose of this study Two-wheeler and three-wheeler segment companies are selected according to highest market share.

Selected companies are as under:

1. Bajaj Auto Ltd.
2. Hero MotoCrop Ltd.
3. TVS Motors Ltd.

Research Techniques

In this study variables considered, are EBITDA ratio, Operating profit ratio, Net profit ratio, Raw Material Inventory, Work in Progress Inventory, Finished Goods Inventory. The voluminous and historical data was collected and analysed with appropriate numerical techniques.

Financial and Statistical Tools:

For assessing relation of profitability ratios like EBITDA ratio, operating profit ratio, net profit ratio, and inventory ratio like raw material turnover ratio, work in progress turnover ratio, finished goods turnover ratio is used.

Data Analysis and Interpretation:

The relationship between profitability and inventory management of specific Indian automobiles is examined in the table no. 1 below. Planning a strategy requires an understanding of the association between profitability and inventory management. Identifying the relation between management of inventory and profitability helps businesses to make pricing plans that maximise revenue without sacrificing supply and demand equilibrium.

Results are extract from SPSS tool through Karl Pearson Correlation method which is mentioned below in Table no: 1.

Table No. : 1 Correlation between Profitability and Inventory Management Ratios

Correlations

Variables	Parameters	EBITDA Ratio	Operating Profit Ratio	Net Profit Ratio	Raw Material Turnover Ratio	Work in Progress Turnover Ratio	Finished Goods Turnover Ratio
EBITDA Ratio	Pearson Correlation	1	.999**	.998**	.602	-.537	-.599
	Sig. (2-tailed)		.000	.000	.086	.136	.088
	N	9	9	9	9	9	9
Operating Profit Ratio	Pearson Correlation	0.999**	1	0.999**	.615	-.526	-.594
	Sig. (2-tailed)	.000		.000	.078	.146	.092
	N	9	9	9	9	9	9
Net Profit Ratio	Pearson Correlation	0.998**	0.999**	1	.618	-.511	-.616
	Sig. (2-tailed)	.000	.000		.076	.160	.078
	N	9	9	9	9	9	9
Raw Material Turnover Ratio	Pearson Correlation	.602	.615	.618	1	.213	-.436
	Sig. (2-tailed)	.086	.078	.076		.582	.241
	N	9	9	9	9	9	9
Work in Progress Turnover Ratio	Pearson Correlation	-.537	-.526	-.511	.213	1	.147
	Sig. (2-tailed)	.136	.146	.160	.582		.706
	N	9	9	9	9	9	9
Finished Goods Turnover Ratio	Pearson Correlation	-.599	-.594	-.616	-.436	.147	1
	Sig. (2-tailed)	.088	.092	.078	.241	.706	
	N	9	9	9	9	9	9

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

Interpretation:

Above table no 1 represents the correlation between dependent variable i.e., profitability ratios and inventory management ratios for selected period of the study i.e., 2022 to 2024. The relationship between profitability and inventory management is examined with the help of the Karl Person correlation coefficient.

It reveals that EBITDA profit ratio has strong positive correlation with operating profit ratio, net profit ratio showing Pearson correlation co-efficient value as 0.999 and 0.998. Whereas the EBITDA profit ratio has moderate positive correlation with raw material turnover ratio indicated by Person correlation co-efficient value of 0.602. Meanwhile EBITDA Profit ratio has negative correlation with work in progress turnover ratio and finished goods turnover ratio indicated by Pearson correlation co-efficient value as -0.537 and -0.599.

Operating profit ratio, net profit ratio had significant at 0.01 level. Hence, it is proven that for all these ratios, P value observed is less than 5% significant level testifying that study shall reject null Hypothesis.

So, it accepts that there is significant correlation between EBITDA ratio and all other profit ratios. While raw material turnover ratio, work in progress turnover ratio and finished goods turnover ratio P value was 0.086, 0.136 and 0.088. It was grater then 0.05. So, it implied that the correlation is not statistically significant, so study fail to reject the null hypothesis. It means there is no significant linear relationship between EBITDA ratio with inventory management ratios for this study.

Table no. 1 indicates that Operating profit ratio has strong positive correlation with EBITDA profit ratio, net profit ratio showing Pearson correlation co-efficient value as 0.999 and 0.999. Whereas the Operating profit ratio has moderate positive correlation with raw material turnover ratio indicated by Person correlation co-efficient value of 0.615. Meanwhile Operating Profit ratio has negative correlation with work in progress turnover ratio and finished goods turnover ratio indicated by Pearson correlation co-efficient value as -0.526 and -0.594.

EBITDA ratio, net profit ratio had significant at 0.01 level. P value observed is less than 5% significant level testifying that study shall reject null Hypothesis. So, it accepts that there is significant correlation between operating profit ratio and all other profit ratios. While raw material turnover ratio, work in progress turnover ratio and finished goods turnover ratio P value was 0.078, 0.146 and 0.092. It was grater then 0.05. So it implied that the correlation is not statistically significant, so study fail to reject the null hypothesis. It means there is no significant linear relationship between Operating profit ratio with inventory management ratios for this study.

Above table of correlation evaluated that Net profit ratio has strong positive correlation with EBITDA profit ratio, operating profit ratio showing Pearson correlation co-efficient value as 0.998 and 0.999. Whereas the Net profit ratio has moderate positive correlation with raw material turnover ratio indicated by Person correlation co-efficient value of 0.618. Meanwhile Net Profit ratio has negative correlation with work in progress turnover ratio and finished goods turnover ratio indicated by Pearson correlation co-efficient value as -0.511 and -0.616.

EBITDA ratio, operating profit ratio had significant at 0.01 level. P value observed is less than 5% significant level testifying that study shall reject null Hypothesis. So, it accepts that there is significant correlation between operating profit ratio and all other profit ratios. While raw material turnover ratio, work in progress turnover ratio and finished goods turnover ratio P value was 0.076, 0.160 and 0.078. It was grater then 0.05. So it implied that the correlation is not statistically significant, so study fail to reject the null hypothesis. It means there is no significant linear relationship between Net profit ratio with inventory management ratios for this study.

Raw material turnover ratio has moderate positive correlation with EBITDA profit ratio, operating profit ratio, net profit ratio showing Pearson correlation co-efficient value as 0.602, 0.615 and 0.618 from table no.1. Whereas the raw material turnover ratio has week positive correlation with work in progress turnover ratio indicated by Person correlation co-efficient value of 0.213. Meanwhile raw material turnover ratio has negative correlation with finished goods turnover ratio indicated by Pearson correlation co-efficient value as -0.436.

EBITDA ratio, operating profit ratio, net profit ratio, work in progress turnover ratio and finished goods turnover ratio P value was 0.086, 0.078, 0.076, 0.582, 0.241. It was grater then 0.05. So it implied that the correlation is not statistically significant, so study fail to reject the null hypothesis. It means there is no significant linear relationship between raw material turnover ratio with profitability and inventory management ratios for this study.

Work in progress turnover ratio has negative correlation with EBITDA profit ratio, operating profit ratio, net profit ratio showing Pearson correlation co-efficient value as -0.537, -0.526 and -0.511. It suggested from above table no.1. Whereas the work in progress turnover ratio has week positive correlation with raw material turnover ratio indicated by Person correlation co-efficient value of 0.213. Meanwhile work in progress turnover ratio has week positive correlation with finished goods turnover ratio indicated by Pearson correlation co-efficient value as 0.147.

EBITDA ratio, operating profit ratio, net profit ratio, raw material turnover ratio and finished goods turnover ratio P value was 0.136, 0.146, 0.160, 0.582 and 0.706. It was grater then 0.05. So it implied that the correlation is not statistically significant, so study fail to reject the null hypothesis. It means there is no significant linear relationship between work in progress turnover ratio with profitability and inventory management ratios for this study.

Above table no.1 evaluated that finished goods turnover ratio has negative correlation with EBITDA profit ratio, operating profit ratio, net profit ratio and raw material turnover ratio showing Pearson correlation co-efficient value as -0.599, -0.594, -0.616 and -0.436. Meanwhile work in progress turnover ratio has week positive correlation with finished goods turnover ratio indicated by Pearson correlation co-efficient value as 0.147.

EBITDA ratio, operating profit ratio, net profit ratio, raw material turnover ratio and work in progress turnover ratio P value was 0.088, 0.092, 0.078, 0.241 and 0.706. It was grater then 0.05. So it implied that the correlation is not statistically significant, so study accept the null hypothesis. It means there is no significant linear relationship between finished goods turnover ratio with profitability and inventory management ratios for this study.

Findings:

Researcher found the relation between profitability ratios and inventory ratios with the use of Pearson's correlation technique. Study analysed EBITDA ratio, Operating profit ratio, Net Profit ratio, raw material turnover ratio has positive correlation with each other. Work in Progress Turnover ratio, Finished Goods Turnover ratio has positive correlation with each other. It means one ratio increased resulting to another ratio increased as well. Likewise, one ratio decreased effects another ratio to decrease. The higher degree of correlation observed between profitability ratios. While moderate level of correlation level had been observed for inventory management ratios.

Correlation analysis found that significance (p-value) is higher for most inventory management ratios. It implied that the strength of the correlation looks not real and a result of random variability in the selected automobile companies. It is also found that correlation was due to chance. As per the p-value for the ratios, it indicates that the probability of this correlation occurring randomly was extremely high. Therefore, there was indeed a low degree correlation between profitability and inventory management ratios.

Conclusion:

This research study of profitability and inventory management in the automobile industry from 2022 to 2024 reveals that for cost containment, operational effectiveness as well as proper inventory management is essential for automobile industry. Robust inventory management and sustained profitability have allowed automobile companies to navigate economic fluctuations, regulatory pressures and shifting consumer preferences by ensuring their resilience and long-term success. The automobile industry must continue to innovate and embrace sustainable practices to remain competitive and capitalize on emerging opportunities.

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