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Research Article

An Impact of Inventory Management on the Profitability of Pharmaceutical Companies : Evidences from India.

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Abstract

This research paper intends to examine the relationship of Raw Material Inventory, Work In Progress Inventory and Finished Goods Inventory with the Operating Profit of the companies in the Indian Pharmaceutical Sector. Raw Material Inventory, Work In Progress Inventory and Finished Goods Inventory are considered as independent variables and Operating Profit has been considered as the dependent variable. The data was collected for Pharmaceutical Companies over a period of 10 years using techniques such as multiple regression; the data was analysed. The study revealed that Finished Goods Inventory though has a negative relationship with Operating Profit, it is the most significant variable influencing Operating Profit of Pharmaceutical Companies.

Key Words: Inventory, Pharmaceutical, India

Introduction

The term "inventory refers to the stockpile of items sold for sale by a corporation and the different components that constitute these items. Stock, as per accounting language means the sum of those tangible property items (i) held for sale in the ordinary course of business, (ii) in the manufacturing process for such sale, and (iii) available for sale. The stock of raw materials, products-in-process, finished goods and shops and spare parts also requires inventory. James H. Greene notes that the movable business articles that are eventually expected to enter the trade flow" constitute the inventory.

Any company's profitability depends on the potential to handle stock and payable - receivables effectively. From the perspective liquidity and profitability in both, this is important. Funds can be unnecessarily tied up in idle assets where there is bad management of working capital. This would decrease the company's liquidity and the company will therefore not be able to invest in profitable assets such as plants and machinery. It will impact the company's profitability. Unnecessary funds have been found to be related with stocks in most situations, one of the important components of existing assets. Therefore to prevent excessive expenditures, it is important to handle inventories efficiently. A company that neglects inventory management will have to face significant long-term sustainability issues and can struggle to do so. A organization can of inventory levels to a significant degree with the help of improved inventory management. A significant component of working capital is inventory. To a large degree, a company's success or failure depends on the efficiency of its handling of inventory. Proper management and monitoring of inventory not only answers the problem of liquidity, it also enhances profitability. Inventory maintains a relationship between production and sales. Each company needs an insufficient quantity of inventory for safe storage and in-transit delivery. Because inventory alone is an idle asset, and includes keeping costs, it is often beneficial to keep investment in that asset upto the lowest amount practicable. At all times, the stock should be available in the right quantity, not more nor less than what is required. Unsufficient inventory has a detrimental effect on the smooth operation of the company, although surplus costs are included, thereby reducing profits. Inventory management's key purpose is to avoid too many and too little from doing so. So that it can be possible to manufacture and sell without interruption with minimum holding costs and improved customer care.

The present paper seeks to examine the size, composition, distribution, growth and effect of inventory management on the profitability of the selected companies during the period under review, in order to assess the practices and performance of inventory management in the pharmaceutical industry in India.

Literature review

Timothy L, P.B Ojera, N.G Mugenda, V.K.Wachira (2013) examines the effect of stock management activities on the financial performance of eight companies producing sugar in Kenya from 2002-2007, by evaluating the degree to which they are processing sugar. In these businesses, the lean inventory method, strategic supplier alliance and technology are implemented Descriptive statistics have been used to test the inventory effect Correlation analysis and management practices were applied to assess the extent and relationship magnitude between variables in inventory management and it was found that inventory management and return on revenue have a good correlation. Elsa George (2019) has analysed whether inventory management has any effect on the net profits of the company.

For this purpose the researcher has studied sample of five companies Metro, Tata, SAIL, Bhushan and Jindal for five years 2011-2015 by using various tools like ratio analysis, Trend analysis, and correlation analysis and found that there were greater net profits for a company with a lower inventory conversion period or higher inventory turnover ratio than for businesses with a higher inventory conversion period. This is because when a company has limited inventory, Conversion time, in inventory, its funds are not blocked. Francis Kakeeto, Timbirimu Micheal, Kiizah Pastor, Olutayo K. Osunsan (2017) Using Gumutindo Coffee Cooperative Enterprise Limited as a case study to examine the impact of inventory management on organizational profitability. A sample size of 181 was derived out of a population of 345 employees. However, out of the 200 questionnaires sent out, only 168 replied. Pearson correlation co-efficient was used for analysis and found that inventory management positively affected profitability of the organization. The study concluded that inventory management was very productive as implemented by the GCCE and suggested more inventory expenditure to raise inventory levels. Akinyomi Oladele John (2014) investigates the effect of inventory management on the profitability of Nigerian manufacturing firms. For study eight beverages Nigerian Stock Exchange companies listed in the manufacturing sector has been taken for the period 2008-2012. ROE was used as a profitability measure while the inventory conversion cycle was used as an inventory management measure, while the control variable was represented by the current ratio. The study found that there exists no significant relationship between stock management and profitability of manufacturing companies. Ahmad.A. Almazari (2013) examined the relationship between the management of working capital and the profitability of firms for the Saudi cement producing companies. The sample of eight cement producing companies listed at the stock exchange market of Saudi (Tadawul) are studied for the period of 5 years from 2008-2012. The variables taken for study are Gross operating profit (dependent variable), inventory conversion period, cash conversion cycle, payables deferral period, receivable collection period, firm size, financial debt ratio, fixed financial asset ratio. The study results showed that the current ratio in the Saudi cement industry is the highest. Consequently, cement firms must create a trade-off between these two goals in such a way that neither liquidity nor profitability is affected. It was also discovered that profitability increased as the size of an organisation grew. In addition, as the funding of debt increased, profitability decreased. A high degree of correlation between the working groups was verified by linear regression tests. James Ndirangu Kung'u (2016) examined the effect on the profitability of inventory management of industrial and allied Kenya's companies. Correlational research design was implemented in the analysis. There were two forms of data obtained. By using a questionnaire and secondary data by the use of a record survey sheet, primary data was obtained. A questionnaire form of a likert scale was used to collect the primary data, but data on all 71 industrial and allied companies were collected for a secondary data panel over the period 2009 to 2014. Correlation, linear regression and ANOVA analysis are used for analyzing the data and found that there is a positive and significant relationship between inventory control practices and profitability of industrial and firms. And further recommended companies should set up and maintain efficient inventory management systems such as Just in Time (JIT) and Economic Order Quantity (EOQ). Abdillah Arif Nasution (2020) determines the impact on profitability of inventory turnover in the automotive companies listed on the Indonesian stock exchange for the period 2015-2017. A sample of 18 companies acquired through ICMD (Indonesia Capital Market Directory) is taken. Return On Assets

(ROA) tests profitability. Through checking classical assumptions, the analytical approach used in this research is a quantitative method, as well as statistical analysis, namely simple linear regression analysis. The findings of this research are that inventory turnover does not have a positive impact on the return on assets. Niranjana Mandal and Dutta Smriti (2010) try to have an insight into the working capital conceptual side and to evaluate the effects of management of working capital for liquidity, profitability and non-insurable danger over the Yearly Cycle from 1998-99 to 2006-07 of ONGC, India's leading public sector enterprise. It also aims to observe and analyse the liquidity and profitability status of the company and to research the relationship both of liquidity and profitability, as well as between risk and profitability. It can be concluded that management of working capital is really helpful in ensuring a company's better productive potential, good profitability and sound liquidity, especially the public sector enterprise in India, for decision making by managers on the development of adequate excess for its development and stability of survival in the current competitive and difficult surroundings. Manpreet Kaur (2017) analyzed the impact of Inventory Management on Working Capital Management of 6 major textile companies in India over a 10-year period from 2005 to 2015 using various statistical and analytical methods, including ratio analysis, and noted that the ratio of inventory to working capital of the industry increased from 70 percent to 123 percent over the study period, this reveals that so much cash is locked up in stock, leading to higher carrying costs and eventually impacting the liquidity situation.

HYPOTHESES DEVELOPMENT

In view of literature review mentioned above the following variables have been considered :

1. Raw Material Inventory (RMI)
2. Work in Progress Inventory (WPI)
3. Finished Goods Inventory (FGI)
4. Operating Profit (OP)

The Hypothesis developed are

1. Ho: RMI does not impact profitability
Ha: RMI impacts profitability
2. Ho :WPI does not impact profitability
Ha: WPI impacts profitability
3. Ho: FGI does not impact profitability
Ha: FGI impacts profitability

RESEARCH METHODOLOGY

Research Objective

This research paper has the following objectives:

- (1) To understand the relationship of Raw Material Inventory, Work In Progress Inventory, Finished Goods Inventory with profitability of the business enterprise.

(2) To comprehend the extent to which Raw Material Inventory, Work In Progress Inventory, Finished Goods Inventory influence the profitability.

Research Techniques

In this study the researchers have considered only Indian Pharmaceutical sector companies. The variables taken into account are of Raw Material Inventory, Work In Progress Inventory, Finished Goods Inventory. These are taken as independent variables. The Operating Profit is taken as a profitability measure and the dependent variable. The voluminous and historical data was collected for a decade and analyzed with appropriate numerical techniques.

RESULTS AND DISCUSSIONS

(1) The standardized β expressing regression co-efficients of the independent variables with their direction, values and significance level are placed in the Table- 1. The β of RMI is +0.068 suggest that RMI has positive relationship with OP and its significance level of 0.0540 suggests that it is statistically not significant at all. Hence null hypothesis H_0 (RMI) be accepted and the alternate hypothesis H_a (RMI) be rejected. Thus RMI does not impact OP.

(2) The β of WPI is -0.175 suggesting that WPI has negative relationship with OP. Its significance level of 0.176 further points out that it is statistically not significant. Hence null hypothesis H_0 (WPI) be accepted and the alternate hypothesis H_a (WPI) be rejected. Thus WPI does not impact OP

(3) The β of FGI is -0.391 indicating that FGI has negative association with OP. The significance level 0.001 suggests that this regression co-efficient is statistically very significant. Hence null hypothesis H_0 (FGI) be rejected and the alternate hypothesis H_a (FGI) be accepted. Hence a change in FGI has substantial influence over GP

(4) The results of F test given in Table – 2, shows $F = 4.116$ with a significance level of 0.009 with $df(3, 96)$. This means that all regression co-efficients will be non zero.

(5) The multi co linearity amongst the independent variables has been checked with the help of Matrix of Co-efficients of Correlations given in Table – 3. None of the three independent variables has the co-efficient larger than ± 0.7 . The VIF (Variance Inflation Factor) statistics in Table-1 point out that each of VIF statistics is less than 10. This means that multi co linearity does not exist amongst independent variables

(6) The Multiple Regression Equation stands as under:

$$OP = + 2108.09 + 0.068 (RMI) - 0.175 (WPI) - 0.391 (FGI)$$

(7) The adjusted R2 i.e. the co-efficient of determination, stands at 0.086 which means that the equation can explain 8.6 % variations in OP. For the remaining variations some other variables are responsible.

(8) The descriptive statistics given in Table -4 suggests that the predictive value of the analysis will be better if the data set to be examined similar in the pattern of descriptive statistics placed in the said table.

FINDINGS

RMI carries positive association with Operating profit, but its significance level being 0.54, does not have any impact on OP.

WPI has negative association with OP. Like RMI it has a significance level i.e. 0.176 rendering it as a variable having no weightage in deciding OP. In contrast to RMI and WPI, FGI having negative association with OP has a significance level of 0.001. FGI clearly emerges as a variable that has a role to play in deciding OP.

RECOMMENDATIONS & MANAGERIAL IMPLICATIONS

Considering the analysis and findings in the lines placed above FGI emerges as the only important variable in this research study, as far as its impact on OP in the pharmaceutical sector. This may be probably due to the very nature of the pharmaceutical industry where demand for the product has to be satisfied in a fairly short period of time. To improve the performance on the profitability front, greater attention has to be paid by the practicing managers to Finished Goods Inventory Management.

FUTURE RESEARCH DIRECTIONS

This Research paper has considered only Pharmaceutical companies. A similar study may be conducted in other sectors of the economy before drawing generalisations across the economy.

Table 1
Regression Analysis

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2108.095	368.785		5.716	.000		
	Raw material inventory	5.299	8.606	0.068	0.616	0.54	0.759	1.317

	Work in progress inventory	-8.835	6.473	-0.175	-1.365	0.176	0.562	1.780
	Finished goods inventory	-30.523	9.056	-0.391	-3.371	0.001	0.687	1.457

Table 2
ANNOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.338	0.114	0.086	954.907	0.114	4.116	3	96	0.009

Table 3
Co-efficients of Correlations

	Operating Profit	Raw Material Inventory	Work In Progress Inventory	Finished Goods Inventory
Operating Profit	1.000	.087	.077	-.311
Raw Material Inventory	.087	1.000	.490	-.268
Work In Progress Inventory	.077	.490	1.000	-.560
Finished Goods Inventory	-.311	-.268	-.560	1.000

Table 4
Descriptive Statistics

	Mean	Std. Deviation
Operating profit	1444.07	998.98
Raw material inventory	32.37	12.80
Work in progress inventory	21.79	19.78
Finished goods inventory	21.07	12.79

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