

# A Comparative Study on Relationship between Management of Inventory and Company's Performance: An Empirical Evidence from Some Selected Indian Oil & Gas Industries

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**Abstract:** - To maintain the optimum stock of inventory in a manufacturing company, management of inventory play significant role. The main components of determining efficiency of Company's Performance in the context of management of inventory includes Cash Conversion cycle, Return on assets, Inventory days etc. This research Segments provide optimal value of components of inventory management. This Research study proved that there is Positive or significant relationship between return on assets and inventory days. The main purpose of this research segments is recommended for improving the company's financial performance in the context of inventory by reducing unnecessary investment in inventory. This research study also analysed the optimum stock of inventory and methods of holding inventory. Last Ten years' (2008-09 to 2017-18) data is to be taken for this Research Segments and for Analysis relevant accounting tools and statistical methods were used in this study.

**Index Terms** – Management of Inventory, Return on assets, Financial Statements, Inventory days, Skewness, Analysis of Variance, S.D – Standard Deviations.

## I. INTRODUCTION

A Manufacturing Company Can Accomplished its operating undertakings efficiently when Appropriate amount of inventory or Stock is preserved. Inventory anguishes totally operating accomplishments like Manufacturing, warehousing, sales etc. The rate of opening inventory and closing inventory should be appropriate adequate so that the other business activities are not unpleasantly affected. Thus, inventory shows an important starring role in operations management.

### Meaning & Types of Inventory: -

Inventory is an asset that is kept by a business. Inventory refers to the stock bunch of the product a firm is present for sale and the components that make up the product. In other words, the inventory is used to indicate the combined of those items of tangible assets which are held for sale in ordinary course of the business. In process of production for such sale. To be currently consumed in the production of goods or services to be available for sale. The inventory may be classified into three categories: -

- Raw material and supplies: - It represents to the unfinished items which go in the production process.
- Work in Progress: It shapes to the semi - finished goods which are not 100 % complete but some work has been done on them.
- Finished goods: - It states to the goods on which 100 % work has been done and which are ready for sale.

Methods of Maintaining Inventory: - Methods of Maintaining Inventory are divided into two categories - modern techniques and traditional techniques

### (1) MODERN TECHNIQUES

- (a) Economic Order Quantity (EOQ)
- (b) Re - Order Point (ROP)
- (c) Fixing Stock Levels
- (d) Selective Inventory Control

- i) ABC Analysis

ii) VED Analysis

iii) SDE Analysis

iv) FSN Analysis

## (2) TRADITIONAL TECHNIQUES

(a) Inventory Control Ratios

(b) Two Bin System

(c) Perpetual Inventory System

(d) Periodic Order System

## II. LITERATURE REVIEW

Prof. P. R. Halani had decorated in his paper in International Multidisciplinary Research Journal (RHIMRJ) on the subject “Inventory Management: A Comparative Study of Selected Paper Companies “. The main intentions of her study is to assess the liquidity position of the paper companies. And for that she used various Accounting gears and statistical tools for getting results like as average, S.D. C.V. Maximum and Minimum and used One-way ANOVA test etc. She also elucidates the relationship between Inventory and working capital by using various Accounting Ratio and finally she recommended that paper companies should try to reduce the volume of inventory and try to increase the current.

Dr. Rakesh Kumar (2016) embody that Inventors are assets of the firm and that they label an investment. Such investment wants a binder of funds; thus a firm has to keep inventories at the accurate level. If the stocks are too large, the firm loses the fortuitous to employ the funds more competently. Likewise, if they become too small, the firm might lose sales. Thus, there is an optimal level of inventories. The economic ordering quantity is used to compute the optimum quantity that can be acquired to diminish the carrying and ordering costs.

## III. TESTING OF HYPOTHESIS

**H<sub>0</sub>:** There is Insignificant Relationship between Inventory and Working Capital of Some Selected Indian Oil & Gas Industries.

**H<sub>1</sub>:** There is Significant Relationship between Inventory and working Capital of Some Selected Indian Oil & Gas Industries.

## IV. RESEARCH METHODOLOGY

Being the descriptive research, this Study is erected on secondary source of data. For Analysis data had been composed from official website of the company, Financial Statements of the company, Accounting reports, various reports, Various blogs, article, website, Various reference books, and newspaper. The reachable secondary data is intensively used for research study.

**Sample Size:** - The following listed textile Companies has been selected for the purpose of analysis.

- I. Indian Oil Corporation
- II. ONGC
- III. Bharat Petroleum
- IV. Hindustan Petroleum Corporation

## V. DATA COLLECTION

For this Segments, Data is composed from the official website of the company, Financial Statements of the various company I.e. profit and loss Account, Balance sheet, Cash flow statement, etc. Last Ten years' (2008-09 to 2017-18) data is to be taken for the Analysis. And for Analysis following accounting tools and statistical methods were used in this study.

- Mean, Median
- Variance
- Standard Deviation

- Kurtosis
- Skewness
- 95% confidence limit
- Co-efficient of Variations (C.V)
- Correlation
- Inventory to Working Capital Ratio (IWCR)
- ANOVA- One way

## VI. DATA ANALYSIS

**Inventory to working capital Ratio:** - This Ratio is indicating Financial Liquidity and its efficiency of the particular company. This ratio displays a relationship between the stock of the particular company and Net Current Assets. More will be the Ratio, lower the Liquidity of the company and vice a versa. The formula of finding out Inventory to Working Capital Ratio is as under.

$$\text{Inventory to working capital Ratio} = \text{Inventory} / \text{Working Capital}$$

**Indication of Inventory to Working Capital Ratio (IWCR):** - Part of Inventory is approx. 40% - 50% of current assets in most of the companies. This ratio articulated what proportion of a company's working capital is tied up in its inventory, and this will provide clear picture of Liquidity.

**Sample:** - Last Ten years' (2008-09 to 2017-18) data is to be taken for the Analysis. Data collected from various blogs and official websites of the company and from other trusted sources. Stock to Net working capital ratio of some selected oil and gas industries are as under.

### Inventory (Stock) to Working Capital Ratio

Year	IOC	ONGC	B.P.	HPC
2009	0.10	0.20	2.64	3.34
2010	0.05	0.18	1.74	5.52
2011	0.05	0.49	10.20	6.65
2012	0.06	0.40	31.18	3.94
2013	0.06	0.55	1.86	2.10
2014	0.08	-2.80	3.47	3.36
2015	0.11	5.48	-2.36	-1.21
2016	0.10	-2.52	-1.67	-0.95
2017	0.27	-0.74	-2.83	-1.64
2018	-2.35	-0.31	-3.37	-1.93

Table No: - A

As we seen in the table no. A, the highest Inventory to Working Capital Ratio (IWCR) is found in Bharat Petroleum in the Year 2011-12. Similarly, Lowest ratio found in Bharat petroleum in the year 2017-18. Highest ratio points out the highest fund of the company is knotted in inventory, Decline the financial liquidity of the company.

### Descriptive Statistical Tools: -

Company	IOC	ONGC	B.P.	HPC
Mean	-0.147	0.093	4.086	1.918
Standard Error	0.245628672	0.711438371	3.270236893	0.994795121

Median	0.07	0.19	1.8	2.72
Mode	0.1	-	-	-
Standard Deviation	0.776746062	2.249765667	10.34139707	3.145818388
Sample Variance	0.603334444	5.061445556	106.9444933	9.896173333
Kurtosis	9.813772868	3.834289037	6.128464607	-1.58084296
Skewness	-3.11993809	1.388284247	2.371856553	0.047392421
Range	2.62	8.28	34.55	8.58
Minimum	-2.35	-2.8	-3.37	-1.93
Maximum	0.27	5.48	31.18	6.65
Sum	-1.47	0.93	40.86	19.18
Count	10	10	10	10
Largest(1)	0.27	5.48	31.18	6.65
Smallest(1)	-2.35	-2.8	-3.37	-1.93
Confidence Level(95.0%)	0.555650659	1.609385407	7.397789811	2.250382909
<b>Correlation</b>	<b>-0.34363</b>	<b>0.656254</b>	<b>-0.24782</b>	<b>0.098951</b>

TABLE NO: - B

## DATA INTERPRETATION

As we seen in the above **Table No-B**, ten-year data related to some selected oil & Gas Companies is revealed. The average or in this table is lies between -0.147 to 4.086 the highest Inventory to Working Capital Ratio (IWCR) is found in Bharat Petroleum in the Year 2011-12. Similarly, Lowest ratio found in Bharat petroleum in the year 2017-18. Highest ratio points out the highest fund of the company is knotted in inventory, Decline the financial liquidity of the company.

Highest IWCR indicates that the high proportion of working capital is spent in inventory and it shrinks the financial liquidity in Business operation. So, the company attempt to reduce the investment in inventory by exhausting various mentors of holding inventory.

Median, Standard Deviations and Standard error – these all are statistical tools labelled the distinctions between sample selected for Analysis. It signposts that how mean value is deviated from average or mean of such distribution. If the variance and standard deviation is less compare to its mean, then results by using such data is more authentic and reliable. Standard deviation is lies between 0.776746062 to 10.34139707. If the variations between sample is large then it's standard deviation is also high while Sample Variance is shows in percentage and it's indicates the variations between sample in percentage. In **Bharat petroleum** company, standard deviation is highest, indicates that there are more variations in sample. Less variations in sample provides the unadulterated Result regarding its relationship between the two Variable described in this table i.e. Inventory and Working Capital. In **IOC** Company, standard deviation is tiniest compare to rest of the companies, and it expressed that, there is a very less variations between sample. If the variations are less, data is more consistent and conclusion is also more reliable and truthful. More variations between two Variable indicates less genuineness of the data and result of by using such data is also not more reliable and authentic.

Correlation displays the linearity concerning two Variable. If the correlation is positive, shows the significant relationship between two Variable I.e. Inventory and Working Capital Management. Here, in this table, the correlation of all the company is positive except ONGC & HPC. Now. There is linear relationship between value of inventory and working capital in case of following company.

- **ONGC**
- **HPC**

And there is no linear relationship between Inventory and Working Capital in case of following Company.

- IOC
- Bharat petroleum

## ANOVA Single factor

### TESTING OF HYPOTHESIS

**H0:** There is Insignificant Relationship between Inventory and Working Capital of Some Selected Indian Oil & Gas Industries.

**H1:** There is Significant Relationship between Inventory and working Capital of Some Selected Indian Oil & Gas Industries.

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
I.O.C	10	-1.47	-0.147	0.603334444
O.N.G.C	10	0.93	0.093	5.061445556
B.P.	10	40.86	4.086	106.9444933
H.P.C	10	19.18	1.918	9.896173333

<b>ANOVA</b>						
Source of Variation	<i>S.S</i>	<i>df</i>	<i>M.S</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	115.53753	3	38.51251	1.257495435	0.303488018	2.866265551
Within Groups	1102.549	36	30.62636167			
Total	1218.0866	39				

- Degree of freedom = 39
- Table Value of F = **F-tab (0.05) = 2.866265551**
- Calculate Value of F = **F-Cal = 1.257495435**
- F-Cal < F-tab (0.05)
- 1.25 < 2.866

Here, the calculate value of **F (F-Cal)**, is less than compare to Table Value of **F (F-Tab (0.05))**, So, here, **NULL HYPOTHESIS** Should be Accepted. Thus, We Can Say that There is No Significant Relationship between Inventory and Working Capital of Some Selected Oil & Gas Companies.

## VII. CONCLUSION

The inventory to working capital ratio of some selected oil & Gas companies in India shown an average -0.92 times. The average Ratio of inventory to working capital management is not adequate in case of IOC and Bharat petroleum Company. Negative Ratio shows High investment in inventory and excess of current liabilities compare to Current Assets. Thus, it is suggested that, the oil and Gas Companies should try to reduce the investment in inventory and also try to reduce the volume of inventory (Raw materials, WIP, Finished Goods) by using various inventory control model and also try to upsurge investment in current assets.

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