

## **A COMPREHENSIVE STUDY ON PHYSICAL VALUATION AND COST ANALYSIS OF INVENTORY WITH RESPECT TO OHMIUM INDIA PRIVATE LIMITED**

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**Abstract:** *This study aims to provide an in-depth analysis of inventory physical valuation and cost analysis in the context of Ohmium India Private Limited. Inventory management is an important part of any organization as it directly affects the financial performance and overall business operations. The purpose of this study is to examine the methods and practices used by Ohmium India Private Limited in the valuation and analysis of its inventories with a special focus on the use of physical valuation techniques and cost analysis methods. The results of this study help to better understand the inventory management practices of Ohmium India Private Limited and provide insight into potential areas for improvement. By identifying the strengths and weaknesses of inventory physical value and cost analysis, the purpose of the study is to propose strategies and recommendations to optimize inventory management, improve financial results, and improve the overall efficiency of the company's operations.*

**KEYWORDS:** *Inventory management, EOQ analysis, ordering Quantity, carrying cost,*

### **Introduction**

Inventory management and control is an important aspect of any manufacturing organization because it makes sure that the right amount of inventory is available to meet customer demand without incurring additional costs. Simply put. In a manufacturing organization, inventories may include raw materials, work in progress (WIP), finished goods, and packaging materials. The main goal of inventory control and management is to maintain the costs of inventory with the benefits of having enough stock to meet customer demand. Physical valuation is necessary for inventory management to accurately record and report the value of the goods held by the business. This provides a way to match recorded inventory levels with actual physical numbers, thereby preventing discrepancies, potential loss, or theft identification, and enabling reliable finances. Reporting and decision-making process. By physically counting and valuing inventory, businesses can verify the accuracy of inventory records, confirm the existence and condition of goods, and

decide the true value of goods by cost or marketvalue.

### Statement of Problem

Accurate physical valuation and cost analysis of inventory is important for businesses to make correct decisions about their financial performance. However, many companies struggle to decide how to correctly value these assets, which can result in inaccurate financial statements and financial losses. The problem, therefore, is the comprehensive research that supplies clarity into various valuation methods, cost analysis techniques, and their impact on a company's financial statements. This study aims to fill this gap by supplying a comprehensive analysis of physical valuation and cost analysis of inventory and fixed assets, to help manage these assets and perfect financial performance.

### Objective of the Study

1. To analyze the scientific process to decide the inventory ordering quantity.
2. To examine the Average annual total cost that is decided from the Scientific process of existing inventory ordering quantity and economic ordering Quantity.

### Review of Literature

**Baruch Lev (2003)** focused on Intangible assets that are substantial and significant. However, the information contained in current financial statements is extremely limited regarding these assets. Worse, most of the information presented is incomplete, inconsistent, and unclear, resulting in Significant costs to businesses, investors, and society as a whole. To solve this challenge, on-balance-sheet accounting for many of these assets and extra financial disclosures will be required. These gains are possible only if financial information users demand that corporate reporting be improved.

**Shelby W & Herman (2000)** Bureau of Economic Analysis (BEA) is revising the national income and product accounts (NIPAs) as part of a comprehensive revision. has issued revised estimates for 1925-1997 fixed assets and consumer durable goods (previously "fixed reproducible tangible wealth"). These estimates include the net stock of commercial and government-owned equipment and software, structures, and the net stock of consumer-owned durable goods. Furthermore, as part of the modifications to the NIPA table presentation, BEA is developing a new table that illustrates changes in the net stock of produced assets & fixed assets.

**E B Barbier et al (2000)** attempts to 'operationalize' the notion of sustainability into assessment

methodologies for Practical decisions have been scarce and generally unconvincing. This study argues that this does not have to be the case if a series of ecologically compensatory, or shadow, initiatives are implemented. Within an entire portfolio, are utilized to ensure a sustainability goal of limiting the depletion and deterioration of natural capital resources. This can be accomplished by employing both a 'weak' and strong sustainability criterion. In both circumstances, the resulting optimum differs from the conventional cost-benefit criterion's efficient optimum, but the core cost-benefit model remains intact. Franco Modigliani and Merton H. Miller (1958) What is a firm's "cost of capital" in a world where funds are used to acquire assets whose yields are uncertain; and where capital can be obtained through a variety of channels, ranging from pure debt instruments representing money-fixed claims to pure equity issues giving holders only a pro-rata share in the uncertain venture.

**Tom Jose V *et al* (2013)** analyzed that a business needs inventory to run the well running of its activities. It connects the production and distribution processes. The inventory investment in most cases is the most substantial component of current assets and working capital. As a result, proper inventory control and management are critical. The goal of inventory management is to guarantee that commodities are available in adequate amounts when needed while simultaneously minimizing inventory investment. So, in order to comprehend the nature of the organization's inventory management, we examine various inventory control strategies for an efficient inventory management system in this paper.

**Sanjiv Mittal (2014)** analyzed that inventory is a significant component of current assets, particularly in industrial firms. Massive sums are committed to stocks in order to ensure a smooth flow of production and meet customer demand. Maintaining inventory, on the other hand, entails holding or carrying expenses as well as opportunity costs. Inventory management, as a result, is critical in balancing the benefits and drawbacks of inventory retention. Inventory management that is efficient and productive can help a business run smoothly and survive. With this as a backdrop, the current study focuses on empirically examining inventory management in the fertilizer business over a 10-year period, from 2001-2002 to 2010-2011, using a sample of 10 enterprises. The study investigates the impact of inventory performance on business profitability.

**Prempeh & Boateng (2015)** aimed to analyze the importance of the manufacturing sector to the Ghanaian economy, this study believes it is necessary to assess the impact of efficient inventory

management on the profitability of Ghanaian manufacturing firms. The annual reports of four manufacturing firms listed on the Ghana Stock Exchange were used to collect cross-sectional data from 2004 to 2014. Profitability measures were investigated and linked to proxies for efficient inventory management by manufacturers.

**Sahari *et al* (2016)** focused on Managers engaging logically in efficiently managing their inventory if they believe the practice improves business performance. However, existing operations management research has yielded different insights regarding the inventory-performance link. This study empirically investigates the relationship between inventory management and business performance and capital intensity using financial data from 82 Malaysian construction enterprises from 2006 to 2010. Inventory management was discovered to be favorably connected with company performance using regression and correlation approaches. Furthermore, the findings reveal a favorable link between inventory management and capital intensity.

**Sharma & Arya (2016)** focused on inventory as a stock file that contains all of the products that the organization has created for sale as well as the components that go into making the product. Every organization requires inventory to ensure the smooth operation of its activities, or processes. Inventory serves as a link between the manufacturing and distribution processes. Inventory management's duty is to ensure the availability of materials as needed, the quantity of inventory, and whether it is possible to reduce inventory investment. In today's competitive industrial world, organizations are looking for innovative ways to improve industrial processes, how to satisfy customers, and how to stay ahead of their competitors in the world of competition. The plan for bringing these things to life.

**Shen, *et al.* (2017)** focused on inventory control in a Chinese manufacturing firm. The main objectives of this study are to pinpoint the critical variables that affect inventory management practices, look into practical and efficient inventory management strategies, and assess the effects of supplier collaboration on supply chain efficiency. The main variables affecting inventory control in manufacturing are determined using a case study technique. The case study yielded efficient and effective inventory management procedures that could serve as helpful advice for international businesses operating in China.

**Chan, et al. (2017)** studied Inventory management effectiveness is critical for a manufacturing organization to be more competitive. Previous research has found that several factors influence the effectiveness of inventory management in organizations, but there is a scarcity of researchers who have conducted research in the manufacturing of small and medium enterprises in Johor. As a result, this study aims to identify the inventory management problem that small and medium-sized businesses face, as well as the factors that influence inventory management

### Research Methodology

Since this research will be majorly focusing on the physical valuation of the inventory with respect to analyzing the cost that is being incurred in this process, we will be comparing the rule of thumb with the scientific approach which is an ad-hoc method of keeping inventory. And analyses that give us the best yield and benefit to the organization. because the value of the assets plays a significant role in the value of the company, by evaluating the assets clearly analyzes the proper position of the organization. As a point proper valuation evaluation of assets is especially important in manufacturing companies. To analyze this research on the physical valuation of inventory the following are the data which are needed. Also, it is secondary data collected by Companies' financial reports. To perform this research, we have considered the following variables.

Proposed Methodology:

Economic Ordering Quantity (EOQ)

$$\sqrt{2 \times \text{Annual demand} \times \text{ordering cost} \div \text{carryingcost}}$$

Carrying Cost.

Financial Feasibility

Average Annual Total Cost (AATC)

One Sample T-test

Homogeneity of mean test

**Testable Hypothesis**

- **H0:** There is no significant difference between mean ordering quantity between the existing inventory system and EOQ (COQ = EOQ)
- **H1:** There is no significant difference between mean ordering quantity between the existing inventory system and EOQ (COQ = EOQ)

### Limitations

A comprehensive study of physical valuation and cost analysis of inventories and fixed assets

has several limitations. First, performing a correct analysis requires significant time, resources, and ability. Second, the accuracy of the analysis depends on the completeness and reliability of the data used, which will not always be available. In addition, factors such as technological obsolescence or changes in market conditions may affect the overall value of the inventory over time. Finally, the study may be limited by the availability of comparable data or comparative data for correct cost analysis.

### Data Analysis

#### Shows Outcomes of One Sample T-Test Conducted Between Existing Inventory Quantity And EOQ

Sl. No	Inventory	Financial Year	EOQ Test value	Test Statistics and P-value	Decision
1	Iridium	2019-20	17.78	-6.10***(0.000)	Significant
		2020-21	18.22	-5.79***(0.000)	Significant
		2021-22	14.87	-6.08***(0.000)	Significant
2	Platinum	2019-20	19.06	-2.36**(0.038)	Significant
		2020-21	13.18	-5.11***(0.000)	Significant
		2021-22	13.77	-10.1***(0.000)	Significant
3	Gold	2019-20	16.86	0.606(0.557)	Insignificant
		2020-21	18.22	0.260(0.800)	Insignificant
		2021-22	22.13	1.04(0.319)	Insignificant
4	Membrane	2019-20	43.54	-3.86**(0.003)	Significant
		2020-21	39.75	-5.76***(0.000)	Significant
		2021-22	43.00	-4.24***(0.000)	Significant
5	Sheet Metal Enclosure	2019-20	34.65	-0.319(0.756)	Insignificant
		2020-21	29.75	-1.10(0.294)	Insignificant
		2021-22	27.19	-2.52***8(0.029)	Significant
6	Hydrogen Dryer	2019-20	12.06	-17.4***(0.000)	Significant
		2020-21	11.52	-11.6***(0.000)	Significant
		2021-22	10.52	-14.0***(0.000)	Significant
7	Power Supply Units	2019-20	11.52	-10.2***(0.000)	Significant
		2020-21	12.57	-13.4***(0.000)	Significant
		2021-22	13.06	-15.4***(0.000)	Significant

8	Circuit Breakers	2019-20	35.99	-0.279(0.790)	Insignificant
		2020-21	35.11	-0.380(0.711)	Insignificant
		2021-22	30.79	-1.19(0.257)	Insignificant
9	Voltage Sense Card	2019-20	32.78	-3.22**(0.008)	Significant
		2020-21	38.54	-3.44**(0.006)	Significant
		2021-22	32.29	-3.58**(0.004)	Significant
10	Control Boxes	2019-20	8.53	-14.1***(0.000)	Significant
		2020-21	10.37	-10.1***(0.000)	Significant
		2021-22	8.53	-19.7***(0.000)	Significant
11	RO Membrane	2019-20	31.30	-0.593(0.566)	Insignificant
		2020-21	31.80	-0.829(0.425)	Insignificant
		2021-22	38.95	0.153(0.881)	Insignificant
12	Interconnection Cables	2019-20	6.16	-14.0***(0.000)	Significant
		2020-21	4.70	-14.3***(0.000)	Significant
		2021-22	3.97	-23.9***(0.000)	Significant
13	Virtual Frequency Drive	2019-20	32.29	-0.506(0.623)	Insignificant
		2020-21	34.65	-0.347(0.735)	Insignificant
		2021-22	28.11	-1.20(0.257)	Insignificant
14	Stack Plates	2019-20	7.75	-11.1***(0.000)	Significant
		2020-21	7.54	-13.9***(0.000)	Significant
		2021-22	6.16	14.0***(0.000)	Significant
15	Sensor Chips	2019-20	5.90	-17.3***(0.000)	Significant
		2020-21	5.90	-13.9***(0.000)	Significant
		2021-22	3.97	-15.5***(0.000)	Significant
16	Cable Harness	2019-20	5.33	-16.4***(0.000)	Significant
		2020-21	5.33	-13.9***(0.000)	Significant
		2021-22	3.97	-9.65***(0.000)	Significant

17	Bush Bars	2019-20	10.37	-8.42***(0.000)	Significant
		2020-21	9.41	-10.8***(0.000)	Significant
		2021-22	11.24	-8.64***(0.000)	Significant
18	Tie Rods	2019-20	37.71	-0.028(0.978)	Insignificant
		2020-21	34.65	-0.389(0.705)	Insignificant
		2021-22	37.71	-0.039(0.970)	Insignificant
19	Hex Nuts	2019-20	12.06	-11.5***(0.000)	Significant
		2020-21	10.81	-9.02***(0.000)	Significant
		2021-22	10.52	-11.0***(0.000)	Significant
20	Pumps	2019-20	9.06	-14.1***(0.000)	Significant
		2020-21	9.24	-11.3***(0.000)	Significant
		2021-22	5.62	-13.1***(0.000)	Significant
21	Plastics	2019-20	22.49	-0.522(0.612)	Insignificant
		2020-21	19.47	0.0639(0.950)	Insignificant
		2021-22	19.06	-0.539(0.601)	Insignificant

*Source:* Author's own calculation

Level of significance \*\*\*0.01, \*\*0.05, \*0.1

*Shows the summary of One sample T-Test*

No of parts whose Hypothesis is rejected(Significant)	<u>14</u>
No of parts whose Hypothesis did not reject(Insignificant)	<u>7</u>

### Interpretation

The table has Inventory data for various commodities from three economic periods: 2019-20, 2020-21, and 2021-22. The material includes EOQ (Economic Order Quantity) test values, test statistics, p-values, and decisions on the significance of test statistics. The EOQ test value is a measure of the proper amount of inventory to order. The test statistic shows the EOQ test's significance level, while the p-values measure the probability that the observed test statistic occurred by chance. The decisions in the table decide whether the results of the EOQ test are statistically significant or insignificant based on the significance levels showed by the p-values. A significant result indicate



### Homogeneity of Mean Test

**TABLE 5.4.1** Showing the Homogeneity of Mean Pertaining to Ordering Quantity for The Financial Year Between 2019-20 And 2021-22

SI NO	Inventory	F value	P value	Decision
001	Iridium	1.02	0.371	Insignificant
002	Platinum	1.17	0.321	Insignificant
003	Gold	1.81	0.17	Insignificant
004	Membrane	0.3	0.738	Insignificant
005	Sheet Metal Enclosure	0.88	0.421	Insignificant
006	Hydrogen Dryer	0.64	0.529	Insignificant
007	Power Supply Units	0.59	0.559	Insignificant
008	Circuit Breakers	0.62	0.543	Insignificant
009	Voltage Sense Card	0.51	0.603	Insignificant
010	Control Boxes	0.94	0.399	Insignificant
011	Ro Membrane	1.10	0.341	Insignificant
012	Interconnection Cables	1.12	0.337	Insignificant
013	Virtual Frequency Drive	0.44	0.643	Insignificant
014	Stack Plates	0.46	0.629	Insignificant
015	Sensor Chips	0.94	0.397	Insignificant
016	Cable Harness	0.46	0.631	Insignificant
017	Bush Bars	0.36	0.698	Insignificant
018	Tie Rods	0.24	0.787	Insignificant
019	Hex Nuts	0.41	0.663	Insignificant
020	Pumps	2.51	0.096	significant
021	Plastics	0.55	0.576	Insignificant

Source: Author's own calculation  
 Level of significance \*\*\*0.01, \*\*0.05, \*0.

## **Inference**

The table presents the results of research studies that analyzed various inventory items including iridium, platinum, gold, membranes, and several others. F-values and p-values were calculated to determine the importance of each item's relationship to the outcome the F- value measures the significance of the variable while the P- value Express the Probability. Analysis showed that most inventory items, including iridium, platinum, gold, membranes, tin housings, hydrogen dryers, power supplies, circuit breakers, etc., were not statistically significant compared to the results. However, two points stand out from the rest. First, the pump showed a significant F- value and a p-value of 0.096, indicating a possible association with the results. This suggests that the pump may play a key role in influencing the study results. Then "Plastic" also has a relatively low p-value of 0.576 but is within zero. Although not statistically significant in this study.

## **Findings**

The research mainly focused on the physical valuation of inventory in the manufacturing sector and its usefulness. The importance of physical valuation is to understand the company's current position and also to avoid stock out of inventory by performing some of the statistical tools. It was found that some of the inventories which were ordered in an ad-hoc method are equal to the EOQ which is significant in nature and means there is no difference between the rule of thumb ordering quantity and economic ordering quantity so in the case of insignificant there is a difference between ad hoc method of ordering and EOQ So, the company can think of focusing on a scientific approach which is EOQ for better results and yield. Part number 004 which is a membrane and part number 009 which is the voltage sensor card is significant in nature which means the current system of ordering quantity is not equal to the economic ordering quantity after performing the cost feasibility analysis we found that if the company further orders this inventory based on EOQ can have a better advantage in cost.

## **Conclusion**

hydrogen batteries are the near future in the EV segment as it provides greater advantage considering all the benefits compared to fuel show the company is mainly focused on preparing hydrogen batteries by extracting hydrogen from the water true to the technique of BE M proton exchange membrane which helps to separate hydrogen from water and producers energy out of it that energy can be replaced with the fuels that are being consumed that helps to introduce the cost, as well as pollution so the company constantly putting their

effort to deliver the best results using from, electrolyzes So after considering the various inventory that is being used in the manufacturing of hydrogen the research made an attempt to find out the inventory feasibility

### Suggestions

In summary, we can say that for the majority of inventory items (items 1-20) there is no significant association with the survey results. Statistical analysis showed that variation in these items did not affect the study results. However, it is worth noting that the "pumping" of point 20 has a relatively high F-value and a slightly lower P-value, suggesting that the relationship may be weak. By clearly analyzing this research we can conclude by suggesting the company focus on economic ordering quantity for a couple of items as it is giving a better yield compared to the ad-hoc method so the company he suggested follows do you work your method for part number, items. And part number 009 which is the membrane and Voltaire sensor card after performing homogeneity of mean and average annual total cost we can clearly say that you will go yields better results for these items.

### Reference

- Lev, B. (2000). *Intangibles: Management, measurement, and reporting*. Brooking's institution press
- Subhani, B. H., Ashfaq, K., Khan, M. A., Meyer, N., & Farooq, U. (2022). Nexus Between Inventory Volatility and Capital Investment: Evidence from Selected Asian Economies. *The Journal of Asian Finance, Economics and Business*, 9(1), 121-132.
- Tom Jose, V., Akhilesh, J. K., & Sijo, M. T. (2013). Analysis of inventory control techniques: A comparative study. *Int J Sci Res Publ*, 3, 1-6.
- Goh, T. S., & Sagala, E. (2022). The effect of raw materials inventory, fixed assets, short-term debt and production costs on net profit pt. Ervin success mujurindo. *Jurnal Ekonomi*, 11(02),957-964.
- Subhani, B. H., Ashfaq, K., Khan, M. A., Meyer, N., & Farooq, U. (2022). Nexus Between Inventory Volatility and Capital Investment: Evidence from Selected Asian Economies. *The Journal of Asian Finance, Economics and Business*, 9(1), 121-132.
- Tempelmeier, H. (1985). Inventory control using a service constraint on the expected customer order waiting time. *European Journal of Operational Research*, 19(3), 313-323.
- Barbier, E. B., Koch, E. W., Silliman, B. R., Hacker, S. D., Wolanski, E., Primavera, J., ... & Reed, D. J. (2008). Coastal ecosystem-based management with nonlinear ecological functions and values. *science*, 319(5861), 321-323.

Teissier, A., Le Magueresse, C., Olusakin, J., Andrade da Costa, B. L., De Stasi, A. M., Bacci, A., ... & Gaspar, P. (2020). Early-life stress impairs postnatal oligodendrogenesis and adult emotional behavior through activity-dependent mechanisms. *Molecular psychiatry*, 25(6), 1159-1174

- Shen, H., Deng, Q., Lao, R., & Wu, S. (2016). A case study of inventory management in a manufacturing company in China. *Nang Yan Business Journal*, 5(1), 20-40.
- Chan, S. W., Tasmin, R., Aziati, A. N., Rasi, R. Z., Ismail, F. B., & Yaw, L. P. (2017, August). Factors influencing the effectiveness of inventory management in manufacturing SMEs. In *IOP Conference Series: Materials Science and Engineering* (Vol. 226, No. 1, p. 012024). IOP Publishing