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A Study on Inventory Management Practices in Silicon Industry

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ABSTRACT:

The aim of the study which is Inventory Management is to investigate the Management system on how the Inventory is circulating in the company to make the finished product of ferro silicon. There are various techniques which is useful to know the Inventory in the company are: Economic order Quantity, Average stock level, Minimum stock level, Maximum stock level, ABC analysis. The main intention of the study is to maintain the proper stock in the company which is neither over stock or under stock.

KEY WORDS: Inventory techniques, Inventory analysis, Turnover ratio, Maintenance of stock, Inventory management, over stock & under stock.

INTRODUCTION:

Inventory management refers to the management of the inventory items and defines how much physical inventory in the company. In other words, inventory defines that the quantity of stock to order and the time period to order and the stock storage. Inventory techniques leads the time period and the quantity to order. From the modern technique of RFID system, it tracks the stock and develops the automated time period and the measuring quantity of stock and purchasing time and develops the reports and analytics because RFID is a bar code mechanism. Every organisation needs the proper managing of the inventory because no business can hold more stock than the profit and this can be done through the proper technique of Inventory turnover. The main objective of the inventory management is to understand the stock levels in the organisation.

REVIEW OF LITERATURE:

Yun fong lim, Chen wang (2017):

According to the authors, Inventory purchases is based on the demand of the product and the customers preferences in using of the material in the daily usage. By the demand that the organisation predicted and the expected demand is the difference of the cost and revenue occur in the organisation, because inventory decides the company's profit and revenue.

Fawzat alawneh, Guoqing zhang (2018):

According to the authors, Inventory management needs a mathematical models and techniques which helps to optimize the quantity of multiple warehouses because the stock needs to be store in the storage stores and ware houses and these techniques will develops the proper analysis of stock circulation in the organisation.

Abdullah, Ali Akbar Shaik (2021):

According to this author, a multi- item multi- objective inventory model is developed to save the environment with the pollution free from the substances where the organisation produces from the stock and dumped as wastage and in this paper it prefers to re-use the scrap material as an spare parts which leads to the inventory for the organisation resulting to save the green environment.

Fahimeh shafiee, Aliyeh khazemi (2021):

According to these authors, Everyday there are some perishable goods are transferring in account of the robust approach to the customers and it needs the limited inventory with the higher transportation cost and it is determined with the help of the policies in the organisation where stock should circulate over the organisation. The delivery time is very important in this model of approaches. A hybrid algorithm is proposed to develop to maintain the inventory in the proper form.

Jiao sun (2020):

According to this journal, it states that Inventory is the core issue in the supply chain management. To point out the future development trend this paper recommends to follow the scientific knowledge map visualisation software so that it can connect with the inventory stores in the organisation and can find out the analysis based on this software.

Pedram hooshangi, Nadia Bhuiyan (2022):

According to this journal, it describes the two- stated integer optimisation model is required to follow by the organisation because row - column generation algorithm is required as it describes the demand modification is to be proceeded to follow so it creates the proper purchasing of the stock will be determined.

Giovanni Giallombardo, Vittorio solina (2021):

In this article, it represents that the production and distribution activities are the most significant factors to limit the wastage of the food supply chain management. Multi- level support and managerial insights are suggested to the food management organisation and the inventory in this company. The mathematical models support the harvesting, storage, and distribution activities in the inventory for the organisation.

Syed jafar sajadi, Ali ahmadi (2022):

From this paper, Product categorisation is important feature in the large-scale industries, as Product Category Management shows the relevancy of shelf space allocation and assortment planning. This paper develops the integrated mathematical model to optimises the space and assortment and inventory control model for the materials. This management shows the efficient performance of the algorithms in solving the large-scale units.

Luis.A.San-jose, L.A.Sicilia (2021):

From this article, the main inventory problem is the inventory cycle and the demand rate is a dependant function. Sensitivity analysis and the efficient algorithm is proposed to develop the alternative solutions for the basic problems in the organisation and the problems arises due to the demand rates over the time period.

Sebatjane, Adetunji (2021):

In this paper, it states that the optimal purchasing lot size policies and the shipping decisions over time period, as demand of the retail decisions are depending upon the inventory expiration time. Customer demand and retail shipment is depending upon the inventory in the organisation. Retailer always keeps some inventory to hold the position before purchasing and it is depending upon the
company's sufficient inventory only.

Teerasoponpong, Apichat sopadang (2022):

From this article, Decision-making and sourcing is very essential for the inventory management because the decision support solutions made more effective controlling in the inventory management in the small and medium companies and so that these organisations can never make the stock goes remained and unused and storage for more time period.

OBJECTIVES OF THE STUDY:

To analyse the standards which helps to reduce the cost without compromising on the quality of raw materials
To know the efficiency in inventory management in the company
To understand and analyse the inventory of various raw materials that are intermediaries and finished goods
To study the various inventory techniques that are followed by the Kalpataru Global Alloys Pvt Limited.

SCOPE OF THE STUDY:

Inventory management can be determined and measured by different techniques for proper purchase and storage
This study carries the establishing the budget of the purchasing the raw materials and minimisation of cost.
Determining the size of inventory to be carried and lot sizes for new orders
Coordinating inventory policies with sales and production
Arranging the procurement and disbursement of materials and record keeping and assigning responsibilities for carrying out the inventory control functions.

NEED OF THE STUDY:

To avoid the over and under stocks of the inventory in the company
Purchasing materials on continue and equalising manner to not to suffer at any time of production
To facilitate the market demand of customers from time to time to meet the desired level of performance in the market.
It is very necessary for an organisation to maintain the minimum investment in material to maximize the profitability in the company.

RESEARCH METHODOLOGY:

In my research, my methodology refers to the secondary data which contains the balance sheet and internal reports from the company which is from 2017- 2023 which is 6 years. This secondary data is the maximum for inventory management.

DATA SOURCES:

Primary Data:

The primary data will be collected through the interaction with the finance manager of the company and from the staff members.

Secondary Data:

Most of the Inventory Management study is based on the secondary data which consists of the Balance sheets of the company, financial statements, reports, collection of records from past 5 years.

Sampling design unit: Financial statements.

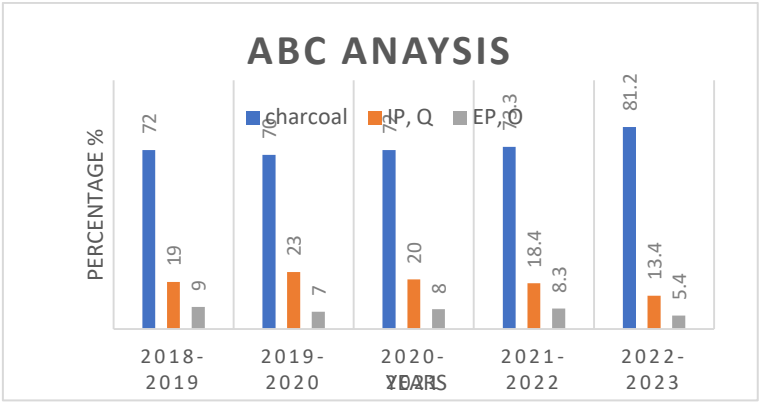
DATA ANALYSIS AND INTERPRETATION:

1. ABC Analysis:

Table 1.1: ABC Analysis technique followed in the organisation

YEARS	charcoal	IP, Q	EP, O
2018-2019	**72**	**19**	**9**
2019-2020	**70**	**23**	**7**
2020-2021	**72**	**20**	**8**
2021-2022	**73.3**	**18.4**	**8.3**
2022-2023	**81.2**	**13.4**	**5.4**

Graph 1.2: Graph showing ABC Analysis technique followed in the organisation



Interpretation:

According to the ABC Analysis calculations, the raw materials namely charcoal, Quartz, Electrode paste, Iron powder and oxygen and form these materials ABC Analysis is calculated and from this analysis, Charcoal is categorised as a "A" material, quartz and Iron powder is categorised as "B" material. Electrode paste and oxygen is categorised as "C" materials. These are the primary materials. From the all graph, we can understand that in the year 2022-2023 category "A" is higher (81.2) than the all past years and category "B" is higher (13.4) is also least in this year compared to past years and in the same year the category "C" is lowest usage from the previous years.

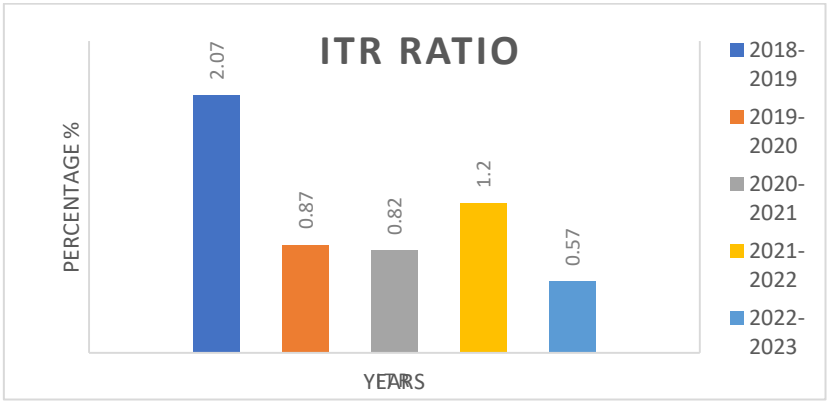
Inventory Turnover ratio:

A ratio which measures the number of times that a firm inventory is sold during the year. Inventory or stock turnover is measured in terms of ratio of the use of materials consumed to the average inventory during the period. High ratio indicates that the material is a fast moving one, when the ratio is low it indicates that material did not goes up to the desirable item.

Table 1.2: Inventory turnover ratio table:

year	ITR
2018-2019	**2.07**
2019-2020	**0.87**
2020-2021	**0.82**
2021-2022	**1.2**
2022-2023	**0.57**

Graph 1.2: Inventory turnover ratio graph:



Interpretation:

From the table 1.1 and graph 1.1, it is clearly states that the Inventory turnover Ratio is higher in the 2018-2019 than the other years and in the year 2021-2022 is also increased to 1. More than 1 represents the company is selling and making the ordering time perfectly and the materials consumed is in the good state and for the year 2018-2019 and in the year 2020-2021 is above 1, and so that the materials consumption and the management of inventory is not that much good state. In the year 2022-2023, the Inventory turnover ratio is 0.57 and it shows that the inventory system is not in a good state because it is not nearer to the 1 and it shows that the inventory monitoring and controlling is not in a good state. It is suggested to make the control and monitor the inventory in the company.

Conclusion:

From the interpretation it is concluded that the Inventory is the valuable asset for the organization and it keeps the organization in a profitable manner and so that the inventory turnover ratio is very necessary for the organization to determine the stock valuations and stock circulation in the organization.

FINDINGS:

From ABC Analysis, it founds that material charcoal is consumed higher in the 2022-2023 year and in the same year oxygen and electrode paste consumption is lower than the other years.

From the ABC Analysis, it is found that the material consumption of iron powder and quartz is higher in the year of 2019-2020.

From the inventory turnover ratio, it is found that the ratio levels are not in a gradual manner and in the year 2018-2019 only the ratio is higher and it is higher than 1.

In the year 2022-2023, the inventory turnover ratio is drastically very low compared to the previous years and it does not nearer to 1.

In the year 2020-2021, the ratio is also increased to the 1 and only these 2 years performs the ratio which is higher than 1 and remaining years are lesser than 1.

SUGGESTIONS:

From the ABC Analysis it is suggested to use the materials in the priority manner and in a proper manner.

It is suggested to give the proper attention to the Inventory that it can goes to the inventory turnover ratio to above the 1.

It is suggested to use the inventory materials, so that the stock can not goes to under stock and therefore it states that the inventory turnover ratio is lesser in the 3 years and is higher in the 2 years

It is also suggested that the regular review of the inventory is needed for the appropriate level of using the raw materials for the finished good.

CONCLUSION:

From this study, it is concluded that the physical asset is very important for the manufacturing industry and it is very essential to circulate the inventory in the company. If there is a storage and if there is a limited stock in the company it creates the massive impact of the company. So that it is important to manage and maintain with the proper techniques of the inventory in the organisation.

REFERENCES:

1. Lim, Y.F., Wang, C.: Inventory management based on target-oriented robust optimization. Manage. Sci. 63, 4409–4427 (2017).
2. Alawneh, F., Zhang, G.: Dual-channel warehouse and inventory management with stochastic demand. Transp. Res. Part E: Logist. Transp. Rev. 112, 84–106 (2018).
3. Ahmadini, A.A.H., Modibbo, U.M., Shaikh, A.A., Ali, I.: Multi-objective optimization modelling of sustainable green supply chain in inventory and production management. Alex. Eng. J. 60, 5129–5146 (2021).
4. Shafiee, F., Kazemi, A., Jafarnejad Chaghooshi, A., Sazvar, Z., Amoozad Mahdiraji, H.: A robust multi-objective optimization model for inventory and production management with environmental and social consideration: a real case of dairy industry. J. Clean. Prod. 294, 126230 (2021).
5. Sun, J.: A review of multi-echelon inventory control in supply chain. OJBM 08, 881–891 (2020).
6. Hooshangi-Tabrizi, P., Hashemi Doulabi, H., Contreras, I., Bhuiyan, N.: Two-stage robust optimization for perishable inventory management with order modification. Expert Syst. Appl. 193, 116346 (2022).
7. Giallombardo, G., Mirabelli, G., Solina, V.: An integrated model for the harvest, storage, and distribution of perishable crops. Appl. Sci. 11, 6855 (2021).
8. Sajadi, S.J., Ahmadi, A.: An integrated optimization model and metaheuristics for assortment planning, shelf space allocation, and inventory management of perishable products: a real application. PLoS ONE 17, e0264186 (2022).
9. San-José, L.A., Sicilia, J., González-de-la-Rosa, M., Febles-Acosta, J.: Profit maximization in an inventory system with time-varying demand, partial backordering and discrete inventory cycle. Ann. Oper. Res. 316, 1–21 (2021).
10. Sebatjane, M., Adetunji, O.: Optimal lot-sizing and shipment decisions in a three-echelon supply chain for growing items with inventory level- and expiration date-dependent demand. Appl. Math. Model. 90, 1204–1225 (2021).
11. Teerasoponpong, S., Sopadang, A.: Decision support system for adaptive sourcing and inventory management in small- and medium-sized enterprises. Robot. Comput.-Integr. Manuf. 73, 102226 (2022).