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RETAIL STORE STOCK INVENTORY ANALYTICS

LITERATURE SURVEY

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RETAIL STORE STOCK INVENTORY SYSTEM

ABSTRCT

In recent years, the correct management of inventories has become a fundamental pillar for achieving success in enterprises. Unfortunately, studies suggesting the investment and adoption of advanced inventory management and control systems are not easy to find. In this context, this article aims to analyse and present an extensive literature concerning inventory management, containing multiple definitions and fundamental concepts for the retail sector. The objective of this project is twofold. First, it proposes an analytic model for hospital inventory management commodities, which would be able to predict the future demands of various inventory commodities. The model takes into account previous demand, population and geographic location and other factors to successfully predict the future demand. Second, the project suggests an optimization model that would minimize the cost involved in supply chain & logistics management so that the required commodities can be made available to the hospitals at the minimum possible cost. As inventory management deals with huge volume and different varieties of information which seems very complex to handle in the daily basis. Inventory stock should be modified or updated based on the customer retention which changes continues with the change in demand which also adds value to the organization in profits by avoiding wastages in the stock. To update the stock data in the organization one should keep on track with the end user demand time to time which can be done by keep track on goods based on First in first out and Last in First Out stock. Nowadays retailers are having access to a raw material of production: big data. In this article, we attempt to focus on the value created by big data for retail industry. While almost of publications of big data and big data analytics are around the technical side, there is a lack of papers and studies which focus on retail.

An efficient inventory management ensures continuous production by maintaining inventory at a satisfactory level. It also minimizes capital investment and cost of inventory by avoiding stock-pile of product. Efficient and Effective Inventory Management goes a long way in successful running and survival of business firm.

KEYWORDS: Analytic Model, Optimization Model, Inventory Stock, Inventory Management, Big Data Analytics, Retail Industry.

INTRODUCTION

Big data refers to datasets which are difficult to capture, store, manage and analyse effectively using current database management software and concepts. This definition remains subjective, we don't define big data in terms of being larger than a certain number of terabytes cause as technology advances, the size of datasets that qualify as big data will also increase. Also the definition can be different from sector to another, depending on software tools are available and sizes of datasets. Nowadays many companies are collecting and processing a huge amounts of data on a daily basis: for instance, Google processes about 24 petabytes of data every day, Walmart collect more than 2.5 petabytes of data every hour from customer transactions alone. With the all of data that being generated, we must have analytics to obtain insights from big data.

A retail store is an interesting amalgam of a factory and a sales office and store employees are responsible for a wide range of execution tasks that collectively determine the success of corporate plans. Factory related store execution tasks include receiving product, moving product from the back room to shelves as needed, putting items moved by a customer back to where they belong on the shelf and checking customers out. Fisher notes similarities between the execution tasks of a retail store and an automobile assembly plant, and suggests drawing on the Toyota Production System as a source of ideas for improving retail store execution. Sales office store execution tasks include all interactions with customers, such as greeting them, asking if they need help, and when requested, providing advice to enable them make a purchase decision and to find the products they have decided to buy.

Interestingly, for many years, retailers have been administering surveys to their customers to measure both their overall level of satisfaction and their opinion of various details of their store experience. Many of the detailed questions relate to store execution. For example, 'Did you find what you were looking for?' is a commonly asked question directly related to the missing inventory issue noted above. It is thus natural to consider using this data to better understand issues related to store execution, including what factors influence the quality of execution and what is the impact of execution on output variables of interest to the retailer, such as sales and overall customer satisfaction. The present paper focuses on the review of existing literature in the field of Inventory Management which helps in capturing both conceptual and research based studies. A Number of studies have been conducted to find the determinants of investment in inventories and the process is still going on.

1.1 INVENTORY RECORD INACCURACY: AN EMPIRICAL ANALYSIS

AUTHORS: Nicole DeHoratius, Ananth Raman

This study explores Inventory Record Inaccuracy (IRI), that are observed within and across the product category and the retail stores. Nearly 370,000 inventories from 37 stores of a single retailer is examined and the inaccuracy was found to be of 65%. Thus Hierarchical linear Modelling (HLM) was applied and the inaccuracy between the inventories are found to be reduced to 26.4%. These inaccuracy involves complexity of the store environment, product distribution structure etc…[4]

LIMITATIONS

The limitations of the inventory record include not knowing an exact inventory count in the middle of the period and running the risk of stock outs. With the periodic system, the company knows the inventory level with certainty only when it physically counts the inventory at the end of each period. Throughout the period, the company takes customer orders without knowing the exact inventory count or whether enough products are available to meet customer demand

1.2 A REVIEW OF INVENTORY MANAGEMENT RESEARCH IN MAJOR LOGISTICS JOURNALS: THEMES AND FUTURE DIRECTIONS

AUTHORS: Brent D. Williams, Travis Tokar

This paper reviews the inventory management articles published in major logistic outlets. Two major themes are found to emerge from logistics research focused on inventory management. First, logistics researchers have focused considerable attention on integrating traditional logistics decisions. Second, logistics researchers have more recently focused on examining inventory management. [3]

LIMITATIONS

The names are revealing of the underlying inventory management practices. A business may use one system or the other, or a combination of the two. A manufacture may use a periodic inventory. Raw goods are purchased, stock is drawn to make products for sale, and raw goods are counted on a

periodic basis, such as weekly or monthly, at which point additional materials are ordered.

1.3 INVENTORY MANAGEMENT OF A FAST-FASHION RETAIL NETWORK

AUTHORS: Felipe Caro, Jérémie Gallien

This study shows the financial performance of the fast-fashion brand Zara. Besides other fast-fashioned retailers like H&M., World.Co., this new Zara defines their novelty in supply chain architecture that relies on cutting, dyeing and sewing the clothes. This outsourced the traditional activities in developing countries, This product development process obviously helped them to increase labour cost, and provide greater supply flexibility and market responsiveness.[2]

LIMITATIONS

The problem of distributing, over time, a limited amount of inventory across all the stores in a fast-fashion retail network. Challenges specific to that environment include very short product life cycles, and store policies whereby an article is removed from display whenever one of its key sizes stocks out

1.4 CONTEMPORARY SUPPLY CHAIN AND INVENTORY DATA MANAGEMENT USING DATA ANALYTICS

AUTHORS: Dr. S. Sai Satyanarayana Reddy, Ch. Mamatha, Priyadarshini Chatterjee and S Nagarjuna Reddy

Here Supply Chain Management is used for enabling the big data analytics. This stock management includes the flow of end-users across the market environment. The Big Data involves in immediate inventory management to access and control the data metrics using cloud computing technology. The stock management deals with the huge volumes and different varieties of information which seems very complex to handle in daily basis.[1]

LIMITATIONS

Changing a supply chain management system takes financial investment, time, and human resources. If not implemented properly, there will be wasted labor, service redundancy, and missed deadlines that result in significant costs. To avoid these unnecessary costs, high-quality logistics providers always complete a thorough analysis before implementing changes to the supply

chain.If searching for logistics providers, always inquire about the training process and the usability of their tools and technology. An experienced provider should start with a clearly defined on boarding or transition process that can then be customized to fit unique teams and timelines.

1.5 SUPPLY CHAIN MANAGEMENT BASED ON THE SHARING OF INVENTORY INFORMATION ANALYSIS ESTIMATES

AUTHOR: ShuQing Lv

This studies the Supply Chain Management as the rapid development that gradually enhances the overall strategies. It serves as the value of collaboration in information sharing, in-depth analysis, mining the measured values and pricing models. Inventory information sharing by comparing two-stage supply chain with the traditional order-driven supply chain costs and to establish the value of inventory information sharing model.The realization of information driven by the end of the upstream and downstream inventory information sharing , the manufacturer of a cooperation agreement in the lower reaches of enterprises under the management of inventory, in the lower reaches of the user's assistance program to more effectively. [5]

LIMITATIONS

Supply chain management will reduce uncertainty along the chain, it will also enforce proper inventory levels in the chain. A huge result of an effective system is also minimized delays. This factor will not only benefit a business but will also satisfy consumers, ensuring consumer loyalty and repeated business. An efficient supply chain management system will enable a contemporary business to provide good customer service and to eliminate rushed or unplanned activities that may occur. Most certainly, an effective supply gives a business an upper hand on its competitors in the marketplace. The benefits of this systematic approach impacts areas ranging from product quality to order turnaround times.

1.6 THE RESEARCH OF FEASIBILITY ANALYSIS AND RISK PREVENTION MEASURES OF ZERO INVENTORY

AUTHORS: Cui-yun Mao, Qiang Mei, Zhi-qiang Ma

The special concept called the zero inventory was studied here. This concept includes both industrial and the commercial enterprises. Zero Inventory

is a form of warehouse of certain items of low number concepts, even for zero, where the inventory does not actually exist. This resolves the problems that included in warehouse construction, management cost, inventory maintenance, storage, transportation and many more. In 20th century, Japan's Toyota Motors implement just-in-time production and in the management means use the billboards management to production units, such as pull production technologies. [6]

LIMITATIONS

A feasibility study is not intended to identify new ideas or concepts for a project. These ideas should be clearly identified before a study is initiated. Assumptions that are partially developed from these ideas provide the basis for the feasibility study, so the more realistic they are, the more value the study's findings will have for a group's decision-making. A study should not be conducted as a forum merely to support a desire that a project be successful. Rather, it should be an objective evaluation of a project's chance for success. Even studies with negative conclusions are useful for group decisions

1.7 STUDY ON PARE PARTS INVENTORY CONTROL BY QUANTITATIVE ANALYSIS IN THE ENVIRONMENT OF ERP SYSTEM

AUTHORS: Zhou Wen-Yong, Xu Ying, Shen Bing

This paper acknowledges the inventory controls that are necessary for the equipment's stable operation and economic benefits. The development information of an ERP application, where the inventory control and the quantitative analysis of inventory theory are discussed through control models.This combination of ERP system and the inventory management is an inevitable trend in the development of modern business standards. [7]

LIMITATIONS

Quantitative research methodology usually requires a large sample size. However, due to the lack of resources, this large-scale research becomes impossible. In many developing countries, interested parties may lack knowledge and especially the resources needed to conduct thorough quantitative research. Sometimes researchers face problems to control the environment where the respondents provide answers to the questions in the survey. Responses often depend on a particular time which again is dependent on the conditions occurring during that particular time frame.

1.8 THE STUDY OF DATA ANALYTICS IN INVENTORY MANAGEMENT

AUTHORS: Mansi Khurana, Deepak Kumar

This paper explains the Data Analytical (DA) tools that are applied in the domain of Supply Chain Management (SCM). Here the practical implementation of the Linear Discriminant Analysis on a large inventory data set to find the dependencies are illuminated. The DA slowly bought a world-wide revolution by empowering the Data Visualization. MNCs like Google, Facebook, Twitter, Wal-Mart etc… adopted this data visualization to simplify the complexity of data handling. This DA in SCM caters the DA application in the inventory level of implementations in different domains by using a huge data sets. [8]

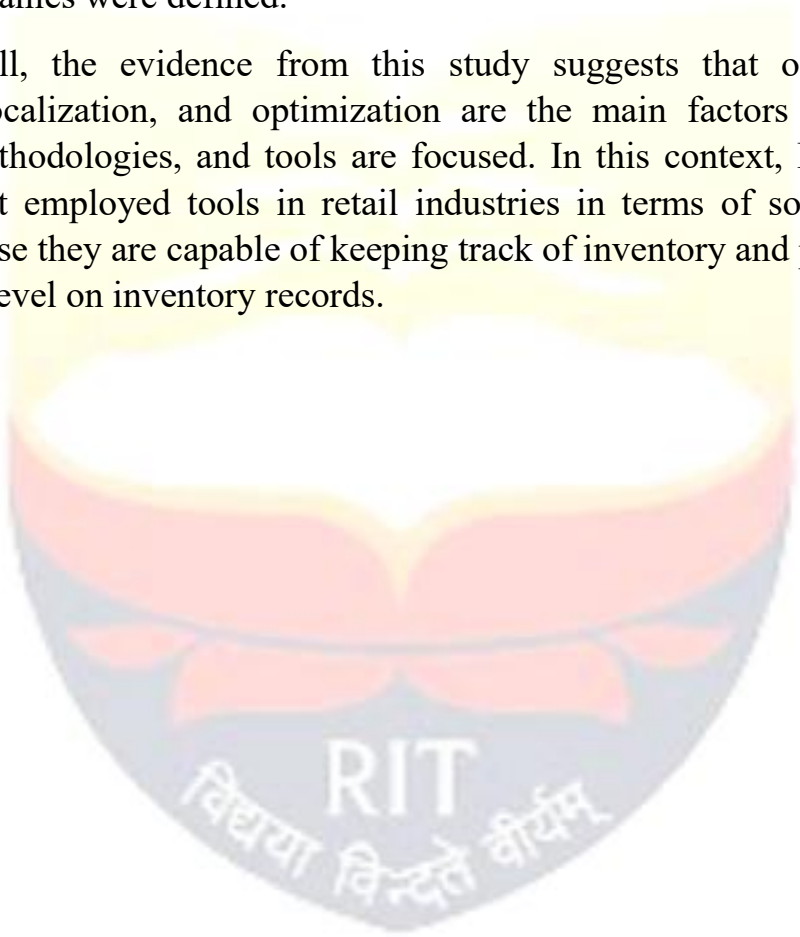
LIMITATIONS

This may breach privacy of the customers as their information such as purchases, online transactions, subscriptions are visible to their parent companies. The companies may exchange these useful customer databases for their mutual benefits.The cost of data analytic tools vary based on applications and features supported. Moreover some of the data analytic tools are complex to use and require training. It is very difficult to select the right data analytic tools. This is due to the fact that it requires knowledge of the tools and their accuracy in analyzing the relevant data as per applications. This increases time and cost to the company.

CONCLUSION

Retail companies have acquired significant importance within several countries due to their high economic contribution. Therefore, the need to analyse their KPIs becomes highly significant, as well as their different systems, methodologies, and tools used within inventory management and optimization. From the aspects mentioned above, the main trends in inventory management within companies were defined.

Overall, the evidence from this study suggests that order quantity, inventory localization, and optimization are the main factors in which the systems, methodologies, and tools are focused. In this context, RFID systems are the most employed tools in retail industries in terms of solving location issues because they are capable of keeping track of inventory and provide a high confidence level on inventory records.



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