



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 7, July 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

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# A Study on Impact of Inventory Management on Efficiency of Supply Chain Management

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**ABSTRACT:** Inventory management and supply chain management are the backbone of any business operations. With the development of technology and availability of process driven software applications, inventory management has undergone revolutionary changes. In any business or organization, all functions are interlinked and connected to each other and often overlapping. Some key aspects like supply chain management, logistics and inventory form the backbone of the business delivery function. Therefore, these functions are extremely important to marketing managers as well as finance controllers. Supply chain management addresses the management of materials and information across the entire chain from suppliers to producers, distributors, retailers, and customers. In the past few decades, scholars gave ample attention to the impact of inventory on supply chain management. Roughly speaking, research on supply chain management has been mainly focused on three major issues. One is the behaviour of information flow; the second issue deals with inventory management; the third issue is orientated to planning and operations management. In this study the second issue, namely inventory management will be discussed. Inventory management is a very important function that determines the health of the supply chain as well as the impact on the financial health of the balance sheet. Every organization constantly strives to maintain optimum inventory to be able to meet its requirements and avoid over or under inventory that can impact the financial figures. Inventory is always dynamic. Inventory management requires constant and careful evaluation of external and internal factors and control through planning and review. Most of the organizations have a separate department or job function called inventory planners who continuously monitor, control and review inventory and interface with production, procurement and finance departments. The purpose of this study is to overview the inventory management in supply chain and their current inventory related issue in a present-day business and present a conceptual methodology for related issue.

**KEYWORDS:** Supply Chain Management, Inventory Management, Business Operations

## I. INTRODUCTION

Supply Chain is defined as a system of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer. Supply chain activities involve the transformation of natural resources, raw materials, and components into a finished product that is delivered to the end customer. Inventory is part of supply chain management which is totally focused on management of inventory from supplier to customer and vice versa. Supply chain management is the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective & efficient ways possible. Supply chain activities cover everything from product development, sourcing, production, and logistics, as well as the information systems needed to coordinate these activities. The concept of Supply Chain Management (SCM) is based on two core ideas:

1. Practically every product that reaches an end user represents the cumulative effort of multiple organizations. These organizations are referred to collectively as the supply chain.
2. While supply chains have existed for a long time, most organizations have only paid attention to what was happening within their “four walls.” Few businesses understood, much less managed, the entire chain of activities that ultimately delivered products to the final customer. The result was disjointed and often ineffective supply chains.

It is well known that supply chain management is an integral part of most businesses and is essential for a company's success and customer satisfaction. The main importance of supply chain management is to reduce the operating costs such as purchasing cost, production cost, etc. and to improve the customer services by delivering the right quantity and quality at the right time and good after-sales service. The supply chain management process is composed of four main

aspects which are demand management, supply management, sales & operations planning (S&OP) and product portfolio management. To succeed in a growing global market, an organization needs a supply chain that is connected from start to finish, even across the enterprise and beyond.

Inventory is the raw materials, work-in-process products and finished goods that are the portion of a business's assets that are ready or will be ready for sale. Inventory represents one of the most important assets of a business. Inventory Management is the part of Supply chain management that plans, implements and controls the efficient, effective, forward, and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer's requirements. Inventory management is defined as the continuing process of planning, organizing and controlling inventory that aims at minimizing the investment in inventory while balancing supply and demand. Specifically, the process is a supervision of supply, storage and accessibility of items in order to ensure an adequate supply without excessive oversupply. Inventory is the stock of any item or resource used in an organization. An inventory system is the set of policies and controls that monitor levels of inventory and determine what levels should be maintained, when stock should be replenished, and how large orders should be. All firms keep a supply of inventory for the following reasons: to maintain independence of operations, to meet variation in product demand, to allow flexibility in production scheduling, to provide a safeguard for variation in raw material delivery time and to take advantage of economic purchase order size. Managing inventory can be a daunting task, and if it isn't done properly, it could cost the company thousands of dollars. Inventory management grows more and more complicated with the increase in sales volume and diversification of product assortment. An inventory as per Inventory system may be defined as one in which the following costs are significant: cost of carrying inventories (holding cost), cost of incurring shortages (stock out cost) and cost of replenishing inventories (ordering cost).

The objective of this study is to understand the concepts of supply chain management and inventory management and inventory management's efficiency in supply chain management and to present a conceptual methodology for related issues.

Paper is organized as follows. Section II describes the literature review that covers previous studies about supply chain management and inventory management. Research methodology and various aspects of supply chain management is given in Section III. Section IV presents data analysis and findings of the research. Finally, Section V presents conclusion.

## II. RELATED WORK

In 1982, Keith Oliver, a consultant at Booz Allen Hamilton introduced the term "supply chain management" to the public domain in an interview for the Financial Times.

In 1983 WirtschaftsWoche in Germany published for the first time the results of an implemented and so called "Supply Chain Management project", led by Wolfgang Partsch.

In the mid-1990s, more than a decade later, the term "supply chain management" gained currency when a flurry of articles and books came out on the subject. Supply chains were originally defined as encompassing all activities associated with the flow and transformation of goods from raw materials through to the end user, as well as the associated information flows. Supply-chain management was then further defined as the integration of supply chain activities through improved supply-chain relationships to achieve a competitive advantage.

In the late 1990s, "supply-chain management" (SCM) rose to prominence, and operations managers began to use it in their titles with increasing regularity.

The security-management system for supply chains is described in ISO/IEC 28000 and ISO/IEC 28001 and related standards published jointly by the ISO and the IEC. Supply-Chain Management draws heavily from the areas of operations management, logistics, procurement, and information technology, and strives for an integrated approach. The term "supply chain management" was first coined by Keith Oliver in 1982. However, the concept of a supply chain in management was of great importance long before, in the early 20th century, especially with the creation of the assembly line. The characteristics of this era of supply-chain management include the need for large-scale changes, re-engineering, downsizing driven by cost reduction programs, and widespread attention to Japanese management practices. However, the term became widely adopted after the publication of the seminal book Introduction to Supply Chain Management in 1999 by Robert B. Handfield and Ernest L. Nichols, Jr., which published over 25,000 copies and was translated into Japanese, Korean, Chinese, and Russian.

Integration era of supply-chain-management studies was highlighted with the development of electronic data interchange (EDI) systems in the 1960s and developed through the 1990s by the introduction of enterprise resource



planning (ERP) systems. This era has continued to develop into the 21st century with the expansion of Internet-based collaborative systems. This era of supply-chain evolution is characterized by both increasing value added and reducing costs through integration.

Globalization era is the third movement of supply-chain-management development, the globalization era, can be characterized by the attention given to global systems of supplier relationships and the expansion of supply chains beyond national boundaries and into other continents. Although the use of global sources in organizations' supply chains can be traced back several decades (e.g., in the oil industry), it was not until the late 1980s that a considerable number of organizations started to integrate global sources into their core business. This era is characterized by the globalization of supply-chain management in organizations with the goal of increasing their competitive advantage, adding value, and reducing costs through global sourcing.

Specialization era (phase I): In the 1990s, companies began to focus on "core competencies" and specialization. They abandoned vertical integration, sold off non-core operations, and outsourced those functions to other companies. This changed management requirements, as the supply chain extended beyond the company walls and management was distributed across specialized supply-chain partnerships.

Specialization era (phase II): Specialization within the supply chain began in the 1980s with the inception of transportation brokerages, warehouse management (storage and inventory), and non-asset-based carriers, and has matured beyond transportation and logistics into aspects of supply planning, collaboration, execution, and performance management.

Supply-chain management 2.0: Building on globalization and specialization, the term "SCM 2.0" has been coined to describe both changes within supply chains themselves as well as the evolution of processes, methods, and tools to manage them in this new "era". The growing popularity of collaborative platforms is highlighted by the rise of TradeCard's supply-chain-collaboration platform, which connects multiple buyers and suppliers with financial institutions, enabling them to conduct automated supply-chain finance transactions.

### III. METHODOLOGY

The objective of the research is to identify which aspects affect supply chain management when implementing inventory management, and to what extent does inventory management influence supply chain management. The purpose of the research is to identify the theoretical framework that relates to inventory management in supply chain management through secondary sources. This study will be descriptive, qualitative and quantitative in nature. The methodology used is built upon theoretical framework and conducting a survey with quantitative and qualitative research. Descriptive research (DR) can be explained as a statement of issues as they currently are with the researcher who has no control over variables. Moreover, descriptive studies can be characterized as simply attempting to determine, describe, or recognize what is, while logical research seeks to determine why it is or how it originated. A significant feature of descriptive research is the point that while descriptive research (DR) can use several variables, a descriptive study requires only one variable. Three main purposes of descriptive studies can be explained to describe, explain, and validate research results. Finally, conclusions are made and suggestions for further research are presented. Under descriptive, it is simple random sampling. This study has been done with special reference to Big Bazaar. A simple random sample is a subsection of statistical inhabitants in which each associate of the subset has the same chance of being selected. A sample of a simple random sample would be the names of 65 employees selected from a hat of 150 employees. In this case, all 150 people are employed, and the sample is random, as each employee has the same chance of being selected. Both primary and secondary sources are utilized in conducting research. Mainly, the theoretical framework is explained by using secondary sources such as books, journals, and articles. The survey used to collect responses from employees is the primary source of this research. For the purpose of this study, two research methods are explored, namely qualitative and quantitative, with the purpose of obtaining data and answering research questions. The study uses both quantitative and qualitative data collection in the form of conducting a survey. Considering the time constraints and the possibility for respondents to answer the questionnaire only once, the survey needed to be formulated carefully for the respondents to answer the questions as accurately as possible. The questions were designed to test the theoretical framework of the study, asking questions about company's inventory management system, impact of inventory management in supply chain management, the decision-making process, and effect of inventory management in supply chain process. The researcher tried to articulate the questions as clearly as possible for the respondents to be able to answer the survey as well as possible. All theories could not be inserted into the scope of the survey; therefore, the most important and beneficial questions were chosen for the results to possibly answer the research questions and reflect the theoretical framework.



IV. EXPERIMENTAL RESULTS

Analysis and Interpretation of the data collected from the sample employees by the standard set of questionnaires are as follows:

Sl. No.	Questionnaires asked to the Sample Employees	Interpretation from the Responses of the Sample Employees
1.	Does your inventory stock have the capability to meet the demands of orders made throughout all your business lines?	45 people out of 65 agree that inventory stock have the capability to meet the demands of orders.
2.	Does your current system deliver accurate reports on your inventory stock and past demands to help you make informed decisions for future purchasing and order?	35 people out of 65 agree that the current system deliver accurate reports on your inventory stock and past demands to help you make informed decisions for future purchasing and order.
3.	Do you shut down your warehouse operations or have your employees work on the weekends to perform an inventory count?	33 people out of 65 agree that they shut down their warehouse operations or have their employees work on the weekends to perform an inventory count.
4.	Do you record inspection adjustments and is the data fully integrated across all your management systems?	25 people out of 65 agree that they record inspection adjustments, and the data is fully integrated across all your management systems.
5.	Is your data linked seamlessly with back-office inventory management, fulfillment and accounting? For example, are your systems able to share data seamlessly across departments?	45 people out of 65 agree that their data linked seamlessly with back-office inventory management, fulfillment and accounting.
6.	Do you have access to critical updates and real-time information?	50 people out of 65 agree that they have access to critical updates and real-time information.
7.	Are you able to control the rotation of merchandise with your current systems automatically?	50 people out of 65 agree that they are able to control the rotation of merchandise with your current systems automatically.
8.	Are you able to control what merchandise comes in, what date, and from what invoice of lot number?	55 people out of 65 agree that they can control what merchandise comes in, what date, and from what invoice of lot number.
9.	Do you strongly feel that inventory management system play an important role in supply chain management?	58 people out of 65 agree that inventory management system play an important role in supply chain management.
10.	Does inventory management improve overall efficiency of supply chain management?	58 people out of 65 agree that inventory management improve overall efficiency of supply chain management.

Findings from the survey conducted for this study are as follows:

- Work environment at Big Bazaar is comfortable for the workers.
- The team is full of enthusiastic people.
- Employees agree that they have inventory stocks that have the capability to meet the demands of orders.
- Employees agree that their data is linked seamlessly with back-office inventory management, fulfilment and accounting.
- Employees are ready to accept the changes.
- Employees agree that they have access to critical updates and real-time information.
- Inventory management system plays an important role in supply chain management.
- Inventory management improves overall efficiency of supply chain management.

V. CONCLUSION

The problem formulation for this study was: “When the firms improve their inventory management, what is the reaction of other factors on supply chain management? Does inventory management improves the efficiency of supply

chain management?" and after the survey conducted for this study and after the interpretations derived from the survey. It can be concluded that due to effective inventory management, procurement goals can be achieved quickly. As we know, inventory is the joint of the whole supply chain. When optimizing the inventory management, upstream activities will run effectively meanwhile downstream activities will go ahead without any stoppage. By holding safety stock, customer service level will rise a little. As we know, when the level reaches a certain point, it is not easy to improve furthermore.

Further, a discussion of some aspects that could have been done better in this study are as follows:

- During the interview the author just visits very few departments of the case company. If it is possible, more departments, better. The author comes to this conclusion when the project needs more information.
- Within a case study however, this is often a utopia. The author has both a pre- understanding and to some extent preconceived ideas, and therefore the backgrounds most likely have affected this research. But this will give a different perspective for further study.

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