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Inventory Management in Supply Chain

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Abstract

The Purpose of this paper 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. The methodology based on the inventory, which are inputs for the methodology and benefits which are output of methodology.

A literature review is conducted on management or control of inventory and also issues related to inventory in industry, and its various parameters. A conceptual methodology for inventory issues in present business.

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Keywords: Inventory; Inventory Management ; Supply Chain Management ; Inventory issues.

1. Introduction

The scope of inventory management concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space, quality management, replenishment, returns and defective goods, and demand forecasting. Balancing these competing requirements leads to optimal inventory levels, which is an ongoing process as the business needs shift and react to the wider environment.

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Introduction to Inventory:

Inventory is the raw materials, work-in-process products and finished goods that are considered to be 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.

The paper makes an attempt to understand the importance of inventory, Inventory issue and then to present a conceptual methodology for inventory issue.

The objective of this paper are:-

1. To understand the concepts of inventory and inventory management in supply chain.
2. To highlight the inventory issue in current business.
3. To highlight various inventory issue in industry.
4. To present a conceptual methodology for related issue.

The paper is organized as after the literature review a conceptual methodology for inventory related issue is presented. Finally, concluding remarks with some directions for future research are provided.

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.

Since the mid-1990s, there has been a large increase in annual number of inventory management articles. Researchers conduct such relevant research in several respects. First, most of publications in logistics journals are about traditional inventory control models. These papers evaluate traditional inventory control models under particular conditions or incorporate additional considerations into established models. Another popular theme is about developing approaches to reduce the quantity of inventory that a warehouse must have, which refers to reducing the safety stock by centralization of warehouse locations.

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.

The network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services delivered to the ultimate consumer. A set of firms that pass materials forward. The alignment of firms that brings products or services to market including the final customers as part of the supply chain. A set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer. Inventory is part of supply chain or supply chain management whose totally focus on management of inventory from supplier to customer and vice versa.

Process view of supply chain:

- (1) **Cycle view** - In which the processes in a supply chain are divided into a series of cycles, each performed at the interface between two successive stages of a supply chain as show in below Fig.1.

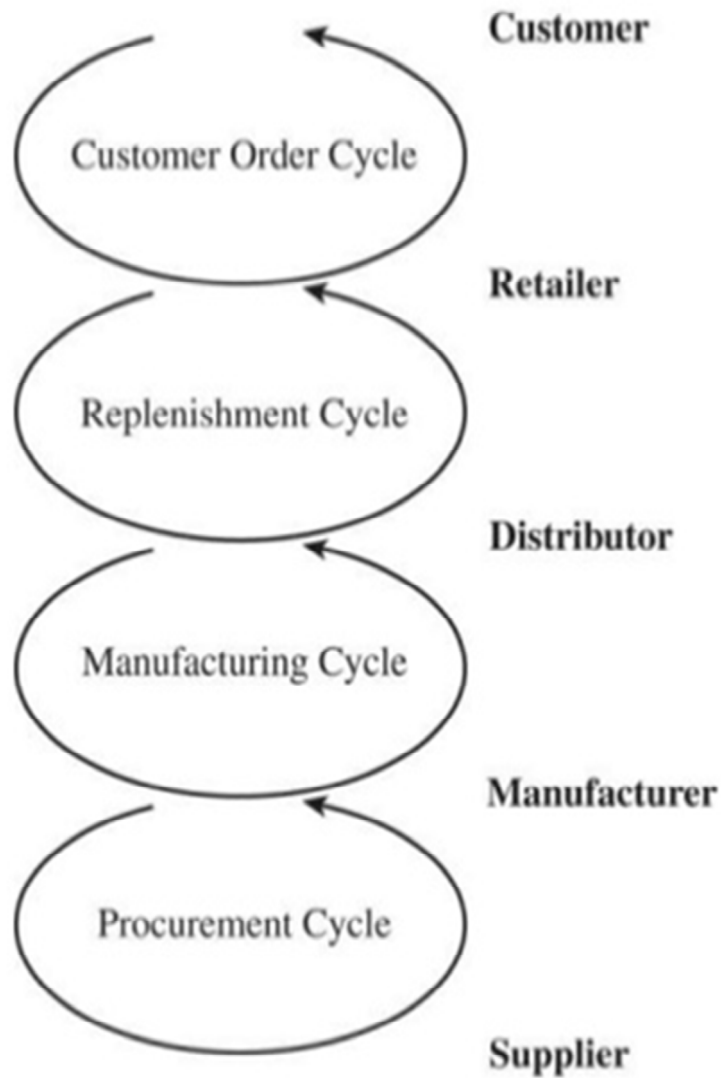


Fig. 1 Cycle View of Supply Chain

(2) Push/Pull view - In which the processes in a supply chain are divided into two categories depending on whether they are executed in response to a customer order or in anticipation of customer orders. Pull processes are initiated by a customer order, whereas push processes are initiated and performed in anticipation of customer orders.

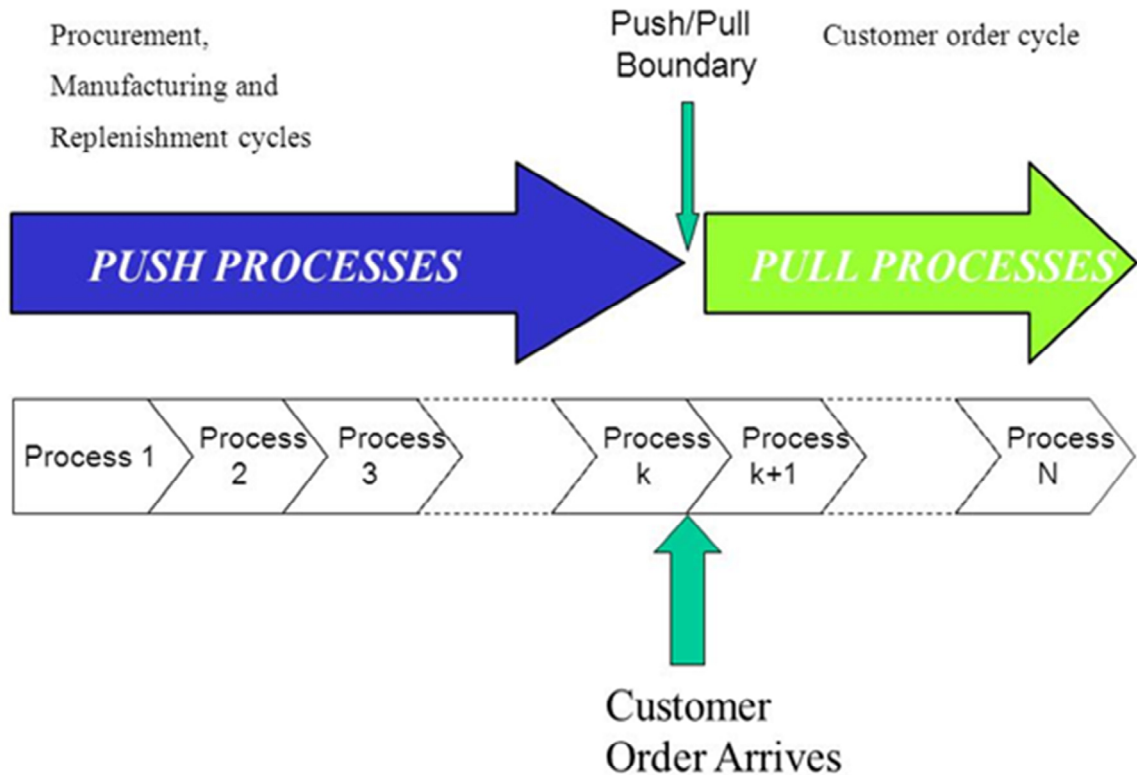


Fig. 2 Push/Pull View of Supply Chain

Supply Chain Management:

- It deals with the total flow of materials from suppliers through end users.
- To synchronize the requirements of the customer with the flow of materials from suppliers in order to effect a balance between what are often seen as conflicting goals of high customer service, low inventory management, and low unit cost as shown in above Fig 2.
- Two or more firms in supply chain entering into a long term agreement, the development of trust and commitment to the relationship, the integration of logistics activities involving the sharing of demand and sales data, the potential for a shift in the locus of control of the logistics process.
- The process of strategically managing the movement and storage of materials, parts, and finishes goods inventory from suppliers through the firm and to the customer.
- The most advanced state in the evolutionary development of purchasing, procurement and other supply chain activities. At the operational level, this brings together functions that are as old as commerce itself—seeking goods, buying them, storing them and distributing them. At the strategic level, it is a relatively new and rapidly expanding discipline that is transforming the way that manufacturing and non-manufacturing operations meet the needs of their customers as shown in above Fig 2.
- The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole.
- It is the systemic, strategic co-ordination of the traditional business functions and the tactics across these business functions within particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.

- A set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantity, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements.

Literature Review

- Olsson explained that an item with a fixed life time perishes on its maximum shelf life time and then must be discarded [1].
- Accurate half-life monitoring is a goal of technologies that have been developed to collect and transmit data about the state of a product. Forcers in items, if temperature departs from pre-defined range, the item is spoiled and must be discarded [2].
- The most advanced state in the evolutionary development of purchasing, procurement and other supply chain activities. At the operational level, this brings together functions that are as old as commerce itself—seeking goods, buying them, storing them and distributing them. At the strategic level, it is a relatively new and rapidly expanding discipline that is transforming the way that manufacturing and non-manufacturing operations meet the needs of their customers [3].
- A set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantity, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements [4].

Current Inventory Management Issues

- Maintenance Policies.
- Transportation cost.
- Holding cost.
- Ordering cost.

Steps to mitigate mentioned Issues:

- Performance Improvement.
- System Structure Improvement.
- Technology Integration.

Methods to attempt the Inventory Issues:

- Identifying Various Current Inventory issues through direct observation in industry.
- Review the literature i.e. review concepts theories and review previous research finding.
- Formulate hypothesis and collect data for execution.
- Analysis the data and make report i.e. output of methodology and as shown in below Fig 3.

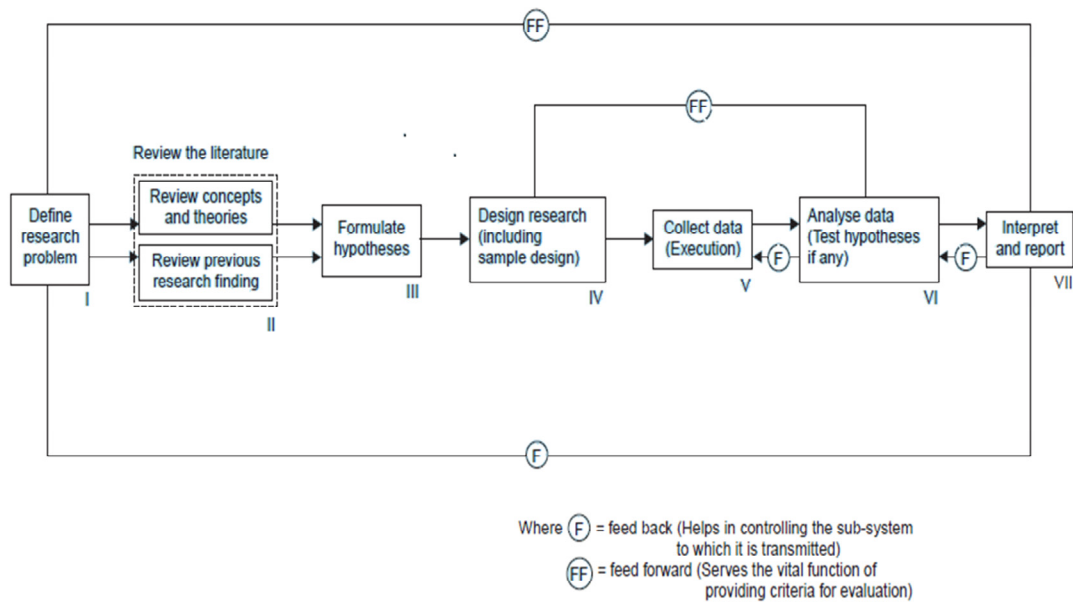


Fig. 3 Conceptual Methodology for Inventory Issues

Conclusions:

The paper presents a conceptual methodology for Inventory issue. The key logistics issue is here mentioned depending its internal or external inventory issue .It is expected that this methodology would be highly beneficial to the organizations in leveraging the efficiency of supply chain management. There is a need for an empirical validation of the proposed methodology. The bi-directional information at different levels will have affected the supply chain at all levels and it should be managed to reduce the information distortions.

Inventory is an important area where every company has to concentrate on and differentiate themselves with their competitors. With the growing demand for various varieties of products available all over the world people's expectations are changing for every product. If a company wants to survive in the long run it should pay special attention to the area of supply chain and Inventory. Research is demanded to reduce the product cost and improve the quality with reduced failure rates.

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