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## **Implementation of Postponement as a Strategy in Supply Chain Management**

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### **ABSTRACT:**

Postponement is a well-known and widely used concept in supply chain industry that adds value in each stage of supply chain by delaying the process till the tile order is not placed. This strategy is very helpful in managing inventory to the supplier, manufacturer & intermediaries. This study seeks to determine how postponement may be utilized as a strategy in the downstream process of supply chain across various sectors, and how it can be used to assure supply chain efficiency and add value to the process by removing various unnecessary steps. Costs and inventory management are two examples of how firms can fulfil the sophisticated needs of the market, through postponement. This research paper aims to describe the various industries where postponement is used as a tool or strategy to add value for customer in the overall supply chain. This paper also talks about the underrated industries where postponement is used. Design/methodology approach- Based on various literature reviews, research papers & case studies we are trying to research, analyse & come to a conclusion that gives a broader perspective of use of postponement in different industries. We also interviewed some faculties & professors who are teaching Supply Chain subject. Cross case comparison plays a vital role in this research due to limited availability of primary research data. Findings- Postponement helps to manage inventory & give a better control over the management of inventory & it's cost. Not only helps managing the inventory but it is also a tool used in the process of customization. Customization is a trend across various sectors & industries that also adds value to customer enabling them to get involved in the process of making final finished good & have an experience that delights them. It is very difficult or impossible to think of any sector or industry that do not use Postponement and still adds value in the process of making final good or service that delights customer.

*Keywords: postponement; supply chain; distribution; downstream network design; conceptual framework*

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### **INTRODUCTION**

Postponement is considered to be a popular or well known concept or strategy that is being adopted in the organizations that usually refers to a delay in manufacturing and / or logistics operations over time. In today's global competitive environment, the situation in which deferrals can be applied is rapidly increasing. Organizations need to redesign deferral strategies to properly and appropriately adjust their products in each market because the actual place of operation is very important. When designing a postponement strategy that impacts the overall performance of the enterprise, spatial perspectives should be taken into account in addition to traditional temporal perspectives. So far, the scientific literature has a global scale for addressing the so-called deferral limit issue or designing related postponement strategies. Based on previous studies, the purpose of this study was to evaluate the concept of postponement in the supply chain environment specially in the downstream focus. There are two intended purposes, One is to review and extend previous research on this subject, and the other is to provide guidelines for designing the postponement strategies.

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### **RESEARCH OBJECTIVE**

This research aims at the objective of how postponement can be implemented as a strategy in the downstream process of supply chain management across different industries and how it can be used to ensure efficiency in the entire process of supply chain and add value to the process by eliminating different aspects like costs and inventory management and help organizations meet the sophisticated demands of the customers and boost the entire supply chain process.

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### **LITERATURE REVIEW**

Postponement can be defined as delaying activities in the supply chain until a demand is released (Yang, Yang, & Wijngaard, 2005). Postponement carries a long history in terms of strategy when it comes to the practical implications. The aim of this strategy is to reduce costs related to uncertainty and physical movement of goods through inventory management. Traditionally it was proven effective in creating value and efficiency in marketing systems. Management began to understand the value of postponement when the production philosophy changed from mass production to mass customization. In

supply chain, it is considered to be a concept where few activities in the downstream process are not performed until orders are received (Prataviera, Perotti, Melacini, & Moretti, 2020).

In the globalization era, it has been observed that firms often face challenges in meeting the diverse needs of the customers in terms of product variety, requirement of product customization and ensuring a last mile delivery of the finished customised goods in a limited time frame. (Aftab, Yuanjian, & Kabir, 2017)The main idea behind the implementation of this strategy is to mitigate the risks and uncertainty at acceptable response times. It allows organizations to develop a flexible approach to manufacture different versions of products as needed to meet changing customer needs or modify a demand function. Alderson's (1950) conceptualization considers three types of postponement: form, identity, and place. Zinn and Bowersox (1988) suggest five types; namely, labelling, packaging, assembly, manufacturing, and time. Many other scholars have emphasized the location aspect of delaying activities in supply chains and, hence, have counted place as another type of postponement. Postponement can be looked at as a "market Oriented" supply chain strategy wherein a downstream firm retains its operational flexibility to respond to demand information (Jafari, Nyberg, & Hilletoft, 2016).

## TYPES OF POSTPONEMENT:

Different types of postponement as identified by researchers are summarized in the below table:

Literature	Classification
Zinn and Bowersox, 1988	Labelling postponement, packing postponement, assembling postponement, manufacturing postponement and time postponement
Bowersox and Closs, 1996	Time postponement, place postponement, manufacturing/form postponement
Lee, 1998	Full postponement, logistics postponement and form postponement
Pagh and Cooper, 1998	Full speculation, logistics postponement, manufacturing postponement and full postponement
Brown et al., 2000	Product postponement and process postponement
Waller et al., 2000	Upstream postponement, downstream postponement, product postponement and place (distribution) postponement
Yang and Burns, 2003	Engineering-to-order (ETO), buy-to-order (BTO), make-to order (MTO), assemble-to-order (ATO), make-to-stock (MTS), ship-to-stock (STS) and make-to-forecast (MTF)

(Yeung, Selen, Deming, & Min, 2007)

This research work is to throw light on areas in different perspectives in a supply chain network where postponement strategy can be used in order to achieve efficiency in the process. The areas are listed below:

- **Logistics Flexibility:** It is an idea of reacting or changing with minimum time, cost, effort and performance. Postponement in logistics allows a company to place its inventory correctly based on the suppliers. It also allows movement or transportation of products only after an order is processed (Burns & Backhouse, 2004).
- **How postponement can be used as a solution to demand uncertainty:** In order to tackle the increase demand in the changing competitive environment postponement can be used as an important strategy that paves the way for mass customization and agility (YANG, BURNS, & BACKHOUSE, 2013).
- **Warehousing Management:** Warehouse Management will play an important role in implementing postponement strategy as inventory holding should be properly monitored and strategized (Yang & Burns, 2010)
- **Industries where postponement strategy is already implemented like FMCG, Apparel and Manufacturing:** For FMCG & Apparel sector there has been a trend towards product variety. The retailer or Customer order points are at the lowest downstream level of the supply chain process hence postponement strategy can be used to move goods based on demand forecasting (Pagh & C.Cooper, 1998).

## IMPLICATIONS:

Until the real-time information about the market is captured postponement centres around holding on to the downstream activities in the supply chain. The viability is determined by the supply chain characteristics of the relevant organization and the industry. Postponement will help in restructuring the supply chain management resulting in the modifying the processes of assembly, warehousing and retail operations. The main idea revolves around the

distribution channel and also the inventory management questioning what, when, where and who to hold in the inventory to reduce cost or risk. The final assembly, labelling and packaging are processed in the warehouse. Few of the organizations succeeded in improving the performance of the supply chain through the implementation of postponement. Postponement therefore fosters a new way in the supply chain management (Yang & Burns, 2010).

## MANUFACTURING AND LOGISTICS POSTPONEMENT

There are a lot of frameworks that have been proposed (Cooper, 1993; Pagh and Cooper, 1998; Yang et al., 2004a) to study the concept of postponement as a strategy by the combination of 3 basic elements which are time, form and place. Focussing on the downstream activities in the supply chain, a 2-axis framework is being developed by Pagh and Cooper (1998) where time and place postponement is associated with logistics and form postponement with manufacturing. Postponement in manufacturing refers to what the final manufacturing work needs to be done in order to customize the product after receiving a customer's order. This also implies that a same category of component parts can also be used for a wide variety of end products. Decoupling points can also be used to determine the points where a product can be converted to acquire a unique identity (Yang and Yang, 2010).

POSTPONEMENT DECISIONS	FOCUS
<b>Time Postponement</b>	Delay in the forward shipment of goods
<b>Form Postponement</b>	Delay in manufacturing or differentiating task
<b>Place Postponement</b>	Delay forward shipment of goods by keeping goods at central locations until customer orders

On the other hand, postponement in logistics refers to the delaying in movement and distribution of finished goods until an order is received. When combining logistics postponement with production postponement, inventories can talk to both completed or semi-completed products or both, relying on the producing postponement approach adopted. In the manufacturing operations cycle, logistics postponement can help enable operations related to packaging, labelling, light manufacturing and final assembly which are performed in the downstream part of the supply chain. Adopting postpone strategies in the distribution network can also be referred as "customizing the channel".

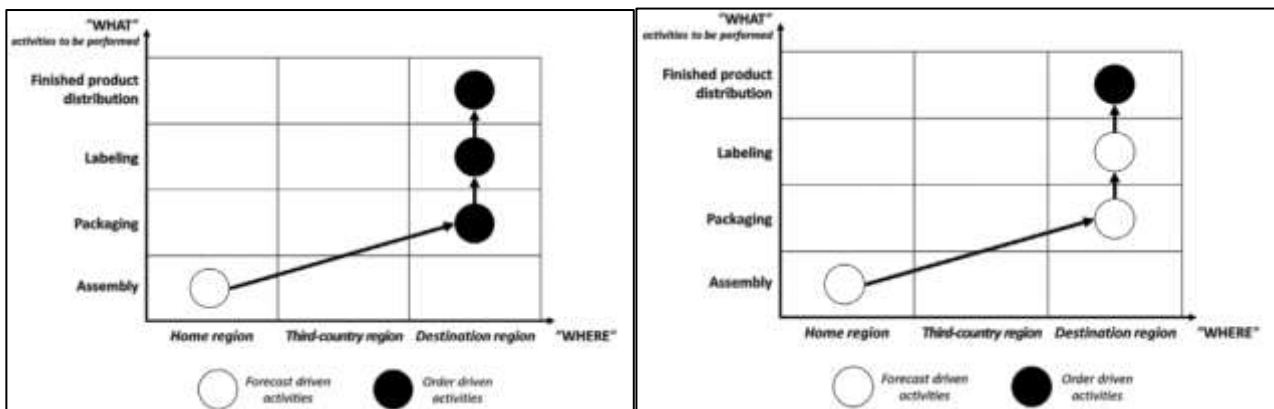


Fig: Classification Framework of Postponement strategy in downstream supply chain

## LOGISTICS FLEXIBILITY

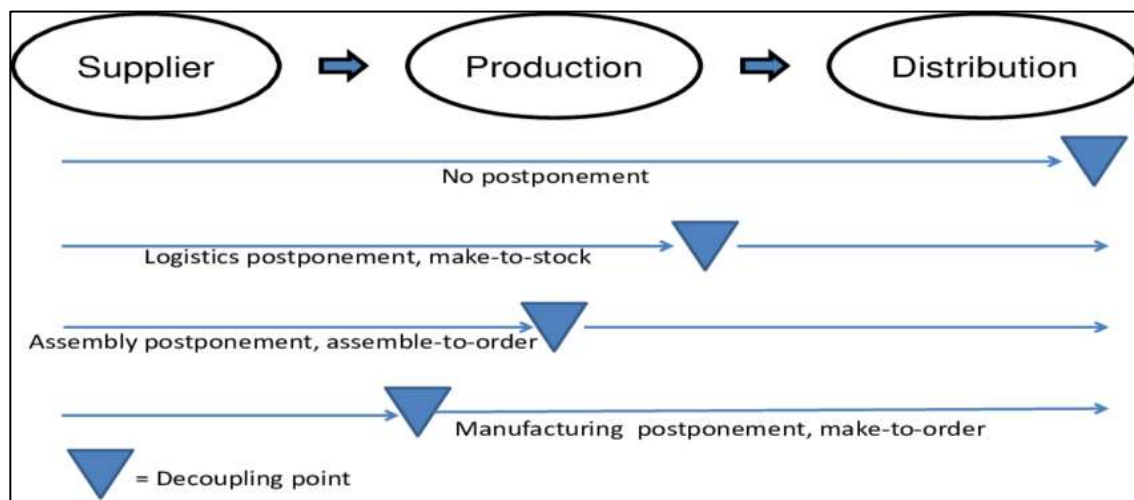
Flexibility basically defines how an existing system can become responsive or efficient when it encounters a change. Flexibility is one of the most important criteria to create value in the supply chain management. As one of the dimensions in the supply chain management logistics flexibility can be a key ability to improve performance in today's rapidly changing environment. Logistics flexibility has been classified into four subconstructs. This classification is in line with the views of Cooper et al. (1997) and Ballou (2007), here the author sees the main functions of logistics management lies in purchasing and distribution management.

- Physical delivery flexibility is the ability to offer a variety of in-stock items fast and accurate transportation, storage and inventory of materials. This allows organizations to coordinate the delivery of inbound goods.
- Purchasing flexibility can be referred as the ability to offer a variety of materials and supplies quickly and efficiently through partnerships with the suppliers. This reflects how easy it is for a company to exercise its procurement options.
- The ways or the ability to adjust and manage the inventory, packaging & labelling, maintaining warehousing and transportation of goods efficiently to meet the customer's demands is called the physical distribution flexibility. This type of flexibility could also be referred as the outbound logistics flexibility as it involves delivering of finished products to the customers in a reliable and efficient manner.

- In today's market there is a wide variety of customer needs in terms of order-taking, delivery scheduling, installation, repair, training, and product maintenance, catering to these needs in an efficient way is what can be called as the demand management flexibility.

## MANAGEMENT OF UNCERTAINTY THROUGH DIFFERENT POSTPONEMENT STRATEGIES

In the changing competitive environment facing a high level of uncertainty, it is difficult for organizations to forecast the changing needs in terms of specifications and keep them frozen for the rest of the production cycle. Organizations lack in the ability to resist these changes and implement them in their products due to the changes in customer requirements and the advent of new technologies. In a recent study it has been observed that changes in customer requirements leads to 25% of the delay in new product manufacturing. Early introduction of new products could possibly face challenges in sustainability due to the rapid changes in customer's needs. Companies need to find new ways to manage uncertainty in order to accelerate the launch of new products and increase the chances of success for new products through the strategy of postponement. In order to make that work, organizations first need to identify the areas in the production cycle where the changes can be implemented leaving adequate margin. For markets that are extremely uncertain, companies need to accept the uncertainty and find ways to introduce a flexible system adapting to the needs of product modification.



### **Purchasing Postponement:**

At highly uncertain markets it'll be difficult for organizations to forecast the demands of their products. Hence purchasing component parts or raw materials at an early phase might prove to be risky as ownership of these assets might become obsolete very quickly. A better choice is to minimize the inventory of components and raw materials by purchasing the components as close as possible to the place of manufacturer and the purchases can be postponed until the actual use in the manufacturing process. It will be convenient to have a high level of collaboration between the suppliers and manufacturers in order to implement the purchasing postponement strategy. Benefits of purchasing postponement could be:

- Greater shelf life of raw materials and component parts
- Less inventory holding cost
- Providing strategic operational flexibility

### **Product Postponement:**

In order to cater to the high uncertainty and changing demand, companies are manufacturing products that are highly customizable to meet the customer demands and also to thrive in the turbulent and dynamic environment. Any specific product might as well have different variants which results in anticipating the demand for each product category. As the product variety increases, it is not feasible to make finished products based on forecast. To cater to this challenge companies like HPE, Levi's, Motorola, UCB etc are looking for product postponement. They started forecasting till the component part and not the finished product which also reduced the risk associated with holding the finished goods inventory. In production postponement, manufacturing, assembly, packaging, and labelling are options for a company to first manufacture a product in an intermediate or neutral format with the aim of delaying the final configuration until a particular customer's order is received. This neutralizes the risk of inventory holding of finished goods of all product variants. It'll be evident to say that product consideration can be taken into consideration only to the attributes which can be better decided when exact information of demand is revealed rather than applying it to all attributes. Therefore, the success of product postponement depends upon the customer's will of tolerating a higher lead time or the ability of paying higher for a higher customized product.

**Logistics Postponement:**

Postponement in logistics is just like just in time delivery, improving customer responsiveness by reducing the obsolete inventory cost and capacity. It allows the movement of goods only when an order is processed. For example, for high quality products, extensive storage networks are not economical. If the shipping cost of the item is low, it makes economic sense to ship it directly to all customers from one source. Logistics postponement might lead to a higher transportation cost, however, shipping the products directly to the customers will eliminate the transportation process between warehouses and factories. Therefore, logistics postponement can be considered relevant if the products are high value products with large product variety i.e., when products are more sensitive to inventory than transportation cost.

**INDUSTRIES ADOPTING POSTPONEMENT STRATEGIES**

Postponement strategy is being used in various industries at different levels in the supply chain to create value and also adapt to a responsive and flexible system to cater to the changing needs of the customer. Postponement is seen in industries with a high product variety where products are stored at a semi-finished level to offer customized finished goods instead of offering a final product that is customizable. Postponement strategy is widely used in both manufacturing and service industry in different operational areas. Few of the Industry includes:

- ✓ Apparel Industry
- ✓ E-Commerce
- ✓ Electronics
- ✓ Consumer Durables
- ✓ Pharmaceuticals
- ✓ Logistics

**CONCLUSION AND FURTHER SCOPE OF RESEARCH**

As studied postponement is an important framework that bridge the gap between the customer requirements and the organization's capacity to meet those demands managing all the constraints. However, organisations need to identify the areas where postponement can be applied in order to make the system more flexible and achieve operational excellence. Through our detailed study we have seen how different organizations have applied postponement as a strategy to offer customization as well as save inventory cost in the downstream activities in the supply chain be it the logistics or the manufacturing of the semi-finished goods. It also gave a clarity on what operational areas postponement can be applied. Further research can also be carried out in order to determine if postponement strategy can be used in the upstream activities of the supply chain or in industries that have a higher product variety however, they're not able to implement this strategy due to a complicated production line. Automobile industry could be one such example where there is high product variety and demand for customization is also high. So, it can be ventured if there are any such spaces where postponement can be applied to achieve a robust flexible system.

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