Postponement in Fashion Retailing
A Case Study of H&M

Master’s thesis within Logistic and Supply Chain Management
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Abstract

In fashion industry, customer demand is constantly changing. One of the main reasons is due to the time of delicate fashion awareness among the consumers, which has come into larger variety and frequent assortment changes. The changing trends in fashion industry allow researchers to get into the postponement strategy as a customized operation in order to focus on quality and flexibility. In today’s fashion market the key for success is to keep an eye on and react to the customer demand. H&M is Europe’s second largest fashion retailer in terms of sales and our work will reflect on H&M supply chain particularly. We try to figure out business strategies such as mass customization and standardization, which H&M is using in their entire supplier chain and in his different processes. Keeping this view in mind, we design our research question, which is about mass customization and standardization and we try to relate these business strategies to the postponement. We try to find out the structure and implementation of these strategies in H&M supply chain with the help of our respondent answers in our proposed questionnaire.

For this purpose, an electronic interview with the H&M senior merchandiser in Pakistan liaison office was carried out. The questionnaire contains different questions related to postponement strategy, customization, and standardization and other processes which are used in the supply chain of any fashion industry. The questionnaire consists of 22 major questions. Our research is purely qualitative. We include both types of the data; namely secondary and primary. Secondary data was collected from earlier studies of the literature and related theories of postponement, customization, and standardization and certain areas of fashion retailing, whereas primary data was collected through the electronic interview with Mr. Syed Naqeeb who is working in H&M liaison office as a senior merchandiser in Pakistan.

After receiving the questionnaire, we have tried to highlight our research questions with the help of our proposed Frame of Reference in Chapter 2. The Frame of Reference consists of theories which will help the reader to get the clear picture of fashion retailing and the related theories.

In the Analysis section, we talk about the activities of H&M and its background followed by its business concept. We define H&M SCM model and draw a figure of H&M
complementarities, which we developed by the help of electronic interview. In the Conclusion part, we come to the point that customization and postponement affect fashion retailing by choosing raw material, components, and apparel accessories plus logistic management. The other aspect of our research area is standardization. After the analysis we come to know that Standardization and postponement are also used together in the supply chain of H&M, in raw material, cotton and yarn, dying, packaging and in the care instruction of labels (washing instructions).
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I Introduction

This chapter presents the background, research problem, purpose, research questions, delimitations, and outline of thesis. The main purpose of the chapter is to introduce to the topic and to make the reader understand about the problem studied.

1.1 Background

Today's business atmosphere is described as a tight competition among the companies, countries, and even whole continents. According to Christopher, Lowson & Peck (2004), Supply Chain Management (SCM) has a major role in the development and growth of any company. In SCM a strategy which is known as Postponement has infinite effects in the retailing and fashion retailing. As an effect it delays product differentiation near to the customer. Postponement is a tool for making products available to the end user efficiently. An efficient supply chain is required, when the demand transferring from mass production to mass customization (Lam & Postle, 2006). Emergence of mass customization has challenged all industries which are producing products or providing services. The idea of mass customization is seen as “ability to use of flexible processes and organizational structures to produce varied and often individually customized products and services at the price of standardized, mass-produced alternatives” (Hart, 1996). According to Feitzinger and Lee (1997), mass customization is a strategy, where organizations postpone the job until the last possible point.

Efficient SCM strategies have effect on the supply chains, and the strategies for supply chains as stated by Pagh & Cooper (1998) differ between postponement and speculation.

The challenge for retailers is that if they do not desire to be out of stock they have to carry a high inventory which raises investment in inventories (Bowersox & Closs, 1996). Building up high inventories to avoid stock out situations is a traditional method. However, most of the companies find out different strategies to this in response to constantly changing demands.

Postponement helps the retailers to keep the inventory at an acceptable level and fulfill the consumers demand responsively. This solution of postponement helps the retailers to be more flexible in their ability to increase or decrease production, to decrease the uncertainty and to meet the consumers demands (Fisher, 1997). Along with any other type of retailing, fashion retailing has same objective, but the processes is changed. Due to these processes, the supply chain become more responsive and is given the name of supply chain flexibility (SCF) by Gilmore & Pine (1997). The processes are customization, standardization, just in time, total quality management and many more. According to Gilmore and Pine (1997), SCF is important due to mass customization and reduce costs requirement by customers. Companies are moving from push to pull systems to become more agile (Simchi & Ka-
minsky, 2008). Therefore, postponement has many advantages under flexibility (Kong & Allan, 2007).

1.2 Problem Statement

In the apparel industry, the customer demand is constantly changing and individualizing. As a result, fashion assortment has increased rapidly over the last 20 years (Christopher, 2004). Main reason is due to the time of heightened fashion awareness among the consumers, which has come into larger variety and frequent assortment changes.

The response of customer cannot be achieved through inventories build up because product life cycle is shorter and greater profit margin, which can only be done through customizing the products. The trend of mass customization (which we discuss in detail as a part of our research) has shortened the life cycle of products. The changing trends in fashion industry allow the researchers towards the postponement and customized operation in order to focus on quality and flexibility. Therefore, speed, quality, and flexibility are the important requirements for the fashion supply chain (Fisher, 1997). In today's fashion market the key for success is to keep an eye on and react to the customer demand. Many apparel industries done with their supply chain development programs. The reason behind this is to improve the base of their competitive advantages and to develop the ability to respond quickly to the demand of customer for the fashion items (Azuma et al., 2004; Adidas, 2005; Liz Claiborne, 2005; Mango, 2004; H&M, 2005). The concept of Postponement was defined by Bucklin in 1965. There are many research papers about the postponement but not many of researchers conducted a study on postponement in a way which could help in fashion retailing. In a fashion industry we want to discuss the customization point with respect to the postponement. We choose H&M for our study. The reason for choosing H&M is that, it is Europe’s leading fashion retailer, and it is representative of others in the apparel industry. We will use H&M as a base line to reach our research questions. On the other side standardization is very useful strategy for the industries. Many of industries built their set up only due to standardization like IKEA. In contrast with customization we want to see the problems and implementation of standardization with respect to the postponement. These two growing strategies “Customization and Standardization” motivate us to write something about their use in fashion industry.

1.3 Purpose

As a result of postponement, it offers benefits which help the organizations as becoming more adoptive (Kong & Allen, 2007). The purpose of this thesis is to identify how postponement and customization effect in the fashion industry and to understand the different processes and applications of standardization with postponement within the fashion industry. The purpose of this paper is also to discuss the processes in the supply chain of fashion industry, and find out the solution, which is caused by customization and standardization. The purpose is also to give a general idea to his reader about fashion industry and his types.
1.4 Delimitation

In our research we discussed on fashion retailing and the company is H&M. H&M has other products also like cosmetics etc which is not a part of our research. We had conducted our study in Pakistan, not Sweden which also comes under delimitation.
1.5 Research Questions

Choosing research question is not an easy task since the frame of reference and methodology depends on it. One must have clear understanding of their research question and idea behind that in order to justify their research. It is quite common for researchers to change their research question during the course of their work or to refine them according to the situation.

The research questions, which we try to explain in our report, are:

1. How mass customization and Postponement affect the flexibility in fashion retailing of H&M.

2. How Standardization and Postponement are used together in fashion retailing of H&M.

Our study will cover by giving the answers of our above mentioned questions.
1.6 Outline of the thesis

In order to give a general overview of thesis, a scheme is made in a form of chart for the readers from chapter 1 “Introduction” to the chapter 5 “Conclusion and future suggestions”.

Chapter 1 – Introduction

Chapter 1 provides the background of postponement, some related definition of retailing and fashion retailing and the challenges faced by retailers. Furthermore, this chapter provides the problem of research and its purpose, the delimitation of the research and ends with the research questions.

Chapter 2 – Frame of reference

This aim of Chapter 2 is to provide the discussion behind the problem which includes postponement, retailing, fashion retailing, speculation, mass customization, standardization, and determinants of postponement with the emphasis on fashion industry. These all theories will be used as a tool to help and understand the problem. This chapter also presents the structured results from the previous studies.

Chapter 3 – Methodology

In Chapter 3 we describe research methodologies; Quantitative and Qualitative research. After this, we describe types of research. We also come with types of data; Primary and secondary to support our thesis in this Chapter. This part tells the course of action of collecting data, analyzing data and types of interview followed by process of our electronic interview with H&M Senior Merchandiser. We have used some ethical issues which are used in qualitative research, and important to know while interviewing. Responses by the interviewee added to the list of interview. Questionnaire is presented in appendix.

Chapter 4 – Empirical findings & Analysis

Chapter 4 presents the activities of H&M as a background and his business concept. We define the H&M SCM model and complementarities within H&M model with the help of electronic interview. This chapter finally demonstrates the retrieved empirical findings and analysis which comes from an evaluation of opinions gathered in empirical study and the theoretical frame work.

Chapter 5 – Conclusion

This chapter gives the main finding and results from the studies and proposed the recommendations for future research under the heading Future Suggestions.
2 Frame of Reference

This chapter focuses on historical and conceptual development of postponement in retailing. The chapter goes through literature that includes Postponement, in relation with other concepts such as speculation matrix, determinants of postponement and Postponement strategies. All these concepts are defined to help and presenting the framework of the study.

2.1 Retailing

Retailing is a growing industry and plays a vital role in the economy of any country. Retailing does not mean that only products are sold to the customers, it means selling products and services to the final customers. Retailing is a part of distribution and is connected closely with the marketing channel concept (Coughlan et al., 2001). Retailing as part of distribution channel that involves in the activities of selling goods and giving services to the final consumers for personal uses or business activities (Kotler & Keller, 2003). Fernie, Fernie, and Moore (1999), investigate and compare the traditional and recent changing roles of retailers. According to Fernie et al., (1999) activities of retailers are more than resellers and they itself design and operate supply chain activities and as a result they act as a key decision makers in the decision making manufacturing and in adopting the choices of end customer. There is direct contact of retailers with the consumer to buy and sell goods. Retailers normally deal with the different varieties of goods (Kotler & Keller, 2006). Checkout system is also very important for good sales in retailing. Retailers can be used for scheduling transport and deciding levels and locations of stock holding. Just in Time system is also very important in retailing for immediate delivery. If the communication and transport system can be linked effectively, retailers can move from keeping stocks in warehouse to running a distribution center (Fernie & Sparks, 2004).

BareKoven, 1995; Hensen, 1990; Levy and Weitz, 2004 & Liebmann and Zentes, 2001 suggest that retailing comes when the distribution is organized over the market and is defined from an academic perspective in two ways:

- Retailing is like a set of functions that will add value to the products/services and that are sold to end users. This perspective of retailing requires functional understanding.
- Retailing is a specific institution within a channel of marketing that executes retail functions. This perspective of retailing requires institutional understanding.
Kotzab (2005) mentions different categories of retailers and categorize into three segments:

2.1.1 Non store retailing
Non store retailing is categorize into three segments which are general mail order, specialist mail order and electronic commerce which further divide into telemarketing, teleshopping, online shopping and cybermalls.

2.1.2 Store based retailing
Store based retailing is categorize into two segments. One is retail stores which define general merchandise retail store, convenience store, supermarkets, supercenters, departmental stores, discount stores, category specialist, factory outlets, hyper markets and duty free shops where as second one is the remaining store based retailing which includes vendor machines, kiosks, catalog show room and gas station.

2.1.3 Hybrid retailing
Hybrid retailing is a retailing which involves street markets, home delivery, door to door sales, mobile trade, and multi level sales network.

In Sweden the overall retailing is one third of private consumption (Bergström et al., 2005). Retailing contains sale of goods and merchandise from a fixed locations or send it through mail in separate lots for consumption to the consumer. The techniques of pricing by most of the retailers are cost-plus pricing technique.

By having influential role of models in decision making for inventory strategies, retailers have opportunity of reducing costs (Shewchuck, 1998). Retailers normally deal with different varieties of goods from different suppliers. Their functions include storage of goods, buying and assembling, providing credit facility, after sale services, display of goods (Kotler & Keller, 2006).

2.2 Retail Strategies
In retailing, strategic planning and management gradually developed over the past decades (Corstjens & Corstjens, 1995). This development has mostly focused on the operational side of retailing (Randall, 1994) or on the positioning side of retailing (Lawrence, 1983; Randall, 1994). According to Herbert Kotzab (2005) there are two basic strategies of retailing.

2.2.1 Cost leadership
Cost leadership defines the differences between the retailer interpretation and the manufacturer interpretation which are primarily retailers which do not have “production facilities” and secondly cost of goods which are sold is ‘high’, i.e. low margins.

2.2.2 Differentiation
There are 5P’s in differentiation strategy; Place location, Product assortment, Price-value/quality ration, People service and Knowledge, Promotion communication internal and external sales and marketing activities. All the five elements are directly visible to con-
sumers and parts of the differentiation strategy. Differentiating strategies that do not specify the target segments are not able to provide the base for building competitive advantages.

Implementing winning strategies in retail sector does not come by itself. It requires a lot of hard work, dedicated management, dedicated staff, an efficient operational system, a clear positioning in the market place and a bit of luck (Aaker, 1995).

2.3 Fashion Retailing

By nature, fashion retailing is internationally, largely as a result of international sourcing issues that distinguish the fashion supply chain. The emergence of fast fashion means that some European retailers like to take the benefit of short lead time and manufacturing need to take place closer to the home than Far East (Alexander & Doherty, 2009).

Fashion is a broad term that encompasses the product where, there is sign of style which is supposed to be short lived. Being close to the customers is a goal of any market oriented business, but it is vital in fashion retailing. Retailers and their suppliers want to be connected closely through shared information that was previous case in past. There are not much retailers and fashion retailers who are sharing point of sales (POS) data with their suppliers (Alexander & Doherty, 2009). It is a growing assumption that shared information allows higher level of on the shelf availability, which is acquired with the use of minimum inventory. POS is analyzed daily and it is used to find the replenishment requirements and the intention is supposed to continue for making the product available (Christopher et al., 2004). In the sector of fashion retailing, retailing is towards less important arm of manufacturing based commercial activity traditionally. As a result the manufacturing business opened outlets that bore the brand name of the company but as far as company was concerned they were not the primary point of value creation (Alexander & Doherty, 2009). A UK based company Burtons is a good example of this. Burtons extended their setup in France in the 1960’s through the acquisition of factories and shops, not only in the retail outlets (Alexander & Quinn, 2002). Retailers like Burtons divert his emphasis away from the manufacturing to the retail part of the business, which was not until the changes in men’s fashion in the 1980’s (Alexander & Doherty, 2009). According to the Christopher et al., (2004) fashion markets are characterized by short life cycles, high volatility, low predictability, and high impulse purchasing. Furthermore Christopher et al., (2004) acknowledge that the fashion sector run around two seasons per year. The buying and supply chain process is forecast based so running the perennial risk of overstocking.

2.4 Quick Response and fast fashion approach

First we come towards the definition of Quick Response (QR) and then relate it to the fast fashion. According to the Fernie (1994) QR is a phrase developed by management executive in the United States (US) to accelerate the response time across the supply chain from a customer choosing a fashion item with respect to its replenishment.

Hines, 2007a describes an interesting analysis between QR and fast fashion which approaches the sake of managing fashion supply chains. According to Hines, 2007a QR is a supplier approach to reduce production cycles to deliver the products to the market faster.
In contrast, fast fashion is a retailer’s perspective on the process and the retailer ensure that it meet the consumer demand efficiently and more in terms of effectiveness by placing more fashionable items in a store on regular basis. In this type of partnership, production is demand instead of forecast driven (Birtwistle, Siddiqui & Fiorito, 2003). By saying this by Birtwistle et al., 2003 suppliers are privy or invisible to the retailer’s confidential sales data and the decision of retailers to buy from supplier is made much near to the time of purchase by the customers.

### 2.5 Fashion Retailers

Retailers such as H&M, Zara, Benetton, and Gap dominated the internationalization of middle market fashion retailing for some time (Alexander & Doherty, 2009). International retailers engaged in clothing industry are believed to be the key drivers of the globalization of the clothing industry (Gereffi, 2005a). Fast fashion retailers can be divided into two categories:

- Some are retailers, in the true sense of the term, with no manufacturing competencies of their own represented by Gap, H&M, and Mango.
- Others retailers are with factories such as Benetton and Zara.

Retailers without factories obviously do not manufacture their own clothes, but instead outsource them to other firms and increasing to firms from partially industrialized countries. Thus, they are the key drivers of the globalization of the clothing industry (Gereffi, 2005a). They fuel globalization via global sourcing, thereby contributing to the flight of manufacturing jobs from the West. For example, H&M has 21 production offices (10 each in Europe and Asia, another in Africa) with a total of more than 700 employees who are responsible for ‘liaising with around 750 factories’, 60% of which are in Asia, the rest being in Europe (Tungate, 2005).

On the other hand, retailers with factories have been credited with keeping jobs in the West. For example, in the 1990’s, the Italian Benetton was seen as something of a 'home-sewn exception to globalization' and during 2000-2001, the Spanish Zara also rose to prominence as an exception (Christian Science Monitor, 2001). At a time when most retailers were outsourcing the bulk of their manufacturing to partially industrialized countries, where labour is significantly cheaper, Benetton and Zara, with their manufacturing facilities in Italy and Spain respectively, were considered to be ‘flout much of the conventional wisdom regarding the global economy’ (Surowiecki, 2000).

As a part of our thesis, we discuss about postponement strategies of H&M and try to find out the process which includes in the supply chain of H&M and its SCM model. Zara, a modern Spanish clothing manufacturer/retailer with comparatively have less turn-around time. Instead of shipping new products in a season, Zara makes deliveries at each of its four hundred stores around the world every few days. Most important, the company took only ten to fifteen days to go from designing to product which means knocking off a hot new look to selling it. By any measure, Zara gets high return on its investment than its major competitors, the Gap, and the Swedish retailer H&M. The business of Zara built on the
one idea that, in retailing, inventory is death (Surowiecki, 2000). Today, retailers are the designers and controllers of product supply in reaction to known customer demand. Retailers control and manage the supply chain from production to consumption. They have increased their control over secondary distribution from warehouse to the respective stores (McKinnon, 1996).

Zara’s practices of sending a half-empty truck across Europe, paying for airfreight twice a week to ship coats on hangers to Japan, or running factories for only one shift went against the usual principles of efficiency, but Zara’s management clearly valued global responsiveness more than efficiency (Ferdows, Lewis & Machuca, 2004).

Now, there is competition between significant number of ‘fast fashion’ retailers to increase the number of their stores while maximizing the speed, synchronicity, and responsiveness within their supply chain. The Spanish Zara, the Swedish Hennes & Mauritz (H&M) and the US-based Gap now have around 1000, 1400, and 3000 stores respectively. The Italian Benetton retails its garments through over 5000 franchised stores (D’Avanzo, Starr & Von Lewinski, 2004; Reinach, 2005).

### 2.6 Postponement

Postponement which is also called product differentiation is a business strategy that maximizes the possible benefits and minimizes risk by delaying the further investment into a product or services until the last possible moment (Friedman, 2006). For example, Dell Computers built to order online store. Postponement is used by many industrial giants such as Xilinx, HP, Mars, Motorola, Toyota, Gillette, Benetton (Brown, Lee & Petrankan, 2000; Peter, 1992; Van Hoek, 2001; Yang, Burns & Backhouse, 2004a). According to Martin Christopher (2005), postponement or delayed configuration is based on the principle of seeking to design products using common platforms, components, or modules but where the final assembly or customization does not take place until the final market destination or customer requirement is unknown. Postponement is an analytical tool which is used to determine the efficient manner to make products available to end user. There might be several reasons for the postponement, some of them are reducing inventory costs and minimizing risk (strategies for holding right inventory at right place and right time).

According to Bucklin (1965), postponement means by which a supplier may shift risk to the buyer. He made a distinction between postponement and speculation; postponement involves delaying value-adding activities until a customer order is received, and speculation involves adding value before the order is received. It represents the risk to shift to the institution rather than away from it. The principle of speculation holds that changes in form, and the movement of goods to forward inventories, should be made at the earliest possible time in the marketing flow in order to reduce the costs of the marketing system.

The main idea of postponement is integration of different types of supply chain (Blurgak & Pawar, 2006). It can be seen that whenever there is difficulty in forecasting, postponement is an important strategy (Matthews & Syed, 2004).
2.7 Speculation

The converse concept of Postponement is Speculation, which holds that changes in form and movements of goods towards inventories should be made at the earliest possible time to reduce the cost of supply chain (Pagh & Cooper, 1998).

Speculation makes it possible to gain economies of scale in manufacturing and logistics operation, and limit the number of stock outs (Pagh & cooper, 1998).

Postponement involves delaying value adding activities until a customer order is received, and Speculation involves adding value before the order is received (Waller, Dabholkar & Gentry, 2000).

The principle of speculation says that changes in form, and the movement of goods to forward inventories, should be made at the earliest possible time in the marketing flow in order to reduce the cost of marketing system. Speculation reduces the cost of sorting and transportation because it permits goods to be ordered in large quantities rather those in small frequent orders (Bucklin, 1965). Speculation strategy is traditionally widely used by the companies (Zinn & Bowersox, 1988). Companies have moved their strategies towards postponement from speculation because of risks of speculation (Kong & Allan, 2007) like obsolete products (Pagh & Cooper, 1998).

2.8 Benefits of Speculation

Bucklin (1965), describe some benefits of speculation. According to Bucklin (1965), speculation allows goods to be ordered in big quantities instead of small frequent orders. As a result, there will reduce the cost of sorting and transportation. Due to the stock outs, speculation helps in limits the loss of consumer goods and speculation allows the reduction of uncertainty in a many different ways.

2.9 Postponement value

Benetton’s innovative Postponement strategy allows product customization to be maximized. In order to position the CODP, companies can start postponement application (Yang & Burns, 2003). Feitzinger and Lee (1997) give the example of Italian manufacturer Benetton who highlight the importance of re-sequencing the manufacturing sub-process for the postponement. In fashion industry, first, yarn is dyed and then knitted into the garment which is bit of a lengthy process. Benetton first knitted the garment using bleached yarn and postpones dying to the next step of the production. By applying the process of Benetton, the operation of dying is shifted CODP downstream by re sequencing the sub processes of manufacturing. We will discuss Benetton process of manufacturing later in detail under the heading determinants of postponement with the help of figures.

The Benetton process of manufacturing helps a lot because there are always many garments in the colors which customers do not want, whereas the colors which customers want are always sold out. Therefore, it is a much better idea of Benton according to the customer requirement. Through this, organization gets higher customer level service and sold out risk is removed.
2.10 Conceptual Development of Postponement

The concept of Postponement can be found in different fields; including, Finance (Trigeorgis and Mason, 2001); Innovation (Szmigin and Foxall, 1998); Logistics (David and Maister, 1976); Operational management and research (Aviv & Federgruen, 2001a) and Marketing (Bucklin, 1965).

In the logistic and operations management perspective which is based on the Alderson (1957) description, the research on postponement has two streams; one is manufacturing postponement, and the other is referred as geographic postponement which also may called Logistic Postponement (Bowersox, Closs & Copper, 2002; LaLonde & Mason, 1985; Pagh & Cooper, 1998).

2.11 Historical background of Postponement

The concept of postponement first developed in the field of marketing. Alderson (1950) defined postponement as a strategy that changes the differentiation of goods (form, identity and inventory location) to as late as possible. Bucklin (1965) defines the opposite concept of postponement which is known as speculation; meaning changing form and moving goods towards the inventory at earliest possible time to reduce the cost of the supply chain. According to Bucklin (1965), activities cannot be postponed forever. We can extend this statement that postponement cannot occur everywhere. We must consider at what point or combination of points in the supply chain postponement provides the greatest overall benefit. Van Hoek (2001) thinks that postponement is an organizational concept because some of the activities in the supply chain are not performed until customer order is received. According to Bucklin (1965), it is important to delay the value adding activities until the order from customer reach the company.

2.12 Classification of Postponement

Logistic postponement is delaying the forward movements of goods in the chain of operations (time postponement) as long as it is possible and place the goods in storage at central location in the distribution chain (place postponement), whereas form postponement relates to delay product finalization until customer orders are received (Van Hoek, 2001). Full postponement is through using make-to-order (MTO) in the manufacturing process and centralized inventories and direct distribution in logistic. In contrast, full speculation is through using make-to-stock (MTS) in the manufacturing and decentralized inventory in logistic (Pagh & Cooper, 1998). Product postponement is through design of the products so the product’s specific functionality is not set until the customer order have been received, whereas in process postponement a generic part is created in the early stage of the manufacturing process and this part will be customized to create the finished product at the later stage (Brown, Lee & Petrankan, 2000). Upstream postponement in the supply chain level means that manufacturer wait for the orders (raw material) from the supplier until they receive the customer order. In contrast to downstream postponement which is about delaying some physical change to the product after it leaves the primary manufacturing stage (Waller et al., 2001). At last, purchasing postponement is the practice of postpon-
ing the incoming component or raw material until demand is not visible or known (Yang et al., 2004b).

### 2.12.1 Classification of Postponement by different Authors

Above postponement strategies which was discussed by different authors can be summarized as below which was given by Yeung et al., 2007.

1. Zinn and Bowersox (1988)
   - Labeling postponement, Packing postponement, Assembling postponement, Manufacturing postponement and Time postponement.

   - Time postponement, Place postponement, Manufacturing/Form postponement.

   - Full postponement, Logistics postponement and Form postponement.

   - Full speculation, Logistics postponement, Manufacturing postponement and Full postponement.

   - Product postponement and Process postponement.

6. Waller et al. (2000)
   - Upstream postponement, Downstream postponement, Product postponement and Place (distribution) postponement.

   - Engineering-to-order, Buy to order, MTO, Assemble-to-order, MTS, Ship-to-stock and Make-to-forecast.

8. Yang et al. (2004b)
   - Product development postponement, Purchasing postponement, Production postponement and Logistics postponement.

Zinn and Bowersox (1988) suggest five types of postponement; labeling, packaging, assembly, manufacturing and time.

- **Labeling:** In this strategy, the product should be standardized and not labeled until order is placed. This approach lowers the inventory cost as inventories are constituted of generic products.
- **Packaging:** In packaging postponement products can be adopted to the customer requirement and transportation requirement.
- Assembly: This postponement is focusing on aesthetic features like computer, mobile phones, iPods etc.
- Manufacturing: It happens when parts are delivered to the finishing center from more than one supplier. Manufacturing postponement is an extension of assembly postponement factors.
- Time: It is used when finished products are delivered to the centralized warehouses close to the end customer, as a result customer service increases, and lead time reduces from customer order to possible delivery.

2.13 Postponement and Speculation (P/S) Matrix

Pagh and Cooper (1998) used 2x2 matrix of generic postponement-speculation strategies which identifies four generic supply chain postponement-speculation strategies by summing manufacturing and logistics postponement and speculation. This matrix is so called P/S matrix. In the Table 2-1, the rows of the matrix represent manufacturing postponement and column of the table represent logistic postponement. Pagh and Cooper (1998) define four strategies, the full speculation strategy, the logistics postponement strategy, the manufacturing postponement strategy, and the full postponement strategy. Logistic can be range from speculative strategy where inventories are distributed speculatively and at the mean time decentralized, to a postponement strategy where distribution is postponed and a result inventories are centralized.

Table 2-1: Postponement and Speculation (P/S) Matrix

<table>
<thead>
<tr>
<th>Manufacturing</th>
<th>Logistics</th>
<th>Speculation</th>
<th>Postponement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Speculation</td>
<td>Decentralized inventory</td>
<td>Centralized inventories and direct distribution</td>
</tr>
<tr>
<td>Make to inventory</td>
<td>The full speculation strategy</td>
<td></td>
<td>The logistics postponement strategy</td>
</tr>
<tr>
<td>Make to order</td>
<td>The manufacturing postponement strategy</td>
<td></td>
<td>The full postponement strategy</td>
</tr>
</tbody>
</table>

Source: The P/S matrix and generic supply chain strategies (Pagh & Cooper, 1998)
2.13.1 The full speculation strategy

The full speculation strategy is traditionally most widely used strategy by the companies. This strategy is based on the inventory forecast, full speculation of manufacturing and logistics operation is observed. The customer/retailer order point is observed in the lowest level downstream in the supply chain as indicated in Figure 2-1. The manufacturing process is prior to the differentiation of product by location and product is stocked near to the customer and distributed is through the decentralized distribution system (Pagh & Cooper, 1998).

An example of employing this strategy is Xerox (Camp & Colbert, 1997). Xerox has been working on integrating the supply chain from supplier to the end customer since 1990.

As an advantage of this strategy, full manufacturing and logistics economies of sales can be achieved, since the products can be both distributed and manufactured in big lot sizes (Bucklin, 1965). However, due to the decentralized inventories, the inventory investment will be high, the highest of all P/S strategies.

![Diagram of the full speculation strategy](image)

Figure 2-1: Full speculation strategy adapted from Pagh and Cooper, 1998

2.13.2 The manufacturing postponement strategy

The manufacturing postponement strategy is useful where final manufacturing operation (light manufacturing, final assembly, packaging, and labeling) will be processed after the order from the customer and after the product has been logistically differentiated. Early stage of manufacturing is centralized and final manufacturing can be done in a decentralized distribution structure in cases where inventories close to the customer. Due to this, slight increase in manufacturing cost occurs but total value of inventory is reduced in comparison with the number of safety stocks and stock keeping units. There will be an increase in cost and complexity of customer ordering process. Economies of sales are supposed to decrease in the downstream manufacturing but economies of sales in logistic will not be change (Bask, 2001). One example of Hewlett-Packard’s employment of decentralized final custo-
mization of their DeskJet printers for the European and Asian markets. Instead of fully customizing the DeskJet printers at the factory, HP decided to postpone the final manufacturing operations (power supplies, packaging and manuals) until the local distribution centers (Pagh & Cooper, 1998).

Manufacturing postponement also effects packaging. Let us take an example from the Swedish retailer IKEA. IKEA has become one of the successful international retailers by shipping furniture products in the smallest form, knocked down in ‘at packs’ for postponed assembly by customers. IKEA spends less money on shipping furniture from Sweden to the USA. There is added advantage for ‘at packs’ which are used in the handling of the furniture during distribution. It reduces a damage that is due to manual handling, since unassembled products compared to the fully assembled furniture which is awkwardly manually handled, can be palletized, and handled mechanically (Twede; Clarke & Tait, 2000).

![Figure 2-2: Manufacturing postponement strategy adapted from Pagh and Cooper, 1998](image)

### 2.13.3 The logistics postponement strategy

Manufacturing is based on the speculation that is economies of sales and logistic is based on the postponement in the logistic postponement strategy. The products which are finalized are distributed from the centralized inventory to the customers directly (Bask, 2001). As indicated in Figure 2-3 the customer order point is shifted upstream to the level of central warehouse and the manufacturing operations are inventory initiated which must be performed before the operations of logistic (Pagh & Cooper, 1998). The result of centralization is reduced inventories for the required amount of stock to provide high in stock availability and the cost of shipment may increase in consequence of modes of faster transportation and smaller shipment sizes (Bask, 2001). The operations of logistics based purely on customer order initiated (Pagh & Cooper, 1998). The centralization of inventories reduces the stock which is required to provide high in-stock availability but due to this shipment cost increased due to small shipment sizes and faster modes of transportation (David & Maister, 1976).
2.13.4 The full postponement strategy

The manufacturing and logistics operations are performed after the customer order received in full postponement strategy. As a result of this strategy, the low manufacturing inventory costs and the reduction of inventories in the distribution occurs (Bask, 2001). Compare with the other postponement strategies, the full postponement strategy represents highest level of postponement application. Some operations in the early manufacturing can be performed in an anticipation of customer’s orders. As a result, it shortens the delivery time by utilizing the manufacturing economies of sales. This condition is in Figure 2-4, where retailer/customer order point initiates in the last step of manufacturing process (Pagh & Cooper, 1998).

Sony factory in Wales is a good example which makes television sets for Europe. ‘Euro Chassis’ a basic design introduced by Sony, which can be customized in the production process later (at central facility) for every market to replace marketing different products for every country according to the technical standard and broadcasting. Sony reduced the required components and simplified its inbound logistic an improved the quality of their products to achieve the benefits of not having to commit inventory to the selected countries (Twede et al., 2000).

Full postponement strategy is feasible when customization has high value to its customer and good reason like to achieve economies of scale by placing customer operation at central location point and specially when the customer is willing to wait for the product.
2.14 Determinants of Postponement strategy

There are different factors which effect postponement. Some of the main factors are demand uncertainty (Aviv & Federgruen, 2001), product life cycle (Pagh & cooper, 1998), product variety (Su, Chang & Ferguson, 2005) and customization (Chiou, Wu & Hsu, 2002).

2.14.1 Consumer Behavior

Consumer behavior towards the product is always changing time by time. It depends on the particular product. This is the reason that retailers move towards the implementation of postponement strategies instead of using speculation strategies.

2.14.2 Product Life cycle

Marketers introduce new products and services for the sake and desire of consumer and end users. Fast development in the technology is directly proportional to shortening the product life cycles means more new innovations come in the market, as a result the life cycle of a product is decreases, so called short product life cycle in business.

Products have different needs of supply chain in different stages of their life cycles, and when the life cycle goes on, the ability to adopt supply chain quickly become more effective (Diaz, 2005).

Fashion products have short life cycle and high demand uncertainty, so exposing the supply chain to the risk of both stock out and obsolescence. Trendy clothing seems to be a very good example of fashion product (Christopher & Towill, 2000). It means that the period in which the product will be saleable is likely to be short and seasonal, measured in months or sometimes even in weeks.

2.14.3 Demand Uncertainty

Demand uncertainty has very much influence in the fashion retailing. The demand of customer towards the latest fashion is changed periodically time by time. For example, if two retailers are selling in the same market, then both retailers have to think about innovation as a fashion retailer in order to gain his market. In today’s supply chain, supplying fast fa-
Fashion is not only to entertain the market with the shortest lead time but also to react immediately on the demand (Saini, 2007). As fashion retailing all about different seasons, means summer, winter, and spring. Fashion retailers have to forecast their products while manufacturing. They must know when their products will be in shop. Customers do not buy those garments which are not as per current season. Colors, Designs, Models, Packaging all these characteristic of a product if not available on time, causes demand uncertainty and the retailers move towards the postponement.

The challenge faced by delivering fashion products is like developing a strategy which improves the match between supply and demand and this could enable companies to react faster to the market (Christopher & Towill, 2000).

There is high demand uncertainty in fashion products (Christopher & Towill, 2000). In order to fulfill demand uncertainty and avoid degeneration, there is need to combine lean and agile for the sake of best results (Saini, 2007).

According to Christopher and Towill, 2000 customers will buy specific products in lean production but in agile production the customer reserve some capacity which may need to be made at short notice. Later on Christopher and Towill, 2000 refers agile supply chain is for fashion goods and lean supply chain is for commodities (see Table 2-2).

Table 2-2: Agile and Lean supply chain

|----------------------------|------------|--------|--------|-----------------|

<table>
<thead>
<tr>
<th>Market Qualifiers</th>
<th>Market Winners</th>
</tr>
</thead>
</table>

Sources: Mason –Jones et al., (2000)

2.14.4 Lead times

Short lead times means that forecasting horizon is short, so the risk of error is low (Christopher et al., 2004). Based on the short lead times, many fashion industries and retailers are expanding their business while outsourcing the products (Saini, 2007). Christopher et al., (2004) suggested three types of critical lead times managed by organizations that seek to compete successfully in fashion market. First is Time-to-Market means how long it takes to
recognize the market opportunity for the business and translate into a service or product to enter in a market. Second is *Time-to-Serve*; meaning how long it takes a customer order to capture it and deliver the product to the retail. Third is *Time-to-React*; means how long it takes the business output in order to adjust in response to volatile demand. It is difficult to achieve the flexibility because lead times are long in fashion industry. For example, Benetton waits for number of order if needed from the retailers to buy bulk fabric and start manufacturing in order to reduce the cost but resultant the lead time of the finished products in store will increase the process. Figure 2-5 describe the traditional (lean) manufacturing process of garments, which results to a long lead time and Figure 2-6 describe the Benetton manufacturing process of garments which will reduce the lead time by swapping one process activity.

![Figure 2-5: Traditional (Lean) manufacturing process of garments](image)


![Figure 2-6: Benetton manufacturing process of garments](image)


In Figure 2-5 and 2-6, the manufacturing process is just changed due to swapping one activity of dying. In Benetton manufacturing process the inventory level and the set up cost of manufacturing garments parts can be reduced because of postponement of dying the garments after manufacturing will reduces the requirement if keeping stock of different colors of garments and also it helps Benetton to produce the fabric under lean manufacturing while eliminating and decreasing cost and waste (Saini, 2007).
2.14.5  Product variety

Product variety is an important determinant of postponement in the sense that globally there is a change in the behavior of consumers. As a reaction, technology also changes because it depends on the reaction of consumers. P1 computers are no longer in use of consumers because of Dual core processor which are used in all new P4 computers. Let us take an example from the clothing industry, now the manual sewing machine are no longer in use in the big industries due to the computerized sewing machines and for cutting the garment parts paper pattern (which is created using Lectra and Gerber system, a computerized system) will be used in industries.

End consumers need change in product variety after specific time either it is FMCG sector, clothing/textile sector or automobile sector.

2.15  Mass customization

To deliver highly customized products efficiently to the customer is a differentiate factor in the industries. Mass customization helps companies to enter in a new market and allows them to capture customers whose special needs could not meet as per the standard product; therefore, mass customization is an important goal for the companies (Gattorna, 1998). The concept of mass customization was introduced in late 1980’s and this concept relates to the ability to facilitate customized products or services at low cost (Silveira, Borenstein & Fogliatto, 2000). It is important to know here the difference between product variety and mass customization. With product variety, the company can satisfy more customers but in the mass customization, the customer has no possibility to influence the product specification and properties (Duray, Ward, Milligan & Berry, 2000). Mass customization system is pull system, subject to if lean production is used whereas system of large product variety is a push system.

Mass customization is a system that will use IT, flexible processes, and organizational structures in order to fulfill special needs of individual customers (Silveira et al., 2000).

Let us take an example from clothing industry. Sears is a leading player in the customization business in the U.S. Land’s End is the affiliated company of Sears, which is the first company to offer mass customization of garments online. Land’s End has 60 percent of all products in some categories are absolutely made-to-order (www.sears.com).

In the apparel industry, mass customization is approached using Collaborative (Gilmore & Pine, 1997) and Fabricator (Duray et al., 2000) customization because customers taking highly interest in modification of design and fit. Interest of consumers in the customization apparel and also in changing design options and personal fit with the help of trained assistant, which they called co-design (Anderson, Brannon, Ulrich, Marshall, Staples, Oliver, Butenhoff & Beninati, 1997). The involvement of customers’ in the design stage will change the customers’ experiences of shopping.
2.16 Customer order decoupling point (CODP)

In order to fulfill the customer demand on time, some activities should be done before receiving the customer order. The activities which relates to the customer order related supply chain should be places downstream and performed when order is received. This point of separation is the idea of customer order decoupling point (CODP).

According to Olhager (2003), CODP which is also known as penetration point, is a point where product in the manufacturing value chain is linked to the specific customer order. According to Olhager (2003), different positions of customer order decoupling point specifies the different manufacturing situations like make-to-stock (MTS), make-to-order (MTO), assemble-to-order (ATO) and engineer-to-order (ETO).

Rudberg and Wikner (2004) highlight the relationship between position of CODP and the manufacturing types, which can be shown in a Figure 7 below:

![Diagram showing sequential approach to customer order decoupling point]

> Figure 2-7: Sequential approach to customer order decoupling point

Source: Rudberg and Wikner, 2004

Rudberg and Wikner (2004) define CODP as a point that separate the decision which are made under certainty from the decisions which are made under uncertainty regarding customer demand. In Figure 2-7, the part which is associated to the speculation points out the forecast driven activities which is done under uncertainty concerning customer demand and commitment part leads to the customer order driven activities. Therefore, the triangle
between speculation and commitment gives the position of CODP in the value added material flow.

Hoekstra and Romme (1992) define CODP, as “The decoupling point is the point that indicates how deeply the customer order penetrates into the goods flow”.

Later on Wikner and Rudberg (2005) stated that the concept of CODP can be evaluated from P:D (P divided by D) ratio, which was presented by Shingo in 1981. Here, P stands for the production lead time and D stands for the delivery lead time. This ratio is important when deploying the strategies because it gives necessary planning and production activities, based on the speculation. Below mentioned is the proposed table from Wikner and Rudberg (2005) of manufacturing strategies for the corresponding measurement of P:D ratio.

Table 2-3: P/D Ratio

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P/D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1</td>
<td>MTO</td>
<td></td>
</tr>
<tr>
<td>&gt;1</td>
<td>ATO</td>
<td></td>
</tr>
<tr>
<td>=1</td>
<td>MTO</td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>ETO</td>
<td></td>
</tr>
</tbody>
</table>

Source: Wikner and Rudberg, 2005

Here it means that, if the production lead time and the delivery lead time of the customer demand is equal then make-to-order (MTO) is the right strategy. If designing the products according to the customer order, then delivery lead time will be greater than the production lead time. If the delivery lead time demanded by the customer is short, the right strategy will be assemble-to-order (ATO).

We can find many examples of decoupling point. Dell Computers is a well known example of decoupling approach. Another example is the Benetton model, which we explain in our literature under the heading lead time. When we compare traditional manufacturing process of garments with the Benetton manufacturing of garments, we find that “dying process” is the decoupling point in that scenario.

### 2.17 Positioning of CODP

Different authors define CODP in their own way. According to Rudberg and Wikner (2004), the position of CODP depends on the two forces: productivity and flexibility force. Productivity force pushes the position of CODP downstream, when the cost is on competitive priority where as flexibility pushes the position of CODP upstream, when the flexibility and specific customer requirement are subject. This can be shown in Figure 2-8.
2.18 Relationship between postponement and customer order decoupling point

The reason for postponing certain functions/operations in the production is due to the unavailability of customer orders. As we discussed, postponement is a process of delaying the activities because of unpredictable demands from the customer or postponement is a tool for uncertainty management where as CODP is a point where customer order penetrates the supply chain. A point where due to missing information, postponement’s operation is held. Hence, the relation between postponement and CODP which shows that the information which is missing from customer order and demand results in delaying the activities of postponement and then postponement decides the positioning of CODP.

Yang and Burns (2003) conducted the studies about relationship between postponement and CODP in Figure 2-9.
Yang and Burns (2003), defines CODP as dotted line in the Figure 2-9. In the figure it is clear that the depth of postponement increases and CODP gets more away from the final user, when seeing from left to right. According to Yang and Burns (2003) “postponement is used to move the decoupling point closer to the end user and increase the efficiency and effectiveness of the supply chain”. An example of this statement can be illustrated in the Figure 2-10 which is about Hp Desk Jet printers.

**Before Postponement**

![Before Postponement Diagram](image1)

**After Postponement**

![After Postponement Diagram](image2)

Figure 2-10: Before and After postponement (HP case)

Source: Comparison of material flows of HP Desk Jet printers before and after implementation of postponement.

With the operation of customization moved from central manufacturing plant to the local warehouses, CODP location shifts towards the downstream closes to the end user. We briefly explain the postponement and CODP relationship in Table 2-4.

**Table 2-4: Relationship between postponement and customer order decoupling point**

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Authors</th>
<th>Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postponement &amp; CODP</td>
<td>Yang and Burns (2003)</td>
<td>Postponement is used to move the CODP closer to the end user and increase the efficiency and effectiveness of the supply chain.</td>
</tr>
</tbody>
</table>
2.19  **Relationship between mass customization and postponement**

Feitzinger and Lee (1997), explain the relationship of mass customization and postponement “The key to mass-customizing effectively is postponing the task of differentiating a product for a specific customer until the latest possible point in the supply network (a company’s supply, manufacturing, and distribution chain)”. Feitzinger and Lee (1997) stated that companies have to integrate their product designs, their manufacturing and logistics process, and supply networks in order to increase their efficiency and responsiveness.

The relationship of postponement and mass customization is viewed under the term leagility. Mass customization requires leagile supply chain as both efficiency and responsiveness are vital principal for the success of mass customization and postponement also contributes to efficiency and responsiveness respectively, so we can say that postponement contributes to the leagile supply chain of mass customization.

Table 2-5 shows the relationship between postponement and mass customization by different authors.

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Authors</th>
<th>Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Customization &amp; Postponement</td>
<td>Feitzinger and Lee (1997)</td>
<td>The key to mass customizing effectively is postponing the task of differentiating the product for a specific customer until the latest possible point in the supply network.</td>
</tr>
<tr>
<td></td>
<td>Yang et al. (2004) and Christopher (2000)</td>
<td>Postponement has been identified as an important approach for contributing to the attainment of agility e.g. through its contribution to the customization of products and services</td>
</tr>
<tr>
<td></td>
<td>Van Hoek (2000)</td>
<td>Leagility should be targeted at an operational level for the implementation of postponement</td>
</tr>
</tbody>
</table>

2.20  **Benefits of Postponement**

There are many benefits while using postponement strategy. Successful postponement improves customer satisfaction while minimizing inventory cost. Due to the implementation companies are able to compete on time while remaining is cost competitive. The given benefits are suggested by Parthanadee, (2009) and Davila & Wouters, (2006).

- **Technology and process characteristics**

There are four technology and process characteristics; Feasible to decouple primary and postponed operations, limited complexity of customizing, Modular product design and Sourcing from multiple locations.
Product characteristic

There are five product characteristics which includes; High commonality of modules, Specific formulation of products, Specific peripherals, High value density of products and products cube and/or weight increase through customization.

Market characteristics

Market characteristics includes; Short product life cycle, High sales fluctuation, Short and reliable lead times, Price competition and Varied markets and customers.

Improvement in customer satisfaction

Improvement in customer satisfaction include increased ability to offer wider range of customize goods and reduced lead time for orders.

Reduction in inventory cost

Reduction in inventory cost is also one of the major benefits of postponement. It has three aspects; 1) Inventory cost shifts upstream to less expensive generic products, which also reduce inventory obsolescence, 2) Enable better planning and allocation of better resources by reducing the forecasting, and 3) Reduces inventory cost as much as 30% to 40% in successful implementation.

Improvement in order fill rates

Improved in order fill rates means finished products are manufactured from generic components so companies are better able to deliver finished goods on time as a result of postponement.

Bottom line benefit

Postponement primary benefit is to reduce the effect of market uncertainty and to meet customer needs, while effectively managing supply chain costs.

2.21 Top Benefits realized from postponement

In the earlier section, we defined many advantages of postponement. Figure 2-11 showing us the benefits of postponement in terms of increased customer satisfaction, inventory cost reduction, improved order fill rate, risk minimizing, manufacturing cost reduction, procurement cost reduction, infrastructure cost reduction, and transport cost reduction.
Figure 2-11 gives a clear view of different factors which effect postponement. On the Y-axis there is all the factors and on the X-axis the percentage with a break of 20 percent per frame. In this chart, there is division of prioritization regarding important factor. Very important factor comes first and then important factor by giving the dark and light color respectively in the specific percentage frame on X-axis. For example, in inventory cost reduction, the total percentage given to this factor is 91 percent and out of 91 percent 60 percent is very important and 31 percent is important factor.

By looking Figure 2-11, we can say that by implementing successful postponement strategies, there is improvement in customer satisfaction while minimizing inventory cost. Many organizations are able to compete in time while cost competitive by enhancing their ability to respond change in demand from global and local markets. Increased in customer satisfaction comes from ability to produce wider range of customized products in the company and the lead time of orders will be reduced. Reduction in inventory cost comes when inventory cost shift upstream to the economical generic products and by reducing the forecasting it enables better planning and allocation of resources. It also reduces inventory cost up to 30% to 40% in the successful implementation. Finished goods are made from generic components, so organizations are able to deliver finished products on time because of postponement, so called improvement in order fill rates. The primary benefits of postponement are to reduce the effect of market uncertainty and to fulfill the need of customers, while managing supply chain cost effectively (Muzumdar, Colehower, Syed, Pernat, Matthews, Wire & Prats, 2003).

2.22 Standardization

Generally component standardization or component commonality means, “An approach in which two or more than different components for different finished products can be replaced by a common component that could perform the functions of those it replaces” (Caux, David & Pierreval, 2006).
The types of standardization are standardization of components within a product, standardization of components among products and standardization of components among product generations (Perera, Nagarur & Tabucanon, 1999).

Let us take some practical examples of standardization from the clothing industry. In downstream the supply chain, poly bags are standardizing for different groups of garments in order to save cost in the production. While packing the garments, the cartons should also be standardize for solid and assorted packing where solid means garments with same color and assorted means garments with different color.

To achieve the postponement, standardization is a way. We have discussed postponement in detail in the previous literature. Standardization involve in the sharing of design and components across the generations of products. Standardization helps in the use part, sub-assemblies, or modules in many products. As an example a group of final products can deal with the same core subassembly, but got different functionalities by using other subassemblies (Davila & Wouters, 2004).

The need of standardization is before the postponement. The best case of standardization is when the final products are same and the customer customizes it.

**Advantages**

The main advantages of standardization are risk pooling and lead time uncertainty reduction (Ma, Wang & Liu, 2002; Yang et al., 2004). The design of standardization needs firms to invest significantly to the homogenize components. The firm can achieve valuable cost reduction through economies of sales after making this investment (Lee & Tang, 1997). Hsieh et al., (2002) conducted an empirical study and found that job standardization is positively related to the perception of quality of the service because standardization will allow companies to minimize variability and uncertainty in their processes. Due to component commonality there is reduce in total number of distinct components and give benefits in a varieties of functional areas throughout the firm (Ma et al., 2001).Commonality has also some additional benefits like economies if the scale through large order sizes.

According to the Davila and Wouters, 2004 the potential advantage of standardization is component sharing and low investment in design and production. However, the involvement of component sharing is due to access capability of shared components (Fisher et al., 1999).

**2.23 Working Model**

Based on our frame of reference, and all related theories, we will go for our analysis and try to figure out our proposed research question. By keeping in mind the related theories, we will design our questionnaire and collect related information from the companies as much s possible.
This chapter describes method of collecting data, analyzing data and type of interviews used. In addition, there are also theories about research methodology as a background, and then rationales for choosing the certain methods and techniques will be discussed. In the final section reliability and validity of this research will be discussed.

### 3.1 Research Methodologies

Research methodology is a strategy applied to achieve goals and provides the blueprints that explain how the tools can be used (Potter, 1996). In our research we came across the concept of quantitative and qualitative research. The concepts of data collection and analysis are needed from the previous literature. There are two ways to conduct Research Methodologies:

1. Quantitative Research
2. Qualitative Research

#### 3.1.1 Quantitative Research

Quantitative research is related with the process of enumerative induction. The impact of quantitative method is that the data is collected from the companies is more efficiently gathered, measured, and compared than that in qualitative method (Patton, 2002).

Quantitative research is a methodology that seeks to quantify the data and it applies specially in some form of statistical analysis (Malhotra, 1996). Quantitative research is a form of definite research involving large representative samples and quite structured data collection procedures (Parasuraman, 1991). Quantitative research can be used to measure customer attitudes, satisfaction, and useful market data tracked over time. It is also used to measure awareness and attitudes of different manufactures and to know customer behavior.

In Quantitative research we classify features, count them, and even develop more complex statistical models in order to explain what is observed. Quantitative analyses allow us to discover which phenomena are supposed to be genuine reflections of the behavior of a language or variety. The picture of the data which comes from quantitative analysis is less than obtained from qualitative analysis (www.tutor2u.net).

#### 3.1.2 Qualitative Research

Qualitative research is defined as the research methodology which is unstructured and based on small sample which entertain insights and by which the reader understand the setting of the problem (Malhotra, 1996). Qualitative research is useful when the concepts are not explored. A research logic which is known as analytical induction is used for analyzing
qualitative data (Haberman & Danes, 2007). Qualitative research is defined as unstructured interview with small samples that could be produce ideas and hypothesis (Aaker & Day, 1990). Depth and detailed interviewing and group discussions are the two main qualitative techniques to obtain data (www.tutor2u.net).

Most of the business markets can use depth interviews for qualitative research. In this method, interviewer spends time on one-on-one interview to find out customer related information. Group discussion is useful for consumers because it can be an effective way of understanding what customers are looking for.

The Research method we used in our study is Qualitative research method. The reason for choosing qualitative research is that qualitative research methods, as according to Walker, Cooke and McAllister (2008) helpful and beneficial in analyzing the complexities related to the concepts of postponement. Qualitative research, most of the time generates soft data, which has less focus on quantifiable methods and try to find in depth information about one specific situation (Maylor & Blackmon, 2005). Data collection and analysis both required the concepts from previous literature and the application of those concepts in reality. Therefore, it was natural to select qualitative method for our thesis. According to Saunders, Lewis and Thornhill (2007), the qualitative research method is a proper way for this research in order to give the inside view of describing the certain phenomena.

In Qualitative analysis, there are four major methods (Silverman, 2001):

- Observation
- Analyzing text and documents
- Interviews
- Recording and Transcribing

This involves a specific chain, which relies on a qualitative study in order to understand and to investigate phenomena. Qualitative method is useful when concepts are unexplored and for general understanding. In continuation to the qualitative approach, a deductive method is used. It is one of the formal and broad methods to work on research study (Holme & Solvang, 1997). Deductive approach is used for creating new information which is based on existing theories by drawing proposition (Patel & Davidsson, 1999). In our research we also try to use deductive approach, with the help of secondary data and the secondary data is all the existing theories from different articles and journals.

Our thesis has adopted the qualitative research method and the reason for choosing this research was to understand the concept of postponement and the practices of customization and standardization in H&M and to link their relationships.

3.2 Types of Research

According to Yin (2003) there are three types of research available. These are exploratory, descriptive, and explanatory.
3.2.1 Exploratory Research

Exploratory research is a type of research which main objective is to provide deeper insight and understanding of the problem which give comprehension of the problem as well while confronting the researcher. Exploratory research is denoted as a hypothesis (Yin, 2003). The major purpose of exploratory research is to gather maximum information in order to get comprehensive view of the problem for researcher. Exploratory research is mostly deals with new topics, where not so much written about that research (Yin, 2003). Exploratory research is good for evaluating the secondary data, where problems are not clearly defined. The best suggested technique for the gathering of information while doing an exploratory research is through interview. Our research fulfill the requirement of exploratory study, therefore we have used this research methodology in our report.

3.2.2 Descriptive Research

Descriptive research is used to generate data describing the composition of relevant group like salespersons, customers and organizations (Parasuraman, 1991). Descriptive research contains getting information concerning the present status of the process to describe, “What exists” with respect to conditions in a situation.

3.2.3 Explanatory Research

Explanatory research is used for developing specific theories which can be used to explain the empirical generalization. Wish to know "why" to explain, is the major application of explanatory research. For example, a descriptive research may explain that 10 percent parents abuse their children, while explanatory research explains why parents abuse their children.

(http://www.blurtit.com/q415229.html).

3.3 Types of Data

There are two types of data which are used in marketing research. These are primary data and secondary data. To continue with our study, both primary and secondary data have been collected through the different channel using appropriate tools in order to complete our research. Gathering of data is also very important and crucial. One must have a very good planning behind this to succeed in the research work.

3.3.1 Primary Data

Primary data refer to the data that is collected by agents or ourselves who known to us. “Studies made by others for their own purposes represent secondary data to you” (Cooper & Schindler, 1998). Primary data has some more evident advantages than secondary data in the aspects of relevance and accuracy. “Using primary sources, researchers can collect precisely the information they want” (Cooper & Schindler, 1998). In addition, primary data is more reliable than secondary type due to the specific research purpose. Primary data is collected by your own creating and analyzing your own results. Primary data is defined as the data that a particular organization collects itself for the purpose of dealing with a specific problem (Gates & Jarboe, 1987). Primary data is a new data
that is collected by the researchers for their running projects. In our study, primary data has been collected through in depth interview with a senior merchandiser of Liaison office in Pakistan. We sent a detailed questionnaire in order to fulfill our requirements for the completion of our study research. There include some delimitation which we had included in our delimitations. Primary data may contain interview, questionnaire, surveys, observation, and documents etc.

3.3.2 Secondary Data

Secondary data is collected for another purpose (Wiedersheim & Eriksson, 1991 in Jennie & Zetterwall). Most common source to get secondary data is social science include censuses, surveys, organizational records and through qualitative methods and research. It saves time that will otherwise be spent to collect data. Secondary data can be obtained from the previous research, journals, and other study literature which may help in ones study research. As our research study is in the fashion retailing of H&M, with respect to postponement so secondary data will play a vital role in our research.

3.4 Accessibility

Accessibility is also important for selecting the topic selection. Many of the public areas such as parks, swimming pools, and libraries are open. You do not have to get permission to be there, although you still need to decide whether your research will be overt or covert and whether informed consent is required (Bailey, 2003). There are many other things which have to be considered like age, race, or religion etc. For example, in our case, we first took appointment from the concerned person for interview, which is actually accessibility.

3.5 Ethical Issues in Qualitative field research

According to Bailey (2007), there are three types of major ethical concerns that field researcher face:

3.5.1 Informed Consent

American Sociological Association (ASA) code states that informed consent is required of research subjects if the “data are collected from research participants through any form of communication, interaction or intervention” or if the “behavior of participants occur in a private context where an individual can expect no observation is taking place“( American Sociological Association, 1999). To obtain informed consent, the researcher must make potential participants aware of 11 pieces of information which are given below:

- Participating in research
- Purpose of research
- Procedures used during the research
- Risk and benefits of the research
- Voluntary nature of the research participation
- Their right to stop research at any time
- Procedures used to protect confidentiality
- Their right to have all questions answered at any time
- Other information relevant to the participants
- What is required of them if they consent to participate
- Refusal to participate or withdraw at any time will lead to know foreseeable consequences

When discussing informed consent, researcher should use language that is easily understandable to the participants. Another exemption to the informed consent requirement involves research conducted in public places. The ASA code specifically lists “naturalistic observations in public places” (American Sociological Association, 1999).

### 3.5.2 Deception

Deception results when people are not told they are participating in a study, misled about the purpose, or are not aware of the correct identity or status of the researcher. If any such deception occurs during the research, then the participants do not have the opportunity to give informed consent; they simply are not fully informed.

Laud Humphreys (1970) used deception in two ways. First, he did not let the men in the rest room know that he was a researcher, although they knew that they were observed. This type of research is called Covert Research, which is conducted without those in the setting being aware of the researcher's dual roles (Participants and Researchers). If the member in the setting is aware of the dual roles, the research is classified as Overt Research.

Taylor and Bogdan (1998) reiterated the view because members of a powerful group are less likely to grant permission, in order to achieve project goals, researchers studying them might have to engage in deception.

### 3.5.3 Confidentiality

Confidentiality is another important ethical issue in the field research. One of the requirements of the informed consent is to inform those in the study whether the research is anonymous, confidential or neither. Research is anonymous when the researcher is not able to identify the participants in the study. In a confidential study, the researcher knows the identities of the participants but does not reveal this knowledge.

The code of ethics also indicates that researchers need to “inform themselves fully about all the laws and rules that may limit or alter guarantees of confidentiality” (American Sociological Association, 1999). For Example, confidentiality cannot be broken even after the death of the participants.

One must have to follow these ethical issues while interviewing. We added these behaviors just for the sake of understanding to our readers.

### 3.6 Case study as a Research Strategy

When the research is qualitative then case study is an option to conduct such research (Yin, 2003). The case study has been a common research strategy in psychology, sociology, political science and social work (Gilgun, 1994), Business (Ghauri & Gronhaug, 2002), and
community planning. It is the best strategy when questions like “what”, “why” and “how” is asked for any event (Chetty, 1996)

Table 3-1: Relevant situation for different research strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of Research Question</th>
<th>Requires control of Behavioral Events?</th>
<th>Focuses on contemporary Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where. How many, how much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: COSMOS Corporation

In the above Table 3-1 first condition covers your research question (Hedrick, Bickman & Rog, 1993). A basic categorization scheme for the types of questions are the familiar series: “who”, “what”, “where”, “how”, and “why”. Chetty (1996) considers case study as a very natural and suitable option when the exploration of an issue is required. Saunders et al., (2007) also support the idea that case study strategy has natural ability to generate answers to the research questions in detail.

Choosing the research questions are the most important step taken in the research study. Therefore, it takes time to think about it because you have to work on it. Another important thing is that you must understand your question. As understanding the question means you solve half of your problem

### 3.7 Six sources of evidence

The sources of evidence are the ones most commonly used in doing case studies. These are: Documentation, Archival records, Interviews, Direct observation, Participants observation, and Physical artifacts.
Table 3-2: Strength and weaknesses of data collection methods

<table>
<thead>
<tr>
<th>Source of evidence</th>
<th>Strength</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation</td>
<td>- Stable: reviewed repeatedly</td>
<td>- Based selectivity: if collection is incomplete.</td>
</tr>
<tr>
<td></td>
<td>- Extract: Contains extract names</td>
<td>- Reporting bias: reflects (unknown) bias of author.</td>
</tr>
<tr>
<td></td>
<td>References and details of an event</td>
<td>- Access: may be deliberately blocked.</td>
</tr>
<tr>
<td></td>
<td>- Broad coverage: Long span of time, many events and many settings</td>
<td></td>
</tr>
<tr>
<td>Archival records</td>
<td>- Same as above for documentation</td>
<td>- Same as above for documentation.</td>
</tr>
<tr>
<td></td>
<td>- Precise and quantitative</td>
<td>- Accessibility due to privacy reasons.</td>
</tr>
<tr>
<td>Interview</td>
<td>- Targeted: Focuses directly on case study topic.</td>
<td>- Bias due to poorly constructed questionnaires</td>
</tr>
<tr>
<td></td>
<td>- Insightful: provides perceived casual inferences.</td>
<td>- Response bias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Reflectivity: the interviewee gives what the interviewer wants.</td>
</tr>
<tr>
<td>Direct observation</td>
<td>- Reality: covers events in a real time.</td>
<td>- Time consuming</td>
</tr>
<tr>
<td></td>
<td>- Contextual: covers context of events</td>
<td>- Selectivity: unless broad coverage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Reflectivity: event may proceed differently because it is being observed.</td>
</tr>
<tr>
<td>Participant observation</td>
<td>- Same as for direct observation.</td>
<td>- Same as for direct observation</td>
</tr>
<tr>
<td></td>
<td>- Insightful into interpersonal behavior and motives.</td>
<td>- Bias due to investigator’s manipulation of events.</td>
</tr>
<tr>
<td>Physical artifacts</td>
<td>- Insightful into cultural features</td>
<td>- Selectivity</td>
</tr>
<tr>
<td></td>
<td>- Insightful into technological operations</td>
<td>- Availability</td>
</tr>
</tbody>
</table>

Source: Robert K. Yin, 2003 Case study research: Design and methods
Each of the six sources of evidence, there are weaknesses and strengths. There is no single source which has complete advantage over all the others (Yin, 2003). Therefore a good case study will use many sources as possible.

3.8 Interviews

Interviews are also an essential source of case study information. The interviews will appear to the guided conversation rather than structured queries. Interviews can be fully structured, unstructured, or semi-structured (Holme & Solvang, 1993; Wengraf, 2001).

3.8.1 Unstructured

Unstructured or informal interviews are the interviews where the respondent can freely respond to questions, and make follow-ups on new questions. During an unstructured interview, interaction between the participants and the field researchers targets primarily the interest of the researcher. Unstructured interview involves little standardization. The first question asked of one interviewee might differ totally from the first question asked of the next interviewee (Bailey, 2003).

Informal interviews are not about structure and hierarchy but about talking and mutual discovery (Neuman, 1991).

3.8.2 Structured

When conducting fully structured interviews the respondents should be asked exactly the same questions, in the same order and ideally by the same interviewer. Structured interview usually are scheduled for a particular time and place and expected to take a specific amount of time (Bailey, 2003). In our research method, we try to use structured approach. The reason for using structure approach is our interview is electronic based, and we have to maintain the same sequence of our questions.

3.8.3 Semi Structured

Semi-structured is built on the best from the two worlds. It has a set of formal guidelines and at the same time has the ability to developed new questions during the interview.

In a semi structured interview, the interviewer uses an interview guide with specific question that are organized by topics but are not necessarily asked in a specific order (Bailey, 2003).

3.9 Interview process


3.10 Finding and Selecting Participant

Following the above process, we started with the finding and selecting participants. We restrict our geographical limits to H&M, Sweden. For acquiring our purpose we contact with
the different stores in Jönköping region including A6 center and Centrum. We also email in H&M, Sweden in Stockholm for pursuing our problem and purpose for the research.

3.11 Making Connection

For making the connection with the H&M officials, we send them email for the meeting and tell that we are interested in your business and need some information. We email to the H&M Stockholm office and meet with the two store managers in Jönköping which are held at A6 center and Jönköping Centrum in order to collect data.

3.12 Initial Contact

It is bit irritating when every planning and thinking whatever you panned to do is not working. After thinking we planned to contact with some of technical person in H&M. As a first step we send an email to H&M liaison office Pakistan for the availability of their senior Merchandiser. For this purpose we contact with one of the garment manufacturer industry in Pakistan as a reference. We contact with the Marketing and Merchandizing Manager of Rajby industries Mr. Amjad Saeed Khan, Pakistan. We contact them because they are working as vendors for H&M liaison office in Pakistan. With the help of Mr. Amjad Saeed Khan, we contact with the Senior Merchandiser of H&M in Pakistan Mr. Syed Naqeeb on November 23, 2009.

3.13 The Interview

On November 23, 2009 after the invitation from Mr. Amjad Saeed Khan we contacted with the Mr. Syed Naqeeb for getting the outcomes of our master’s thesis. In this case it not possible to meet him personally because of geographical locations and financial matters. We had included this part in our delimitation. He agreed to help us in our thesis. After the confirmation by Mr. Syed Naqeeb we sent him our detailed questionnaire¹. He ensures us to give all the possible answers. We tried to includ all the possible questions which we need to know from him which includes their business procedures and processes, standardization of raw material, their way of standardizing their products like cartons and poly bags, about their customization procedures, about their fabrics and sourcing of fabrics, how to choose suppliers and their locations, dying process and its application and all the key processes of determinant of postponement like product life cycle, lead time, product variety, capabilities and manufacturing process of garments. We have made the questionnaire according to our working model which we have defined in Chapter 2- Frame of Reference. We used all the theories as a background which we have used in frame of reference while writing the questionnaire.

¹ Questionnaire is attached in the Appendix
3.14 Ending

From the above mentioned procedure we sort out and extract all the data, what we need for our analysis section. The data provided by Mr. Syed Naqeeb helps us in our empirical research and finding. We thanked to our interviewee Mr. Syed Naqeeb and also Mr. Amjad Saeed Khan for helping us and allowing us to complete our master’s thesis.

<table>
<thead>
<tr>
<th>Sending Questionnaire Date</th>
<th>Interviewee Name</th>
<th>Interviewee Designation</th>
<th>Time of Sending Questionnaire</th>
<th>Place of Interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 23, 2009</td>
<td>Mr. Syed Naqeeb</td>
<td>Senior Merchandiser</td>
<td>13:32</td>
<td>H&amp;M Liaison office Pakistan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receiving Questionnaire Date</th>
<th>Interviewee Name</th>
<th>Interviewee Designation</th>
<th>Time of receiving Questionnaire</th>
<th>Place of Interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 26, 2009</td>
<td>Mr. Syed Naqeeb</td>
<td>Senior Merchandiser</td>
<td>17:32</td>
<td>H&amp;M Liaison office Pakistan</td>
</tr>
</tbody>
</table>
4 Empirical findings and Analysis

This empirical part presents the main activities and background of Hennes and Mauritz. We will describe the supply chain model of H&M in detail and describe its business concept in fashion industry. Then in the analysis section there is a evaluation of the opinion given by H&M representative. In the light of the views we will analyze our research questions.

4.1 Hennes and Mauritz

Hennes and Mauritz more remembered as H&M started their business in a small Swedish town named Vasteras. The Swedish person Erling Persson in 1947 opened his first store called “Hennes” in Vasteras. At that time the clothing range was limited to women’s wear only. This chain was expended in the 1950 and spread in the neighboring countries of Denmark and Norway in 1960. After the acquisition of Stockholm based Mauritz widfross in 1968 H&M was complete and Erling Persson renamed the store as Hennes & Mauritz. The company expended into men’s and kids wear. Then, H&M went public in 1974 and continued its geographic expansion beyond Scandinavia and started their business in Great Britain in 1976. H&M has started to spend more on advertising and design and accelerated its expansion in the Europe. In the new millennium, they showed fast development as they opened their first store in USA in 2000 and H&M’s 5,8 billion turnover in 2002 (Pahl & Mohring, 2008).

By the end of 2007, H&M was operating about 1500 stores in the 29 countries all over the world. H&M has more than 50,000 employees. H&M outsource its production from 700 suppliers of clothes. H&M was the largest fashion clothing retailer until 2005, but after that the faster expansion of Spanish group Industria de Diseño Textil, which is more remembered as Inditex took over and H&M lose their market share (Pahl & Mohring, 2008).

The key factor behind H&M success can be identified by the location of its store, flexibility of its production and its low prices. Germany is the biggest market of H&M with 27 percent of the company total revenue (Lopez & Fan, 2009). Figure 4-1 describes the number of stores in a column and years in a row with respect to the different countries,
4.2 International Presence of H&M

H&M is more internationalized as compared to its competitor like Inditex and Gap because more than 90 percent of its turnover comes from overseas in 2005. H&M is viewing the same pattern as of Zara and Gap, Inc. by selecting the international markets based on physical and culture distance first and then on economic indicators like purchasing power, rate of employment and purchasing behavior.

First H&M has launched its international expansion in its neighboring countries; Norway in 1964 and Denmark in 1967. Both Norway and Denmark share the cultural similarities called “Nordic Europe” (Usunier & Lee, 2005). The second phase was started in 1976 with store opening in UK and after this expansion there was opening in Switzerland in 1978 and Germany in 1980.

In 1997, the formal Managing Director of H&M, Stefan Persson, stated in his annual report that

“When we expand. It is important to listen carefully to the local market. We need to adapt but not at the expense of losing what makes us who we are”.

According to Yip (2007) H&M has created his fundamental technique benefit by developing a brand story that creates interest in markets before the arrival of retailer’s operation and its delivery system of fast fashion.
4.3 Business concept

The business concept of H&M is to provide unbeatable values to his customers and providing fashion, design, and quality at low cost as they can for men, women, teenager, and children. Target group of H&M is very broad which includes men’s, women’s, teenagers and children’s but the main emphasis is from 15 to 30 years of age. Their product range is very broad from moderate to high fashion and very latest international trends. In this group there are some celebrities, which work as designers like Karl Lagerfeld, Stella McCartney & Sonia Rykiel to catch consumer attention. H&M creates 500 new designs every year that can be purchased from its 1193 retail outlets across 22 countries and also via mail order (shop orders) or through its web site for Nordic countries (Lopez & Fan, 2009). As the business concept of the company depends on fashion, price, and quality, H&M manufacture most of the garments outside the Europe to achieve the advantages of leanness (Saini, 2007). H&M purchase the fabric in advance due to forecast in order to minimize the expected cost (Li Li, 2007). The production offices are built around the origin of production which act as the second hub of the flow of information downstream and make sure the quality and the work standard of the suppliers. One other reason of placing production office is to increase the efficiency of suppliers in order to get the lower cost with zero defects in the products and to low the lead time (Saini, 2007). In the Figure 13 the transit point in the Hamburg works as a Decoupling point and its task is to managing the flow of products upstream and downstream. Li Li, 2007 stated that H&M is a customer oriented company who learn from its customers and try to serve the surge demand by production in the Europe. In the Figure 13 Saini (2007) try to generate the model of H&M supply chain to show the ways of marriage of lean and agile. In order to show it in an easy way Saini (2007) put one of the suppliers in the Asia and the other one in Europe.

4.4 H&M SCM Model

H&M SCM model in Figure 4-2 which was suggested by Saini, 2007 to show demand and surge. It is a very comprehensive figure, which shows that suppliers are assembling all the transport action from different processes. In this diagram Saini, (2007) suggests two production offices. One is in Asia and the other one is in Europe. In continuation with these production offices, Hamberg, which is IT and warehouse department has link with both the production offices in Asia and Europe in order to create better supply chain. Hamberg acts as a Decoupling point in Figure 4-2. This figure gives the basic understanding to the readers about the production in H&M. This picture shows that H&M outsource its production from Asia with the help of its different Liaison offices in Asia particularly from Bangladesh, Pakistan, China, and Turkey. Their Liaison offices are responsible for sending all the goods in Europe via Hamburg which is main hub for H&M in Europe. After reaching Hamburg, the goods distributed to their origin countries for the sale.
Source: Mandeep Saini, 2007. Analysis of clothing supply chain: Integration and marriage of lean and agile

Figure 4-2: H&M SCM Model
4.5 Complementarities within H&M Business Model

Based on our theoretical framework and research literature, we have tried to give the characteristics of H&M business model in the Figure 4-3. Many of the characteristics we confirm through the electronic interview by sending questionnaire. The success of the firms made on several characteristics which is called complementarities\(^2\) to their business models. One characteristic may depend on other characteristics by creating complementarities to the business model of the organization/firm. The variety of characteristics which can be complementarities to the business models is wide.

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\(^2\)The two choice variable are complements when doing (more of) one of them increase the return to doing (more of) the other.
Figure 4-3 is a result of our secondary and primary research. We come to know that H&M is using all these characteristics in its supply chain. It is quite obvious from the our respondent answers that focus of H&M is to give best services to the consumers in terms of fashion, near to the market, customizing the products, better outsourcing, low price, location of the stores and by giving flexibility for choosing right products. H&M first priority is by delivering quality products to its customers, not quantity. All the above mentioned characteristics in Figure 4-3 are the base for delivering quality products. By responding our questions about strategy for choosing supplier, our respondent told us:

“We always choose our supplier by looking how much volume he can bear. Supplier is capable of making big volume orders. The most important point for us is supplier make the goods by following all the standards of H&M or not. At last, we are always dividing the order within our suppliers in different countries to reduce the order load. It makes our suppliers more efficient and responsiveness”.

When we asked to our respondent that how you decide to open the location of store. He replied:

“We open store by seeing our competitors store and by seeing the distance from our own store, which is closest one. It requires a lot of market research, which depends on the peoples living in that particular areas plus sales volume in that specific region”.

By answering one of question about giving high fashion products, he replied:

“H&M is very keen about delivering high fashion products to its consumers. Every year H&M hire many celebrities and designers to market their products in a different way as compared to its competitors. Different means that hiring top celebrities. Some of the designers are in contract with H&M like Sonia Rykiel, who is top French designer. The policy of H&M is selling products at cheap price with good quality”.

H&M is out sourcing the product from other supplier in Asia particularly, which means that H&M do not have any production plant or factory. We already discussed this issue earlier in out text. By answering this question, our respondent replied as:

“H&M outsource all the products (garments) from Asia. H&M have liaison offices in every country of production. The purpose of liaison offices is to control and ensure the quality standard as per H&M requirements all over the world. H&M is compromise on the any issue like price, delivery etc, but not compromise on the quality standards. H&M has very strong check and balance all over the world by integrating its supply chain”.

IT infrastructure is one of the prominent departments of H&M, through which H&M is in contact with all its supplier and sub suppliers. Answering the question about IT infrastructure, our respondent replied as:

“It is important for any organization to make its IT infrastructure strong in order to make its supply chain more efficient. It is one of the reasons that H&M has more focus on its IT infrastructure to integrate its all activities with the suppliers. H&M rely a lot on its IT network because in every single second we have to take important decisions. Without a strong IT infrastructure, it really difficult for us to communicate with our suppliers. That is the reason H&M gives lot of respect to his IT”.
Now, we come to our research questions. We will evaluate our research question individually for the better understanding of the reader, so reader will get the clear picture of these strategies. We try to figure out all the processes, which we discussed earlier in our text. We try to highlight every aspect of supply chain within fashion retailing.

4.6 Affect of mass customization and postponement in the fashion retailing

The challenge in retailing is to respond to changing demand, seasonality, price competition, core important products with high service level goal in right time.

H&M’s goal is to be known as a company which is changing with changing fashion trends and to fulfill this promise the whole supply chain has to be designed to support this idea. This synchronization can be analyzed in the supply chain from suppliers till the end users.

4.6.1 Supplier

As the company H&M is retailer and its core competency is stores management not the production management but it is of prime importance to facilitate the suppliers with right information on right time, so suppliers, sub suppliers and transport and have a synergy. The biggest challenge and requirement of this fashion business is agility and to empower supplier to reduce lead times. Reducing the lead time comes under postponement, which means that when customizing the products, there is also possibility of reducing lead times. In this way supplier will get more time for production. Right information at right time is very important in the fashion retailing.

4.6.2 Raw Materials

As raw materials management and processing is the main contributor of the lead time it is quite evident from answers of the company that supplier are specialized in certain areas, which can be denim, knitted, woven, and man-made fibers. So if every suppliers is given a lot of various products from these categories means they cannot master one and one supplier’s made article is not selling well which means production loss where as another supplier can have huge orders which are over and above to the possible and allocated capacity is not good for the supply chain. Therefore, the idea of specialization is empowering the suppliers to focus on narrow range of business and have semi finished and standard fabrics to react to the quick demand changes with an ease in planning. A good example can be that if one color "black" is selling well and blue is not selling well, then and obvious interpretation is that stores will be run out of stock for black and will have excess blue in sales floors, so the damage is twofold for this design and only responsive supplier with short lead time can react with replenishment of right stock keeping units (SKUs) of black to balance the size ratio as much as possible.
Yarn counts, Lycra and composition is basics for fabric manufacturing in textile products and if these are certain limited and specified for certain suppliers then the suppliers can take position on these as the coloring decision is postponed on these standardized fabrics.

4.6.3 Components and Apparel accessories
The added on materials which is used in the finishing of garments such as cartons, tags, stickers, poly bags, tapes, tag pins, threads are certain items which are not the core competencies of suppliers. In fact the supplier has its own supply chain with its sub suppliers which it is managing it with standardization and postponement.

Standardized cartons give an opportunity to have a running stock available all the time in supplier facility as it is very easy to maintain one size for thousands of SKUs and the decision of printing the destination on carton is deferred and printed in house at the dispatch time. This is big advantage of standardizing cartons. By this way, supplier will get rid of out of stock situation regarding cartons.

4.6.4 Logistics management
The country of origin is dependent on the quantity (volume) and destination combination which is solved with the standard cartons from every supplier to co-load if the destination is same, also this delivery is postponed for the consolidator who is doing a job for H&M as third party and the right container size and vessel is selected with respect to the requirement.

4.7 Use of standardization and postponement together in the fashion retailing
To understand the benefits of standardization of materials and different postponement activities, it can be discussed from the initial phases of manufacturing. H&M uses standardization in many of their process in the supply chain. The application of standardization and postponement in the fashion industry is high. It is also clear from the answers of our respondent that H&M is using standardization and postponement in his supply chain efficiently.

4.7.1 Raw Material Standardization coupled with Postponement:
Below mentioned are the processes in raw material standardization which coupled with the postponement.

4.7.2 Cotton & Yarn
H&M has clear segments of compositions which have been standardized to consolidate and facilitate the manufacturers to take a position stocks of desired materials as cotton is
cultivated once in a year and manufacturers have to buy the right materials for the coming year.

Blended yarns which mixed in a ratio with man-made materials are also tricky with the high fluctuations of prices. Less variety in H&M's case is allowing the manufacturers to manage fewer variants. Then, further the suppliers are assigned few specific material based products which restrict the range to be small at one given supplier to specialize in it.

4.7.3 Dyeing/Processing

Suppliers already and always have standard materials ready in anticipation of replenishment orders and this certainty allows the supplier to postponement the dyeing/coloring process until the firm demand arises from POS (point of sales). Actually, standardization has decreased the response time of supplier due to the fact the suppliers are sitting with semi-finished goods which has a healthy impact on total supply chain’s response time. Postponement of coloring also allows H&M to order at right time, otherwise previously the company had to base on assumed forecast. Because now H&M can experience the sales first in the market and still the company have the option to catch up the demand with more accurate need fulfillment rather than preoccupied assumed order which will also lead to better availability in Stores also avoiding over stocks.

4.7.4 Cutting

The fabric has another parameter which is the width of the fabric, which is determined by the size/measurements of finished product. If garments have five sizes which are S, M, L, XL and XXL then the sales history/population figures also clearly guides that best selling sizes are medium and large in Men’s. This helps to determine one standard width for each type of product. This standard width concept actually postpones the decision of actual sizes where this is left to the cutting process to extract the right sizes form the standard fabric. Even some times for generic fabrics the suppliers also carry finished and dyed fabric in standard fabric width to avoid the bottlenecks of dyeing before peak manufacturing weeks.

4.7.5 Packaging

Corrugated materials of organic pulo (material used in the cartons, which is like sheet of brown paper) in beige color are standard requirement for H&M cartons, and sub suppliers are described the specification of layers of the paper for carton which is same for all H&M products, so the sub suppliers carry standard material ready all the time to fulfill fluctuated demand. The carton box size is standard as well for all products which allow the H&M supplier to carry a stock, as this is a standard box for every product and an essential important item needed in the final processes. This standardization of carton allows the supplier to use it for all combination which is destination country, warehouse number, port of entry, category (men’s, women’s) size, quantities, net and gross weight. This information is postponed until the actual goods are packed with all the information ready and then the right information is pasted on standard carton in a sticker form which is called ASN, Advanced Shipment Note. The shipments from multiple suppliers in one country are sent to the nominated consolidator/logistic specialist in port area to consolidate the shipments from re-
ceiver’s perspective and it is very easy for them to accommodate same size cartons from everyone to have better filling rates in containers to avoid waste of space.

4.7.6 Care Instruction Label

Care instruction label used is standard which enables H&M retail and logistic team to steer to multiple countries, swap between stores, as these are generic/standard garments with UPC number (Universal Product Code) which is same for all stores. H&M uses standardization in all care instruction labels by means of adding language of every destination country. It is very important and necessary strategy to standardize you care instructions in order to ease for your consumer.
5 Conclusion

This chapter presents the main findings from the studies in connection with the purpose of study and the Literature reviewed with some future research.

In fashion industry, the application of customization and standardization is very high. H&M as a one of largest fashion retailer uses these strategies in their supply chain with postponement.

In this study, we try cover two research questions. The first one is how customization point comes up with postponement strategy in the fashion retailing. For this we come to the point that Customization and postponement affect the fashion retailing by choosing suppliers, raw materials, component and apparel accessories and also in the logistics management.

We come to this conclusion, by the help of answers which we got from our respondent. The main task of H&M, towards its suppliers is to inform and update them in each and every thing from order placement to the shipment of goods. If the company (H&M) do not give the right information, at right time to its supplier then the supplier is not able to give good services in terms of production and order fulfillment. In this case H&M loses its competency towards its supplier. As a result, it affects customization and postponement both. So it is necessary to give information at right time, in more specific way, we can say that the information prior to the production. Raw material is a very important part of our analysis. It is very clear from the answer of our respondent that H&M is very specialized in his raw materials like denim, non-denim and other seasonal item. It is very important that H&M give orders to his specialty. Means if one group is well known for his denims production and he has all the facilities of this particular item, then denim part must be done by that particular group. Another thing is clear from the answers of our respondent that if one supplier has too many orders then, it is better to place the other orders with the different suppliers. If H&M continue to place the order with one supplier, then the production will be overloaded and the results are obviously negative. As a result, there will be negative effect in the whole supply chain. The idea of specialization is empowering the suppliers can be used here.

When we talk about raw material in fashion industry, we always talk about yarn count and its composition. It must be standardized and supplier can make decision on the basis on its dying procedures. Similarly, when we talked about the finishing, the finishing material like carton, poly bags, carton marking is customized and also postponed at the same time according to the buyer’s requirement. Before final audit of the goods, the marking of carton cannot be made because there is always a chance of changing the route/plan/destination of the goods. This is only one example; the finishing material is treating in a same manner.
On the other hand, the second research question which is standardization and postponement also used together in the supply chain of H&M. In this we come to the point that the areas where it is used by H&M is, raw material, cotton and yarn, dying/processing, cutting, packaging and also by using care instruction labels.

H&M has a very clear vision about cotton and yarn. As everyone knows that cotton is cultivated once in a year, so H&M planned it one year in advanced. It means that H&M book the space for cotton prior to placing orders by saying to his suppliers. This is basically standardization coupled with the postponement. From the answers of our respondent, it is quite clear that dying/processing has great value within H&M supply chain. Postponement in coloring decision of garments at right time is plus point which goes to H&M. Otherwise H&M took their decisions only by forecasting on the basis their experience, which sometimes give negative impact. In other words, H&M uses these strategies efficiently and also many other strategies like cutting, packing, ordering, environmental issues, least but not last inbound and outbound logistic. It is also clear from the answer of our respondent that care instruction H&M used in their orders are standardized and can the postponed if something happen. For example, if H&M want to discard one country due to bad sale or any other reason and want to add any other country, then the care instructions should be changed according to the new packing list. On the labels, care instructions are in every language of the destination country, so it will be easy to read it for local consumer.

By analyzing our proposed research questions, we come to the conclusion that H&M uses standardization in many of their processes within and outside its supply chain along with postponement. It is quite obvious from the answers of our respondent that H&M try to implement and focus these strategies in his supply chain. We define all those processes, in which H&M uses these strategies in the supply chain. However, these are not limited; it can be more depend upon the situation. We also come to this conclusion that mass customization and postponement can affect the flexibility in fashion retailing. We have defined all those processes, by which mass customization and postponement can be affect the flexibility in fashion retailing/industry but it is not limited. There might be many other processes other than our defined one.

In addition to our research question, we define P/S Matrix in our literature by Pagh and Cooper, (1998). P/S matrix is basically, the approach towards the postponement, which companies are using in their supply chain. Some companies implemented P/S matrix without knowing this strategy. Just recall P/S matrix, in which Pagh and Cooper, (1998) give four postponement strategies; Logistic postponement, Manufacturing postponement, Full postponement and Full speculation strategy. By keeping an eye on all questions and its answers, we come to that point that H&M is using multiple P/S strategies in his supply chain rather than to implement only one strategy. It is more obvious in now days, companies are implementing more than P/S strategies rather than to implement only one. That’s exactly H&M is doing.

Customizing products in the supply chain of fashion industry have great influence in many processes which we have discusses and highly beneficial for company. These, are some process which we explored and still there are many other processes which needs to be
identified within supply chain not only from customization point of view but also in the standardization.

**Future Suggestions**

In future the application of the business strategies like postponement, mass customization, standardization has great importance in the industries. Now, the industries who are not financially established have also implemented these strategies in order to enhance and give value in their supply chain. If we will get another chance to write something about fashion retailing, we will try to find out the pros and cons of every single process which is used in the supply chain of fashion industry. It is very interesting to know the pros and cons, of every single activity which cause mass customization, postponement, and standardization within the supply chain of fashion industry. For future research, we also recommend to explore other related business strategies which has good application in fashion industry like VMI (vendor management inventory), QR (quick response), TQM (total quality management), and JIT (just in time). As fashion industry is a very large and growing industry in which we can apply many business application.

Furthermore, it is suggested that see the usage of all growing strategies like mass customization, standardization, and total quality management etc in the field of organic cotton, which is the growing topic in the fashion retailing. It is also environmental issue as well, and need some good work. If we get another chance to write our research paper in any other master’s, we definitely will go for it.
6 List of references


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7 Appendix

The following questionnaire sent to the H&M senior merchandiser Mr. Syed Naqeeb in order to carry on with our analysis portion.

1. What is the major segment of your business? Men’s, women’s or kids.

2. How the company is trying to standardize the raw material, while decreasing the number of inputs?

3. Does the company try to maximize the similar product production instead of giving their supplier a large number of varieties?

4. Does the company have standard generic price tags on all products in order to avoid variants and for the sake of better management by standardization?

5. Does the company design standard multi-language care labels to avoid wide range of variants? or they have instruction in one language only.

6. Care labels are always attached with the garments at the time of stitching with the mill dyed fabric. During washing procedure it might be possible that care instructions do not match with the fabric, so is what the remedy for that case is? Is the company postpone care instructions only until the fabric has been tested finally with respect to fabric or use any other strategy which protects it?

7. How the postponement of deliveries are done from warehouse in the selling countries to postpone the distribution on the basis of Point of Sales (POS) data.

8. Does the company facilitate the alteration of clothes to the customer fit instead of having two large size ranges?

9. In the case of Discounted Sales, Is store management decide the placement of sales discount tags, in the case of excess stock which cannot be forecasted before the time of manufacturing.

10. Does the company have standardized fabric width in order to use for a large variety of sizes to avoid higher wastage of material?

11. Does the company postpone hanger packaging to reach at stores in order to have maximum logistic efficiency by getting flat packs?
12. Does the company have replenishment order system to postpone purchase decision until the sales is started: PULL based strategy.

13. Does the store offer gift packaging on demand and postpone it? Until the customer need it.

14. Does the company use the supplier on the basis of location (region) of the supplier to use consolidator at port and send best container load in order to avoid multiple shipments to different destinations or the company postpone the destination’s decision on weekly shipments?

15. How does the company decide to open a store in a city? Is it on the basis of location, population, see the nearby areas, see the availability of transport, see that there must not be any of his competitor at that particular area, looking for some economical place or something else.

16. Company orders the poly bags with just after the order placement or postpone until garment is packed in order to know the size of poly bags?

17. Does the company standardize the poly bags or one size poly bags for all garments or for different groups (of garments) there are different defined sizes.

18. What carton sizes the company use for his production? Is the company used standardization while ordering the cartons?

19. If the company is using standardizing for the cartons, at what extent it is used and the company postpone the order of carton until to know the exact size of garments or order it immediately after receiving the customer order on the basis of forecasting or previous experience?

20. What is the company strategy regarding price tags, when the company order price tags because there is always a chance of change the order no. What is the precaution in that case?

21. Dying is major process in the fashion industry. How the company used postponement strategy while dying the thread and garment dyed fabrics.

22. Is the company used Benetton manufacturing process of garments for dying or used traditional (lean) manufacturing process of garments for dying, in which company dye the yarn before manufacturing garment parts?