

AN ASSESSMENT OF THE ORGANIZATION OF DEMAND SUPPLY CHAINS IN THE FASHION INDUSTRY

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Abstract:

Manufacturing companies have a plethora of methods through which to build and manage their demand supply chains (DSCs). This study aims to assess how retail brands in the fashion industry have organized and managed their DSCs. Both trendy and regular product based retail brands were included in the study. The paper is based on a literature review of apparel supply chain management and analyses the demand process of leading fashion brands. Textile and apparel processing stages associated to DSCs were also studied. The review identified that the degree of fashion sensitivity adopted by the retail brands influences their supply chain strategy. Manufacturers dealing with fast fashion operate a rapid response and flexible supply chain, whereas efficiency is key for less fashion-sensitive brands. This study assesses the DSCs of retail brands for which data is available in journal articles, associated companies' web sites, and web resources related to the textile industry. DSCs classified by other basis than fashion sensitivity can be compared. It demonstrates the DSC characteristics of retail brands, allowing the findings to be exploited by other industries to analyse and further develop their DSCs. Further, textile and apparel producers may thus obtain valuable insights regarding the structure of retailers' DSCs. The findings may also prove useful for retailers less sensitive to seasonality but seeking a competitive advantage through the rapid supply of products. The complex structure of the textile and apparel supply chain is still a concern in coordination of the DSC. This paper provides insights on the demand-supply network contributing to the achievement of better coordination.

Keywords: demand supply chain, fashion industry, retail brand, fast fashion, fashion sensitivity, apparel industry

1. INTRODUCTION

The fashion industry has gone through drastic changes in recent years due to the impact of globalization, which has a significant influence on demand and supply organization. Historically, fashion industry is characterized by short product life cycles, volatile and unpredictable demand, tremendous product variety, long and inflexible supply processes, and a complex supply chain (Sen, 2008). The demand in contemporary quick responsive fashion market requires more varieties in short period. Consequently, many researches done on supply and demand management for these demanding situations. As de Brito et al. (2008) state, there are a number of stakeholders like suppliers (fibres, machinery and chemicals), manufacturers (clothing and textiles, including technical textiles), retailers and fashion bureaus; post-consumer actors; service providers (software, consultants, press, industry associations) and independent experts (scholars), the supply chain (SC) grows truly complex. Therefore, current competition does not just concern the individual firm but, rather, involves the entire SC (Jin, 2006).

In a quick response setting, products need to be delivered sometimes even in three to four weeks' time. To respond accordingly, traditional way of operation is not sufficient. Often the raw material and initial production process (such as weaving and stitching) may remain the same for multiple products from the same retailers, yet supplier has to start the raw material procurement and production process way before the order is received from retailers (Banerjee & Golhar, 2013). It means that an authentic collaboration between supply and demand is absolutely necessary as Christerson & Appelbaum (1995) state most firms which market brand-name labels in apparel do not take part directly in any manufacturing activities, but focus on design, marketing and retailing. Generally the SC lead by large retailers, branded marketers, and branded manufacturers who set up decentralized production networks in a variety of exporting countries as denoted by Gereffi (1999). However, this customary supply chain management (SCM) in fashion industry reformed in recent time, which is apparent in many researches. Subsequently the concept of demand change management (DCM) emerges as an effort of combining marketing with supply process. Demand supply chain management (DSCM) is an endeavour of further development of the SCM and DCM by combining the concepts.

The study is based on a systematic literature review of textile and apparel SCM and analyses of the demand process of leading fashion brands. It is comprised of two research questions: is there any difference in operations in the retail brands for fashion sensitive and less-fashion sensitive apparel products? How is the demand supply chain (DSC) organized and managed for both types? The structure of this paper comprised of the following sections: a literature review on the DSC is made which assess the evolution and explanation of DSCM. The next section provides an overview of the present status of the fashion market, changes within the brands and the evolution of quick response in the fashion market. The DSC of few leading retail brands is analysed to get an idea about the DSCM notion. For a better understanding how the SC is coordinated, the textile and apparel processing stages are briefly discussed by dividing the operations from the supply side and demand side. Afterwards composition of DSC in textile and apparel sector and its consequences are presented.

2. DEMAND SUPPLY CHAIN

The requirements in SCM vary with time, for instance, researchers consider marketing as an integrated part of the SC in recent times. Seeing the increasing need to integrate key elements of SCM (e.g. demand fulfilment with a focus on efficiency) with marketing (i.e. demand creation with a focus on responsiveness), researchers have been advocating the concept of DCM (Lau, 2012). DSCM is the extended footstep towards operational improvements through the integration of demand and supply side of organizations. Esper et al. (2010) define demand and supply integration as the balancing of demand and supply market information and business intelligence through integrated knowledge management processes to strategically manage demand-supply activities for the creation of superior customer value.

SCM has first appeared in 1982 which is defined as efforts to reduce inefficiencies and solve the problems throughout the SC, from raw materials to final customers (Lee & Kincaid, 2003). The SCM concept extends the view of operations from a single business unit or a company to the whole SC (Heikkilä, 2002). On the other hand, DCM is relatively a new concept which integrates SCM with demand generation through marketing effort. It emphasizes on customer value creation throughout the SC. Hilletoft et al. (2009) shows that DCM is about developing synergies between the demand

creation and the demand fulfilment processes which comprise all the activities necessary for creating demand and is closely linked to the marketing discipline, whilst the demand fulfilment processes comprise all the activities necessary for fulfilling demand and is closely linked to SCM. Demand integration includes increased access to demand information throughout the SC to permit rapid and efficient delivery, coordinated planning, and improved logistics communication (de Treville et al., 2004).

The need to coordinate the demand and supply processes has been emphasized in both the DC as well as the SC literature (Hilletoft, 2011). Both SCM and DCM are simultaneously appearing on many literatures where the need of SCM from the demand perspective is emphasized. DCM attempts to analyse and understand overall demand for markets within the firm's current and potential product range (Rainbird, 2004). They also mention SC, by contrast, emphasize the efficiencies in the production and logistics processes, while the DC emphasizes effectiveness in the business. Esper et al. (2010) define demand side activities as relating to individuals and processes both inside and outside the focal organization that are responsible for generating and maintaining demand, and supply side activities relating to the individuals and processes both inside and outside the focal organization for managing operational areas that support and supply the products and services necessary for demand fulfilment. Hilletoft (2011) compares how companies are attaining competitive advantages by DCM or SCM and states that those embracing the demand-led business model (demand chain masters) focus on coordinating and managing the demand processes (DCM) by providing superior customer value while companies embracing the supply led business model (supply chain masters) focus on coordinating and managing the supply processes (SCM) to obtain a competitive advantage by providing comparable customer value at lower cost.

To form DSCM, DCM and SCM interacts at some point which are termed as order penetration point (OPP) and value-offering point (VOP) as entitled by Holmström et al. (2001). As defined by them, OPP is the place in the SC where the supplier allocates the goods ordered by the customer and VOP as a meeting point of the DC and SC where the supplier fulfils demand in the customer's demand chain. They also argue that manipulating the DSC does more than improve customers' performance and benefit suppliers. The goal of DSCM is to gain a competitive advantage by providing superior customer value at lower cost, and this is achieved by organizing the company around understanding how customer value is created cost efficiently (managing the DC), how customer value is delivered cost efficiently (managing the SC), and how these processes and management directions can be coordinated (Hilletoft, 2011). He emphasizes on competences, a company established principles, DSC collaboration, and information technology support in order to achieve the benefits of DSCM which includes enhanced competitiveness, DC performance and SC performance.

3. OVERVIEW OF FASHION INDUSTRY

In the course of the last two decades, the fashion apparel industry across the globe has undergone deep transformation due to various changes in the business environment (Bhardwaj & Fairhurst, 2010). There is a decline in the length of fashion product life cycles which has put pressure on retailers to replenish more frequently as they simply need more product ranges to keep up to date (Barnes & Lea-Greenwood, 2010). This section provides an overview of fashion market's diversity, change from mass manufacturing to the quick response concept and operations of top brands under present circumstances.

3.1. Fashion market and consumer need

Fashion is a broad term which is defined by Christopher et al. (2004) that is typically encompassed any product or market where there is an element of style that is likely to be short-lived. They have divided the fashion market based on four characteristics. Products fall into short life-cycle category is saleable for a very short period and these are seasonal. High volatile product group's demand is very unstable and influenced by weather, films, or even by celebrities. Products whose demands are extremely difficult to forecast is categorized as low predictability. High impulse purchasing is happening when shopper confronted with the product is stimulated to buy it. Product characteristics emerge immediately as an aspect that cannot be neglected to compete in the fashion market, at least due to differences in the competences, which are required for manufacturing and distributing products (Brun & Castelli, 2008).

In the past centuries, clothing was regarded by most people as a necessity and therefore apparel manufacturing mainly had a functional purpose (Brun & Castelli, 2008) which means that complexity related to product characteristics was less, as a result fashion market was rather uniform. They also add that most fashion industries generally launch two collections each year, corresponding to the main seasons (fall–winter and spring–summer) and also offer evergreen products, or classics, which remain on the market for multiple seasons. Apparently, consumers during that time were less sensitive to style and fashion, and preferred basic apparel (Bhardwaj & Fairhurst, 2010). Today's consumer is more inclined to look beyond traditional retail venues for shopping alternatives which means more options for shopping is a requisite and on top of that they are even interested in personalizing their apparel (Anderson-Connell et al., 2002). As a consequence fashion market is highly competitive and the constant need to 'refresh' product ranges means that there is an inevitable move by many retailers to extend the number of 'seasons', that is, the frequency with which the entire merchandise within a store is changed (Bhardwaj & Fairhurst, 2010).

3.2. From standardized products to fast fashion

Until the mid-1980s, success in the fashion industry was based on low cost mass production of standardized styles that did not change frequently due to the design restrictions of the factories (Bhardwaj & Fairhurst, 2010) as the demand in apparel market was more homogeneous. The changes in the fashion industry have been occurring rather rapidly afterwards, which has a drastic impact on apparel supply chain operations. Cao et al. (2008) argues the changes are attributable to the consumer fickle demands and more customized market requirements. Vrontis & Vronti (2004) mention a diversity of factors, including socio-cultural, legal/political, physical, environmental, technological, demographic, competition and economic determine whether the marketing mix can be standardised for all customers or whether it needs to be adapted to suit specific market conditions. Meanwhile Mass customization evolved as another concept to provide individual consumers with products tailored to their specific wants, and these customized products are manufactured in a mass production arena, allowing them to be sold at prices reflecting economies of scale (Anderson-Connell et al., 2002). Even though clothing retailers in the industrialized core have favoured a strategy of increased variety and fissionability since the 1980s, 'fast fashion' principles have recently reinforced that strategy even further (Tokatli, 2008).

Fast fashion is a concept whereby retailers orientate their business strategies to reduce the time taken to get fashion product into store, working on a system of in-season buying so product ranges are consistently updated throughout the season (Barnes & Lea-Greenwood, 2010). By including consumer demand as a facet of fast fashion, they suggest that in-season buying and reduced lead time concept to incorporate "newness" as a key feature of fast fashion, in other words, continual renewal and updating of ranges and merchandise delivered to the store. Bhardwaj & Fairhurst (2010) state that the concept emerges from the constant need to 'refresh' product ranges to extend the number of 'seasons', that is, the frequency with which the entire merchandise within a store is changed. They add, by small collections of merchandise, fashion retailers are encouraging consumers to visit their stores more frequently. Tokatli (2008) points out that fast fashion requires the retailers have rapidly increasing numbers of stores worldwide—preferably directly owned and operated outlets in secure countries and franchised outlets in risky ones—so that they can reach more and more customers around the globe.

3.3. Trends among the brands

Since the introduction of first jeans in 1873 (Levi Strauss & Co., 2014), Levi's is the one of world's largest brand-name apparel marketers with an unparalleled global presence of more than 100 countries which are sold under the brand names Levi's and Dockers (Vrontis & Vronti, 2004). They explain that it was under pressure to lower the prices of its clothes which has put pressure to reduce workforce and cease operation of some of its own facilities. The global outsourcing trend in early nineties pushes them to outsource from less expensive resources to keep them competitive. Levi's forced to reorganize its strategy which results affordable Signature brand. Besides, they have been trying to customize jeans for several years, offering consumers choices within a range of style, colour, and fit (Anderson-Connell et al., 2002), which was not a successful campaign at the end. But recently they have re-launched the mass customization concept offering "Made To Order" jeans for individual customers. In addition Levi's emphasized on sustainability through green campaign, better cotton initiative, waterless products etc.

Nevertheless, Levi's was struggling with the flourishing aptitude of less expensive and trendy products as ecological campaign is also not uncommon by those brands. It is not only the low price, ecological product, fit, brand image which makes the difference, but the consumer behaviour and market need is one of the chief moderator. Barnes & Lea-Greenwood (2010) argue that there has been a decline in the length of fashion product life cycles which has put pressure on retailers to replenish more frequently as they simply need more product ranges to keep up to date. The prime user of fast fashion concepts like Zara, H&M, Gap organized their operations to refurbish products many times in a year. Firms like Inditex (Zara) and H&M are able to produce apparel from design to distribution in three to eight weeks (Jacobs, 2006), which allows them to renew the stores frequently.

Zara is one of the pioneers to use the fast fashion concept to manufacture and retail clothing successfully. Zara introduces approximately 11,000 new products each year, resulting in a much shorter product shelf life (Banerjee & Golhar, 2013). From the drawing board to store racks, new fashions can be brought into the markets in 2 weeks (Chow et al., 2008). Clearly their target is to offer a wide option for the customer based on the current trend at an affordable price. Zara has over 2,000 stores strategically located in leading cities across 88 countries (Inditex, 2015). Their international market positioning places it in direct competition with some of the most skilled operations in the business, including Italian fashion giant Benetton and U.S.-based Gap and The Limited (Christopher, 2000). The whole process of supplying goods to the stores begins with cross-functional teams—comprising fashion, commercial, and retail specialists—working within Zara's Design Department (Christopher, 2000). They have their own tightly linked and vertically integrated SC that is attributed by many as key to its success (Banerjee & Golhar, 2013). Almost uniquely they have developed SC processes that enable them to capture ideas and trends in the apparel market and to translate them into products in amazingly short lead times (Christopher, 2011), through closely connected, highly synchronized arrangements with internal and out-sourced suppliers (Christopher & Lee, 2004).

Zara's specialist design teams constantly collect the customers' feedback. A creative team consists of over 200 professionals forward those to product development. Raw materials are procured through the company's buying offices in the United Kingdom, China, and The Netherlands, with most of the materials themselves coming from Mauritius, New Zealand, Australia, Morocco, China, India, Turkey, Korea, Italy, and Germany (Christopher, 2000). The product range is strategically divided in order to produce the fastest among fast from the adjacent facilities and the least amongst to take competitive advantage of relatively inexpensive resources. It also uses a postponement trick in its SC by keeping the utmost raw material in unprocessed form. The material or fabric is also held in "Greige" (i.e., undyed and unprinted) and, if demand for a particular garment turns out to be higher than expected, local manufacturers can then quickly manufacture additional products (Christopher, 2000).

4. TEXTILE AND APPAREL SUPPLY CHAIN

Textile and apparel processing consists of a number of activities prior to stitching task. Cao et al. (2008) mention textile-apparel SC is relatively complex because it encompasses several chunks of manufacturing processes such as fibre and yarn processing, fabric manufacturing/finishing, garment manufacturing and retailing. They have found a such SC to be similar to conventional forms of SC, i.e. the vertical integration process in which steps of production and/or distribution of a product are controlled by a single company or functional entities of an enterprise, in order to increase that company's or entity's power, mainly in terms of cost or time efficiency, in the marketplace. Although Cao et al. (2008) state that vertical integration is not so common nowadays and even such integration exists, it is only part of the company's business. This section aims to provide a supply side overview of textile-apparel manufacturing operations where the minor or side-line operations are not presented elaborately.

4.1. Apparel pre-processing

A generic textile SC has for its primary raw material vendors, cotton growers and/or chemical suppliers, depending upon whether the end product is cotton, polyester or some combination of cotton and polyester garment (Kumar, 2001). In this chain, materials usually flow in one direction, and excluding minor quantities for testing materials and designs, starts with fibre production (Seuring, 2004). Fibers are usually classified into two groups: natural and man-made (Sen, 2008). Cotton is cultivated around the world which is transported to spinners either domestically or internationally. Man-

made fibers (i.e. synthetic fibers) are another very essential fiber source which accounts for nearly 60% of the apparel product at the time of analysis (U.S. Congress, 1987). Both natural and synthetic fibers become yarn through spinning. Spinning is the final, most costly part of the conversion of fiber into the yarn (Gillham et al., 1995). Whether or not the spinner is vertically integrated with the weavers and apparel manufacturers, it produces the yarn as required by the weavers to meet the retail buyer's specification. From SC perspective, typically yarn suppliers are chosen by weavers, but often spinners develop new yarns by their specific competence in this field which may motivate retailers for developing new products.

Weaving transforms yarn into fabric by interlacing lengthwise warp yarns and width wise filling yarns at right angles (U.S. Congress, 1987). Fabrics produced by weaving or knitting required good and constant yarn quality, because of the advancement of weaving technology, equipment are faster than before which need high quality yarns to reduce the yarn breakage rate and efficient production. The warp yarns are at times dyed with the yarn dyeing process before the weaving. A typical example is denim fabric where warp yarn is dyed with indigo through yarn dyeing. Warp dyed or raw yarn is woven with numerous constructions by various weaving methods. Yarns are transformed into fabrics also by knitting and Non-woven processes. Non-woven processes involve compression and interlocking fibers by mechanical, thermal, chemical or fluid methods (Sen, 2008).

Chen & Harlock (1999) state that textile industry is facing ever-increasing competition in the global market, which demands production flexibility and quick response to customers. Which means that the market is demanding more variety of fabric styles, smaller order sizes, and shorter delivery times. Weaved and knitted fabrics are called "greige" contains impurities and requires further processing. The typical fabric processing stages involve pre-treatment of textiles, dyeing or printing and finishing. Seuring (2004) interprets textile industry is a global one where fibres might be produced in one country, yarns may be in other, fabric may be woven in a third country and stitching in somewhere else. He also adds that the textile chain is based on supplier and buyer relationship and it neglects the multiple side-lines employed to build these products, e.g. the chemicals needed in the production process or sewing yarns. Chemical suppliers at different stages in textile-apparel SC play a very important role. All of the processes like yarn processing, sizing, pre-treatment, dyeing, finishing are chemical intensive.

4.2. Apparel processing

Since the production of mechanical sewing machines in the 1850s, sewing apparel products has always been and remains a labour-intensive activity with small capital-investment requirements (Abernathy et al., 2006), which allows the industry to spread widely especially in the low wage areas. Although automation in cutting and sewing is apparent, but the elimination of physical labour is not significant. From the SC point of view, apparel manufacturing is the continuation of the extensive textile processing which consists of a series of operations, including pattern, assortment, fabric handling, cutting, stitching, washing, dyeing, finishing etc. Undeniably many parties involved in textile-apparel operations which might be from a same apparel composite or independently specialize bodies like dry or wet processing companies. Seuring (2004) defines the textile-apparel chain as a simplified description of supplier-buyer relations needed to offer products to final customers where the emphasized relationship often neglects the multiple side-lines employed to build these products, e.g. the chemicals needed in the production process or sewing yarns. But those side-line actors like chemical and dyestuffs suppliers, accessories suppliers, embellishment service providers, quality testing services etc. play a very important role.

Retailers or distributors are often closely integrated with the apparel manufacturer, even some of them are vertically integrated. For example, Christopher (2000) alludes that Zara uses its own highly automated factories and a network of smaller contractors for quick response. However, Christerson & Appelbaum (1995) argue that apparel production is vertically disintegrated, transactions intensive, and involves extremely volatile demand conditions and highly specialized niche markets. They observe that it operates through subcontracting networks where the cut fabric, along with buttons, zippers, or other components, are delivered to an independent sewing contractor. However, after the extensive effect of globalization, such segregating activities are not so common. Although the principal players are often retailers and apparel companies, each member of the textile-apparel chain has its valuable contribution, as Chandra & Kumar (2000) mention that each member of the textile SC possesses specialized knowledge about the textile business. They add that the collaboration is mutual as the

apparel maker acts as a consumer of fabric, while dealing with a textile manufacturer (a provider of fabric). The long supply pipeline makes the lead time of the textile-apparel SC relatively long and uncertain in response to the volatile characteristics of fashion markets (Cao et al., 2008). For this reason the growth of mutual cooperation between the actors in the SC is important for the sake of quick response which is demanded from the present market.

5. APPAREL DEMAND CHAIN

This part of the study considers demand side of the textile-apparel chain as a distinct part where it is separated from manufacturing operations. DC operations are mainly non-production activities which are concentrated to the activity of a retailer who are a brand owner as defined by Cao et al. (2008), or can also be treated as a distributor and a retailer. Practically retailers or brands are detached from the suppliers in most cases because often they source their products from independent manufacturers. For example, Benetton uses both franchising and sub-contracting, Zara is vertically integrated which maintains significant upstream clothing production, some retailers use an independent trading company like Li and Fung (MacCarthy & Jayarathne, 2013), Levi's obtains products through listed suppliers etc.

5.1. Designing and product development

Design is usually done by focal companies in the SC (Seuring, 2004) which is either completed in-house or by design firms where the design process first analyse the consumer need and motive as Sen (2008) adds. The information often collected from the fabric exhibitions, fashion shows, trade shows which are getting importance nowadays as recent years have seen fashion retailers compete with others by ensuring speed to market with their ability to provide rapidly the fashion trends revealed by fashion shows and runways (Bhardwaj & Fairhurst, 2010). By collecting the idea for designing, brand owners initiate the product development process which is according to Cao et al. (2008) includes research and design. Commercially viable design and product development process is critical for demand fulfilment and growth and also for efficient SC operation.

Seuring (2004) argues that sometimes product design & development integrate to either side of the SC, i.e. they perform some stages of production or distribution and sell the apparel they buy from suppliers. In a competitive fashion business condition the lead time is compressed exceedingly. Prototypes are required to produce much faster than before as it consumes a considerable amount of time according to Sen (2008). Some of the designing process is comprehensive as brands involved in developing fabrics or even fibres rather than just selecting materials. Trendy products often required a considerable amount of embellishment work which is subject to trial and error. Therefore a continuous product development process is quite common for the brands. Prototypes are finalized after necessary corrections followed by preparation of production samples. It is worth mentioning that the prototypes are prepared by the suppliers in general.

5.2. Retailing and distribution

Retail operation occupy the top of the chain which consists of sales related activities like buying merchandise, operating stores and operating warehouses (Sen, 2008) although often those tasks are carried out by an individual responsible person or department. Retailers maintain relationship with the suppliers in various ways through direct interaction, retailer's regional office, manufacturer's regional office, independent retail agent, trading company as classified by MacCarthy & Jayarathne (2013). As Lee & Kincade (2003) explain, retailers select vendors, primarily on a cost basis, the advantage emerges as manufacturers compete for retail business. On top of this product fashion level, product quality level, operational performances, ethical and ecological requirements etc. influence the selection and cooperation with suppliers. The extent of interference by retailers directs the DSC. For example, some retailers decide about the fabric, accessories, packaging or even logistics.

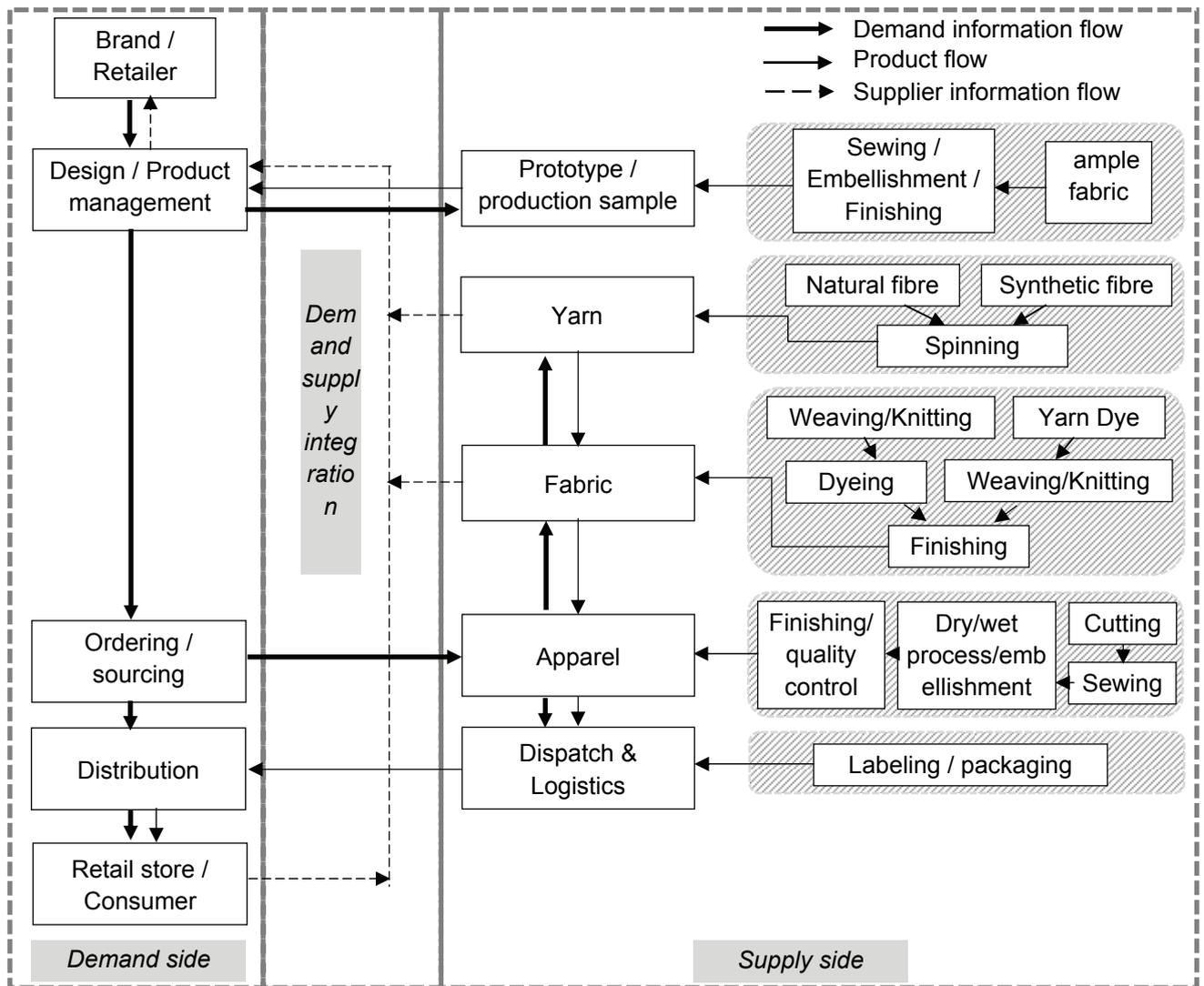
Apparel items that are produced by garment manufacturers are sent to distributing channel from brand owners to retailers (Cao et al., 2008). Selling and distribution can be carried out by a single company or within a distribution system (wholesalers, retailers) of varying depth and the mode of this operation is linked to product design (Seuring, 2004). Sen (2008) provides the process description where assembled garments are labelled, packaged and usually shipped to an intermediate warehouse before shipping to the retailers' warehouse. According to him, to compress the time from placement of the

retailer's order to the consumer's purchase, responsibilities are often shared with the manufacturer where they are labelling products with retailer's price tags, preparing them on hangers and in some case shipping them directly to stores.

6. TEXTILE-APPAREL DEMAND SUPPLY CHAIN

This paper focuses on the DSC in the fashion industry by assessing demand side and supply side of a value chain which is according to Jacobs (2006) different perspectives on one chain or value system and the argument is that the distinction provides a clearer view of the structure and operation of DSC. DSCM requires a veritable collaboration between marketing and supply chain efficiency, because as denoted by Lee & Kincade (2003) traditionally in the apparel industry, each chain member runs its business based upon separate concerns and interests, sometimes causing conflicts in the relationships with chain partners. DSCM tends to amalgamate those individual interests to group interest as Chandra & Kumar (2000) states that each member pursues its own goals, objectives, and policies conceptually, independently of the group, but pragmatically in congruence with group goals. The motive of the DSCM is to gain a superior competitive advantage by creating customer value cost efficiently (Esper et al., 2010; Hilletofth, 2011). Esper et al. (2010) also mention that the integration represents a strategic approach to bundling the customer value propositions from both sides to create value in the marketplace. Hilletofth (2011) mentions about market orientation, equal importance on demand and supply, value creation, processes differentiations, process coordination, innovativeness, responsiveness and cost efficiency in the demand and supply processes. Market orientation is to some extent evident to the apparel companies (e.g. Zara, Benetton) where the partial SC with own manufacturing integrated into DC that delivers superior customer value cost efficiently. However a true coordination only possible when demand and supply is equally important for value creation (Heikkilä, 2002; Rainbird, 2004; Holmström et al., 2001; Hilletofth, 2011) and coordinated accordingly. The partnership is critical to produce a wide assortment of a single style in small quantities which is an essential requirement of present market run by fast fashion strategy. A retailer's DC would consist of assortment planning (deciding what to sell), inventory management (deciding the quantity of supplies needed), and the actual purchase, which together with SC form the DSC. (Holmström et al., 2001).

Figure 1: Textile-apparel demand supply chain.



The development of new, quick fashion appears symptomatic of the transition from a production-driven to a market-driven approach in the fashion apparel industry where the markets have become more varied and faster-changing in the present retail environment (Bhardwaj & Fairhurst, 2010). Few brands utilized the fast fashion concept through process differentiation. H&M and Gap introduce 2,000–4,000 new items each year, Zara able to supply new products in each 3-6 weeks (Tokatli, 2008), whereas traditionally the fashion chain leading to a new season has taken even about 18 months (Jacobs, 2006). Zara has differentiated their DSC exceptionally with innovativeness and utilized responsiveness feature by organizing the DSC where superior customer value is realized. Other fast fashion leaders like H&M, Gap, Mango have been able to implement the mentioned features without having their own manufacturing facilities, but still being able to deliver their products reasonably quicker. Retailers and brands like Levi's is not on an equivalent pace to consider those recent changes in apparel DSC and apparently market share is reduced. Although they have introduced less expensive lines, but probably that was not enough to regain lost share.

Unfortunately, coordination in textile-apparel SC is still an unresolved question both from the theoretic and practical points-of-view (Cao et al., 2008). MacCarthy & Jayarathne (2013) apprise that the retailer or brand owner, as the buying entity, is powerful and influences the structure, relationships and operational practices across the network. According to them a typical scenario is that a retailer based in a developed western economy works with a specific prime manufacturer based in a clothing production region in a less developed economy to supply a particular type of garment. Similar scenario also evident among the brands considered in this study which do not own manufacturing and have to

rely on the suppliers. Because most fashion firms rely on other partners for an important part of their value system, shortening the SC requires increased fine-tuning with these partners (Jacobs, 2006). Therefore, to gain a true DSC the interests of all parties should be secured mutually and truthfully which will lead to reconstruct the value chain. The reliance is important for sharing information throughout the DSC.

7. CONCLUSION AND FUTURE RESEARCH

DSCM is a cutting-edge method of managing value chain which encompasses a wider perspective from customer oriented marketing to demand fulfilment activities. By reviewing existing researches on various perspectives of demand and supply and wandering web resources, this study attempted to investigate the researches on DSCM and its association to textile and apparel retailing and manufacturing. A vast amount of research on SCM and a considerable amount on DCM is observed in this sector. In most of the fashion chain literature, the emphasis is seen from retailing and marketing perspective and the manufacturing segment dominated by them. The study also reveals that researches in textile and apparel DSCM is not ample which is the motivation of the contribution to this effort. The connection and essentiality of DSCM with fast fashion concept are more noteworthy. However, it opens up the scope for the retailers running the SC traditionally. Further research through specific case study can examine how the less fashion-sensitive brands can adopt and benefited by DSCM. The conjunction of DSCM with other aspects like consumer segmentation, product and product pricing segmentation etc. deserve ample research.

The organized study in textile and apparel supply and demand chain provides the ground for developing the framework for the application of DSCM in this sector. The drivers of demand-supply integration is widely discussed and it is also shown that the elements for the integration existent to some of the retailers in this review. The comparative picture exposed the gap between successful retailers and the similar retailers based on the quick response concept. The apparel market is affected by the fast fashion concept widely and presumably trend will continue in the same direction. Therefore, in addition to the present research related to SCM or DCM of fast fashion, emphasis should be put on further investigation on the DSCM on fast fashion. It is also necessary to inquire, how the same interest can be propagated to different members of a SC, especially when it is not vertically integrated. It is critical because extremely quick response requires consensus at all levels of DSC, although individual firms preserve their own interest.

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