Chapter 3- Conceptual Framework of Apparel Merchandising

3.1 Apparel Supply Chain

Hines (2001) sees Supply Chain Management as a critical factor in managing contemporary fashion businesses. Traditional supply chains view flow of goods/services from upstream raw material suppliers through manufacturing processes and on to the customers. In contrast the modern supply chain concepts begin and end with customer (Fisher, 1997).

Modern supply chains are described as flexible, responsive, agile, lean, value adding networks and value streams. Supply chains are more than the term suggests. They are value creation mechanisms for customers. They are not simply ‘supply’ focussed nor are they necessarily ‘chains’. Supply chains are dynamic, efficient, effective response networks delivering customer requirements flexibly and on time. These high performance networks consist of customers, suppliers and information travelling through organisational ‘arterial systems’. These arterial systems cut across functional, organisations and geographical boundaries.

Two management skills in particular are marked out winners in today’s marketplace: managing the product cost and speed to market. In the apparel industry, speed and flexibility are required to satisfy customers who expect increasingly good value and more fashion content (Teng and Jaramillo, 2006).

There are a number of critical issues management needs to address when it comes to applying the marketing concepts towards fashion:

a) Fragmented markets hence difficulty in targeting and segmentation
b) Increasingly more demanding customers make it difficult to spot a sustainable winning formula
c) Individualism is breaking down traditional fashion trend prediction influences
d) Fashion cycles are shorter, leading to a more volatile marketplace, making forecasting difficult
3.1.1 Global Trends in Fashion Industry

Global trends that have strongly impacted apparel/fashion industry are (Das, 2005):

i. A single, global product range, designed and positioned to appeal to an international target group.

ii. Global developments are now incorporated into fashion/trend forecasts

iii. Sourcing is global in nature to ensure lowest possible procurement costs and better buying terms.

iv. Merchandise is sourced from different regions in the world, consolidated at a centralised warehouse/distribution centre. Large retailers like JC Penney and Walmart control further (secondary distribution) of merchandise to various stores.

v. Vendor bases are being consolidated to reduce number of dedicated vendors who are flexible and can manage responsive replenishment requests. The relationships are long-strategic, associiative.

vi. Vendors are expected to efficient, responsive, flexible and cost effective.

Das (2005) further states that time and cost management have been the major objectives of apparel supply chain management in the last 2 decades. To achieve these objectives, apparel exporters/suppliers strive for the following:

a. Cut down on activities that contribute to value being created for the customer. Examples of non performing activities could be-complicated and lengthy orderering/re ordering processes, cumbersome approvals, unproductive intermediate processes

b. Organisations identify value added at each stage of value chain and also find out realistic time per activity from research, product development to final delivery.

c. Once such activities have been identified, the companies then need to be proficient in simultaneous activity handling rather than sequential handling. In order to achieve the above, there must be clear lines of communication amongst all members of the value chain. All efforts must be participative and must involve linking amongst all chain members.
3.1.2 Characteristics of the Apparel Supply Chain

Most product categories can be segmented under two different types of international economic network (Singhal et. al 2004) - producer-driven supply chains; and buyer-driven supply chains.

**Producer-driven:** In producer-driven supply chains, large transnational manufacturers play the central roles in coordinating production networks. Industries characterised by producer-driven supply chains are typically capital- and technology-intensive sectors such as automobiles, aircraft and computers.

**Buyer-driven:** Buyer-driven supply chains are those in which large retailers, marketers and manufacturers of branded goods play a pivotal role in setting up decentralised production units in various exporting countries. Consumer goods industries such as garments, footwear, toys, consumer electronics and handicrafts follow this pattern. Retailers such as Wal-Mart and Sears, footwear companies such as Nike and Reebok, and brands such as Gap and Liz Claiborne source their products from labour intensive factories in developing countries.

The characteristics of buyer-driven supply chains as given by Singhal et al. (2004) are as follows.

- Buyer-driven supply chains tend to be labour intensive. Thus manufacturing tends to shift to countries with a lower cost base.
- Buyer-driven supply chains are global in nature and in most countries decentralised.
- The decentralised nature of buyer-driven supply chains makes them highly competitive.

Most buyer-driven supply chains have low entry barriers. Unlike producer-driven supply chains—which have large manufacturers such as IBM, Airbus Industries, General Motors, and Intel controlling the chain—the main leverage in buyer-driven supply chains is exercised by marketers and merchandisers.

The textile and apparel supply chain is a classic example of a buyer driven supply chain. Although the chain spans several stages, the clout is entirely in the hands of the front end, in other words, the stage of the supply chain which is closest to the consumer.
3.1.3 Buyer Driven Value Chain

According to Gereffi and Memedovic (2003), apparel is an ideal industry for examining the dynamics of buyer-driven value chains. The relative ease of setting up clothing companies, coupled with the prevalence of developed-country protectionism in this sector, has led to diversity of garment exporters in the developing and underdeveloped countries. Furthermore, the backward and forward linkages are extensive, and help to account for the large number of jobs associated with the industry.

The apparel value chain is organized around five main parts: raw material supply, including: natural and synthetic fibres; provision of components, such as the yarns and fabrics manufactured by textile companies; production networks made up of garment factories, including their domestic and overseas subcontractors; export channels established by trade intermediaries; and marketing networks at the retail level (Camuffo, 2005).

There are differences between these parts, such as geographical location, labour skills and conditions, technology, and the scale and type of enterprises, which also affect market power and distribution of profits among the main firms in the chain. Entry barriers become progressively higher when moving upstream to textiles and fibres.

The concept of the global value chain recognises that the design, production and marketing of many products involve a chain of activities divided among enterprises located in different places (McCormick and Schmitz, 2001 and CUC and Tripa, 2008). The value chain describes the activities required to bring a product from its conception to the final consumer.

The value chain concept has several dimensions.

a) The first is its flow, also called its input-output structure. In this sense, a chain is a set of products and services linked together in a sequence of value-adding economic activities. A value chain has another, less visible structure. This is made up of the flow of knowledge and expertise necessary for the physical input-output structure to function. The flow of knowledge generally parallels the material flows, but its intensity may differ. For example, the knowledge inputs at a product’s design stage may be much greater than the material inputs; production, on the other hand, needs large quantities of materials, but in many cases requires only standard or routine knowledge (Dalziel, 2009).
b) The second dimension of a value chain has to do with its geographic spread. Some chains are truly global, with activities taking place in many countries on different continents. Others are more limited, involving only a few locations in different parts of the world. A UK retailer may, for example, contract with a Chinese fabric supplier to deliver cloth to a garment producer in Sri Lanka. The finished goods will then be shipped directly to the UK retailer.

c) The third dimension of the value chain is the control that different actors can exert over the activities making up the chain. The actors in a chain directly control their own activities and are directly or indirectly controlled by other actors. A retailer, for example, controls the way he sells, but may be limited (indirectly controlled) by the range of goods available from wholesalers and producers.

According to Hines (2001), although being first to market is important in the typical apparel value chain, the real returns go to companies that are able to exploit their products by being first to spread the product round the globe. The primary goal is therefore to drive a new product or marketing concept around the globe as quickly as possible, the critical success factor being access to channels of distribution and to have developed an internal capacity to propagate new product innovation. Hence the core capability is competence in managing global supply chains. Relationships are an important competence.

Three critical lead times identified in the supply chain are:

A) *Time to market*—time taken by a company to translate a market opportunity into a product or service

B) *Time to serve*—time taken to capture a customer order and deliver goods to the satisfaction of customers

C) *Time to react*—time it takes to respond to demand volatility by turning on or off the production.

Lead-times in the fashion industry have, if anything lengthened over the last two decades or so. This is primarily the result of global sourcing as retailers have sought out low cost sources of supply. The risk that is incurred through lengthened lead-times can be considerable. If decisions on style, colour and quantity have to be taken many months ahead of the season then the greater is the chance of error in the forecast.

As pointed out by Christopher et al. (2004) in their paper- ‘Creating Agile Supply Chains in the Fashion Industry’ the demand for fashion products cannot be forecast.
Fashion markets are complex open systems that frequently demonstrate high levels of chaos. In such conditions managerial effort may be better expended on devising strategies and structures that enable products to be created, manufactured and delivered on the basis of ‘real-time’ demand. Because of the volatility of demand it is extremely difficult to forecast with any accuracy even total demand within a period, let alone week-by-week or item-by-item demand. Traditional ways of responding to customer demand have been forecast-based, with the resultant risk of over-stocked or under-stocked situations.

The idea of agility in the context of supply chain management focuses around ‘responsiveness’. Conventional supply chains have been lengthy with long lead-times and hence, of necessity, have been forecast-driven. By contrast, agile supply chains are shorter and seek to be demand-driven. A further distinction is that because conventional supply chains are forecast-driven that implies that they are inventory-based. Agile supply chains are more likely to be information-based (Christopher et al., 2006).

A. The Apparel Importer/Buyer-

A research paper by McNamara (2008), describes three main categories of apparel buyers, although these also overlap so exact distinctions cannot be made:

i. Retailers (such as Gap, Hennes and Moritz, etc) that sell own-label clothes in their own stores and usually, but not always, sub-contract the manufacturing;

ii. Marketers (such as Nike and Liz Claiborne), that specialize in design and marketing functions and contract all the actual production to others, and also do not have their own retail outlets apart from a small number of flagship stores; and

iii. Branded manufacturers and marketers (such as the Sara Lee Corp,) who manufacture apparel in their own factories as well as sourcing from unrelated factories, and whose products are sold mainly by third party retailers.

In the first group, big retailers selling own-label garments are increasingly in control of their supply chains, performing the same function as marketers and manufacturers in terms of product design and development, followed by production which is contracted out to overseas suppliers. This trend is referred to as ‘vertical retailing’ (Love, 1999).
### Types of Buyers and their Quality and Sourcing Characteristics

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<th>Quality Requirements</th>
<th>Representative Firms</th>
<th>Sourcing Regions</th>
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<tr>
<td>Fashion-oriented Companies</td>
<td>Expensive “designer”. Products require high levels of craftsmanship in their garments</td>
<td>Armani, Polo/Ralph Lauren, Gucci, Hugo Boss, Prada, Harvey Nichols</td>
<td>Countries with a well-established track record for producing premium-quality clothing, such as Italy, France, Japan, and Asia</td>
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<tr>
<td>Department Stores, Branded Merchandisers, and Specialty Chains</td>
<td>Top-quality, high-priced goods</td>
<td>Bloomingdale’s, Marks and Spencer, Saks Fifth Avenue, Neiman-Marcus, Macy’s, Liz Claiborne, Calvin Klein, The Gap, The Limited, Next, John Lewis, Debenhams,</td>
<td>Established exporting countries, such as Asia, Brazil, Mexico, and India</td>
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<tr>
<td>Mass Merchandisers</td>
<td>Good-quality, medium priced goods</td>
<td>Sears Roebuck, CAN, J.C.Penney, Montgomery Ward, Kaufhof, CandA, British Home Stores, Littlewoods</td>
<td>Low-end producers in like China, and other Asian countries.</td>
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<td>Discount Stores</td>
<td>Low-priced goods</td>
<td>Wal-Mart, Kmart, Target, Kaufhalle, Woolworths, George/Asda, Primark, New Look</td>
<td>Low-cost suppliers in both established producing countries, such as Mexico and India, and those on the outer edges of export production, like Kenya or Vietnam. Sometimes they buy directly from these factories, but often they work through intermediaries</td>
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<td>Boutiques and other small importers</td>
<td>Pilot purchases and special items</td>
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Table 3.1- Types of Buyers and their Quality and Sourcing Characteristics


### The Buyers’ Requirements

**Volume** - Retailers are getting bigger, and large retailers want large volumes of products. By the mid-1990s the five largest retailers—Wal-Mart, Sears, Kmart, Dayton Hudson and JC Penney—accounted for 68 per cent of all apparel sales in the US (Daly and Towers, 2004). These large retailers are likely to consider only very large producers able to handle the sort of volumes needed. Under the quota system, these large volumes had to be sourced from a number of different countries. The expectation now is that the biggest buyers will streamline the number of countries from which they source. Large factories in the selected countries will be the main beneficiaries.

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Lean Retailing- A retailer hoping to reduce costs is unlikely to find enough savings in the cut-make-trim (CMT) part of garment production, and conversely that suppliers wanting to increase profit margins need to look outside the confines of CMT. These two aims are on the face of it highly complementary (Guercini and Runfola, 2004). Lean retailers seek to outsource many, if not all, aspects of their business between the design of items and the sale of the finished product in the stores. If cost savings on CMT are so limited, then efficiencies clearly need to come from elsewhere in the value chain. A fully-integrated supply chain should offer those efficiencies. Thus a garment manufacturer may increasingly be expected to assume responsibility for intermediate stages such as sourcing the fabric and trim, packaging and labelling for sale, and organizing the logistics of inventory and delivery (Weil, 2006).

The full package service can be thought of as the continuation of a trend that has been underway among developing countries’ suppliers for almost 20 years. This full package service clearly shifts a greater responsibility onto the supplier, but does offer the potential for seizing higher value segments of the value chain. Management know-how and technology, specifically ICT, come to the fore when offering a full package solution. The buyer wants to track the process of each order very precisely, which means
i) that the supplier must already have tracking systems in place and
ii) the information about individual orders must be easily accessed by the retailer.

All this demands close cooperation between the manufacturer and the retailer—and compatible data-sharing and electronic data interchange (EDI) systems. Wal-Mart was an early mover in this regard, insisting that suppliers implement information technologies for exchange of sales data, adopt standards for product labelling and deploy specific methods of material handling. Wal-Mart’s aim was to cut inventory levels and reduce the lead-time for replenishment orders.

Speed-to-Market-Suppliers must now provide these new services in record quick time. Until relatively recently, retailers’ buyers would order a whole season’s supply of the selected garments up to 10 months before they would go on sale(Kansupada et.al, 2008). From the garment manufacturer’s point of view, that system meant price and quality were the main ways to compete; logistics and speed of response were less important. This has changed.
Customers expect much greater variety of choice, and a faster turnover of individual styles. Retailers need to offer a large number of products, each with a shorter lifespan. Orders are for shorter production runs, and involve point of sale information (POS) providing real-time information about best-selling items. The retailer’s inventory levels are kept very low, which helps to cut their costs.

Lee (2002) highlights four key factors are involved in a supplier achieving sufficient speed and reliability to meet these demands:

i) Proximity to the retailer’s market,
ii) Adequacy of the transportation infrastructure,
iii) Efficient customs administration, and
iv) Adequacy of the telecommunications and it infrastructure.

B. The Apparel Buying Agency/Intermediary - With globalization of industries and fragmentation of production worldwide, trading service operators take on more sophisticated organizational forms to include international buying offices owned by multinational manufacturing and retailing groups, as well as independent buying agents who perform sourcing and logistics management functions for their customers. The apparel intermediary is a domestic apparel service firm that links domestic wholesalers/retailers and foreign distributors/manufacturers to facilitate import transactions in the global apparel supply chain. Typical international trade intermediaries (ITIs) are buying offices/sourcing offices/agents/liaison offices serving large retailers or brand-name merchandisers in developed countries through sourcing of products in developing countries. The contemporary business world thus encompasses a wide range of market intermediaries, involved in indirect export of products between suppliers and buyers located in separate countries (Krause, 1999).

Making sourcing decisions in the global apparel market is a daunting task. Due to factors including language and custom barriers, communications hurdles, and the sheer number of producers scattered across the world, U.S. retailers have had to change the way they approach the world market. Some large retailers have established their own buying offices overseas to administer the outsourcing of their private label products. Others work with large and sophisticated independent sourcing agents to handle this intricate task (Abernathy et al., 2005).

In global business environments characterized by product proliferation, cycle time compression and mass customization, intermediaries play a significant role in effecting
a competitive global supply chain that meets end customers’ needs. Their role and tasks, however, are constantly adjusted according to the supply chain environments as well as the functions performed by their upstream and downstream supply chain members. Any individual intermediary has to enhance its value-adding services to customers in order to sustain its competitive position in the industry. Intermediaries in the apparel supply chain include international buying offices fully owned by multinational corporations, buying agents with contractual or alliance relationships with principals overseas, as well as independent importers or exporters serving retailers and manufacturers in different countries (Verdicchio and Colombetti, 2003). They are expected to effectively manage its operational tasks and strategic relationships with upstream suppliers and downstream customers simultaneously. Their performance is determined by the customer value it can create through enabling winning transactions from various parties in the supply chain (Dyer and Brookshire, 2008).

To be customer focused, the trade intermediaries have to perform a wide range of operational and managerial functions add value to end customers. Many of the intermediaries are agents in the broadest sense of the word, with no manufacturing or logistics capability or assets whatsoever, but who do have access to an appropriate supplier network (Mason et al, 2007). They are in essence used to manage the supply network immediately downstream from the retailers, taking responsibility for the whole process of sourcing product from low-cost countries, and subsequently managing the logistics of delivery to the retailers in USA and Europe. The advantages of using these intermediaries were enormous. They have product technical expertise, knowledge of and access to an existing supplier network, and almost always offer a complete sourcing and logistics service with local expertise to overcome many of the problems of complexity discussed earlier. Intermediaries are one of the key value-adding players in the fashion supply chain, whose role is to act as network co-ordinators, managing the information and material flows, and it is they, rather than the retailers, who act as the network orchestrator or coordinators. Besides, often collaborating with the retailers before product launch in the early establishment of fabrics and fabric suppliers, etc. they help identify spare capacity, consolidate orders, and take charge of quality assessment processes and product delivery to the retailer’s warehouse.
Different intermediaries operate in different regions of the globe, although some are present in more than one, and each intermediary has access to a pool of suppliers with which it had an existing relationship or simply worked on a one-off basis. Even though the volumes are small, intermediaries are often able to realise economies of scale and scope by working for multiple customers and across multiple product streams, although some intermediaries work exclusively for one customer. There are strong partnerships relationships based on commitment and trust between many of the retailers and their intermediaries but this was not always the case between the intermediaries and their suppliers, particularly the garment manufacturers.

*Mason et al. (2007)* further states that by helping the retailers establish fabrics and colours before product definition and launch, the intermediaries could help forecast preferred fabric and other possible suppliers and this supported the lead time reduction that pre-booking production and logistics resources could achieve. If and when the retailer’s initial trial product launches seemed to indicate a market existed, the intermediary could then organise competitive auctions for garment manufacturing by passing the required specifications of the product and the volumes required to appropriate players in its supply network base, giving them a few days to put together an ‘offer package’ based on price and lead time. The ‘best’ offer in terms of delivery lead time and price is selected and the manufacturer given the order.

Different trade intermediaries may take on different roles and business scopes along its supply chain, adjusted to those of their upstream and downstream members. This includes, for example, procurement of raw materials and other forms of technical and financial support to manufacturers / suppliers. The companies must manage the competing claims of a multiplicity of customers and suppliers. Furthermore, they have to strategically evaluate internal structure and operations to decide how to keep their organizations lean, and to allocate and balance its scarce resources and investment in different supplier-customer portfolios in order to achieve maximum effectiveness and profitability.

International apparel buyers base their sourcing decisions on the capabilities of their suppliers to offer *full package services* *(Gereffi, 2008)*. Buyers today demand a flexible mix of value-adding services which either the intermediaries can directly offer themselves or indirectly through their alliances with further upstream suppliers.
Capabilities of intermediaries in providing such value-adding services determine them being preferred by customers and hence their competitive position in the industry. Beyond bridging barriers and responding to consumer and retailer demands, sourcing agents provide a competitive advantage because they negotiate contracts and identify the factory with the best cost and appropriate equipment capabilities (Cook, 2004). Sourcing agents, through their close relationships with factories, can better ensure efficiency in production. Sourcing agents are critical to the success of complex designs in off shore production facilities. The sourcing agent’s technical knowledge and network of contacts allow them to identify the best factories for specific designs and production volume requests of the manufacturers and retailers.

Cook’s (2004) research has shown that the added cost of royalty fees for sourcing agents was indicated to be less expensive than identifying factories and working directly with those factories independently. On time delivery and communication with factories is more effective when a sourcing agent is utilized. When apparel retailers use factories that are off shore, they rely on sourcing agents to solve geographic and cultural barriers.

The agents then become the ‘eyes and ears’ of the retailers by communicating with the factories directly and monitoring the quality and timing of apparel orders placed by the retailers.

They help to solve problems within the global apparel supply chain, through their ability to communicate with local factories and their awareness of factory capabilities for the regions they represent around the world.

Sourcing agents play a critical role in supporting the global apparel supply chain. They organize the various actors within the supply chain that would otherwise be difficult to connect due to geographic and cultural barriers. The sourcing agent’s role in the global apparel supply chain is to facilitate the relationships among key players who seek to produce apparel goods efficiently, meeting quality and timing standards.

In this business, transparency of communication is of vital importance (Popp, 2000). Popp (2000) in his paper points out that intermediators take responsibility for handling much of the information flow that is needed to make the business work. They are bearers of information costs. They improve communication between buyers and sellers. The principle sources of information costs in international markets for apparel are distance, geographical and cultural.
Volatility in the fashion business increases information costs by increasing the **volume** and **quality** of information required for good decision making, which often results in search for new opportunities to trade, new product sources, news ways in which supply and demand can be integrated.

It is this volatility that intermediaries are expected to handle and ensure the ripples do not affect the business.

**C. The Apparel Manufacturer/Exporter**

Garment manufacturing is a pure *Make to Order (MTO)* production scenario unless production houses have their private labels (*Tanksale, 2005*). Typical business processes in this industry include style development, sampling, customer order management, fabric and trims procurement, inventory management, production planning, material and factory capacity planning, sub-contracting in overload scenarios, raw material distribution between warehouses, production, finishing and packing, shipments, and other non engineering processes. *Tanksale (2005)* further states the following five most challenging business processes in MTO production scenario

i. Style and Attribute management

ii. Sampling

iii. Capacity Planning and Scheduling

iv. Inventory Management, and

v. Order life cycle management and buyer interaction.

Garments are always planned and inventoried in units or dozens. Many top garment manufacturers have numerous buyers and each deals in different types of garments and thus may have variation in planning and manufacturing process. As mentioned, garment style has various attributes such as size, color, major dimension (as length in pants), and fabric type. Attributes play very important role in garment planning and operations business processes. Fabric needs to be procured, received, inventoried and issued to production at attributes levels such as color, fabric type, width, construction etc. Garments need to be planned, produced, inventoried and distributed at attribute levels as well depending upon buyer requirements. Attribute level planning can be complex to configure, implement and to use due to possibility of numerous variations and amount of processing resources required.
One of the most important requirements from the Supply Chain systems in MTO scenario is tracking operations and orders by customer’s order or style number. System should have required functionality or provide flexibility to design workaround without adversely affecting original business process. Fabric procurement is a long lead-time process that involves fabric capacity bulk booking, informing color breakdowns to fabric suppliers, color and shrinkage testing and final delivery schedules. Since garment colors are not known till later stages, fabric booking and procurement planning in applications a challenging process. One can look for specific functionality in system or configure a workaround to design this process.

Material and capacity planning is another complicated and challenging processes. This is because factors such as last minute changes to the styles and bill of materials (BOM) by the buyer, quality defects in fabrics, late fabric deliveries, rejections on production lines, sample failures and other numerous reasons affect factory operations showing false picture of effective capacity available delaying the garment deliveries to buyers. In a typical case, buyer first blocks capacity with manufactures by intimating orders months in advance so that fabric can be booked at mills and other priority processes can be triggered. Only information known at this time is style number and bulk quantity at style level.

Without knowledge of color and sizes of end garment items required, phantom items and codes are used to plan capacity and to initiate procurement process for long lead-time items. This helps production planners to look for other alternatives such as other factories, subcontracting etc to meet the production plan in case of capacity overload or capacity mismatch and also helps sales team to get idea of available-to- promise (ATP) capacity during sales negotiations or capacity auctions. Without right capacity plans, sales are directly affected by loosing orders and production is suffered with delayed schedules and late deliveries to customers.

3.2 Responsiveness in Apparel Supply Chain

Agility is concerned primarily with responsiveness. It is about the ability to match supply and demand in turbulent and unpredictable markets. In essence, it is about being demand-driven rather than forecast-driven.

Agility is a business-wide capability that embraces organisational structures, logistics processes and, in particular, mind-sets. A key characteristic of an agile organisation is flexibility (Forsberg and Towers, 2007).
The importance of Quick Response strategies has been emphasised in the clothing and apparel sectors since the late 1980s.

Quick Response in the clothing sector has been defined in different ways and from different perspectives. Lowson et al. (1999) define Quick Response as ‘a state of responsiveness and flexibility in which an organisation seeks to provide a highly diverse range of products and services to a customer/consumer in the exact quantity, variety and quality, and at the right time, place and price as dictated by real-time customer /consumer demand.’ The potential benefits of Quick Response initiatives being- increased sales volumes, reduced markdowns, reduced stock-outs, reduced costs and prices, greater price validity in retail stores, and improved financial performance and increased competitiveness (MacCarthy and Jayarathnae,2009)

Quick Response essentially has broad dimensions or attributes, the work highlights the necessity of 4Rs viz -responsiveness, reliability, resilience and relationship.

i. **Responsiveness**: The responsiveness in operations management has been defined in different ways (MacCarthy and Jayarathnae,2009). Common elements typically highlighted for responsive operational systems include information management, partnerships between supply chain members, manufacturing flexibility, effective inventory management and strong logistics systems.

In several ways, flexibility contributes toward achievement of responsiveness within defined supply chain parameters by increasing competitiveness thus directing its association into the framework defined under responsiveness.

Quality is a vital component of Quick Response (Pal and Peterson, 2009) and Total Quality Management (TQM) is essential for Quick Response development which is dependant on trust. Development of trust depends on transparency and knowledge dissemination in the system predominantly building upon superior reliability. This accounts for more system visibility and trust.

ii. **Reliability** in a value chain could ideally be delivering the product that customer requested at the right time, as promised by the seller. This builds on customer trust, supply chain quality and pipeline visibility. Thus a commitment towards the consumer-driven system has led to the development of a Quick Response culture by stimulating TQM improvements through recognition,
awareness, problem ownerships and involvement; the core of developing reliability.

iii. Resilience: The challenge to business today is to manage and mitigate the vulnerability or risks to the supply chain. Resilient supply chains are capable of withstanding and recovering quickly and effectively from unexpected disruptions. Resilience is the ability of a system to return to its original state or move to a new, more desirable state after being disturbed.

iv. Relationship: A key component of Quick Response strategy is the development of supply chain relationships based on collaboration, partnerships, integration and information sharing (Nobukaza, 2001). It is realized that performance depends much on alliances and relationships to deal with changing market conditions. From the Quick Response perspective, relationships and networks are critical and must be considered a key component of strategy for being increasingly competitive. Coordination of performing activities in the supply chain requires consideration of relationship as a major dimension of Quick Response concept. Relationship in an apparel value chain could be inter-organizational at same or different levels (integration - horizontal or vertical respectively or collaboration), intra-organizational (collaboration based on organizational culture) or with customer (customer focus).

As highlighted in the preceding sections, the clothing industry now operates with global supply networks, presenting greater challenges for Quick Response. Global Quick Response (GQR) is a strategy that seeks to achieve accurate, rapid and cost effective response to specific markets dynamically by leveraging the potential of dispersed global supply and production resources through lead time compression, effective real time information management, flexible pipeline management and optimal logistics and distribution systems (Pal and Peterson, 2009). GQR strives to combine cost and scale efficiencies by sourcing globally with quick and accurate response to specific market requirements derived from information management, dynamic planning and strong logistics. GQR requires that the complexities, risks and additional coordination inherent in managing international supply routes with multiple linkages are absorbed if sales opportunities are to be maximised and the risks of supplying the wrong products minimised.
As per Pal and Peterson (2009) three key processes for Global Quick Response (GQR) in garment industry are:

i. The new garment design and development process
ii. The initial volume order process
iii. The replenishment or repeat order process.

**Enablers for GQR**

i. Strive for fast and accurate information transmission: the processes and speed of transmission of both product and order information need to be analysed. The formats for design and garment specifications need to facilitate both rapid transmission of design requirements and the rapid production of new designs.

ii. An issue in the sector is that no standard universal product data formats exist for garments, unlike engineering design information. Speed and accuracy are also important in the transmission of order information, particularly for replenishment orders where time is of the essence.

iii. Develop flexible production resources: Traditional garment manufacturing uses batch production methods. Many opportunities exist to reconsider layouts and organisation of factory processes, particularly cellular manufacturing where whole garments or parts of garments are produced or assembled in flow driven cellular processes. If such cells are rapidly reconfigurable then advantages can be gained in quickly responding to the required mix changes. In addition, flexible human skills are valuable in responding to changing garment designs. This is critical, particularly in the time consuming making up processes in garment production. When flexible skills are combined with cellular team based production, then rapid response to design and mix changes can be enacted without incurring significant set up costs.

iv. Utilise technology and automation where appropriate: In general the garment manufacturing sector is less automated than many other industrial sectors, particularly the engineering sector. Human skills perform much of the value adding activities in garment production. However, every opportunity needs to be taken to adopt new technology in areas such as laying up and marking of fabric, cutting, sewing, pressing and packing. Also technologies that assist in rapid material identification, material handling and material flow and technologies that enable flexibility need to be adopted, particularly for quick changeovers and set-up processes.
v. Develop fast logistics: Rapid material flow needs to be encouraged and enabled in any Quick Response system. Implementing fast logistics for in bound fabric supply, for material flow within plants and outbound into the distribution channels is important. The technologies noted above can assist in achieving this. Hence the importance of ‘floor ready’ garments that are appropriately tagged and packaged for immediate display once delivered.

vi. Exploit all opportunities for lead time compression: the combination of the above initiatives reduces many of the time delays affecting overall response times.

vii. All aspects of processes, systems and procedures for gathering and transmitting demand information and for the design, production and distribution of garments must be looked at for opportunities to compress lead times. One of the keys to compressing overall response times is to ensure fabric availability. In addition, Quick Response initiatives will try to identify specific opportunities for lead time compression in the systems and processes of any specific producer or supply chain prime partner and those aspects of the system that need close management and control.

viii. Develop an organisation that seeks to pursue Quick Response must see it as a fundamental part of its business strategy. Not all organisations should attempt or will be successful at Quick Response, as all it needs is creating and sustaining an organisational culture supporting QR.

### 3.3 Supply Chain Coordination

Supply chain coordination can range from minimal to intensive interactions among participating actors. The basic dimension of coordination is the sharing of information between two or more functions. Information sharing can be defined as the act of disseminating common understanding among participating members (Simatupang et al., 2004). Shared information provides visibility into supply chain processes used to coordinate the flow of products. This shared information may include customer needs, customer demand, product-related data, costs related data, process-related data, and performance metrics.

The second dimension, called decision synchronisation, refers to the extent to which participating actors become involved in joint decision making such as resolving conflicting objectives, mitigating uncertainty, redesigning workflow, and allocating
resources. The participating actors do not merely share private information but also work together to find alternative solutions to the problem encountered.

Responsibility interdependence captures the level of formal and informal direct contact among participating actors who have joint responsibilities to create, modify, and use a set of shared work objects.

According to Simatupang et al (2002), supply chain coordination encompasses every effort of information exchange and integration during the courses of developing, producing and delivering a product or service to end marketplaces. In reality, the objectives and interests of different members along a supply chain could be diverse and conflicting. Thus, supply chain coordination becomes so vitally important to achieve the all-level consensus, through which different members along a supply chain can react to market requirements in highly congruous ways. Coordination means organizing the activities of two or more groups so that they work together efficiently and know what the others are doing. In other words, the groups are assigned and responsible for individual activity tasks but work interdependently for common goals. A supply chain is fully coordinated when all decisions are aligned to accomplish global system objectives.

Lack of coordination occurs when decision makers have incomplete information or incentives that are not compatible with system-wide objectives (Xu and Beamon, 2006).

A textile-apparel supply chain can be divided into the several main functional role players. Putting them in operational sequence, they include end-consumers, retailers, distributors, brand owners, garment manufacturers, fabric manufacturers, yarn manufacturers and fiber suppliers. An independent entity may be in charge of more than one functional role. For example, Nike is a brand owner, it can also be treated as a distributor and a retailer. Another example is that a garment manufacturer may also own woven or knitting factories.

Apparel wear are the final products of the textile-apparel supply chain. The creation and development of apparel items into a matching collection or a product line involves a series of steps. Each step is closely related to and influenced by all the other steps in the process.

Postponement Strategy- In this strategy, the configuration/differentiation/customisation of the final product is postponed as long as possible to keep the inventory levels low
(Sharma, 2010). The first application of this principle can be traced to Benetton, the Italian fashion brand. The company produces and sells basic T-shirts. The T-shirts are first manufactured and dyed closer to season in the colors that will be popular in that season. This helps to avoid, stockpiles of dyed T-shirts in unpopular colors. Even leading denim wear manufacturers follow it.

3.4 Technology Trends in Apparel Supply Chain

A number of specific types of information and communication technologies are used in the textiles and garments sector, many of which were created for other industries and then adapted for the needs of the apparel value chain (McNamara, 2008). An ICT system is usually configured for the particular needs of the user, but any technology must obviously be compatible with the systems used by both customer and supplier. Few of the most common types of system are briefly described by along with some recent advances which are likely to become more common in coming years.

*Enterprise Resource Planning (ERP)* - ERP is a system for managing and integrating a number of different business activities within a company, including order processing, materials sourcing, manufacturing, account handling, and logistics. It can be introduced in modules. ERP may start off as an internal company resource, but information and data from the system can subsequently be made available to the other players in the supply chain, particularly the buyer (Varokolu, 2007).

A functioning ERP system should provide access to a range of information and tracking data including:

a) Purchase orders from customers  
b) Purchase orders issued to fabric and trim suppliers; fabric inventory control  
c) Garment production line processes from cutting to finishing  
d) Status of particular work orders  
e) Work station usage/performance (for lines and individual workers)  
f) Dispatch details  
g) Supplier inventories  
h) Customs documentation

Such real-time information means that suppliers can see how their part of the supply chain is performing. Customers can be given reliable progress reports, and productivity can be improved after identifying bottlenecks. Staff time formerly spent collecting data
can be redeployed. Although employees often resent the system’s ability to monitor individual worker output, the new data also means that conscientious employees can be identified and rewarded with bonuses.

Electronic Data Interchange (EDI) and internet-based data transmission systems—Supply chain management systems need communication networks connecting a supplier with the customer (Byoungho, 2006). EDI has traditionally been the most commonly used technology, but web-based systems are gradually taking over. EDI is a system which transmits documents electronically in a standard format and syntax. Electronic transmission largely removes the possibility of the supplier introducing order-entry errors, thereby reducing costs and avoiding mistakes. Orders can be placed at any time, on any day of the week.

During the course of a transaction for garments, an EDI system can handle (Get Connected, 2005):

a) Raw material availability inquiries
b) The purchase order (PO) from the retailer (or agent) to the garment supplier and/or fabric supplier
c) An advanced ship notice (ASN) from the fabric supplier
d) An advanced ship notice (ASN) from the garment manufacturer
e) A report on the status of orders
f) Order amendments
g) Generation of packing lists
h) Generation and printing of barcode labels
i) Automatic generation of an invoice
j) Replenishment orders
k) Provision of an audit trail covering the history of the contract

Recent web-based alternatives and XML (eXtensible Markup Language) protocol systems offer the same functionality as EDI but without the need for a dedicated system for a single customer, and are more attractive and cheaper for small- and medium-sized suppliers in developing countries. Wal-Mart is the most prominent retailer to have moved to internet data exchange, and is rolling out the move through its supply base (Pfitscher and Wei, 2005).
Integrated Information Systems-In an integrated supply chain, all partners will ideally have real-time access to information from each stage of production. This is possible using a web-based transaction/project management system (Choudhary et.al., 2008). One typical example is the ecTrack software application sold by Integrated Solutions Technology (IST), a technology business started in 1998 by the Luen Thai apparel company. The timeline can include all stages from pre-production to delivery. The supply chain partners collaborate to modify this plan until it satisfies all their requirements. An integrated supply chain enables such information to be available to both the retailer and the supplier, so that orders can be swiftly adjusted. At the retailer’s end, point of sale information (POS) is closely related to inventory management. A fully integrated system will include real-time, online inventory monitoring which is vital if stock levels are to be kept low. The overall level of coordination and collaboration in an ICT-enabled world depends on a clear definition of responsibilities and tasks. Once this is achieved a high level of tracking and service is available, with information updated and shared in real-time.

Logistics e-Information- The transportation and warehousing of goods needs to be integrated with the rest of the supply chain if bottlenecks and delayed deliveries are to be avoided, but stand alone software packages are also available. Manifests and customs documentation can now be handled online in some countries, which can speed up the bureaucracy considerably. The logistics information highway is a two-way street. The retailer and the supplier need to be able to track stock and shipments, but the firm’s logistics managers also need to know about upcoming order flows. A web based system can provide this access to all the supply chain players (Mossinkoff et.al, 2008).

Design and Virtual Prototyping-ICT also has an important and growing role in the early design stages of a product’s evolution. Sophisticated computer aided design (CAD) software packages cover all stages of the process from initial drawings and 3D simulations of garments, following on to pattern generation and production of data outputs suitable for a computer-aided manufacturing (CAM) process. Virtual prototyping offers what its name suggests i.e a digital prototype rather than a physical prototype is used to simulate designs and fabrics, evaluate comfort, and provide animations to demonstrate the garment. The applications can assess the behaviour of the garment’s fabric in different postures (sitting or running, for instance). This offers the opportunity to speed up product development and would greatly cut costs.
Prospective designs can be shared quickly between a large number of people using internet transmission (Hammond, 2001).

*Online Portals*- The internet offers easy and cheap access to information for developing country manufacturers, who previously could be very isolated from global industry trends. Apart from keeping in touch with patterns of demand, web access can also provide information on developments in the relevant ICT technologies (McNamara, 2008).

*E-Commerce*- There are intrinsic limitations to B2B e-commerce sourcing in the textile and garments sector because of buyers usually need to handle samples and touch fabrics before making their decisions. Even for those companies which do not want to take the risk, the internet provides access to details about the products on offer and their suppliers (Gamage, 2007 and Hammond and Kohler, 2000).

*Vendor Managed Inventory (VMI)*- A ‘lean retailer’ wants to do as little as possible apart from selling clothes. One way to achieve this is for the garment manufacturer to take responsibility for checking and replenishing the retailer’s stock levels—the so-called Vendor Managed Inventory (Cetinkaya and Lee, 2000). A high level of collaboration and trust is necessary for such an arrangement, and it is only usually relevant for long-term business relationships. VMI needs a very high degree of systems integration. The supplier receives information about sales and customer-country inventory levels through an EDI or web-based ICT link. Under VMI, enormous trust is put in the overseas suppliers, both in terms of giving them access to market-sensitive information and control over inventory levels. This makes inventory management both easier and more important, e.g. any supplier, who allows a customer to run out of a popular item, or whose aggressive reordering leaves a lot of unsold stock, will lose both business relationships and income (Blatherwick, 1998).

*Radio Frequency Identification (RFID)*- The RFID label or ‘smart tag’ emits a radio signal that can be picked up by a short range receiver. RFID is being used to label pallets and cartons, but as prices drop the smart tags could be attached or incorporated into single garments. The technology opens up the possibility of tracking items at the piece level, which should lead to greater efficiencies in the supply chain and even more precise inventory control. RFID technology will start to matter for any developing country supplier that is providing labelling and packaging (Williams, 2005). The data provided by RFID will be available in real-time and therefore offers a means to the most precise type of monitoring of the supply chain—at least from the
point when the smart tag is fitted. This will bring great benefits to retailers, which in turn will expect their suppliers to accommodate the new technology (Tyler, Heeley, Bhamra, 2006).

Mass Customization-The swift collection and transmission of data has created the potential for garments to be manufactured for an individual customer at an affordable price the so-called lot size of one or mass customization (Staples, 2001). The process depends on the possibility of being able to track an individual item through the supply chain, something that has become possible with ICT.

Implementation usually involves these steps (Lee and Chen, 2000):

a) A customer visits the store, where a body scan machine provides the necessary measurements. Alternatively, this can be done manually in store, or provided direct by the customer from self measurement, and input to a website.

b) The measurements and other details of the order (color, number of units etc) are transmitted by internet to the supplier factory. Made to Measure software generates the pattern.

c) The fabric is cut and the garment manufactured.

d) The finished item can be shipped direct to the customer or to a specific store.

e) A turnaround time of less than a month is usually possible. Only suppliers with the appropriate technology will be able to support a retailer offering this option as it demands a swift information flow from the shop floor to the production line and then back again (Oren, 2009).

3.5 Trends in apparel trade and exports and its impact on supply chain

The clothing industry is labour-intensive and it offers entry-level jobs for unskilled labour in developed as well as developing countries (Nordas, 2004). Job creation in the sector has been particularly strong for women in poor countries, who previously had no income opportunities other than the household or the informal sector. Moreover, it is a sector where relatively modern technology can be adopted even in poor countries at relatively low investment costs. These technological features of the industry have made it suitable as the first rung on the industrialization ladder in poor countries, some of which have experienced a very high output growth rate in the sector (e.g. Bangladesh, Sri Lanka, Viet Nam and Mauritius). These characteristics, however,
have also made it a footloose industry is able to adjust to changing market conditions quickly (Knappe, 2002).

At the same time, the textile and clothing industry has high-value added segments where design, research and development (R&D) are important competitive factors. The high end of the fashion industry uses human capital intensively in design and marketing. The same applies to market segments such as sportswear where both design and material technology are important. Finally, R&D is important in industrial textiles where, again, material technology is an important competitive factor (Munir, 2004).

Textiles and clothing are closely related both technologically and in terms of trade policy. Textiles provide the major input to the clothing industry, creating vertical linkages between the two.

3.5.1 The Agreement on Textiles and Clothing (ATC) and Multi Fibre Agreement (MFA)

International trade in the two sectors is regulated by the Agreement on Textiles and Clothing (ATC) at the multilateral level, while bilateral and regional trade agreements typically link the two sectors through rules of origin accompanying preferential market access (Yamagata, 2007).

At the micro level, the two sectors are increasingly integrated through vertical supply chains that also involve the distribution and sales activities.

Indeed, the retailers in the clothing sector increasingly manage the supply chain of the clothing and textiles sectors. This development probably started with the establishment of shopping malls such as Wal-Mart in the United States in the 1970s. Wal-Mart insisted that suppliers implemented information technologies for exchange of sales data, adopted standards for product labelling and methods of material handling. This ensured quick replenishment of apparel, which in turn allowed the retailer to offer a broad variety of fashion clothes without holding a large inventory. This approach has spread throughout the industry in the United States as well as elsewhere (and to other industries), shifting the competitive advantage of suppliers from being mainly a question of production costs to becoming a question of costs in combination with lead time and flexibility. This development has in turn favoured suppliers located close to the major markets.

Protection of the textile and clothing sector has a long history in United States and Europe. In the 1950s, Japan; Hong Kong, China; India and Pakistan agreed to voluntary export restraints for cotton textile products to the United States. In 1962 a
Long Term Agreement Regarding International Trade in Cotton Textiles (LTA) was signed under the auspices of the GATT (replacing a 1-year short-term agreement). The LTA was renegotiated several times until it was replaced by the Multi Fibre Agreement (MFA), which came into force in 1974. The MFA, as the name suggests, extended restrictions on trade to wool and man-made fibres in addition to cotton. The MFA aimed at an orderly opening of restricted markets in order to avoid market disruptions. Like the LTA, it was supposed to be a temporary measure. The science of quantitative trade policy analysis was not very well developed in the 1970s. The burden of proof of what constituted a market disruption was therefore relatively weak and the agreement came to comprise most developing country exports to the United States and the EU.

By the end of the second MFA (1981), 80 per cent of imports of textiles and apparel into United States were covered by bilateral quota agreements with 20 countries and territories and by consultative mechanisms with another 11. The MFA was renegotiated four times, the last time in 1991, and it finally expired in 1994. Six developed countries applied quotas under the MFA during the final years of the agreement (the EU, Austria, Canada, Finland, Norway and the United States), and the quotas were applied almost exclusively to imports from developing countries. The expiration of the MFA did not, however, mean the end of quotas on textile and clothing exports from developing countries. Instead the MFA was followed by the Agreement on Textiles and Clothing (ATC), which came into force with the establishment of the WTO in 1995. ATC was a transitory regime between the MFA and the full integration of textiles and clothing into the multilateral trading system. Four countries carried the MFA restrictions into the ATC (Canada, the EU, Norway and the United States). The impact of implementing the ATC had several dimensions. First, there was the political gain related to the credibility of the multilateral trading system at a time when the system was experiencing considerable strains. Second, there were efficiency gains from eliminating highly distorting quotas that led to an inefficient global allocation of textile and clothing production. Third, there was the loss of quota rents on the part of ATC exporters. Finally, the gain to consumers. However this regime ended on 1st January 2005.

Post MFA, there were remarkable structural changes in the US market in the clothing trade (Yamagata, 2007). As expected, exports from China and India jumped in the first half of the year. Since China was the greatest exporter of garments to the United
States and since the growth rate in the value of exports from China was extremely high, the US government seriously considered invoking safeguards to put the brakes on garment imports from China. The EU also faced a surge in garment imports from China. As a result the EU and China reached an agreement on a three-year transitional arrangement on June 10, 2005 which limited the annual increase in Chinese garment imports to about 10 percent until trade was liberalized in 2008 (Ark et al, 2008). The United States and China made a similar agreement which set quotas covering nearly half of China’s garment imports into the United States by the end of 2008.

3.5.2 Market Development and Supply Constraints and It's Implications
Since the late 1960s, the market for garments in the USA and Europe has changed substantially, due mainly to the qualitative and quantitative changes in consumer demand and the reactions to these changes by the main marketers and retailers. Retail prices have been stagnant or even decreasing over the past few years (Smakman, 2004). This has been attributed mostly to market saturation and increased production. On the other hand consumer demand has changed and is increasingly for higher quality, more differentiated- fashion and branded garments, which explains the rise of specialist clothing retailers what has taken place is a shift in value added from the product to the image (thus to the marketing end of the commodity chain), hence a shift in power from producers to buyers/retailers, also referred to as the ‘Retail Revolution’ (Yim, 2003).

Least Developed Countries have been affected by these market developments both directly and indirectly, through the strategies of buyers and the attractiveness of their location, impacting their competitiveness within the chain. As a consequence of stagnant prices and fiercer competition, a consolidation and concentration in the retail segment has taken place. This has substantially diminished the bargaining power of producers and market pressures on retailers’ profits are diverted to manufacturers by reducing prices. The manufacturer reduces the margin paid to his contractors and these are then forced to reduce cost, often through squeezing labour, achieved through (further) subcontracting to lower wage countries. This has stimulated a further tiering of production networks and deepening of the international division of labour.

In order to cut cost, buyers have placed greater emphasis on inventory control. The major implication has been that retailers no longer want to hold large stocks and either expect their producers to take care of this (hence shifting the cost and risk to the
producers) or force them to deliver on a 'just-in-time' basis. The latter requires the development of new capabilities by producers, in order to produce smaller batches, be flexible in mid-season re-orders or adjust rapidly to orders, etc. Again, the burden of this cost cutting by buyers is shifted to the producers (Yuan-Yuan et al, 2006).

Quality control has become increasingly strict, to reduce rejects and increase efficiency. Buyers have placed a larger part of the responsibility for this control with their producers, according to standards and rules set by them. One of the common measures in this respect is the nomination of input suppliers. To capture niches and new markets, buyers have placed more emphasis on segmentation, which usually means an increased emphasis on fashion and design, demands for smaller batch sizes and more frequent style changes. This has implied increased demands for quality and flexibility from the producers, thus the development of new and enhanced capabilities. With increasing emphasis on rapid fashion and style changes, lead-time considerations are becoming ever more important. On the one hand this has led to an increased importance of producers’ proximity to markets for certain (fashion sensitive) market segments. On the other hand buyers prefer to source from locations where material inputs are readily available, hence where large parts of the apparel commodity chain are present. Thus countries/regions, which are relatively far from the main markets but have a strong and flexible material supply base, can still retain an advantage.

Many buyers have pushed for capability enhancement of producers worldwide (i.e. regardless of their location), through upgrading and teaching. This has led to an ever greater number of producers being able to supply on a ‘full-package’ basis and meet buyer’s more stringent quality and delivery times requirements.

In a study by Technopak in 2007, sourcing decision of buyers are affected at two levels, at the macro level (country level) and at the micro level (firm level). The major macro level factors include factor costs, trade agreements, raw material base (or presence of domestic market), economic policy and stability, political policy and stability and proximity / transportation infrastructure. The major firm level / micro level factors include production capacity, product specialization, quality, delivery reliability and services provided

### 3.5.3 Trends in Apparel Supply Chain and Sourcing

In an article in Textile Outlook International, Singhal et al (2004) of Technopak present their opinion on the textile and apparel supply chain -- from fibre to retail.
According to the authors, the textile and apparel supply chain is experiencing deflationary price trends, making cost reduction the key to survival. This has forced players to rethink the role they play within the supply chain.

With operating efficiencies already quite high, members of the supply chain need to look at various strategies to improve margins. Two key areas on which to focus are collaboration with supply chain partners and innovation.

Collaboration offers an opportunity to reduce costs in the supply chain in the areas of product development, inventory holding, and manufacturing through better capacity utilisation, lower reject rates and fewer charge-backs.

Investment in the innovation of products, services and business processes can result in quantum jumps in profitability for a company. Significant growth in revenue will only come by bringing jaw-dropping new products and services to customers. Customers will always make room for something new, useful and value-packed.

*To create a collaborative supply chain requires manufacturers, suppliers, partners and retailers to work together for the common good by sharing information, agreeing common goals and strategy and integrating business processes, letting information and transactions flow freely between all parties.* The mindset needs to be one of, ‘if it’s good for one member of the supply chain, it will benefit everyone’.

This will only be achieved if all parties are more open, have trust and mutual respect for each other, and co-operate at all levels. Companies need to become less combative, and collaboratively more competitive. Apparel business moving toward a situation where supply chains compete with each other, not individual companies.

Certain global trends that have strongly impacted on the fashion industry are *(Das, 2005)*:

i. A single, global product range, designed and positioned to appeal to an international target group of carefully selected demographic and psychographic characteristics. Notable examples here are The Limited, The Gap, Next, Zara, and United Colours of Benetton.

ii. Global developments are now incorporated into fashion/trend forecasts.

iii. In tandem, *sourcing has become global in nature*, and is motivated by replacing disadvantages of high distribution costs and long procurement/delivery time with advantages of lowest possible procurement costs and better buying terms.
iv. There has been increasing control by the retailer over secondary distribution, primarily through dedicated distribution centers. Merchandise is sourced from various vendors distributed across a geographical spread and consolidated at centralized warehouses/ distribution centers. Examples of organizations successfully controlling secondary distribution include J. C. Penney and Wal-Mart.

v. Vendor bases are becoming consolidated/ rationalized as a means to increase effectiveness of vendor monitoring and associations. In many cases, this even involves captive/ dedicated production bases. This also has positive benefits in terms of responsive replenishment systems.

vi. It has been argued that Sourcing needs are complex and in order to be competitive, production facilities must be responsive, flexible, efficient, and cost-effective. Correspondingly, there has been a paradigm shift from routine vendor monitoring to dynamic vendor partnerships. Vendor relations are no longer mere sub-contracting arrangements or transactions, but more to do with associative networking and sharing.

Das (2005) further stresses on management attitude and perception. Most management thinking and functions have veered towards a contemporary and forward-thinking mindset, and strongly tilted towards the concept of managing through information, and not merely by ‘doing’. In order that information is meaningfully used as a decision-making tool, the case for long-term partnerships in the supply chain becomes even stronger.

Managing the components of the chain fundamentally involves the concept of time management, measured largely by the degree and speed of responsiveness by the channel members. In striving towards this, organizations should essentially strive for the following (Das, 2005):

i. Speed up in the shortest possible time. That may be crucial in many ways, but the key lies in the number of activities that contribute to the value chain. Common examples of ‘non-performing’ activities are complicated and lengthy ordering/ re-ordering processes; cumbersome approvals; prolonged decisions of holding of stocks; and unproductive intermediate processes.

ii. The Limited Inc revolutionized the fashion logistics supply chain through their approach to elimination rather than engineering and minimum task processing by which overlap and duplication in processing were eliminated, time in
processing was cut and distribution systems were re-designed to eliminate components (Hausman et al., 2005).

iii. *The organization must be able to identify the value added at every stage of the value chain, and also work out realistic time per activity, right from research, product development and upto final delivery.*

iv. Once such activities are identified and their critical times are arrived at, the accent should be to try and *develop proficiency in being able to handle simultaneous activities rather than on sequential activities.*

In order to be able to achieve to above, there must be clear lines of communication amongst all the member of the value chain, and such communication cannot be unilateral or dictatorial. *All efforts must be participative, and must involve linking amongst the chain members.*

### 3.5.4 New Sourcing Rules for the Global World

Technopak (2007) study paper further states that in the post quota era most of large buyers started to work differently to adapt to the new global environment. Prior to 2005, the buyer strategies were governed by availability of quotas and than on supplier efficiency parameters. Quota abolishment provided an opportunity to the buyers to consolidate their sourcing operations and select efficient and cost competitive suppliers.

![Factors affecting sourcing decision](Source: Technopak 2007)
The key changes that buyers are making in their sourcing strategies were:

_Rationalization of Vendor Base_: Quota abolishment provided an opportunity to most of the buyers to rationalize their vendor base. Retailers and brands started to segment their vendors for optimizing the sourcing benefits:

i. The strategic partners: This refers to a close working relationship. These vendors are not only selected on competitive cost but also on capabilities like quality, lead time and their willingness to work jointly.

ii. Niche Vendors: The vendors who provide unique product, capabilities or geographic positioning

iii. Opportunistic Vendors: Vendors who could be considered for business on need basis.

_CHANGE FROM TRANSACTIONAL RELATIONSHIP TO STRATEGIC LONG TERM RELATIONSHIP_: Buyers are developing long-term relationship with their key suppliers. Buyers and suppliers, both get benefited in developing such a long-term relationship. While suppliers can look for constant flow of order, buyers on the other hand can make operational efficiencies in its supply chain through reduced times in product development, standardization of processes, logistics routing and inventory visibility.

_CHANGE FROM FRAGMENTED SOURCING TO FULL PACKAGE SUPPLIERS_: Working with full package suppliers, who have capabilities from design to development, helps suppliers reduce the lead-time for their products and also shrink concept to store timelines (Hossain et.al, 2006).

_OUTSOURCING OF OPERATIONS TO SUPPLIERS_: A large number of buyers have started to outsource their operations like product development, inventory management to their vendors. As more and more retailers starts to focus on their front end to improve their competitiveness more and more outsourcing of operations is expected to happen (Kumar and Arbi, 2008). Suppliers are also responding to the changed environment and to the new requirements of the buyers. Suppliers have started to invest in building special capabilities. Some key changes which suppliers are making are:

_FOCUSING ON BUILDING PRODUCT DEVELOPMENT AND DESIGN CAPABILITIES_: Suppliers have started providing all under one roof facilities to their buyers by focusing on product development and design capabilities. A number of suppliers in India and China are investing in developing design studios to provide their buyers with design options.
Companies like Arvind Mills are looking at developing new denim varieties to cater to changing fashion trend

*Developing logistics capability:* Suppliers have also developed strategic tie-ups with third party logistics (3PLs) service providers to be able to reduce lead times.

*Productivity improvement:* Faced with decreasing margins a number of suppliers are looking to improve productivities through ‘do it right the first time’ approach. Suppliers in South Asian countries are investing in improving productivity and implementing systems for quality control.

*Consolidating operations from a number of countries to efficient and cost effective countries:* Quota forced a number of large suppliers to operate from various countries. With quota no longer in consideration, many of the large suppliers have started to consolidate their operations to a fewer cost effective countries.

*Collaborating with buyers on forecasting and inventory management:* Suppliers are now actively collaborating with their buyers on forecasting and management of inventory (Eckert, 1997).

*Investing in IT infrastructure and compliance:* Most of the large suppliers are investing in building IT infrastructure which would not only help them in better manufacturing planning and monitoring progress but would also assist their buyers in better visibility of their merchandise.

**Redefinition of the Traditional Roles of Apparel Buyers and Suppliers**

Buyers as well as suppliers would be redefining their traditional roles in the years ahead (Pincus, 2009). Buyers/Retailers looking for leaner and more efficient operations would like to outsource more and more responsibilities from their suppliers. Suppliers on the other hand would look at enhancing their competitiveness by offering more and more services to their buyers. Buying house which till now used to play important role will see themselves constrained in the changed environment. Hence buying houses would reinvent themselves to survive. Buying house would take up more activities from the retailers in order to grow in the emerging scenario. Some of the key developments which are expected to happen in next 6-8 years would include:-

a) Shifting of design and product development responsibilities from buyer to supplier.

b) Redefinition of the structure of sourcing organization of the buyers: number of offices, size of offices, location/countries of offices.

c) More sharing of processes between the buyers and suppliers
Increasing Role of Apparel Suppliers

- Buyers/Retailers looking for leaner and more efficient operations.
- Buyers would like to outsource more and more responsibilities from their suppliers.
- Suppliers looking at enhancing their competitiveness by offering more and more services to their buyers.

Figure 3.2- Changing role of Suppliers from Pre Quota to Post Quota regime
(Source-Technopak 2007)

3.5.5 Global Apparel Imports

USA is the largest importing country for ready-made garments. As indicated in Appendix A (Table A.I) the countries which followed USA were Germany, Japan, France, United Kingdom, Italy, Spain, Netherlands, Hong Kong and Belgium. In 2009, USA share in the total import was 16.8% with the balance 9 countries accounting for 48% share. The share of USA in total garment imports from the world over fell by almost 23% in from 2008 to 2009.

During the year 2009, EU’s import of RMG accounted for 79 billion dollars with a decrease of 8.6 per cent from the previous year (Appendix A Table A.II). In 2009 China, Turkey, Bangladesh, India and Tunisia were the top five apparel supplier countries to the EU. However, the share varied to a large extent viz. China accounting for the largest share of 45 per cent followed by India with a share of 7.1 per cent. China was the highest value exporter to USA, India followed at number 6 in 2009 with a share of 4.33% compared to China’s 37.86%. The countries much smaller than India like Bangladesh, Vietnam, Indonesia were also higher in value terms for exports to USA (Appendix A, Table A.III).
The share of China in world RMG markets increased over the years and this is sometimes explained by the low relative wage in China. But this argument is only partial and ignores the fact that besides low wages China has increased its capacity over the years by huge investments in technology; it has not only increased the scale of operation, but also the scale increased along with increased flexibility in production organization.

This perhaps explains the fact that despite the wages in garment sector in China being almost 3 to 4 times higher than that in Bangladesh, nonetheless China emerges as the major exporter among the developing countries group. Hence it would be too simplistic to argue that the only source of comparative advantage that China derives over other exporting countries flows from the low wages. Rather for all developing countries what could be a sustainable strategy to remain buoyant in the world market is to increase the portfolio of export goods and move up the value chain such that production does not remain confined to the low-wage-low-skill segment.

3.5.6 Indian Garment Exports

Indian Apparel Exports

As one of the world’s leading sourcing hubs for garments (India Sourcing Report-Global Sources, 2008), India boasts a well-developed industry that produces models in an array of designs blending traditional styles with the latest and emerging trends from global fashion capitals.

The country is the sixth-largest garment exporter in the world, behind mainland China, the EU, Hong Kong, Turkey and Bangladesh. According to the Apparel Export Promotion Council (AEPC), India registered overseas sales of almost $10.2 billion in the fiscal year 2008-2009. This amount equates to a 2.6 percent share of the overall global exports. The line benefits from a large pool of exporters located in most major cities in the country. Most of them ship their entire output to overseas destinations.

Another key advantage is the steady domestic availability of most fabric types. With India being one of the world’s chief textile producers, local garment suppliers enjoy easy access to most raw materials (Lakshman, 2007).

More than 18,000 garment exporters are established in India. Of this number, 78 percent are classified as small-scale, 15 percent are midsize and 7 percent are large enterprises. Companies falling under the first two categories are usually family-run
businesses that employ up to 1,000 people. They can generate annual sales of $20,000 to $10 million. Large suppliers are commonly publicly listed and have at least 1,000 workers. They have fully integrated manufacturing units, which include spinning mills located in various areas all over the country. Annual turnover can reach $50 million. Most garment exporters ship the bulk of their output to overseas markets (Sehgal, 2009).

The US prevails as the top export destination, capturing more than one-third of shipments. The UK is second, accounting for 15 percent of turnover.

The industry is supported by numerous sourcing hubs, each of which emphasizes a specific product type.

The National Capital Region, which consists of Delhi and a few urban areas in the neighbouring states of Haryana, Uttar Pradesh and Rajasthan, is a sourcing center for mid-range and high-end apparel accented by various types of embellishments such as embroidery. Most suppliers in this area produce woven garments, including evening wear, polo and T-shirts, and girls’ dresses (Sekhar, 2008).

The state of Maharashtra and the city of Mumbai, in particular, emphasize knitted and woven garments, including underwear and formal pants. Production costs have gone up in Mumbai, however, prompting some companies to set up workshops in other states such as Gujarat. Head offices continue to be run from Mumbai. Key supply zones for knitted cotton garments include Ludhiana in the northern state of Punjab and Tirupur in the southern state of Tamil Nadu.

As regards exports from India, USA accounts for 24.81% of the total garments.

In the case of India the other major destination of exports are UK, Germany, UAE, France, Spain, Italy, Netherlands, Saudi Arabia Canada (Rao, 2010).

**Products Exported from India**

Indicative list of products made from Knitted and Woven Fabrics currently being produced in India (Singh 2008).

**Category Products**

i. Men's Casual shirts, shorts, trousers, etc.

ii. Ladies Blouses, Skirts, Tops, Dresses, Maternity wear, Party wear

iii. Children's Readymade Garments, Rompers, Jumpers, Bibs, etc.
iv. Outwear Jackets, Blazers, and Pullovers, etc.
v. Undergarments and Lingerie
vi. Sleepwear Night shirts, Pajama sets, Robes, etc.
vii. Accessories Scarves, Stoles, Shawls, Mufflers, Neck Ties, Caps, etc.
viii. Home furnishings-Cushion Covers, Shower Curtains, Throws, Tablecloths, Placements, Runners, Aprons, etc.

3.5.7 Indian Apparel Export Industry- Regional Features and Structure of the Industry

Western India including the states Gujarat and Maharashtra have a number of spinning units as well as composite mills (Dutta, 2003). Also in the west, the Surat belt is known for polyester fabrics, gaining from the proximity of large polyester yarn suppliers. Surat's industry has been a fast-growing supply base for the domestic market and, it has steadily grown its exports also.

The south, including the Salem-Erode belt, is a hub for cotton fabric. While it dramatically grew in the 1980s and 1990s as a belt of small-sized unorganised mills, many companies here have recently become more sophisticated in their technology and product development.

In the apparel sector, Ludhiana, Tirupur, Delhi, Bangalore, Mumbai and Chennai are all remarkably unique and dynamic centres of production. For example, Tirupur in south India, formerly a small town is today a stronghold of cotton knitwear with annual exports of a billion dollars. Ludhiana, in the prosperous northern state of Punjab, originally built its strengths in woollen knitwear through exports into the former Soviet Union. After a brief hiatus in the early 1990s it regained its dynamism, and is now a supply hub for sweater knits to some of the largest fashion brands in the US and in Europe. Delhi, the leading export centre for apparel in volume and value, leads also in design and merchandising skills, with smaller and flexible production quantities. Chennai (Madras), on the other hand, is more geared towards large and well-established factories producing large quantities of basic products, while Bangalore is growing in more engineered products including tailored clothing and foundation garments.
The profile of Indian apparel manufacturing industry has undergone a major change during 1990s. Majority of large export organisations have set up bigger and better production facilities. This effort was further helped by liberalisation of the Indian economy. Many state-of-the-art factories came up in collaboration with international apparel companies. Many of the progressive apparel manufacturers continue to add substantial dedicated production capacity for leading apparel buyers. Some of these new plants engage over 1500 workers and can be compared with any modern apparel plant located in any part of the world.

Famously inward-looking till the 1980s, the Indian textile and clothing industry has become increasingly integrated into global markets since the late-1980s and 1990s, emerging as one of the top ten global exporters of textiles and clothing after 1998 (Tewari, 2005). The export growth, though slow in comparison to exporters like China, is impressive because it occurred despite the persistence of many of the factors that observers have cited as shackling Indian productivity in textiles and apparel: technological obsolescence, fragmented capacities, low scales of operation, lack of an exit policy, and rigid labor laws.

Features that are striking when one compares India with other countries that have emerged as successful exporters of garments and textiles in recent years.

i. A late start
India’s apparel exports are of relatively recent vintage, having taken off only in the mid-1980s, well after the first and second wave of global outsourcing in the 1970s and 1980s established strong apparel export platforms across East Asia, Latin America, China and Southern Africa. Till the 1960s and 1970s India was mainly an exporter of textiles, it barely had any export-oriented garment production. The linkages of India’s apparel industry with global clothing chains are therefore shallower and relatively recent.

ii. An extensive domestic fibre and fabric base
India’s apparel exports are embedded within a strong domestic textile industry. Unlike many import substituting countries whose textile and clothing sectors originated with export-oriented apparel assembly in the 1970s and 1980s, gradually linking backwards into textiles in a small number of cases, the development of India’s textile industry preceded the rise of its apparel sector. India has an extensive fibre base—largely in
cotton—and though organized in much smaller average unit sizes compared to firms in other supplier countries, its production capacities and raw material availability are second only to China’s. With a 13% share in the global production of textile fibres, India is the third largest global producer of cotton yarn, the second largest producer of silk, and the 5th largest producer of synthetic fiber/yarn. It is one of a few developing countries today (along with China, Turkey, parts of Eastern Europe and Pakistan) with a fully developed textile value chain extending from fibre to fabric to garment exports. Tewari (2005), further states that the presence of a domestic textile industry—a legacy of the countries vast capabilities in cotton production and the government’s efforts to harness this abundant raw material base to generate employment and ensure adequate availability of cloth for domestic consumers—is emerging as a major advantage for India’s apparel exports. As India’s apparel firms compete for market share in a world where timely deliveries, low costs, variability and quality are critical, the proximate availability of good quality textiles is a major benefit.

Though today the biggest names in apparel are sourcing directly from India (e.g., Gap, Banana Republic, Ann Taylor, Nike, Reebok, Liz Claiborne, Tommy Hilfiger, Abercombie and Fitch, Sears, Sara Lee) it is striking that till the late 1990s, and early 2000s few global buyers had a significant direct presence in India—Wal Mart and Target did not have their own offices in India till as late as 2004/5; most buyers sourced from India indirectly through local buying houses and other intermediaries. A third factor that has driven apparel exports in many supplier countries, namely, the incorporation of the supplier nation into major regional or preferential trade agreements with their main buyer countries—such as NAFTA, CBI, EU enlargement, AGOA, is also absent in India’s case. India’s recent export growth has occurred despite its absence from every major regional free trade agreement (RTA).

India is generally seen as one of the lowest cost apparel producers globally. India’s poor productivity has always undermined its labor cost advantage. Even in the early 1990s when Indian apparel exports were growing rapidly, India’s productivity lagged behind most of the major exporters of apparel. Thus, even aside from the rigidities introduced by some of India’s labor laws, low labor costs have never automatically added up to low production costs or low unit costs in Indian apparel. This mixed cost
advantage pushed many better performing firms to look elsewhere for advantage in the export market (Shetty, 2001).

3.5.8 The National Capital Region of Delhi: An Important Apparel Export Region

Since mid-eighties National Capital Region that includes Delhi, Noida and Gurgaon has emerged as the major site for production and exports of readymade garments. Production for the domestic market dates back to the time when Delhi housed a number of large textile mills (Roy, 2009). Gradually because of civic regulations industrial units, garment units along with other industrial activities moved away from Delhi to newer industrial sites of Noida and Gurgaon.

In India, besides the schemes of Cash Compensatory Support (CCS) and Duty drawback, the incentive to exporting garments amounted to more than 40 per cent. There was a surge in setting up garment units during the mid-eighties because of the high rate of profit that an entrepreneur could earn in exporting garments. Investments and finances poured in and many new garment producing units as well as extensions of earlier firms came up in Noida and Gurgaon areas along with those units which were relocated from Delhi.

Production Organization

Roy’s (2009), research shows that production of garments in NCR includes a process of arranging raw materials and intermediate products from different parts of the country and rendering the core activities such as cutting, stitching and finishing in-house. The knit fabric used by firms in NCR comes from Ludhiana, yarn-dyed fabrics are sourced from Chennai while cotton cloth is produced in Delhi. Dyeing and printing jobs are largely done by firms located at Sahibabad and Faridabad and sometimes firms get polyester printing done from specialized units located at Ahmedabad and Surat. Printing of tags, stickers and barcodes required for garments are also produced in the same cluster and there are some specialized embroidery units doing job work for the garments unit located nearby. Firms in Delhi, Noida and Gurgaon mostly produce ladies’ and kids’ woven garments.

The use of knitwears increased, firstly, because of changes in climate and extended summer due to global warming and, secondly, because of cultural change that allows a shift towards casual wears. On the other side, one may find in Noida and Gurgaon a
few firms specializing in the production of home furnishing, the demand for which has increased in European countries over the years.

Because of legal restrictions the expansion of firms got manifested in horizontal expansion through multiple firms rather than vertical integration reflected through expansion in size. Firms reported employment of 250 to 450 workers on an average although there are firms of larger size employing 1500 to 6000 workers considering all their subsidiaries. There are a few firms engaged in both export and producing or doing job work for the domestic market.

Production of garments is organized in the following phases (Bhatia, 2007, Bhavani and Tendulkar, 2001):

i. First, samples are produced by firms and the approved designs are set for production. Patterns of those designs are made by computerized machines and then layers of fabric are made and cut according to the design.

ii. Tailors with imported sewing machines do the required tailoring job thereafter and this phase may involve a number of sub-phases.

iii. There is a lot of supervision involved in this phase where the master tailors look after the sewing job.

iv. Then there is a phase of thread cutting and trimming which makes the garment smooth and reduces extra threads.

v. The produced garments are then compacted through ironing and undergo checking and alteration, if required.

vi. The final product is then packed and made ready for delivery.

vii. In most of the exporting units the production process is organized in an assembly line.

viii. The length of the assembly line in terms of activities involved is somehow directly related to the number of machines involved as well as the complexity of the garment produced. The length of the production chain varies from those involving 12 to 13 people to around 100 to 140 people, especially in large factories in the case of making trousers.

ix. If the orders of specific designs are small, relative to the production chain or the length of the assembly line, optimal productivity of the labour would not be reached.

x. In a number of firms time motion study is done for a single production cycle and production is monitored in reference to the benchmarks set for each step.
Product Market

In NCR garments produced for both domestic and export markets are of low and high fashion intensities. The average realization price of a garment to be exported is of the range $5 to $15 per unit (Roy, 2009). High fashioned garments usually fetch high economic rents and many of the firms try to create a niche in fashion designing. Garments produced in NCR are sold to brands such as H&M, GAP, Diesel, Adidas and so on. Firms are competing with producers located in low wage countries such as Bangladesh, Cambodia, Vietnam, Sri Lanka, Pakistan and Indonesia. Most of the firms sell their products either to USA or to the European countries. In the case of orders from USA there would generally be bulk orders of more standardized designs, while European purchasers usually give orders in relatively smaller batches and with varying designs.

Large global retailers such as Wal-mart work on large volumes and low margins. And for that production on a large scale is more suitable than medium-sized units that could not reap the benefits of scale. In this context, China and even Bangladesh are far ahead of India because the average size of firms in these countries is much higher than those in India.

The labour intensity of garment production being high, the share of wages in total cost of production has been the major consideration if not the defining factor in choosing the place of production. This has led to the global phenomenon of changing sites of production in search of low labour costs. But the mobility of labour, on the other side, has also increased over the years, thereby declining the wage differences across space (Roy, 2009). At least wage difference between Delhi, Gurgaon and Noida and places in neighbouring states does not make much difference. But the price of land is increasing much faster, pushing up the rents for factory spaces in places in NCR that possibly tend to eat out the little margin attained in periods of recession. The other issue that becomes important is specific tax and other reliefs provided by respective state governments in order to attract new industries. In response to those policies garment units are relocated to spaces where cost of infrastructure turns out to be low giving rise to net benefits in business.
Labour Process

As regards labour process, Roy (2009), states that the region is endowed with a regular flow of a large number of migrant labourers who come from neighbouring districts of UP, Bihar and also from Orissa and West Bengal. The owners do not prefer to employ local residents in their units, because local residents might have some connection with the legal or illegal power entities of the locality and that might add to their bargaining strength vis-a-vis the owner. In this context owners prefer migrant labourers because they are more vulnerable and hence more docile. Since there is no trade union, labour rights can be easily ignored if the share of migrant labourer increases in the workforce. On the other side, migrant workers are less concerned about their rights and welfare; rather they are inclined to earn more even if it involves higher exploitation and coercion. Most of the workers of garment units in Noida and Gurgaon stay at adjacent villages or commute from places where they could stay at low rents.

Manufacturing Processes

Most of the garment units perform the cutting, stitching and finishing jobs in ‐ house (Roy, 2009). The backward and forward linkages are thin in the sense that fabrics are bought from other states, most of the dyeing and printing jobs are also done outside the cluster, sometimes fabrication jobs are subcontracted to smaller firms located at Sahibabad and Faridabad and the rest of the jobs are done in ‐ house. Moreover for the exporting units, maintaining quality and also to have greater control over the production process the portion of work subcontracted gradually declines which in a sense further reduces the possibilities of extending production networks within firms.

3.6 Merchandising and Supply Chain

In a study done by IBM Institute of Business Values (2006), merchandising and supply chain challenges in the apparel industry are, manual processes, legacy systems and facilities, and unreliable data. Most companies also treat their merchandising and supply chain operations as unconnected functions, with different – sometimes conflicting – goals and measures. The outcomes of this are:

a. Non-tailored customer offering- Reliance on demographic data rather than multidimensional customer insights, together with limited systems to capture and
share data across the value chain, frequently prevents retailers from tailoring their offerings.

b. Poor new product development processes- Poor internal and external collaboration and insufficient use of metrics and milestones elongates lead times. Similarly, lack of integration among the product development team, merchandising functions and store operations, together with lack of real time demand data, makes it difficult to respond rapidly to changes in demand (Senanayake and Little, 2001).

c. Ine...ect global and local sourcing- Traditional sourcing strategies, which focus on cost rather than balancing costs with product margins, often produce a mismatch between demand and supply, increasing the need for markdowns. Limited performance measurement systems also prevent retailers from selecting and managing their vendors properly, while poor systems integration among retailers, their suppliers and carriers restricts their ability to track orders and manage exceptions. Goods of the wrong quality then end up on the shelf at the wrong times and prices.

**Bullwhip effect in Supply Chain**- It refers to the increase in variance in the demand as one moves up in the supply chain from retailers to distributors/company’s warehouses (Sharma, 2010). In India the most common reason cited for Bullwhip effect is lack of demand forecast.

According to Lee, Padmanaban and Whang (1997), there are four basic causes of bullwhip effect-

i. faulty demand forecasting
ii. order batching
iii. price fluctuations
iv. shortage gaming

Zara is careful about the way it deploys the latest information technology tools to facilitate these informal exchanges (Ferdows et al. 2004). Customized handheld computers support the connection between the retail stores and Zara head office. These Personal Digital Assistants (PDAs) augment regular (often weekly) phone conversations between the store managers and the market specialists assigned to them. Through the PDAs and telephone conversations, stores transmit all kinds of information—such hard data as orders and sales trends and such soft data as customer
reactions and the buzz around a new style. While any company can use PDAs to communicate, Zara's flat organization ensures that important conversations don't fall through the bureaucratic cracks. Once the team selects a prototype for production, the designers refine colors and textures on a computer-aided design system. If the item is to be made in one of Zara's factories, they transmit the specifications directly to the relevant cutting machines and other systems in that factory. Bar codes track the cut pieces as they are converted into garments through the various steps involved in production (including sewing operations usually done by subcontractors), distribution, and delivery to the stores, where the communication cycle began (Tokatli, 2007).

The constant flow of updated data mitigates the so-called bullwhip effect—the tendency of supply chains (and all open-loop information systems) to amplify small disturbances. A small change in retail orders, for example, can result in wide fluctuations in factory orders after it's transmitted through wholesalers and distributors. In an industry that traditionally allows retailers to change a maximum of 20 percent of their orders once the season has started, Zara lets them adjust 40 percent to 50 percent. In this way, Zara avoids costly overproduction and the subsequent sales and discounting prevalent in the industry.

A Study by IBM Institute of Business Values (2006) has outlined that the merchandising-supply network has four strategic imperatives, which are:

i. Craft a fully integrated merchandising and supply Organization - the merchandising and supply chain functions are highly interdependent. They require the constant exchange of data and decisions across various processes and, by managing them as an integrated organization, retailers can more effectively deliver a customer-centric experience. The key to a fully integrated merchandising and supply organization is the creation of common processes, systems and information flows, together with a common planning mechanism, to connect the people sitting in the different parts of the business. With shared processes and systems, data that is accurate, consistent and easily available and seamless information flows, formerly isolated functions can work as one.
ii. Using analytics and systematic data to improve their decision making-
These should include measures for evaluating how systematically individual employees use data to make decisions – both internally, across the network, and externally, as in the assessment of suppliers or partners. Some companies may need to supplement their analytical capabilities, either by training existing staff or recruiting people with the right skills

a) Aligning their product/service offerings with actual customer demand-The gaps between what customers need and what the employees in merchandising and supply chain functions execute can result in lack lustre merchandise assortments and unexciting shopping experiences. If retailers are to develop offerings that reflect actual customer demand, they must start with an understanding of their customers that goes beyond traditional demographics.

Figure 3.3 Merchandising Supply Network
3.7 Role of Merchandisers in Apparel Export Companies

The term merchandising means simply to buy and sell commodities for a profit. It involves the Conceptualization, Development, Procurement of Raw material, Sourcing of Production and Delivery of apparel products to the ultimate consumer for a profit. In apparel industry, merchandiser is the BRIDGE between the management (or) industry and the buyer (Mehta, 2008). Merchandiser is the responsible person to make the product according to the buyer’s parameters and satisfaction. Merchandisers have to look after every job like buying the raw material (which is required to finish the product), making the apparel, finishing the apparel, documentation (over all view) and finally shipping.

Merchandiser responsibilities-The key responsibilities are listed as follows:

i. Receive Source Plan from the Buyer and pass it on to the Sampling. The
ii. Sampling Dept. then decides whether it is feasible to produce the style
iii. Receiving shopping list from the Buyer and pass it on to the fabric and purchase Dept so as to enable them to source the fabric, trims and accessories on time;
iv. Receiving proto request from Buyer
v. Get the minimum production quantities by style/color and the lead times from the factory and communicate them to buyer;
vi. Receive Buy Plans, Buys from Buyer and pass it on the PPC dept.
vii. Receive comments from the Buyer on the samples submitted by the factory and pass them on to the sampling Dept.
viii. Communicate delivery dates received from the Buyer to the PPC dept to ensure smooth Production Planning;
ix. Communicate any delays in sending the samples to Buyer with reasons received from the factory.
x. Ensure that the Work in Progress Report sent by the Buyer to the Factory is completed by them on time and sent to Buyer.
xi. Coordinate and follow up with the factory and supplier to get the fabric, trims and accessories in house on time.
xii. Coordinate and follow up with the factory and the printer/Embroidery Dept to get the Printing/Embroidery done on time.

xiii. Collect all the information required for doing costing and send it to Buyer.
xiv. Receive corrections, revisions and comments from Buyer and do the revised costing.

xv. Check and ensure whether the style is ready when the buy is received, if it’s not then communicate the fact to the buyer.

xvi. Ensure that the style is cut ready before the production starts.

xvii. Ensure timely shipment of samples and the final production as per Buyer requirements.

In a paper by National Skill Development Corporation on Human Resource and Skill Requirements in the Textile Industry (2010), the skills required in a merchandiser are:

i. Understanding of various production activities as the merchandiser is interface between the buyer and the company

ii. Soft skills like negotiation and communication skills. These skills assume more significance for export oriented units.

iii. Knowledge of foreign languages such as French for better co-ordination with the buyer.

iv. Ability to handle multiple accounts/customers.

v. Thorough understanding of costing.

vi. Understanding of buyer requirements of design and quality.

vii. Reviewing materials used for garment manufacturing

viii. Understanding of various production activities as the person is responsible for execution of the order.

ix. Ability to work closely with other functions like design, production etc.

x. Time management skills to handle multiple orders at the same time.

xi. Basic computer skills

3.8 Merchandisers in Indian Garment Industry

In an interview to Apparel Online (2009), Roopak Malik, Director of Textile Sourcing Network commented on the rapidly changing fashion trends and how the buyers are looking more towards their suppliers to give ideas and directions in fashion. This changing attitude of the buyer has placed increasing responsibilities on the buying agencies/factories to provide sourcing support for not only preset ideas and concepts
but to create new looks and fabrics appealing to the consumer base of the retailer. With this widening scope of buying operations, merchandisers, who are responsible to interact and interpret buyer needs, are entrusted with the job of product development and sourcing.

Merchandisers are expected to be equipped with knowledge and insight to suggest different yarns, weaves, fabrics, blends. For this they require to be **innovative** and **proactive** to suggest as per buyers’ needs and profile. This is indeed challenging as prices have dropped 15-20 per cent in the last six years and hence merchandisers have to be intelligent enough to **source from not only the country but from all over the world to at price quotations that are acceptable to the buyer**. Merchandisers have to be trained to not only **work out the best possible price** but also advise **design limitations to buyers** and suggest alternative options in all elements of fashion and design like fabrics, trims, silhouettes, accessories etc. Sometimes orders have to be placed with vendors outside the country to ensure that business is retained by the agency.

With their **understanding of the buyer**, merchandisers are expected to know how much he is willing to pay and offer only those developments, which suit his budget. This added responsibility of combining development and price has made the role of a merchandiser **more than just that of ‘production trackers’**. The job is more hands on. In fact even the basic role of tracking has become more difficult and demanding. The pressure is constantly on the merchandiser to bring in business from the buyer and not let him take away business to other destinations. Though Indian merchandisers are very sharp in sourcing, pricing, innovations and crisis management they are lacking as compared to merchandiser in Hong Kong in the eye for details in colour matching. Pattern making and giving correct response to comments and queries made by the buyer in the approval process is not a strong area and a lot of things are still for approval, which should never have been sent in the first place.

In many cases the factory may also not have the right type of people to provide solutions and a sample is resubmitted with minor adjustments, which in all probability will be rejected again. This to-and-fro of samples wastes a lot of valuable time. If the merchandiser has an idea of **how to solve the objection**, the process would be faster.
and less irritating for the buyer.
As buyers are in a position to select fabric from one place and do production from the other, the job of a merchandiser is additionally broken down into two basic segments – one responsible for costing, pricing and development work, while the other for monitoring follow-ups, if any.