



GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: A
ADMINISTRATION AND MANAGEMENT
Volume 14 Issue 11 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Supply Chain Management in Garments Industry

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GJMBR - A Classification : *JEL Code : L60*



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Supply Chain Management in Garments Industry

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Abstract- The term “supply chain management” has become a popular buzzword, probably first used by consultants in the late 1980s & then analyzed by the academic community in the 1990s. If one wants a simple definition, supply chain management links all the supply interacting organizations in an integrated two-way communication system to manage high quality inventory in the most effective & efficient manner. The supply chain management reflects those actions & values responsible for the continuous improvement of the design, development & management processes of an organization's supply system, with the objective of improving its profitability & ensuring its survival, as well as the profitability & survival of its customers & suppliers. A firm's supply system includes all internal functions plus external suppliers involved in the identification & fulfillment of needs for materials, equipment & services in an optimized fashion. Supply management lays the foundation for, and is the key to, successful supply chain management. Meanwhile, to execute order properly we have included supply chain management. We identified these supply chain areas from my own observation managers may apply analysis or decision support tools. We provide a brief description of the basic content mention likely operations research based tools to aid in analysis & decision support. As a merchandiser it is so important to know the supply chain management to control the merchandising system he/she must have proper understanding about the whole supply chain management to ensure smooth handling the merchandising movement in order to succeed the merchandising plan. That is why my total dissertation basically based on the relationship between supply chain management & merchandising department which can able together to supply an outstanding feedback for the apparel industries.

Keywords: SCM, four phases of SCM, issues in SCM.

I. INTRODUCTION

A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain includes not only the manufacturers and suppliers, but also transporters,

warehouses, retailers, and even customer themselves. Each stage in a supply chain is connected through the flow of products, information and fund. These flows often occur in both directions and may be managed by one of the stages or an intermediary. Here we can see raw materials supplier supply industrial product to the manufacturer, and make the product sale to distributor, distributor sale this product to the retailer by small lot, and final consumer get the product from the retailer.

Supply chain stages:

- Raw material supplier
- Manufacturer
- Wholesaler/distributor
- Retailer
- Customer

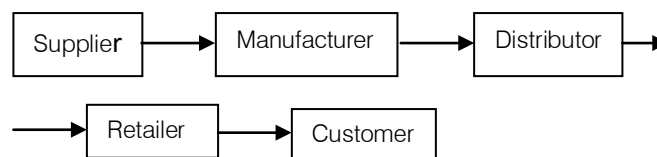


Figure 1: An example of supply stage.

II. REASONS FOR FORMING SUPPLY CHAIN MANAGEMENT

Practices experienced in the traditional management of the supply chain raised the need for conversion to a new paradigm of supply chain management (SCM). The traditional supply chain and manufacturing processes relied on experience and intuition of managers and were designed with long supply cycle times, large batch sizes, capacity based on annual volumes, volume-driven technology, and numerous suppliers for the same parts on the short-term base contracts. With traditional management processes, the goal of business activities was to maximize the efficiency of an individual functional unit by achieving competitive edges based on cost reduction. SCM is designed to solve these problems and is important to reduce inventory investment in the chain, to increase customer service, and to help build a competitive advantage for the channel. With a changing management focus, companies also began to realize that maximization of efficiency in one department or one functional unit is less desirable than optimal performance for the whole company.

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III. THE FOUR PHASES OF SUPPLY MANAGEMENT

The four phases of supply management all require many perspectives & inputs best obtained through a cross-functional approach. These four phases of supply management are as follows:

- **Generation of Requirements:** The generation of requirements is a critical activity that results in the identification of the optimal materials & services to purchase, together with the development of specifications & statements of work describing these requirements. Approximately 85 percent of the cost of purchased material, services & equipment is "designed in" during this phase. Thus supply management should be involved up-front during the generation of requirements to ensure that all commercial issues such as cost, availability, substitutes & so on, receive appropriate consideration.
- **Sourcing:** The objective of sourcing is the identification & selection of the supplier whose costs, qualities, technologies, timeliness, dependability & service best meet the firm's needs. The development of supply alliances is a sourcing activity.
- **Pricing:** The objective of pricing is the development of prices that appropriately reward the supplier for its efforts & which result in the lowest total costs of ownership for the customer firm. While negotiations occur throughout the supply management process, their most significant role normally is during the pricing phase.
- **Post-Award Activities:** This important activity ensures that the firm receives what was ordered on time & at the price & quality specified. Post-award activities include supplier development, technical assistance, troubleshooting & the management of the contract & the resulting relationships.

IV. ISSUES IN SUPPLY CHAIN MANAGEMENT

The classic objective of logistics is to be able to have the right products in the right quantities (at the right place) at the right moment at minimal cost.

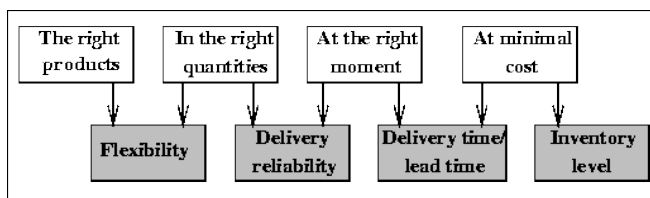


Figure 2 : Hierarchy of Objectives.

Supply chain management is divided into three levels of decision making. And the use of metrics to evaluate supply chain performance is described.

V. DECISIONS ON THREE LEVELS

Supply chain management decisions are often said to belong to one of three levels; the strategic, the tactical, or the operational level. Since there is no well-defined and unified use of these terms, this Section describes the how they are used in this thesis.

Figure: 5 shows the three levels of decisions as a pyramid shaped hierarchy. The decisions on a higher level in the pyramid will set the conditions under which lower level decisions are made.



Figure 3 : Hierarchy of Supply Chain Decisions.

VI. METRICS AND DATA COLLECTION

Management can be defined as the planning, execution, and control of goal oriented activities. Today's supply chains are too complicated to be controlled based on intuition. It is necessary to have access to statistical data on the performance of the supply chain.

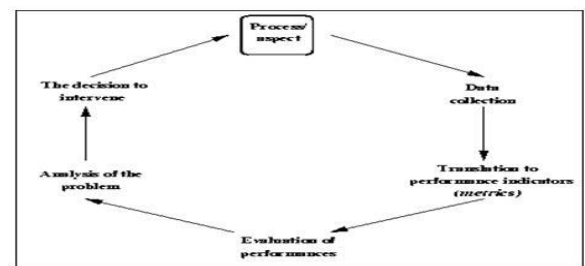


Figure 4 : A Control Cycle.

VII. INVENTORY MANAGEMENT IN THE SUPPLY CHAIN

Inventory management is one aspect of SCM. The main goal of SCM is to better manage inventory throughout the chain via improved information flow aimed at improved customer service, higher product variety, and lower costs and used the term "Networked Inventory Management" (p.16) for the inventory aspect of SCM.

When customers are trying to operate on fewer inventories, manufacturers can respond in two ways:

1. Carrying more inventories to compensate for the shorter lead times.
2. Improving the management of the supply chain.

As shown in Figure there are three inventories in the model: The raw product inventory (RPI), the work in process (WIP), and the finished goods inventory (FGI). The RPI is the inventory for incoming parts ready to enter assembly, the WIP are the products that are in the assembly, and in the FGI we find the finished products ready for shipment to customers.

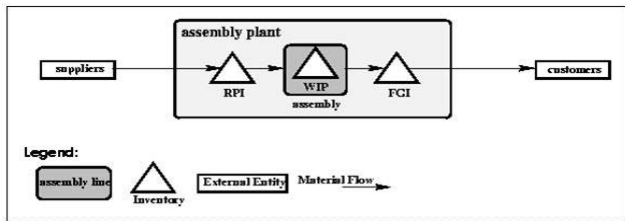


Figure 5: the entities and material flow in the Simple Model.

A safety stock is the stocking level desired at any time for a given part in a given inventory. Holding inventory is costly and the ideal situation would therefore be to have no parts in stock when they are not immediately needed. In the real world however materials and production planners meet many uncertainties. A safety stock superior to zero is therefore in general required for the RPI and FGI.

VIII. TIME AND MATERIAL FLOW

Time is measured in weeks. When a month is used this signifies four weeks. When arriving from the suppliers the parts enter the RPI (see Fig. From the RPI the parts enter assembly (WIP), and are now referred to as products. A set of one unit of each of the nine parts makes up one product.

The parts have different lead times from suppliers. These are shown in Table Parts of index 1 have 6 weeks lead time, index 2 parts have 10 weeks, and index 3 parts 14 weeks. All parts are delivered according to lead time, and there are no damaged parts.

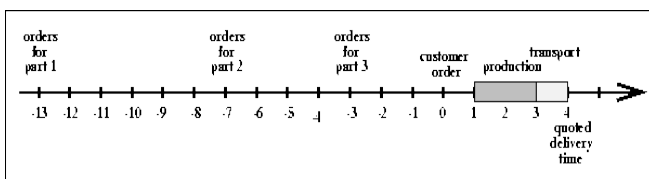


Figure 6: Timeline of materials flow.

Figure shows a timeline for the material flow in the Simple Model. Week 0 on the line is set to the week when a customer order arrives. To build a customer order, parts of index 1 (14 weeks lead time) must be ordered 13 weeks prior to the arrival of the order. Parts can enter assembly instantaneously when they arrive in the RPI. The figure shows an assembly time of two

weeks. Once out of assembly, the products enter the FGI, from where they are shipped to customers. Products are ready for shipment the moment they enter the FGI. Transport time to customer is one week. The plant quotes an order to delivery time of 4 weeks.

IX. ISSUING A DEMAND FORECAST

Since materials orders must be ready up to 13 weeks prior to the arrival of orders, it is impossible for the company to base the materials planning on incoming orders. A demand forecast is necessary. The demand forecast gives the expected product quantity ordered for a set number of weeks. In the model we assume the forecasted demand to be as is shown in Fig

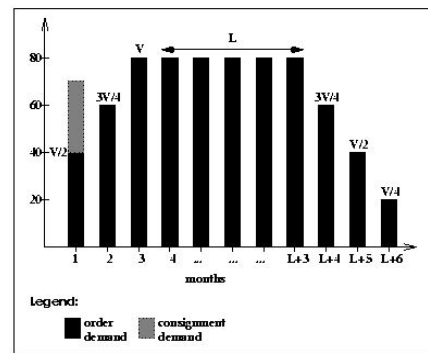


Figure 7: Issuing a Demand Forecast.

TIME-TO- MARKET: In these short life-cycle markets, being able to spot trends quickly and to translate them into products in the shop in the shortest possible time has become a pre-requisite for success.

Figure 1: Shorter Life-cycles making timing crucial



Figure 8: Shorter life-cycles making timing crucial.

TIME-TO-REACT: Ideally, in any market, an organization would want to be able to meet any customer requirement for the products on offer at the time and place the customer need them. Clearly, some of the major barriers to this are those highlighted in the previous paragraphs, i.e. time-to-market and time-to-serve. However, a further problem that organizations face as they seek to become more responsive to demand is that they are typically slow to recognize changes in real demand in the final market place.

Figure 2 : Inventory hides demand

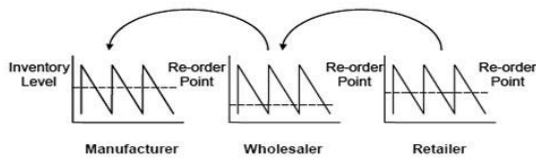


Figure 9 : Inventory hides demand.

Table 1 provides an indication of the size of these losses and of note is the cost of carrying inventory. The biggest item is forced markdowns - mainly at retail - with the total losses amounting to over 14% of retail sales. A distinction is made between promotional markdowns, e.g., special sales, and the marking-down that occurs out of necessity when a season ends and unwanted goods must be moved to make way for new merchandise – forced markdowns.

Table 1 –Revenue losses in the apparel pipeline (% retail sales)

	Fibre & Textile	Apparel	Retail	Total
Forced Markdowns.	0.6%	4.0%	10.0%	14.6%
Stock-Outs.	0.1	0.4	3.5	4.0
Inventory @ 15% carrying cost	1.0	2.5	2.9	6.4
Total	1.7%	6.9%	16.4%	25.0%

Source: Lowson RH, King R and Hunter NA (1999)

QUICK RESPONSE AND OFFSHORE SOURCING: As highlighted earlier, consumer demand is becoming more volatile. QR is designed for such an environment. The fashion industry is, perhaps, one of the most demanding challenges for logistics management with hundreds of colours, thousands of styles and millions of SKU's on the retail shelves at any one time. Further, the average shelf life of these merchandise items shortens with each passing year. A key factor in the value of QR is its ability to deal with uncertainty or variance. There are numerous sources of uncertainty in a fashion supply pipeline starting with demand through to the reliability on the part of suppliers and shippers, etc, and Quick Response offers the ability to counter the negative impacts of uncertainty.

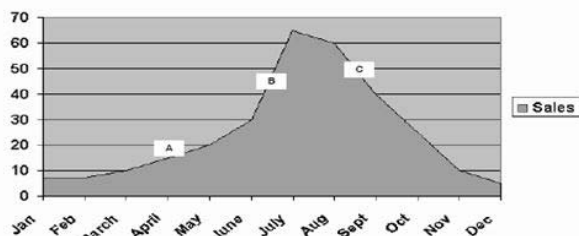


Figure 10 : Seasonality Profile

QUICK RESPONSE AND THE COSTS OF OFFSHORE SOURCING: Quick Response operations

strategy offers a high degree of speed, flexibility and responsiveness in supply pipelines. This has substantial implications for sourcing decisions; particularly offshore sourcing. Table 2 compares two different sourcing alternatives: the Quick Response domestic supplier and the offshore counterpart.

Table 2 - QR and Faster Turnover

	QR Supplier	Offshore Supplier
Consumer Purchase Price (£)	100,000	100,000
Customer Purchase Price (£)	60,000	60,000
Gross Margin (£)	40,000	40,000
Average Inventory (£)	10,000	24,000
Gross Margin (%)	40.00	40.00
Inventory Turns (p.a.)	6.02	2.5
GMROI (%)	400	167

Source: Lowson RH, King R and Hunter NA (1999)

In this initial scenario two possible buying decisions are reviewed using QR and then offshore sources of supply. First, end-consumer purchases, whether bought from a retailer or manufacturer, are assumed to be one hundred thousand pounds. It is then assumed that the customer (a manufacturer or retailer) has bought the goods for the same price (£60k). An averaged gross margin is also assumed of 40% on these sales. The only difference between the two sourcing alternatives is the flexibility and speed of response. The ability of the QR supplier to rapidly replenish the stock of the customer (manufacturer or retailer) to real-time consumer demand allows the customer to turn inventory of the product 6 as opposed to 2.5 times a year.

Table 3 - QR and a Higher Cost of Goods

	QR Supplier	Offshore Supplier	Cost Advantage Applicable
Consumer Purchase Price (£)	100,000	100,000	
Customer Purchase Price (£)	78,000	60,000	30.33%
Gross Margin (£)	22,000	40,000	
Average Inventory (£)	13,033	24,000	
Gross Margin (%)	22.00	40.00	
Inventory Turns (p.a.)	6.02	2.5	
GMROI (%)	169	167	

Source: Lowson RH, King R and Hunter NA (1999)

This faster turnover rapidly increases the customer's gross margin return¹ on each pound invested in inventory from £1.67 to £4.00, more than twice that of the offshore competition. Because of this inventory turnover advantage the manufacturer or retailer could afford to pay a premium for the product and still get a better return (Table 3).

In the table the price paid for goods by the customer has increased by almost one-third, but because of the flexibility and responsiveness of the supplier, the return on inventory has increased by 1.2 percent or from 167% to 169%.

Table 4 - A Move to Offshore Supply

	QR Supplier	Offshore Supplier	Cost reduction Applicable
Consumer Purchase Price (£)	100,000	100,000	
Customer Purchase Price (£)	60,000	38,448	35.92%
Gross Margin (£)	40,000	61,552	
Average Inventory (£)	10,000	15,379	
Gross Margin (%)	40.00	61.55	
Inventory Turns (p.a.)	6.02	2.5	
GMROI (%)	400	400	

Source: Lowson RH, King R and Hunter NA (1999)

Table 4 views the sourcing decision from another perspective. The decision to move sourcing offshore to a competitor with lower unit cost but a slower response

In this situation the foreign supplier would need to reduce the purchase price by nearly 35% to retain a comparative GMROI to that of the QR supplier. The more flexible and higher velocity supplier proves more competitive than the lower-cost; even without taking into account the other hidden and inflexibility costs.

Table 5 shows the shows the combined effect of velocity, faster inventory turns and reduced markdowns. As product velocity increases so too will revenue as there is less need to sell goods below optimum price points. The customer's (manufacturer or retailer) return on investment grows to over 3-times that of a competitor.

Table 5 - The Effect of QR Velocity

	QR Supplier	Offshore Supplier
Consumer Purchase Price (£)	113,000	100,000
Customer Purchase Price (£)	60,000	60,000
Gross Margin (£)	53,000	40,000
Average Inventory (£)	10,000	24,000
Gross Margin (%)	40.00	40.00
Inventory Turns (p.a.)	6.02	2.5
GMROI (%)	530	167

Source: Lowson RH, King R and Hunter NA (1999)

Finally, Quick Response also has an impact upon strategic pricing decisions. Velocity and flexibility in the supply system will allow an original equipment manufacturer (OEM) or retailer to reduce the price of the finished good below that of the competition and capture greater market share.

Table 6 - QR and Strategic Pricing

	QR Supplier	Offshore Supplier	Possible price Reduction %*
Consumer Purchase Price (£)	76,840	100,000	-32.00
Customer Purchase Price (£)	60,000	60,000	
Gross Margin (£)	16,840	40,000	
Average Inventory (£)	10,000	24,000	
Gross Margin (%)	21.91	40.00	
Inventory Turns (p.a.)	6.0	2.5	
GMROI (%)	168	167	

* Based upon purchase price of £113,000 as seen in table 5
Source: Lowson RH, King R and Hunter NA (1999)

This paper has provided a conceptual focus upon the main logistical issues involved in fashion retailing. The peculiar nature of the industry was discussed in terms of its volatility, complexity and dynamism. It is with these factors in mind, that the need for agility and responsiveness in the logistics pipeline has been identified.

X. KEY COMPONENTS OF SUPPLY CHAIN MANAGEMENT

Supply chain management is an enormous topic covering multiple disciplines and employing many quantitative and qualitative tools.

The twelve categories we define are

- location
- transportation and logistics
- inventory and forecasting
- marketing and channel restructuring
- sourcing and supplier management
- information and electronic mediated environments
- product design and new product introduction
- service and after sales support
- reverse logistics and green issues
- outsourcing and strategic alliances
- metrics and incentives
- Global issues

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