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Competitiveness in the Textile and Clothing Supply Chain

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Abstract

The competitiveness scenario in the textile and clothing is always changing with the entrance of new players and changes in the rules of trade. This can be observed by looking at the developments that took place around the world in the last decade. This study finds how things are changing in this chain and how players are positioning themselves in this new competitive scenario. One such player of the chain is focused for study and its strategic position was analyzed and directions for improving competitiveness were identified. The focus is taken to more depth by considering the tactical issues for the competitive options already identified.

Key Words: Competitiveness; Supply Chain; Textile and Clothing;

Introduction

Over the past 25 years, trade liberalization and communication innovations have increased the opportunities for retailers and brands to buy their products from producers worldwide. According to recent studies, these retailers and brands have become “global sourcing companies”, outsourcing the production of goods they sell to tiers of competing suppliers and producers through complex international networks, or global supply chains.

The supply chains in textile and clothing are driven by the big brands and retailers that have tremendous power in determining price, quality, delivery, and labor conditions for suppliers and producers down the chain. They are segmented into high and low profit steps. Retailers and brands keep high profit steps such as innovation, marketing and retailing. Low profit steps, such as sourcing raw materials, production and assembly, finishing and packing, are outsourced to mid-chain suppliers and low-cost producers worldwide. Thus global supply chains have created labor-intensive exports from low-cost locations especially Asian and Far East regions. The result is an enormous growth in the number of producers, increasing competition among the world’s factories at the bottom of the chain. The phenomenon of this industrial shift towards low labor wage economies is discussed by Loo (2002) and Bolisani and Scarso (1996). During the last couple of decades, the major competing supply chains in textile and clothing are routed from China, India, Pakistan and Turkey and some others are emerging like Brazil and Bangladesh because of the low-cost production strategies.

Competitiveness in Textile and Clothing

Firms try to develop their comparative advantages by adopting specific strategies to attract and retain customers. They compete in the market on the basis of different strategic options as price/cost, quality, delivery speed, delivery reliability, customer service, flexibility, product design. These options are the result of filling the gaps of production and consumption including time, space, quantity, variety, information and quality as discussed by Alderson (1954) and Tersine and Hummingbird (1995).

The competitive scenario has changed in the textile and clothing industries of the world in the last couple of decades. Resources of raw material and availability of low cost labor

shifted the manufacturing industries away from the main consumption markets and near to those resources. The usage of competitive options in textile and clothing chain can be identified by analyzing the preferred outsourcing locations for upward and downward segments of the chain and what they offer as discussed by Teng and Jaramillo (2005). Both competitive options and potential/ideal supplier locations present the compatibility of these options in the global chains. The combined effects of potential/ideal supply sources and their competitive options in global textile and clothing supply chains are presented in Table 1.

Table 1: A view of competitive options in global textile and clothing chains

	Segments	Competitive Options	Current State	Remarks
Upward Chain (Raw Materials to Fabric)	Producers: Asia (China, India, Pakistan, Turkey), S. America, Africa. Markets: N. America, Europe, Asia	Price/Cost, Quality, Delivery Time, Reliability, Service, Flexibility	Experiencing significant changes and new players are positioning themselves in new situation. Competition is fierce in gaining and maintaining position in markets when cost and delivery times are the critical options to maintain and control.	Maquiladoras initiated the transfer of these industries from North America to Central America and NAFTA accelerated this shift. Then the different events as revaluation of currency by Mexico, elimination of quotas and entrance of China into WTO regime, created a shift of textile and clothing manufacturing near to resource rich and low-cost locations.
Downward Chain (Clothing Design and Development and Customer Link)	Markets: N. America Europe, Japan, Russia Emerging Markets: China, India, Brazil Producers: Asia, Europe, South America	Design, Services Differentiation with Shortest Possible Lead Times	Controlled by big brands and retailers (Wal-Mart, Zara, Gap, etc.)	Preferred geographical locations exists near main and emerging markets which support to compete on design and time

The downward chain is mainly competing on the design, service differentiation including short lead times to keep its competitive advantage when other advantages are shifted to countries with low cost labor and availability of raw material.

Strategic View of a Case Supply Chain

A case supply chain is focused for study which is mainly composed of the textile and clothing activities in Pakistan. The study was started with the analysis of both the strategic environment in which the chain operates and the status of development of the activities in the chain. The strategic environment of the chain in broader perspective was discussed by Loo (2002) and for the case supply chain by Altaf (2008), Bedi (2008) and Salam (2008). Our analysis was concluded in a study presented by Hussain et al. (2009). The analysis was improved at later stages and expanded to the strategic planning for improving the factors

which are responsible for competitiveness in the chain. The formal methods of analyzing the developed plans with Analytical Hierarchy Process (AHP) and Analytical Network Process (ANP) were adopted and the usefulness of plans was studied. These tools are discussed by Kurttila et al. (2000), Saaty and Vergas (2006) and Saaty and Sodenkamp (2008). Their application in similar environments is presented by Yuksel and Dagdeviren (2007) and Koprulu and Murat (2007). The results achieved by the environmental analysis of the chain and strategic planning process were presented in Hussain et al. (2010). The studies, Hussain et al. (2009 and 2010) include results for the status of the activities in the chain and strategic plans for improvements. The status of the activities is presented in Table 2 and strategic plans are presented in Table 3.

Table 2: Development Status of Activities, Infrastructure and Functions in the Supply Chain

Supply Chain Activities & Logistics Infrastructure		Other Functions over the Chain		
		Research and Development	Marketing Function	Technology and Skills
Fibre Production			Poor	
Cotton farming	Strong	Medium		Medium
Ginning	Poor	Poor		Poor
Other Natural Fibres (Jute, Silk, Wool, ...)	---	Poor		Poor
Man Made Fibres	Medium	Poor		Poor to Medium
Yarn Manufacturing			Medium to Strong	
Ring Spinning	Strong	Medium		Medium to Strong
Rotor (Open End)Spinning	Strong	Medium		Medium to Strong
Other Yarn Manufacturing (Air Jet, …)	---	Poor		Poor to Medium
Fabric Manufacturing			Medium	
Weaving	Strong	Poor		Medium
Knitting	Strong	Poor		Medium to Strong
Other Fabric Manufacturing (Braiding, Nonwoven, …)	---	Poor		Poor
Fabric Coloration			Medium	
Dyeing	Medium to Strong	Poor to Medium		Medium to Strong
Printing	Strong	Poor to Medium		Medium to Strong
Fabric Finishing	Medium to Strong	Poor		Medium
Clothing	Medium	Poor	Poor to Medium	Medium
Associated Industries			Poor	
ICT and Applications	Medium	Poor		Medium to Strong
Machine Manufacturing	Poor	Poor		Poor
Dyes and Chemical Manufacturing	Medium	Poor to Medium		Medium
Logistics Infrastructure				
Rail	Poor			
Road	Medium to Strong			
Ports	Medium to Strong			
Storage	Medium			

Table 3: SWOT Matrix and Strategic Plans for the Supply Chain

		Internal Factors	
		Strengths	Weaknesses
		S1 - Indigenous cotton crop S2 - Low wages/labour costs S3 - Strong investment in textiles & made-ups S4 - Skills in ICT S5 - Skills in chemistry (for textile & clothing chemical industry)	W1 - Limited base of non cotton fibres W2 - Weak ginning sector W3 - Lower cotton yield (per acre) W4 - Low application & usage of ICT W5 - Non competitive behaviour of entrepreneurs W6 - Skills (technical, marketing & management) W7 - Distance to (current) markets W8 - Underdeveloped logistics W9 - Weak market awareness W10 - Input costs and continuity W11 - Low Foreign Direct Investment
External Factors	Opportunities	SO Strategy	WO Strategy
	O1 - Technical Textile O2 - Value added products (fashion, children clothing & home textiles) O3 - Closed proximity to future potential markets O4 - Government support for R&D O5 - Dyes & chemical manufacturing O6 - Machine manufacturing O7 - Logistic link for Far East to European and Middle East Markets	SO1 - Diversification of product range SO2 - Establishing industrial-parks with common facilities of design & development centres, ICT application centres, effluent treatment, etc SO3 - Applying export incentives SO4 - Establishing downstream links/facilities in competing regions (Turkey, Egypt, Bangladesh & Mexico...) SO5 - Improving domestic chemical industry	WO1 - Skill development programs WO2 - Expanding non cotton fibres base WO3 - Improving logistics WO4 - Developing effective linkage between industry, academia and R&D institutes WO5 - Developing domestic engineering industry
	Threats	ST Strategy	WT Strategy
	T1 - Political instability T2 - Regional competitors	ST1 - Development of markets access strategies ST2 - Establishing down-stream facilities in stable, near-to-market and competing regions	WT1 - Work in collaboration with competitors WT2 - Development and implementation of long-term and coordinated policies WT3 - Introduction of industry relief packages

The importance of strategic plans was established through AHP and ANP which is presented in Table 4.

Table 4: Results of the Strategic Planning Process

Strategy	Importance Out of 1
WO4: Developing Effective Linkage between Industry, Academia and R&D Institutes	.144
WO1: Skill Development Programs	.123
ST2: Establishing Down Stream Facilities in Stable, Near to Market and Competing Regions	.084
WO2: Expanding Non-cotton Fibre Base	.082
Overall Group Importance	0.433
SO2: Establishing Industrial Parks with Common Facilities of Design & Development Centres, ICT Application Centres & Effluent Treatment Plants	.080
SO1: Diversification of Product Range	.075

ST1: Development of Market Access Strategies	.073
SO4: Establishing Downstream Facilities in Competing Regions	.067
SO5: Improving Domestic Chemical Industry	.062
WO3: Improving Logistics	.050
WT1: Work in Close Collaboration with Competitors	.049
Overall Group Importance	0.456
WT2: Development and Implementation of Long-term & Coordinated Policies	.040
WO5: Developing Domestic Engineering Industry	.029
SO3: Applying Export Incentives	.025
WT3: Introduction of Industry Relief Packages	.017
Overall Group Importance	0.111

The strategic analysis of the chain (see Table 2) confirms that the segments of the upward chain are already competing on the price/cost, quality and reliability. Those segments are comparatively more developed and can support the segments of the downward chain if these opt for competing on design, delivery time, service and flexibility. The competitive option of delivery time for different product groups and markets behave differently and identifying this behavior can bring new opportunities for the chain in its non traditional markets of fashion and clothing.

The above analysis guides us to the study of time elements in the chain so that new directions can be identified for improving the time related competitive options. The objective of this new study is to identify the areas and measure their effects for improving the delivery times in the chain with a focus on tactical and operational issues. The methodology and objectives are discussed in the following sections.

Measuring and Controlling Activity Times in the Supply Chains

A lot of research is done to study the time elements for different activities of the chains and to develop methodologies to minimize wasted time. Tersine and Hummingbird (1995) for example have proposed a methodology for gaining control over the time elements in the Supply-Production-Distribution (SPD) chain. It is conceptualized in Figure 1.

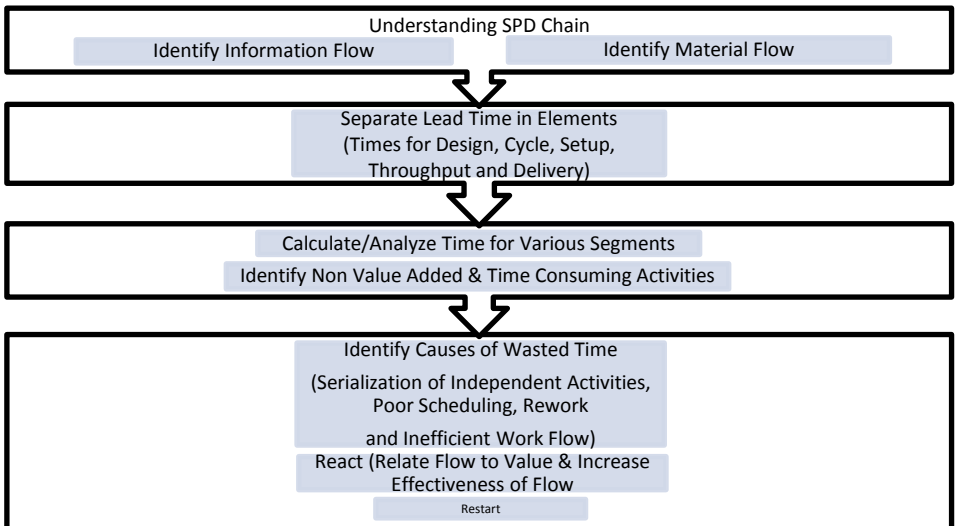

Figure 1: Controlling Time in the Chains

Here the time is broken down as per typology of product environment (engineer-to-order, make-to-order, assemble-to-order and make-to-stock) and its main elements include design/development, procurement, production and distribution. The control of these elements is subject to the product environment in which a firm operates. Another important aspect of these product environments ("-to-order" and "-to-stock") is that they provide decoupling points in the SPD chain segments and allow them to behave with anticipative and reactive responses to customer requirements, Hoekstra and Romme (1991) mentioned by Fleischmann and Myer (2003). These decoupling points help to model SPD chains to fill the gaps of time, space, quantity, variety, information and quality which are described in the sections above.

The data of the sample surveys on shipping times from main ports of Pakistan to destination ports, discussed by Hussain et al. (2009), is presented in Table 5.

Table 5: Shipping Times in Days (Main Ports of Pakistan to Important Destinations)

Destination	Shipping Time	Destination	Shipping Time	Destination	Shipping Time
United Kingdom	20-22	Norway	32-35	Mexico	40-45
Germany	22-24	Portugal	30-32	Brazil	40-45
France	28-30	N. America (NY)	22-24	Argentina	30-35
Italy	21-22	Canada	28-30	Vietnam	20-22
S. Africa	24-25	Tunisia	29-30	Malaysia	16-17
Algeria	24-25	Saudi Arabia	10-11	Japan	22-25
Egypt	18-20	Australia	30-35	Bangladesh	18-20

The shipping times represent an important part of the total time in the global textile and clothing supply chain. If these are added to the other elements of time in the supply chain, the overall measure of lead times can be developed for product families. Thus we can identify product groups which have time based supply feasibility for certain markets and the measures to improve this factor.

A case study approach is planned to measure the time elements for design, cycle, setup, throughput and delivery in a representative company in Portugal and probably in Pakistan too so that a comparative scenario can be developed. The focus of these studies will be:

1. Configuration of the Supply-Production-Distribution Chain
2. Structure of Information and Material Flow
3. Structure of Organization and its Planning and Production Control System
4. Time Elements for Design, Planning, Procurement, Manufacturing and Delivery
5. Methods and Effectiveness of Forecasting
6. Time Model for the Chain Activities
7. Identifications of Gaps in the System and Recommendations

The results will enable us to develop time models for different product families which can be supplied to important markets and they will also help to identify areas for improving the time efficiency in the chain.

Conclusions

The strategic view of a case supply chain in textile and clothing was developed and tactical and operational issues are under study. The results of the strategic analysis showed that the chain is already competing on the price/cost, quality and reliability and moving towards achieving competitiveness in design, delivery time and service differentiation. The study will proceed by analyzing the supply chains in textile and clothing to identify the areas where time efficiencies can be improved and policies for allocating time based preferences can be implemented to improve total response time.

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