QUICK RESPONSE, AN INDISPENSABLE STRATEGY FOR TURKISH APPAREL INDUSTRY

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ABSTRACT
The Textile and apparel sector is characterized by a short life cycle and its distribution requires frequent deliveries in small lots. As such it is one of the pioneer sector for which quick response programs have been developed. It is the aim of this article to underline the importance of the necessity of excellent relations among the parties involved in the quick response chain. For ultimate success, the importance of total quality management in each operation of the chain is emphasized.

Keywords: Quick response, time-based strategy, textile and apparel.

TÜRK GİYİM SANAYİİ İÇİN HAYATİ BİR STRATEJİ: HIZLI TEPKİ

ÖZET

Anahtar Kelimeler: Hızlı tepki, zamanı daraltmaya dayalı strateji, tekstil ve giyim

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1. INTRODUCTION

QRM (Quick Response Manufacturing) is based on the concept of time-based competition (TBC) (Blackburn, 1991). It was pioneered by Japanese enterprises in the 1980s. Time-based competition is a competitive strategy emphasizing time as the major factor for achieving and maintaining a sustainable competitive advantage, develop, manufacture, market and deliver products (Suri, 1998). QR was a competitive industry initiative introduced in the US Textile Industry in 1984 (Hunter, 1990) as a means of improving efficiencies in manufacturing and supply chain processes and as such was one of the earliest pioneers of putting into practice time-based competition. Observations from various lead time reduction projects, Suri conceived QRM as a concept espousing a relentless emphasis on lead time reduction that has a long-term impact on every aspect of the company (Suri, 1998).

Traditional manufacturing firms have focused on economy of scale and cost management strategies. Work practices formalized by Frederick Winslow Taylor and pioneered by Henry Ford form the basis of human resource management. Yet from the time-based perspective of QRM, the high degrees of labor specialization and hierarchical department structures at cost-based organizations have these negative effects on lead times:

- Products and product orders require long routes through numerous departments
- Hierarchical communication structures involving various management levels require a significant amount of time to resolve even routine issues
- Focus on efficiency and resource utilization encourages workers and managers to build high level of work-in-process (WIP), slowing the response to customer requests
- Trying to minimize costly machine setups, managers and workers resort to running large batch sizes. Large batch sizes result in long run times, leaving other jobs waiting and increasing lead times
- Making large product quantities to stock leads to high inventory, often prone to inventory obsolescence – when stored products have to be discarded because of market or engineering changes
- Low skill levels lead to low quality and high levels of rework

All these factors contribute to long lead times, ultimately resulting in waste throughout the enterprise such as excessive forecasting, planning, scheduling, expediting, and work in progress (WIP), finished goods costs and obsolescence. These increase the overall costs and lower the organization’s competitiveness.

QRM suggests that an enterprise wide focus on reducing lead times will result in improvements in both quality and cost (Blackburn, 1991). Eliminating wasted time can lead to large cost savings while improving product quality and customer responsiveness. Hence, on a management level, QRM advocates a mindset change from cost-based to time-based thinking, making short lead times the yardstick for organizational success. Pursuing right strategies and relevant organizational
structure and system and human resource management companies aim at higher productivity, better quality, faster delivery of product at lower cost.

Many cost-based organizations aim for machines and labor to be utilized at close to 100% of capacity. QRM criticizes this approach as counterproductive to lead time reduction based on queuing theory, which shows that high utilization increases waiting times for products. In order to be able to handle high variability in demand and products, QRM advises companies to operate at 80 percent capacity on critical resources (Stalk, 1988)

Time reduction provides an important leveraging of profits that is not obtained with cost-reduction strategies. Reducing time requirement in their operations firms find their cost going down without additional effort. In his pioneering Study of the Toyota Production System, Shingeo Shingo states ‘Construct a production system that can respond without wastefulness to market change and that, moreover, by its very nature reduces costs (Shingo, 1985).

Marvin Lieberman, in his study of Japanese automobile industry has noted that companies reducing the total throughput time, compared to industry average, manage to increase their labor productivity to industry average as well (Lieberman, 1990).

2. TEXTILE AND APPAREL INDUSTRY AND QUICK RESPONSE SUPPLY CHAIN

As a result of intense competition coming from developing countries, the US textile and apparel industry faced crises starting from early 1980’s. Under the leadership of Roger Milliken (of Milliken Corporation), an association was formed to handle the marketing needs of the industry which was experiencing strong competition from foreign suppliers. The mission of this association was:


So they formed CWP in 1984, which engaged the Boston Consulting Group (BCG), in a search for a viable strategy to counter this foreign threat. The first finding of the BCG study was that the longer lead times associated with imported merchandise decrease the accuracy of the buyer’s sales forecast and the result is either greater forced markdowns, in the case of over-supply, or substitution of lower margin goods, should supplies run out. At the end of the BCG study, a quick response chain formation among all parties (starting from raw material supplier and ending at retail distribution) was proposed to counter this threat. It was noted that since the US market was the largest market in the world, US manufacturers being nearest to that market should provide an excellent opportunity to beat the rival foreign suppliers.
The idea was to shorten the supply chain pipeline and to squeeze time requirement in all stages of the process. This idea has soon inspired and been adopted by many companies not only in US, but worldwide.

However, since that report, competition in the textile and apparel industry in the US has not eased; instead it has become ever tenser, with new challenging producers coming on scene, especially from the Far East. Yet it is still the US and the West European markets where demand is predominating. Distance and lead-time for supply have become one of the most important factors for the retail outlet.

On the other hand, consumer demand has become increasingly sophisticated and requires an ever more variety of goods. Multiplying product varieties, characteristics of fashion goods, with the number of sizes of all articles, the retailer has a challenging job to satisfy its customer. Yet structurally, the retail sector’s aspiration of maximum sales turnover per square meter of shop-floor is an important point to keep in mind. This is necessary for keeping the overhead cost per unit of merchandise at the minimum; while considering that the fixed cost consisting of rent and wages is very high for retail sector. Therefore, the shop-floor assignment per variety of garment is continuously shrinking as the market requirement for variety increases.

It is also important to take into consideration that apart from some basic items, the majority of the apparel sales consists of fashion goods; therefore, items of very limited sales life time. We are living in an era when there is a fashion explosion and industry has to introduce more and more styles with shorter and shorter life spans.

Traditionally there used to be two seasons, spring and fall. Then it became three, four, five and today we have to deal with continuous seasons in which new merchandise has to be produced for the retail market.

Since we are dealing with small shop floor assignment for each item on one hand and the apparel products of very short sales life on the other; a supplier in apparel industry should be capable of supplying goods in small lot sizes with very frequent delivery. While doing so, cost should not be adversely affected.

Consider a garment in 10 colors and 10 sizes, for a total of 100 SKU’s (stock-keeping units). In the past, when the apparel manufacturer had long lead times, and the retailer had to order almost his entire requirements long before the season started, he was very prone to not carrying all 100 SKU’s. He might select half of the sizes and colors he felt were going to sell well. If the retailer guessed wrong on the colors, he would face with either a lot of left overs to be disposed off with high mark-downs, or loss of potential sale.
If a retailer is confident that his apparel supplier can quickly restock his shelves, he will be able to carry all 100 SKU’s, but in limited numbers. This reduces his risk on markdowns, and increases the probability that customers will find the color and size they are looking for. Inventory turn-over will increase dramatically, thereby increasing the total gross margin and net profits of the firm.

The partnership required between the apparel manufacturer and his suppliers is critical. It is vital to switch from an adversarial role between apparel manufacturer and textile supplier to one of corporation to ensure that the entire system functions smoothly.

3. IMPORTANCE OF TOTAL QUALITY MANAGEMENT (TQM) FOR OVERALL SUPPLY CHAIN:

As should be noted from the introduction; the name of the game is time squeeze in the supply chain in one hand, and the responsiveness to the variety requirement of consumers on the other. Therefore, the total supply chain should be working in such a synchronized and predictable manner that every function in the system works towards the same goal. Each link on the supply chain should produce goods and services right-first-time. The information system should cover the total chain and information should be freely shared by everyone taking part in the stream. The total system should be analyzed and cleared from any kind of waste, especially waste of time. Supplier relation should be based on long-term business partnership. Training programs designed for the new system should cover all parties. As the maximum strength of a chain is that of the weakest link, it is vital to avoid any weak link in the supply chain. Overhead cost of retail distribution is usually the highest within the total supply chain. Any unpredictable event will lead to an unacceptable cost per item.

Total quality management challenges unpredictability and aims at controlling future events rather than reacting to unexpected mishaps. It is within the scope of total quality management to challenge the status quo in order to clear the system from any activity that is waste and is not producing added-value. It is also within the scope of total quality management to develop and deploy a system that safeguards right-first-time. However, achieving such a system is easier said than done. It is a long-term effort which requires continuous and persistent improvement carried out by everyone taking part in the overall system; starting from the very top management level down to everyone on the shop floor. It should be realized that this process is a race with no finish line, requiring continuous improvement on lead-time, and reducing post-season mark-downs. To be quick in responding to market requirements, application of total quality management principles is indispensable.
4. APPLICATION OF NEW TECHNOLOGIES TO PRODUCT DEVELOPMENT

It is also necessary to improve the speed with which design of fabric and apparel are delivered. Thanks to the application of new technologies, spun yarns can be built up from colored fiber images and the desired twist inserted on-screen. For both woven and knitted fabrics, computer-aided design (CAD) systems are available. With the help of these systems finished designs can be printed out with excellent resolution, simulating the surface texture. However, despite this preliminary assessment, it may still be necessary to produce and deliver the prototype of the product for the final decision.

CAD systems have important effects on quick response:
- The speed of developing new designs has been enhanced.
- CAD systems are linked to Computer Aided Manufacturing (CAM). Thus, the translation of an on-screen design to weaving, knitting pattern and marker making and cutting is simple and rapid. The exact knowledge of location, shape and orientation of each cut piece contributes to automation of the cutting and sewing operations.
- CAD allows vendor/customer design interaction and encourages joint efforts. Thus instant modification of design becomes possible.

The depiction of garments in two dimensions is quite easy. However, it is the creation of a three dimensional image presents some difficulties. Technological developments will, no doubt, surmount these difficulties over time.

5. IMPLEMENTATION OF TOTAL QUALITY

As mentioned above, Total Quality principles are easy to state but difficult to implement. Successful implementation starts at the top. Senior management should take responsibility for quality. The most common mistake of top management is to delegate that responsibility to subordinates. Top management should begin by understanding the total quality principles. He or she should assess where their organization is and where it wants to be in the future and decide where total quality management should stand in their strategy.

Industrial engineering principles and techniques have been successfully applied; although limited to manufacturing operation. To achieve an all-embracing change in corporate culture, the Total Quality Management (TQM) methodology, as developed by E. Deming, J.M. Juran, P. Crosby has successfully been adopted and put into practice by many companies. Adoption is time and energy consuming but the result is well-worth the effort. In Turkey, Altinyıldız Group was one of the pioneering companies to engage in this transformation in the late 1980's. The author was the general manager of this company during this transformation. His experience has shown that during the four years of the process (including the training of all staff in the new philosophy and techniques), it was possible to raise production output per
working hour in the manufacturing departments (scouring, tops-making, spinning, weaving, dyeing, finishing) by some eighty per cent within three years. This performance was achieved with the existing machinery park; simply by adopting a new philosophy and new techniques. This confirms Crosby’s estimate of the cost of quality in most corporations, amounting to as much as twenty per cent of sales turnover (Crosby, 1979).

The techniques and mechanics of Total Quality Management process include Statistical Process Control, formal Problem Solving training and Zero Defect mentality, and an aptitude to challenge what has been traditionally considered impossible at every level in the organization. Adopting the new philosophy, of necessity, requires a more participative management style, leading to an increase in employee involvement and employee morale. The most difficult stage in this transformation is to convince the employee of the sincerity and the determination of the top management in adopting this new management style. To attain success in gaining employee trust, top management should get out of the office and take part in all training activities; walk around the shop floor and be more visible among staff.

The external objectives of the process are to engage with suppliers and customers through partnership programs. It is necessary to get parties involved in design and product development and set up product specifications together. It should be common understanding that:

- Quality is the responsibility of the supplier.
- Incoming products meet agreed specifications.
- Incoming inspection is eliminated.
- No production delays.
- Buffer inventories eliminated.
- Buyer-seller relationships of full confidence and trust.
- Integrated production planning, including free exchange of plans and consumption and inventory data.

These concepts should form the basis of certification as they are considered to be at the heart of Quick Response.

The importance of Total Quality Management is paramount for Quick response. It is undoubtedly an off-shoot of TQM. Companies like Altinyıldız, with a vertically integrated operation, have been involved in almost all stages of the supply-chain (in other words, covering all the processes in the pipeline; starting from the acquisition of raw wool and going through all manufacturing processes: wool scouring, tops making, spinning, weaving, dyeing, finishing, garment making and ending in retailing of the finished garment). For such companies it is very important to adopt the same principle. Each unit should be regarded as a separate business unit; each acting like a supplier to the next step, and as the customer of the previous step. Each step should engage in full customer satisfaction, as if they have no organic ties. To
enhance the adoption of this new philosophy, despite being self-sufficient as a producer, the Altinyildiz Group became engaged in buying a certain amount of tops, yarns and fabric from elsewhere, while selling a portion of its own intermediate products to outside firms. This operation created a competitive environment for tops, yarn and fabric making units and formed a bench-mark to compare where the company stood as far as quality, delivery time and price are concerned.

However, such fully vertically integrated operations are not a common practice in our days. Starting from early 1970’s, focused factories and outside sourcing has become common practices. As a result of this development, a supply chain has to be formed among independent multiple operations.

Supply-chain management requires skill, technique, collaboration, free information sharing (EDI - Electronic Data interchange) and determination to follow the same strategy based on time-based competition. Integration of processes through a supply chain requires sharing valuable information, including demand signals, forecasts, inventory, transportation, potential collaboration, etc. Shared information on inventory should cover quantity and location of inventory, including raw materials, work-in-process (WIP) and finished goods. It should also include cash-flow: arranging the payment terms and methodologies for exchanging funds across entities within the supply chain.

6. **SHORTENING THE PIPELINE**

The basic objective in shortening the pipeline should be to eliminate unnecessary activities and complexities. Material should be moved forward as much as possible on a straight line from its existing state to its finished state so that every move adds value. Operations should be examined in detail and every activity should be challenged whether they are necessary and value adding. The objective is:

- To eliminate waste of time. Nothing should stay idle longer than absolutely necessary.
- That the equipment is operated only for productive purposes so that energy is not wasted.
- That all material is converted to a first class product.
- That right-first time is achieved in all tasks performed; so that repeating of tasks are out of question.
- To produce only when the customer wants. If there is no demand, further production should be stopped until new demand occurs. If the system covers a vertically integrated manufacturing and retailing operations, then it is vital to establish an internal customer relationship as if each unit is a separate company. One should pretend that there is no warehouse, and therefore no production for inventory should take place. On the other hand, if the supply chain is formed by many separate independent companies, they should act as if they are vertically integrated.
- To produce only goods that meet specifications.
- To take measures to spot faulty produce as soon as it happens, and take immediate corrective measures so that the faulty product does not go through the pipeline.
- To produce with no waste of labor, materials or equipment.

When the pipeline is cleared of wastes and idle inventories, the immediate effect will be noticed on the shortening of pipeline.

Techniques have been developed to help achieve these improvements. Operations Research for queuing and optimization, MRP, Kanban, MRP II are some of these techniques. MRP II dictates that all the elements of planning (business, sales and production) should be balanced simultaneously in a closed loop system.

Real time information exchange during the selling season, rapid product design and development and manufacturing and product delivery systems are the engines for Quick Response delivery. Some very successful quick response supply chains have abolished formal procurement order, and instead, automatic replenishment of shelves at the retail site is made by suppliers activated by the generation of information at the point of sale.

7. THE TURKISH TEXTILE AND GARMENT INDUSTRY

The economic structure of Turkey is based on a balanced sectorial distribution: approximately 28% industry, 10% agriculture, and the rest services. The industry is diverse: covering textile and apparel, white goods, furniture, electronics, auto, steel, cement, ceramics and variety of construction materials, chemicals, pharmaceuticals, sanitary ware, ship-building etc. The textile and apparel industries do not only create jobs for millions; but also contribute some 18-20% to the total annual export revenue. Being close to one of the major markets; namely the EU, and having the logistic advantages, Turkey has managed to establish close links with the major retail outlets. It has the advantage over the Far Eastern suppliers by managing to deliver in small lots frequently. This is important especially for fashion goods retailers which prefer small lots but frequent deliveries. For basics, however, which is usually ordered in big lots, cost is most important. In these areas Far Eastern suppliers may offer better advantages, especially to US retailers.

The infrastructure for information systems in Turkey is excellent. Therefore, electronic data interchange (EDI) among business partners has excellent potential. Education in textile and garment design in many universities is well established. Istanbul is standing to be considered among the major fashion centers in the world. As for logistics, the country has carried out massive infra-structural development in transport networks in the last ten years, including railways and motorways. Turkish Airlines has grown at an average rate of 15% per annum during this period and is now proudly claiming to have reached to over 200 international airports. Air cargo facilities supplied by the airline are at the disposal of Turkish exporters if they intend to be part of a quick response supply chain.
8. CONCLUSION
The global economic crisis that began with the collapse of Lehman Brothers in the U.S. in September 2008 is still prevailing in full swing and the future of this crisis is not clear. Thus the competition for market share is becoming ever tenser. Markets for apparel are no different.

To gain a better share of the market requires the ability to supply retail distributors with many varieties of goods in small lots with very frequent deliveries and with zero defects. To be able to survive in such circumstances necessitates the suppliers to engage in developing and delivering a time-squeezing strategy. That strategy necessitates long term collaborations among members of the supply chain, and comprehensive data exchanges.

Turkish textile and apparel industry enjoys the advantage of geographical positioning to major markets and necessary infrastructure to make best use of quick response strategy. In fact it is the only viable strategy for Turkish suppliers to compete in these sophisticated market vis-à-vis Far Eastern low cost manufacturers.

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