Critical Analysis of The Impact of Product Development on Readymade Garments (RMG) Sector

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Abstract

The dynamics of markets, technology, and competition have brought changes to virtually every market sector and have made new product development one of the most powerful business activities. The monumental changes that constantly impact commerce have forced companies to innovate with increasing speed, efficiency, and quality. In turn, this has made new product development one of the most complex and difficult business functions in anywhere. A firm's new product development efforts are shaped by its size, as well as the nature of the industry in which it operates. New products may be defined as any product, service, or idea not currently made or marketed by a company, or which the consumer may perceive as new. Many types of new products exist, from never-seen-before products. Various studies suggest that between 50 and 80 percent of new products fail-the greater the rate of new product development, the higher the failure rate. Although there are numerous reasons why new products fail, faulty management and planning are at the core of most failures. Therefore, managing the new product development process is a key to a healthy organization.

Keywords: *Product development, RMG, brainstorming, mind map, group discussion.*

1. Introduction

After World War II, competition in business escalated and consumers became more skeptical and selective about the types of products they purchased. Marketers found it increasingly difficult to rely on persuasive sales techniques to move products. Retailers grew restless when these products did not move off shelves as quickly as planned. Companies had to know more about their target markets. What were the wants and needs of the people and who were buying their products? How could their firm satisfy these wants and needs? (E. LaBat, K. & DeLong Report 2006)

The second stage was marked by the emergence of the market as the driver of innovation. Instead of being technology-driven, new product development evolved into a market-led process in which new products emerged from well-researched customer needs. The new product development process was placed in the hands of marketers who knew consumers' wants and needs. Customer demand "pulled" the product through the development process.

Modern new product development is a blending of these two orientations into a "dual-drive" approach to innovation. Companies recognize that innovation is a complex process that requires sound investment in research and development, as well as significant marketing expertise that focuses on satisfying consumers' wants and needs.

The rapid pace of change that engulfed businesses toward the end of the twentieth century put an even greater burden on companies to build adaptive capabilities into their organizations. Global competition means there are more competitors capable of world-class performance. This has made competition more intense, rigorous, and aggressive than ever before. Fragmenting and more sophisticated markets mean that consumers demand more from products in terms of quality differentiation and "meaningfulness". (E., Bye, E., LaBat, K. DeLong, M., & Kim, D.-E. 2006)

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New technologies have had two important outcomes in regards to innovation. First, new technologies are responsible for this new market sophistication in which consumers have more choices and are thus more demanding. Secondly, new technology has increased manufacturers' capabilities for rapid response to shifting market needs.

Finally, product life cycles have become more compressed as the skills required for developing new products increase in complexity. For example, consider the development of a new type of computer software. The expertise needed to develop the software from conception to commercialization might take years. The product's life cycle in such a competitive and turbulent environment might last only a few months. Therefore, companies have embraced the view that new products are transient, whereas the skills and expertise needed to develop these products are a much more persistent requirement for success. Instead of the mono-approach, in which technology or markets drive innovation, new product development now requires a convergence of technology, marketing, product design, engineering, and manufacturing capabilities. Speed, efficiency, and quality in product development are the challenges that new product development faces in today's intense competitive environment.

2. Challenges

Complex multi-channel distribution networks, dynamic consumer demands, pressure to deliver to increasingly aggressive calendars, and global sourcing have created a fast-changing environment where rapid decision making in product development means the difference between success and failure. Major apparel companies are attempting to manage high rates of product change globally across multiple product calendars, using thousands of different materials, and producing more than ten thousand samples annually. Yet, apparel companies typically manage product data with disconnected systems, spreadsheets, and unstructured data. (M.R., LaBat, K.L., & Bye, E. Report -2006)

New products often fail because of unanticipated market shifts that result in missed opportunities and misused channels of distribution. Failures also occur because companies miscalculate their own technological strengths or the product's technological challenges. These potential problems often crop up in the latter stages and result in delays, redesigns, or poor quality products.

Companies are constantly seeking ways to avoid these pitfalls. One solution is new product development maps that chart the evolution of a company's product lines. This historical perspective helps the firm to identify and analyze functional capabilities in a systematic, repetitive fashion that allows for the development of linkages and the identification of resources for new endeavors.

These maps can direct the firm to new market opportunities and point out technological challenges. Many entrepreneurs start their businesses because they have an idea for a product that is unique and they think people will buy it. Unfortunately, a unique idea is not always a business opportunity. The product development process helps to weed out ideas that are unique but not likely to sell in the marketplace. It also perfects an idea so that it can be profitable. The product development process translates a good idea into a product that fulfills the following criteria.

That is, product development takes an idea and prepares it for the market place and commercializes it. This paper mainly discusses the following issues for better product development.

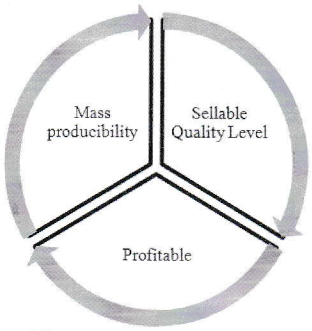

Figure 1: Criteria of good product development.

Table 1: Topics discusses in the paper.

1	Understanding the steps in product development from design to commercialization and product maintenance.
2	Understanding the market and trend research strategies that will confirm product idea as an opportunity for profit.
3	Comparison the role of prototypes and production patterns in the product development process.
4	Analyzing and selecting appropriate pricing strategies for new products that focus on innovation price leadership, market penetration, and luxury.
5	Identification and explanation of the variable and fixed costs incurred when producing apparel and sewn products.

3. Relation between Product Design and Business Plan

The product development process also encompasses the business as a part of design. It makes design a commercial enterprise, setting the design process and product design evaluation within a business context. It asks questions such as:

- Is the design compatible with the other products in my business?
- What products in the market does it compete with?
- How many people might consider buying it (or, how large is its target market)?
- Should the product design be adjusted for volume production? If so, how?
- How can the product be improved after introduction to add value or to sell cheaper?
- How long will people buy the product? What is its potential life span?
- The product development strategy at every stage should reflect the company's business plan and core mission. For example:
- If the plan positions the business as the low cost producer of screen printed T-shirts, then the product development process should focus on low cost design and production.
- If the business plan is to be the technology leader in outerwear, then technical fibers, fabrics, and clothing structures should be the main product development consideration.
- If customer service is the business plan's competitive edge, then the product should inspire loyalty between customer and designer.

4. Fitting the Product into Apparel Industry Categories

The first step in developing your product concept and business plan is to learn about the industry in which you will sell your product. Every industry is organized differently, based on products, customers, distribution channels, or competitors.

To understand the organization of the apparel industry, followings must be followed

- Identify products and businesses those are competitors
- Learn about trade shows and other sourcing and distribution methods used in the apparel industry
- Consider selling your product, or positioning it, through a related industry.
- Product type, size, price, Brand name.

5. Key Personnel Involved in Product Development

Trend Analyst

What will be everyone wearing next year? Styles, colors and patterns are determined months in advance by the trend analyzer. This person researches the latest textile trends, and determines the overall look of garments that will be produced by a company during a season. A trend analyzer needs excellent fashion sense and a good deal of experience, most often as a designer. Without trend analysis we cannot go for next steps for our design. What types of design is out and in our global fashion, it may be depends on trend analysis. This trend is varying from country to country culture to culture, even all types of life style in the global fashion. So if we did not find how we can search a fashionable trend for our product line that will be difficult for design process.

Product Development Manager

This person takes garments from the drawing board to the consumer. The product development manager oversees the entire process, and manages the other people involved in product development. He or she is in charge of a company's product lines, and meets the needs of retailers. A product development manager must have a great deal of experience, know every aspect of the development process, and have strong leadership abilities.

Pattern Maker

A pattern maker works closely with the designer to create master patterns for the desired design. In effect, a pattern maker must translate the designer's sketch into the real world. Pattern makers must have good visualization skills, and be familiar with fabric and body construction. Experience is usually gained as an assistant to a pattern maker.

Technical Designer

The technical designer translates the vision of the designer into reality. It's their job to make sure a particular garment can actually be manufactured efficiently and within budget. A technical designer helps develop the prototype that subsequent garments are based upon. They must have creativity, excellent color and fashion sense, strong communication skills, and be knowledgeable about computers (E. & LaBat, K. Report 2005).

Cost Analyst

The cost analyst determines how much it will cost to produce a given item. They must factor in several variables, including the price of material and how much the item will cost to produce. Cost analysts must be good at mathematics. The job often involves travel. Depending on the company, cost analysts may be actual engineers, or the duties may be performed by another employee, such as the designer (E. Lal, Report 2006).

6. Product Development Stages

Product development is basically team work. In our apparel industry it is not possible to handle all work for development process we have to work team basis for better efficiency as well as technical support for our product. Product development job is not an easy task. It can be divided in much segmentation. If we proof it our apparel industry, then we can easily move to our volume of new order. (LaBat, K. Report 2005).

Tabel 2 : Product Development Stages.

1	Understanding customers' needs
2	Market Research
3	Trend analysis
4	Forecasting
5	Idea generation
6	Prototype development
7	Material selection
8	Design optimization and Material specification
9	Production method
10	Sample management
11	Cost and pricing
12	Product maintenance and extension
13	Maintaining an identity

6.1 **Understanding Customer Needs**

The first thing to consider in product development is what your customer wants.

- What are customers buying now?
- What will they want in the future?
- What would they buy if it were available?

It is important to identify NEEDS that potential customers may not even know they have. Who thought 20 years ago that we would be wearing sandals that can be worn in water or hiking up a mountain? Successful product development addresses customer needs.

6.2 Market Research

- What's being offered in the market?
- Who is offering it (i.e., the competitors)?
- What are the current consumer trends in color, styles, and lifestyle?

A variety of methods make thorough research easy. This research can help to determine how a product fills a gap in the market. But research cannot assure 100% success to a product. It can be used as one step in the product development process.

Research can be done to identify customer needs on self funding or someone else may be paid to do it. Data can be bought from research firms that have already been conducted. The objective is to make certain that someone NEEDS the product and that it is different from other products being offered.

6.3 Trend Reports

There are a number of companies that sell trend reports-on consumer buying habits, fashionable colors, and predictions or forecasts of the next new styles and products. The reports are generally expensive (i.e., hundreds of dollars) and are sold to many entrepreneurs, so others are using the same trend information. The information can be based on past sales or "educated" guesses by industry professionals. Be sure to identify the source of the information and what it represents
(E. & LaBat, K., Report -2005).

6.4 Consumer Studies and Demand for Future Product Development

Consumers can be directly accessed and asked what they are buying and what they would like to buy. Friends and family or potential customers can be asked to evaluate your product idea using written surveys.

6.5 Idea Generation or Design

Designers' work is the generation of ideas. But contrary to many people's beliefs, ideas are not usually "flashes of brilliance" or intuitive creativity. Design is a hard work. It requires researching ideas and trends, educated guesses, and trying out alternatives. Inspirations from art, architecture, nature, or the streets can help to generate multiple ideas. Then some ideas can be tried out and decide which ones are best.

The design process includes

- Analyzing customer needs
- Defining the design problem
- Ideating or generating ideas
- Selecting design criteria
- Implementing one or several prototypes
- Evaluating prototypes against design criteria.

Individual designers use all of these steps, but often develop an order that works best for them.
A variety of methods can be used to generate design ideas. Brainstorming is one of the simplest and most effective methods of generating ideas. Someone can start with his initial idea - say, that people have many electronic gadgets that they need a way to carry. Then, all of the possible ways are written down that these gadgets could be carried.

Having a long list of options, designing clothing and accessories based on these possible carrying strategies can be started. Brainstorming helps you to get lots of ideas and to consider each one's merits.

A similar strategy is the mind map. Starting with the same need (carrying gadgets), the problem can be divided into different concepts. It could be started by listing all of the gadgets that need to be carried, such as cell phone, PDA, wireless laptop, pager, etc. Some low-tech things could be added that also need to be carried out, such as wallets, credit cards, and pens. Write all of these on a piece of paper in different locations.

Next to each item, all of the possible design solutions for carrying it, including body placement, apparel, or accessory are listed. Once a number of solutions for each item have been taken in to consideration, it can be seen whether several items can be carried using one design solution (L. Hakala).

For this example, the mind map can be started with body parts instead of gadgets. All of the body parts that might be involved in carrying electronic gadgets, for example, the wrist, waist, upper arm, head, thigh, and chest can be listed. Then, for each location, list the types of solutions that would work at that location. At the wrist, a band or pocket purse might hold a PDA so that it can be used while attached. At the waist, a cell phone, PDA, pager, or wallet could be attached to the belt, attached as a fanny pack, built into pants as extended pockets, etc (E. & LaBat, K., Report -2005).
A group ideation session can be especially successful at generating ideas that are innovative and "outside the box". Getting a group of people together to brainstorm or develop mind maps generates creative energy and "way out" ideas. "Way out" ideas sometimes identify a surprise kernel that sends on the road to an

innovative product design. In all ideation sessions, it is important to write down every idea, no matter how wacky. Then, go back and discuss the merits of each idea, discussing how the design might look, how well it would carry, and so on. The best ideas can be developed further during group discussion. Experimentation with materials finishes, stitching, or draping can also be used to generate design ideas. For example,

- Draping fabric on dress forms to create unique design variations
- Folding and stitching material to create texture, and
- Painting or printing fabric inspired by color, nature, or street art.

6.6 Prototype Development

Prototype development is the first stage where new product costs begin to escalate. Because of this, many companies have placed greater emphasis on the previous stages and reduced the proportion of new products that reach the prototype stage from about 50 percent to around 20 percent. At this stage the concept is converted into an actual product. A customer value perspective during this phase means the product is designed to satisfy the needs expressed by consumers. Firms may use quality function deployment (QFD) as they develop the prototype. QFD links specific consumer requirements such as versatility, durability, and low maintenance with specific product characteristics. The customer value perspective requires the new product to satisfy customer needs and meet desired quality levels at specified production costs.

And this prototype sample has to make several time until final sample is not approved. After each trial, the prototype is tested and others might be asked to try it.

The prototype development process is critical to ensuring customers' satisfaction and minimizing customer returns. Most retailers approach to prototype development consists of a multi-step process that must be completed before finished goods are produced. Here are a few common steps in the prototype development process.

- Product Review Meeting
- Submission of Trimming & Components
- Fit Testing
- Photo Samples
- Performance Testing
- Final Decision (Specially from Buyers)

6.7 Selecting Materials and Methods

Prototypes give you the opportunity to test out a variety of

- Materials and trims
- Product structures through pattern-cutting and construction methods
- Surface design methods.

Materials should be evaluated for functional characteristics such as stretch, water repellency, cleaning requirements, and wear. Material specifications should be asked at time of purchase (see the Sourcing Materials module). The wrong material in a good design may cause failure. Actually constructing prototypes in several materials and trims will help to evaluate the materials and the entire design.

6.8 Optimizing Product Design for Production

When it is decided to produce a final prototype of a product, information has to be communicated to others involved in buying materials and production. Most apparel businesses use specification sheets for this purpose. The information necessary to purchase the right material in the right amounts can be indicated. A picture of the product with the sewing operations, stitch types, and seam allowances is needed for the production department and sewing machine operators. The exact dimensions of the finished product and the acceptable tolerances (e.g., a seam allowance can be +/- 1/8" off) can help in quality assurance.

6.9 Production Method

Once decision has been settled on a prototype design and material, it is need to prepare the design for production. This requires a product that can be easily manufactured in quantity and at a price that will be profitable.

The prototype patterns and construction methods often need to be modified by

- Changing the shape of the seams to be more easily sewn
- Reducing the number and types of seams
- Choosing materials that are easy to cut and sew in volume
- Reducing the amount of fabric or fabric waste by adjusting the design.

If custom production has been chosen, individually designed and produced products will be made. The prototype may not need changes before commercialization, i.e., only one final product may be made. Profit will come from high price rather than high volume.

The objective of mass production is to make the production process cost effective by increasing volume while reducing material and labor costs.

Modifying the prototype to accommodate volume and cost requirements is very important in a mass production setup. It requires standardizing and simplifying the pattern pieces, seam allowances, and seam types.

Mass customization is a relatively new business strategy that adds value as well as reduces the cost of the product by

- Making products to customer specifications
- Involving customers in the design and delivery
- Using advanced technology (the production module)

This unique approach requires technologies that can produce small numbers of similar products at a low cost. The production cost may be higher than mass production due to individualized design and small production lots. But the cost is lower than custom due to extensive technology use. Making products to order instead of as stock items, reduced inventory cost of finished goods to zero. Profitability depends on getting enough orders at a price that will pay for the technology and individual service.

6.10 Sample Management

The macro-economic climate has made these initiatives imperative for success in today's environment. A key indicator in cost management and efficiency is the performance of the sampling process. Whether looking to drive development ratios, increase cost and margin control, or improve time to market; effective sample management can greatly impact a brand's success.

The evaluation and approval process are supported for products using specification and measurement definitions. Material and component sampling is supported with a robust Lab Dip and Strike-Off tracking process. Design, sourcing and supplier partners can access relevant data for analysis and viewing trends across multiple evaluations and for performance score-carding. Sampling is an expensive and time consuming process. Shortening time to market can only be achieved by optimizing the sample management process.

6.11 Cost and pricing

Cost is the second decision which has to be optimized the product for a commercial market. Based on the product concept and business plan, an appropriate cost level for the product needs to be produced. Then, price it to sell. There are several approaches to pricing that need to be considered.

Cost-based pricing starts with how much it costs to produce one unit or piece. The direct costs include materials, labor, and marketing. An overhead cost is calculated based on an annual rate for all design and production. This includes rent, lights, heat, and travel to trade shows, for example. The overhead cost can be calculated for each product unit as a percentage of the direct costs or as a dollar amount and added directly to

the unit cost. The final variable is profit.
Direct Cost + Overhead (% of direct cost) + Profit = Cost-based Price

6.12 Product Maintenance and Extension

The product development process is not finished with product commercialization. A product's expected life cycle should be planned for from product launch to the last sale. Product maintenance and extension, including branding, are discussed in the next module, Product and Business Life Cycles.

6.13 Maintaining an Identity

Traditionally, manufactures specialize in a particular styling category, price range, and gender and size range of apparel. As a company grows, it expands by adding diversified lines. Many manufactures have broadened their product lines to include other style categories or size and price ranges but they have spate divisions and level names for each. As manufactures diversify, however, they must maintain a consistent identity oriented towards their customers.

7. Conclusion

The multi-step process assumes a definite beginning and end. However, studies suggest that what goes on before and after new products are introduced is as important as the process itself. Organizational structure, leadership, and team building influence the speed and efficiency with which new products are introduced. Structure influences efficiency, autonomy, and coordination. New product innovation requires structure that optimizes direction and guidance. Structure that facilitates internal information exchange, decision making, and materials flow is essential. The coordination of the engineering, product designs, manufacturing, and marketing functions in the new product development process is vital. Technology continues to change and create new opportunities and threats. Customer requirements and expectations continue to shift and create new demands. Old channels of distribution are becoming obsolete and new channels are opening new opportunities. Some competitors are falling by the wayside while others are surging to the fore front by making new and
unexpected moves to gain advantage. The very structure of industry is changing. A key to success in this tumultuous environment will continue to be the ability to sustain a competitive advantage through innovation. However, speed, efficiency, and quality in product development will be paramount. Building capabilities in all aspects of product creation and implementation, overcoming uncertainty and facilitating decision-making, ensuring these innovations are strategically linked to the firm's vision, and doing this on a continuous basis is the challenge of new product development in the next century.

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