

ABSTRACT

GHAANI FARASHAHI, BEHNOOSH. Perceptions and Integration of Product Quality by Textile and Fashion Entrepreneurs (Under the direction of Dr. Katherine Annett-Hitchcock).

Product quality dimensions are a point of emphasis for competitive advantage and survival in the textile and fashion industries. Specific product quality attributes, driven by target consumers, should be integrated into the product development process to achieve consumer satisfaction. Established textile and fashion companies have extensive resources to identify these attributes, and they use advanced and structured methods to integrate and evaluate the product quality attributes throughout their product development process. Textile and Fashion Entrepreneurs (TFE) in their early stages of development are challenged to find resources and expertise necessary for the survival of their business. The current knowledge about TFE perception of product quality, their product development processes and the integration of consumer-driven product quality attributes into these processes has not been fully investigated. The purpose of this study was to identify perceptions of product quality of textile and fashion entrepreneurs and examine how quality is integrated into their product development (PD) processes. A literature review of entrepreneurship, product development processes and models, and textile and apparel product quality were explored to ensure an understanding of the subject being studied and identify the potential gaps in the literature. This study used a mixed methods research design, consisting of a secondary survey data and a case study. The survey data was obtained from the Carolina Textile District (CTD) and included information about TFE requesting CTD services. Two open-ended questions were analyzed with QSR Nvivo 11 software. The case study comprised in-depth interviews with six TFE and a qualitative observation of one TFE. Qualitative content analysis was used for interview data analysis. The results of this study suggest that TFE perceive product quality as having intrinsic, extrinsic, and

undefined quality attributes. The product development steps used by TFE were identified as ideation, concept development, market research, tech pack development, cost analysis, prototype development, pilot production, and full production. TFE identified product quality attributes through informal focus groups, market research, consumers, friends, and family interviews, and consumer feedback from previous products. The product quality attributes were integrated into products during design development, material selection, and construction processes. Finally, this study suggests that TFE evaluate product quality after each of the following stage; prototype development, pilot production, and full production (post purchase). A suggested product development model was developed to show these steps.

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Perceptions and Integration of Product Quality by Textile and Fashion Entrepreneurs

by
Behnoosh Ghaani Farashahi

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APPROVED BY:

Dr. Katherine Annett-Hitchcock
Committee Chair

Dr. Blanton Godfrey

Dr. Marguerite Moore

Dr. Lori Rothenberg

DEDICATION

To my parents

Nahid Tayari and Mahmoud Farashahi

for their love and support.

BIOGRAPHY

Behnoosh Farashahi was born in 1991 in Mashhad, Iran. She went to Amirkabir University of Technology in 2010 to obtain her B.Sc. degree in Textile Engineering. She realized her passion for the textile and apparel industry and decided to pursue her graduate degree in Textiles. In 2014 she moved to Lexington, Kentucky, for her M.Sc. degree in Merchandising, Apparel, and Textiles with a focus on textile and apparel product quality. She worked in the textile testing laboratory as a research assistant where she found her interest in product development and product quality. In 2016, she moved to Raleigh, North Carolina to get her PhD degree in Textile Technology Management from the Wilson College of Textiles in North Carolina State University. As of today, her area of interest is technical and performance textiles product and material development.

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CHAPTER ONE

INTRODUCTION

Product quality is one of the important attributes of an apparel item. Studies show that multiple dimensions of apparel product quality are used by consumers as an evaluative criterion (Cotton Incorporated, 2015; De Klerk & Lubbe, 2008; Eckman, Damhorst, & Kadolph, 1990; Zeithaml, 1988). Apparel product quality has a significant influence on consumers' purchase decisions (Cotton Incorporated, 2015; Iwanow, McEachern, & Jeffrey, 2005; Swinker & Hines, 2006). Therefore, creating quality through the product development process should be a point of emphasis for competitive advantage and survival in the textile and fashion industries.

A product development process includes the steps required to transform an idea or concept into a physical product that is ready for final production. Product development (PD) models and strategies vary depending on the company's business nature (Senanayake, 2015). Regardless of the differences in the PD processes, textile and fashion companies try to ensure that the final product conforms to predetermined specifications and standards in terms of design, performance, and quality. The quality characteristics of a textile or apparel product can be defined during the PD process and should be followed throughout the supply chain (Senanayake, 2015). Prior to incorporating quality specifications into a product, specific quality attributes are identified based on companies' target markets. When consumer-driven quality attributes and evaluative criteria are embedded in a product, the consumers' attitude towards an apparel product can be better understood and their needs can be met (May-Plumlee & Little, 2006).

Established textile and fashion companies use extensive market research to understand their consumers, to identify the product quality attributes that are pursued by consumers, and ultimately, to create a product that is desirable for consumers (Kincade & Gibson, 2010). The

information obtained through market research can be based on direct input from consumers and also by using a panel of experts in the field (May-Plumlee & Little, 2006). Moreover, mature apparel retailers can benefit from utilizing and evaluating the point of sales (POS) data; merchandisers' feedback of the current sales status in the shop floor; marketing data from professional market research companies, and the line's performance in the previous seasons and years (Kincade & Gibson, 2010). However, the resources for conducting extensive market research and the availability of such information varies widely dependent upon the size, resources, and age of the company.

Among all the areas of entrepreneurship, textile and fashion entrepreneurship has received little focus from scholars in the field. As the global population is expected to grow, the need for textile and apparel products will increase. Recent studies show that consumers are increasingly attracted to artisanal products that are ethically produced on a smaller scale by entrepreneurs and have higher perceived quality than fast fashion apparel (Bhaduri & Ha, 2011; Pookulangara & Shephard, 2013). However, the incorporation of consumer attributes into these products has received little scholarly attention. This signifies the need for further research in the areas of textile and fashion entrepreneurship and product quality.

Textile and Fashion Entrepreneurs (TFE), especially in their early stages of development, have limitations in the availability of resources and can be faced with constraints, which may affect their ability to build accurate quality specifications based on consumer research into their products. Due to their limited access to a large amount of marketing data and evaluation tools, TFE may not be able to fully connect with their consumer. Although marketing related tasks such as consumer product testing and preliminary market analysis can be a determinant of success for new products, such activities are frequently neglected by small-sized enterprises

(Huang, Soutar, & Brown, 2002). Annett-Hitchcock and Relyea (2016) also found that TFE conduct consumer research through an informal and unstructured process.

Several studies (Lamb & Kallal, 1992; Lea Wickett, Gaskill, & Damhorst, 1999; May-Plumlee & Little, 1998, 2006) have defined apparel product development models and the incorporation of consumers' inputs and quality characteristics into the PD processes for established companies. However, the use of these PD models by TFE has not been fully investigated; therefore, the integration of consumer-driven product quality attributes into the PD process by textile and fashion entrepreneurs is unknown. Moreover, the current knowledge about the TFE perception of product quality is very limited. The purpose of this study is to identify perceptions of product quality of Textile and Fashion Entrepreneurs (TFE) and examine how quality is integrated into their product development (PD) processes.

Research Objectives

The research objectives of this study are as follows:

1. Identify Textile and Fashion Entrepreneurs' perceptions of quality for their products in their business context.
2. Examine the product development processes used by Textile and Fashion Entrepreneurs.
3. Examine how Textile and Fashion Entrepreneurs are identifying, integrating, and evaluating quality specifications in their product development process.

Justification

The results of this study identify the product development processes used by TFE and contribute to the scholarly body of work on entrepreneurship. Moreover, this research contributes to the industry sector-specific literature by providing a better understanding of how TFE define and integrate quality into their products. Finally, the results of this study may be used to help

TFE create products with consumer-driven quality attributes, especially when the product is new, and no sales or prior product performance data exists.

This dissertation consists of six chapters. Chapter Two reviews current and past literature on the areas of product quality, apparel product development, and textile and apparel entrepreneurship. In Chapter Three, the research methodology along with data collection and data analytics methods are presented. Chapter Five discuss the results of this study. Finally, Chapter Six present the conclusions of this research and well as limitations and suggestion for future studies.

CHAPTER TWO

REVIEW OF LITERATURE

In this chapter, previous work on Textile and Fashion Entrepreneurs (TFE), the barriers and challenges faced by entrepreneurs is reviewed. The Product Development (PD) processes and models used in the textile and fashion industry is also discussed in detail. To address the importance of quality integration and evaluation in the PD process, the topic of quality and product quality is reviewed. The current gaps in the literature are identified at the end of the chapter.

Entrepreneurship

Entrepreneurship is defined as the process in which “opportunities to create future goods and services are discovered, evaluated, and exploited” (Shane & Venkataraman, 2000, p. 218). Meriam-Webster dictionary (n.d.) defines an entrepreneur as a person “who organizes, manages, and assumes the risks of a business or enterprise”. The Cambridge dictionary offers a slightly different definition; here, an entrepreneur is defined as “a person who attempts to make a profit by starting a company or by operating alone in the business world, esp. when it involves taking risks” (Cambridge Academic Content Dictionary, n.d.). Here, the Cambridge delineation of “entrepreneur” ignores the non-profit or social entrepreneurs that enter the business for solving social problems and needs rather than making a profit. Burns (2010) identifies entrepreneur as a person who generates new market demands through creating or changing the use of technology, materials, prices or demographics (Burns, 2010). Entrepreneurs may also create business opportunities by redirecting resources from an area with lower efficiency into an area with higher efficiency while taking a high degree of risk (Burns, 2010).

Entrepreneurs can offer consumers new alternatives or possibly more value for their money. Their endeavors stimulate other competitors to enhance their market offerings which leads to improvement in the efficiency and effectiveness of products and services. Moreover, successful entrepreneurship pulls the interest of new enterprises to the market, consequently increasing the competition towards enhancing efficiency and effectiveness (Davidsson, 2016).

Entrepreneurship can be social or commercial. Social entrepreneurship is defined as the innovative and value creating practices that take place within or across the business, nonprofit, or government sectors (Austin, Stevenson, & Wei-Skillern, 2006). The primary goal of social entrepreneurs is to generate social value for the public benefit. On the other hand, the fundamental purpose of commercial entrepreneurs is to create profitable products and services that results in private monetary gain (Austin et al., 2006). Another rising trend in entrepreneurship is certified Benefit Corporations (B Corporations) that includes entrepreneurs that strive to balance profit and purpose and create values for their community, employees, and the environment (B Corporation, n.d)

Burns (2010) explains how entrepreneurs can be opportunistic, innovative, self-confident, proactive and self-motivated, visionary with flair, and with high willingness to accept greater risks. Other dominant characteristics of entrepreneurs are: energy; long-term involvement and commitment; persistent problem solving; goal setting; use of feedback and resources; taking personal responsibility; internal locus of control and tolerance of ambiguity (Timmons, 1978).

Textile and Fashion Entrepreneurs (TFE). A textile and fashion entrepreneur is defined as a person who creates a new fashion company or sets up a new fashion brand (Burke, 2013). Fashion entrepreneurship comprises two different dimensions; fashion or the creative part in which new products are developed in response to current trends, and the business

dimension that includes the process of searching, evaluating, and exploiting new opportunities in the business (Vecchi & Buckley, 2016). In the textile and fashion industry, entrepreneurship is highly associated with innovation (Unay & Zehir, 2012). TFE are ambitious, innovative, disciplined, have positive attitude, and are willing to take risks (Vallone, 2008).

Mills (2011) explains that entrepreneurs enter the textile and fashion industry with three orientations: the Creative Enterprise Orientation (CEO) which includes entrepreneurs with a powerful creative impulse but who lack specific business ambitions; the Creative Business Orientation (CBO) or entrepreneurs who are planning to develop a successful company and be self-employed, and the Fashion Industry Orientation (FIO) which is defined as entrepreneurs who want to succeed in the fashion industry and be a major player. TFE can also start their enterprise having a combination of these orientations (Mills, 2011)

TFE operate in a variety of industry sectors including technical textiles and apparel, luxury apparel, ready-to-wear apparel, accessories, and wearable technologies. According to the North American Industry Classification System (NAICS), the four major segments of textile and apparel manufacturing are textile mills (NAICS 313); textile product mills (NAICS 314); apparel (NAICS 315), and leather and allied product manufacturing (NAICS 316).

TFE motivations and success factors. Although TFE have distinguishing traits that motivate them to start their business, such personal characteristics cannot guarantee business success. Several studies have been conducted to address the critical success factors for entrepreneurs and small-sized companies. Attahir (1995) identified good management, access to capital and initial investment, personal qualities, and government support as critical success factors for entrepreneurs.

Acquiring the right skills and competencies, proactiveness, and creativity and innovation are regarded as success factors for entrepreneurs in the textile industry (Gil-Pechuan, Exposito-Langa, & Tomas-Miquel, 2013). *Creativity in design* is helpful to TFE in differentiating their products from competitors' (Kusumsiri & Jayawardane, 2013). Another key to TFE success is finding a *market demand* and *filling a market niche with suitable products and lines* (Stoll & Ha-Brookshire, 2012). *Small-scale production* can help sustain consumer loyalty by building intimate relationships through their products. Small-sized fashion and apparel companies identified gaining *financial security* for organizational growth and *product line extension* as a motivation for success (Stoll & Ha-Brookshire, 2012). The acquisition of skills is another determinant of success. Kunene (2008) identified Personal Skills (motivation), Business Management Skills (marketing management, financial management, and human resources management), Entrepreneurial Skills (opportunity recognition, ability to gather and control resources), and Technical Skills (Kunene, 2008) as contributing factors for successful business. Such skills are often obtained through on-the-job experience over an extended period of time rather than formal structured training (Rogerson, 2000).

Developing an accurate *financial plan* is another prerequisite for surviving in the industry (Vallone, 2008). Focusing on increasing the value and growth of the brand influences the quality and consistency of a company and decreases competitive challenges. TFE should have a long-term structured plan to maintain their sales growth and brand value growth. The growth of a startup strongly depends on the management of production, time, and administration through activities such as bookkeeping, seasonal planning, and creating accurate timelines (Van Den Berg & Almanza, 2016). The literature does not directly address product quality as a determinant of success for TFE, however, since the importance of acquiring the technical skills and

experience for creating products is mentioned as a requirement for having a successful business, it must be assumed that quality is part of the product's success.

TFE challenges and barriers to success. Textile and fashion entrepreneurs face multiple challenges that are particular to this industry. The fashion industry caters to an unpredictable and saturated market that for the most part, offers products with short life cycles at competitive prices for the mass consumer (Malem, 2008). Fashion trends are continuously changing, and the industry, as well as consumers, influence these changes. The pendulum of fashion predicts the direction of current and incoming trends. Using this model, a trend grows continuously until it becomes overly saturated, resulting in consumers' abundance of a product (Kincade & Gibson, 2010). This means that sometimes TFE should be able to respond swiftly to the current trends and demands before a design or trend becomes overly saturated.

There is also intense competition in the fashion industry. Lower entry barriers and existing regulations compared to other industries (e.g., food, cosmetics etc.) have been identified as major challenges for entrepreneurs (Godfrey & Pourmojib, 2017; Van Den Berg & Almanza, 2016). For example, any designer can create a product using fabrics and a home-sewing machine and sell it through online websites and social media accounts. The only government regulations in textile and apparel sector are in children's products, protective clothing, and technical apparel (Benson & Reczek, 2016). However, producing and selling food and personal care products is regulated and require specific licenses (FDA, 2017; NCDA & CS, 2017).

At the company level, accessing and maintaining financial support can be difficult for TFE since entrepreneurs and new business ideas are often considered high-risk investments (Van Den Berg & Almanza, 2016). Moreover, in the U.S., very limited governmental support is offered for creative entrepreneurs (Van Den Berg & Almanza, 2016). Seasonal changes make

cash flow management challenging. Since cash flow is essential for materials procurement, which in turn is based on the whims of the market, the ability to estimate order volume to satisfy retail customers is a challenge (Van Den Berg & Almanza, 2016).

TFE may experience production challenges due to quantity limitations, and therefore cannot create high margins and leverage capacity because of low product volume (Van Den Berg & Almanza, 2016). In the early stages of company growth, it might be possible for entrepreneurs to develop and make products in-house, but at some point, it may be necessary to outsource production, which means higher cost, uncertainty about the contractor, less control over production, and possibly a higher risk (Kurz, 2010). Entrepreneurs can also find it challenging to source suitable manufacturing sites, machinery, and suppliers while taking into account the production and transportation of raw material and the final products (Plieth, Bullinger, & Hansen, 2012). Moreover, outsourcing their process and moving towards a large-scale production could result in loss of customer loyalty and intimacy built through small-scale production.

From the outset, a fashion entrepreneur is challenged to create a balance between design creativity and business skills (Burke, 2013). Younger TFE tend to have a Creative Enterprise Orientation (CBO) and their business mainly serves as an outlet to show their creative potentials (Mills, 2011). As mentioned above, a balance should be created between creativity and business skills in order to sustain the business and generate revenue. As a result, many TFE with CBO partner with a business-oriented person or outsource their business activities through a financial firm (Mills, 2011).

Many entrepreneurs choose to enter the industry without any prior background and experience in fashion or textiles. This can present a problem in an industry with complex and

multiple design and development processes, and in some cases, an outdated domestic supply chain model. For example, textile and apparel design includes aesthetic and technical processes, which require skills, training, time and multiple resources. Moreover, due to the outsourcing of almost all production steps in the apparel industry, finding people with the relevant expertise for certain tasks, specially cut-and-sew processes is very difficult. When the reach of the fashion entrepreneur is local or regional, and their network is nascent, this problem is compounded. For startup companies, having a network of relevant people helps companies to gain useful information, important contacts, and share knowledge. This might be challenging for entrepreneurs with limited networks (Kurz, 2010).

Plieth, Bullinger, and Hansen (2012) addressed the issue of the revitalization of disappearing knowledge and experience in the production of garments. According to the Sourcing Journal, many U.S. based apparel manufacturers are turning down orders due to shortage in skilled cut and sew labor (Hall, 2014). The offshoring of apparel production to other countries has resulted in the decline of the available workforce with proper training and experience in the cut and sew process. The skilled labor force who worked in apparel manufacturing in the 1970s and 1980s have retired, and the younger generation is inclined toward more skilled manufacturing or engineering jobs or would prefer to work in office environments (Hall, 2014).

Table 1 summarizes this set of problems and challenges faced by entrepreneurs both at the research and application levels. The elements of this table were identified after reviewing the related literature.

Table 1. Challenges Faced by Textile and Fashion Entrepreneurs.

| External (Industry) Challenges | Internal Challenges |
|---|---|
| High level of market competition | Finding and securing capital |
| Limited governmental support | Acquiring and maintaining technical knowledge and resources |
| Short fashion lifecycle/ Seasonal changes | Acquiring communication knowledge and resources |
| Geographic fashion clusters | Acquiring networking knowledge and resources |
| Lack of established networks | Acquiring business knowledge and resources |
| Lack of available local vendors | Maintaining Creative-Commercial Balance |
| | Growth Management |
| | Brand and Marketing Management |
| | Project & Production Management |
| | Relationship Management |
| | Finance Management |

Overall, TFE need to be acutely aware of the multiple aspects of their business strategy, such as market research, consumer behavior, product development (design, quality, and technical performance), sourcing, production, marketing, distribution, sales, general management, and pricing (Kurz, 2010).

Impact of local and regional resources on textile and fashion entrepreneurship.

Cultural industries such as fashion, architecture, media, movies, and art demonstrate extreme levels of spatial clustering. In such industries, clustering creates competitive advantage by transforming the co-locations or clusters into creative fields (Scott, 2006). Spatial clustering is

the concentration of industries or institutions that operate in a specific field or industry within a certain geographical limit (Encyclopedia of Small Business, n.d.). Entrepreneurs can benefit from developing “fashion clusters”. Fashion clusters are created when a set of apparel companies gather in a specific region (Burke, 2013). Fashion clusters include supporting services, fashion designers, pattern makers, marketing agencies, retailers, and education institutes. They can provide a working environment that encourages innovation, creativity, and facilitates networking (Curzio & Fortis, 2012). Moreover, specialized labor is more accessible in clusters which minimize employee search costs and time for the firms (Gordon & McCann, 2000). Local incubators, local sourcing, and production facilities were identified as the most important resources desired by TFE in a focus group exploring impediments to success in fashion entrepreneurship (Annett-Hitchcock, 2017).

Another advantage of clusters is the availability of faster provision of materials by local and specialized suppliers that reduces transportation fees and raw material costs. Moreover, the local knowledge spillovers between firms within clusters would benefit companies through providing a mutual learning environment without financial compensations (Gordon & McCann, 2000). Knowledge spillovers are defined as the external benefits from the creation of knowledge that accrue to parties other than the creator, occur at multiple levels of analysis, be it within or across organizations and networks (Agarwal, Audretsch, & Sarkar, 2010). A study by Wenting, Atzema, and Frenken (2011) shows that knowledge spillover, availability of experienced people, and networking caused by co-location enhances the economic success of entrepreneurs. Being a part of the local industrial community implies greater speed in gaining new insights into the latest trends and techniques (Storper & Venables, 2004; Wenting et al., 2011). This is a very important advantage in the apparel industry, because, due to the short fashion lifecycle and high

turnover of trends, any delays in identifying the latest styles and trends could result in a decline in a product's economic value.

Product Development Models

The design, production, and sales of textile and fashion items consist of multiple complex processes and requires people with advanced levels of expertise (Lee & Steen, 2014). Product development is the process of designing and engineering serviceable, marketable, producible, and profitable products for consumers (Glock & Kunz, 2005). The offshoring and globalization of apparel production have resulted in the separation and outsourcing of different steps of product development. However, the advent of new technologies has enabled seamless real-time collaboration and communication that simplifies the management of the product development process globally (Senanayake, 2015). Entrepreneurs develop new products for business for many reasons: to hit financial targets, enhance sales, gain competitive advantage; increase product lifecycles, new inventions and technology, response to changes in regulations material costs, and to meet consumer demand (Senanayake & Little, 2001).

Efficient models provide a detailed understanding of stages and activities in the product development process and can enhance not just the quality of process but also the end product. The following section describes how different product development models can be utilized in a variety of industries.

Sequential. In this model, a product's movement through development is sequential across a series of specific steps. A process is completed in one department and then the product is sent to the next step for further processing (May-Plumlee & Little, 1998). In this process, marketing input is integrated in later steps of the PD process to test the performance of the product (May-Plumlee & Little, 1998). Marketing includes all the activities that would lead to

finding gaps in the current market through market research, interviews, and analysis of the competition (Parrish, Cassill, Oxenham, & Jones, 2004). The process starts when an opportunity is found and new concept (conception) is transferred to technical designers for identifying the design specifications and making the initial sample (modeling). The sample will be adjusted based on consumers' input (research and development). The final sample will be presented to potential buyers and a marketing plan is developed based on their feedback. Upon receiving an order, the sourcing manager locates a source and contracts to buy raw materials and to manufacture the product (major introduction). Finally, the finished product is delivered to the customer. The typical time frame for the sequential process is between 9 to 12 months (Pitimaneeyakul, LaBat, & DeLong, 2004).

This traditional method is segmented and is slower than other product development models due to the minimized interaction and communication between departments. In order to survive the current competition in the textile and apparel industry, companies should be equipped with faster PD capabilities to respond to consumers' demands as quickly as possible. A lack of communication between departments in the sequential model can lengthen the development cycle and could result in loss of market opportunity (May-Plumlee & Little, 1998). Figure 1 illustrates the examples of the activities involved in the sequential PD process.

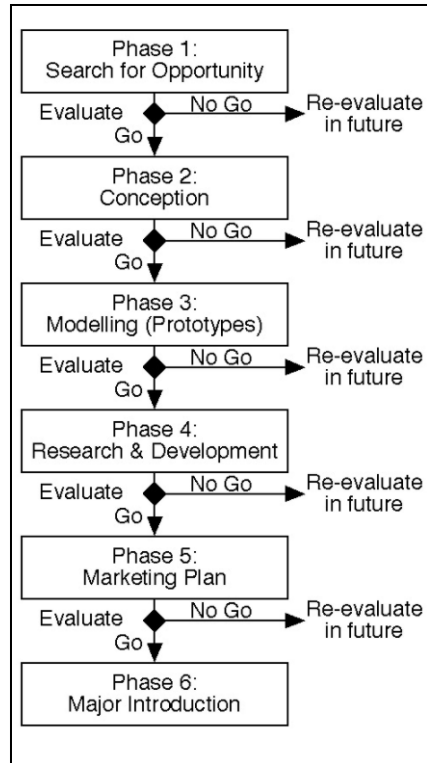


Figure 1. Example of a Sequential PD Model by Gruenwald (1992).

Parallel or concurrent. The parallel or concurrent product development process was introduced in response to the limitations of the sequential model. This model focuses on the connections between the different steps in the process. The steps and activities are often carried out in parallel in multiple departments through interdisciplinary and multifunctional teams (Bandinelli, Rinaldi, Rossi, & Terzi, 2013). A major difference between sequential and concurrent models is the movement of some activities (e.g. cost analysis, developing specifications, sample production, etc.) to an earlier position, compared to their position in the sequential model (Kincade, Regan, & Gibson, 2007). Figure 2 shows the difference between concurrent and sequential PD process. The parallel model enables a faster and more efficient product development cycle. The continuous communication between departments allows a streamlined exchange of information and responsibility. Finally, the marketing and

manufacturing phases are more emphasized to ensure that external and internal design attributes are incorporated in the early stages of the product development process (May-Plumlee & Little, 1998). A drawback of this model is its push towards doing functions in parallel when they can be converged and done in one stage and then moved to the next stage (Hart & Baker, 1994).

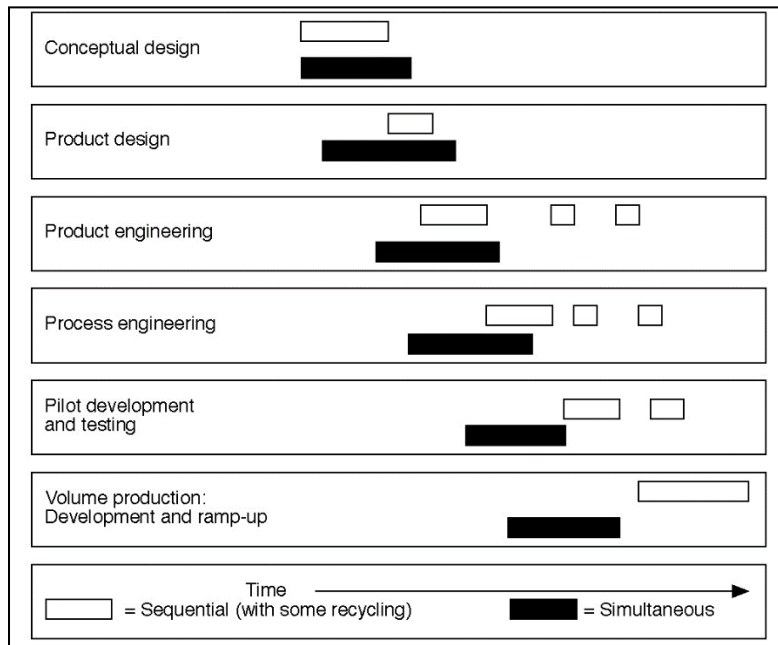


Figure 2. Difference between Sequential and Concurrent PD Process by Rosenthal (1992).

Multiple convergent. This model (Figure 3), views product development as a series of processes that require functional integration. While transforming the idea to prototype and to the final product, several points of evaluation should be executed simultaneously and in an integrated mode. This indicates that inevitably, at some point, some steps in the process must converge (Hart & Baker, 1994). In the multiple convergent model different inputs from varying sources are integrated in the PD process (Bruce & Biemans, 1995). In contrast to the sequential approach, the multiple convergent model allows iterations between employees within stages and establishes a framework that can suit third parties. Moreover, during the course of the process,

this model creates integration opportunities in the convergent points between different functions (Hart & Baker, 1994). The disadvantage of this model is the high frequency of the converging points, which requires more process management efforts to hold process on track (Owens, 2009).

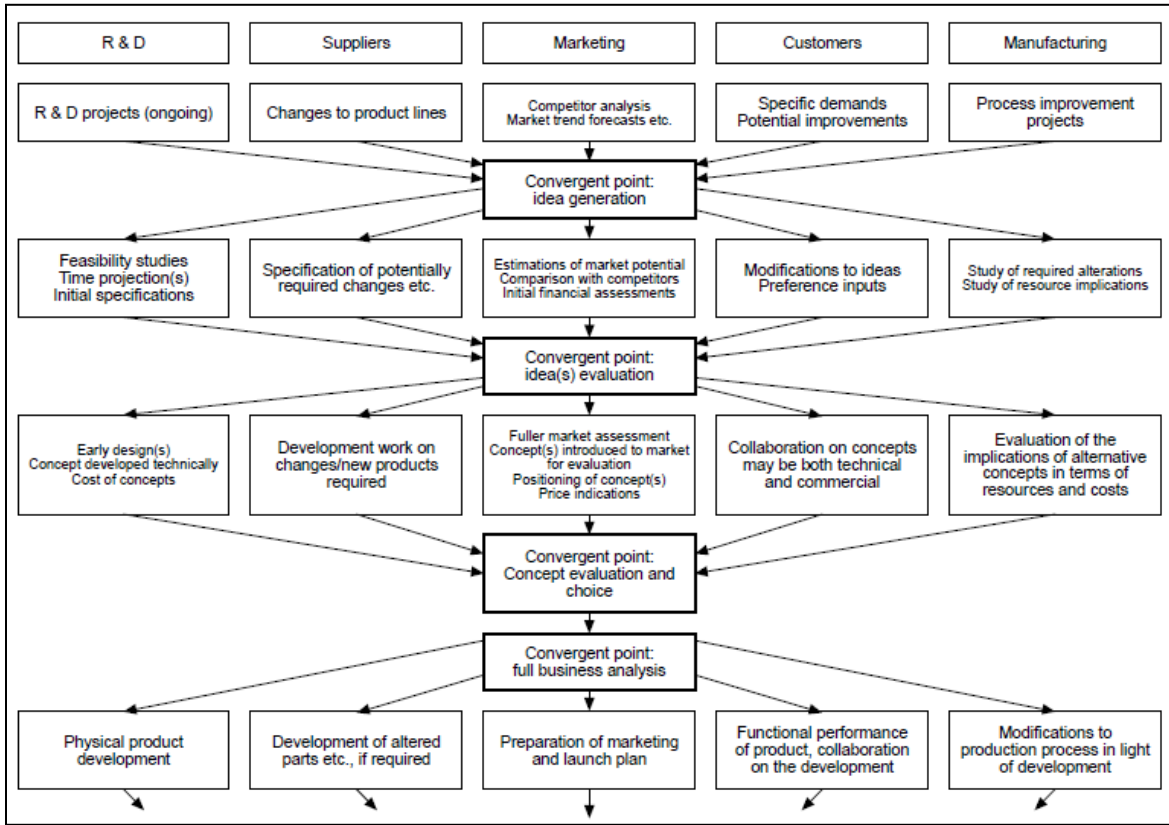


Figure 3. Multiple Convergent PD Model by Bruce & Biemans (1995).

Stage-Gate. The stage-gate product development model introduced by Cooper (Cooper, 1990) is a conceptual map that includes steps involved in transforming an idea into a new product launch and beyond (Figure 4). In the updated version of the model, the five main stages are discovery, scoping, build business case, development, testing and validation, and launch (Cooper, 2008). The activities within stages are conducted in parallel and by a cross-functional team of people from different departments in the firm. At the end of each stage, there is a gate or

decision point which serves as quality control or go/kill decision and determines the path forward for the next stage (Cooper, 2008). Gates or decision points consist of deliverables (e.g. results of completed step), criteria (judgement basis), and outputs (decision). The five gates are initial screen, second screen, decision of business case, post-development review, and pre-commercialization decision (Cooper, 1990). In each of these gates, customer reaction, acceptance, and needs are considered for assessments.

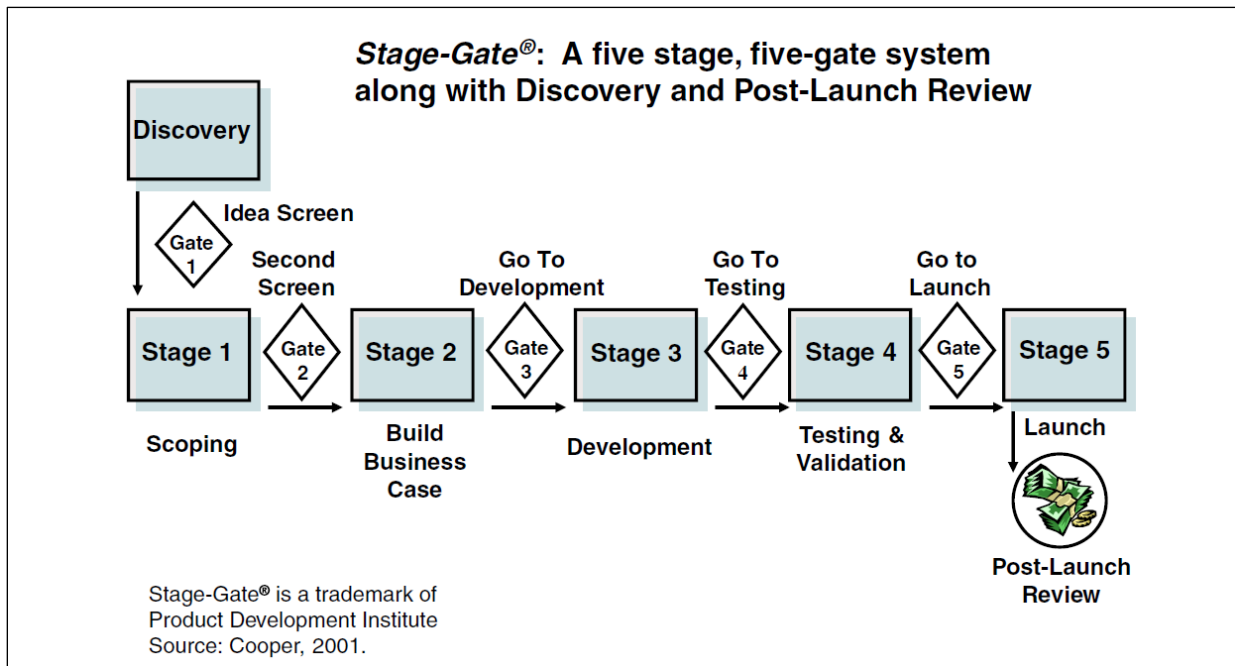


Figure 4. Stage-Gate PD Model by Cooper (2008).

New product development and evaluation gates. Tzokasa, Hultinkb, and Hart (2004) developed a model that included development and evaluation gates (Figure 5). The incorporation and importance of each evaluation gates were tested among 234 companies that manufacture industrial and consumer goods. The product development steps were idea generation, concept development, build business gate, product development, market testing, and market launch. The six evaluation gates incorporated in the model were idea screening, concept testing, business analysis, product testing, analysis test market results, and post launch evaluations. The results of their study suggested that product testing and market testing were evaluation gates that believed to be important for product's success. The evaluation criteria of each evaluation gate varied based on the nature of each step, however, the most used evaluation criterion were customer acceptance, customer satisfaction, sales in unit, product performance, quality, and technical feasibility (Tzokas et al., 2004).

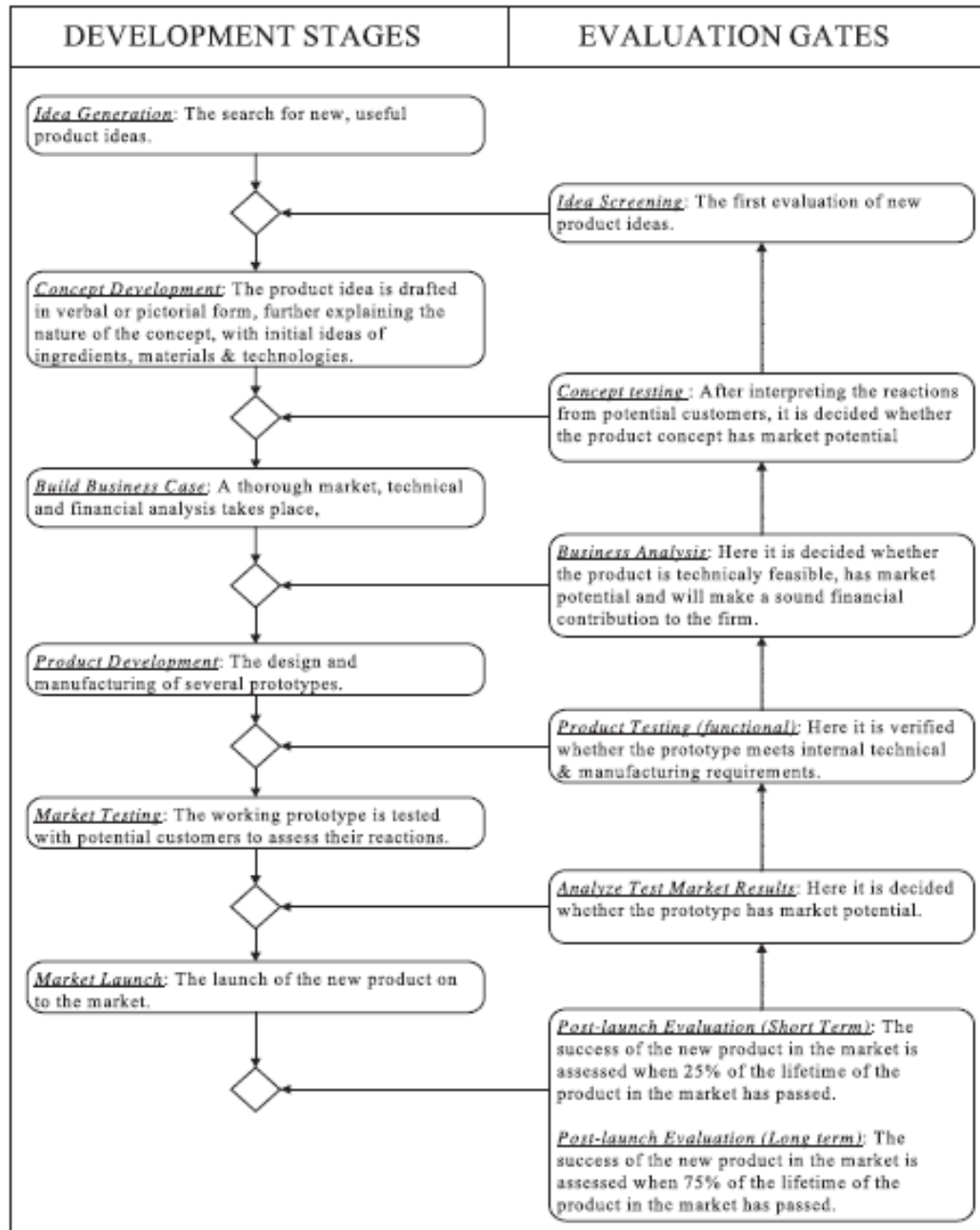


Figure 5. New Product Development Model and Evaluation Gates by Tzokas et al., (2004).

Textile and Fashion Product Development Models

The goal of designing new products is to transfer consumer needs into sellable and profitable products. The literature suggests that the textile and fashion industries have been using a variety of product development/design frameworks, based on the five PD models outlined above. This section discusses several textile and apparel product development frameworks that have been developed based on empirical research and scholarly/educational practice.

Apparel design model. Lamb and Kallal (1992) incorporated functional, expressive, and aesthetic (FEA) aspects to create an integrated framework for apparel design education. Their model was developed as a framework for apparel design education, but the authors suggest that FEA model can be used by fashion and apparel designers. The FEA model was only tested on student design projects. Their proposed framework is a combination of different design process model as well as the FEA model. Their sequential process starts with problem identification which is derived from target consumers' needs and concerns (Lamb & Kallal, 1992). Then, preliminary ideas are generated through brainstorming, market research, and presented visually and verbally. The ideas are then evaluated based on the FEA model principles. The selected ideas are transformed into physical prototypes during the prototype development step. The prototypes are tested based on their level of conformance to the criteria mentioned in the problem identification stage. The products that do not conform to the functional, expressive, and aesthetic requirements are modified prior to the final production (Lamb & Kallal, 1992). Finally, after the completion of all the steps mentioned above, the mass production is planned and implemented. The apparel design framework introduced by Lamb and Kallal is shown in Figure 6.

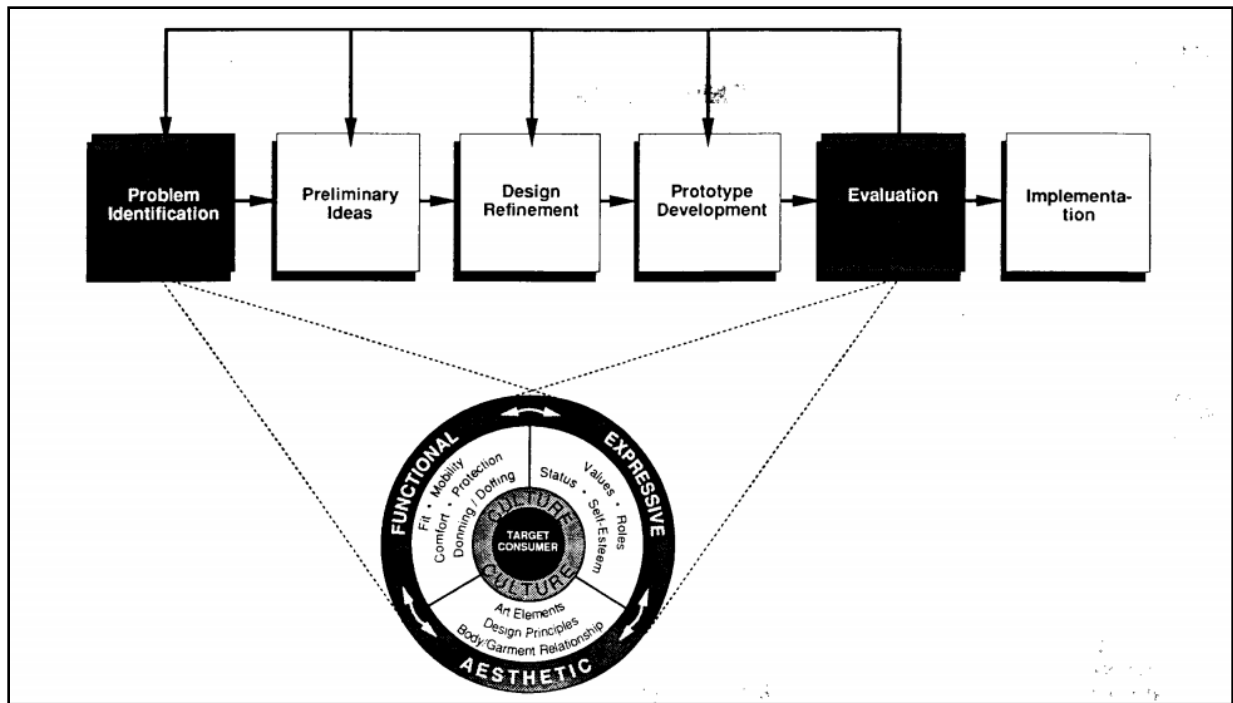


Figure 6. Apparel Design Framework by Lamb and Kallal (1992).

Retail product development model. Gaskill (1992) proposed a product development model (Figure 7) consisting of product development processes as well as intervening factors. The developed model is based on a case study approach and selected one established international apparel retailer as their case. This model encompasses some concurrent activities and starts with a comprehensive trend analysis that could help predict the current and future trends based on color, fabric, and silhouette (Gaskill, 1992). Inspired by the information gathered through trend analysis, the design team creates a concept or theme of collections that complies with company's target market. The concept development is followed by selecting the color palette that includes dominant (base) and accent (pop) colors (Gaskill, 1992). Fabrication is selected while considering sales history, past and current consumer needs, and silhouette direction. The next step is fabric design while considering the design concept and color palette. After determining

the design concept, fabric, and color palettes, the designers develop the sketch and silhouette of the garment that includes design elements, proportions, and dimensions. Then, the designers and pattern and sample makers collaborate to create initial prototypes and detailed specifications are included (Gaskill, 1992). The prototype is tested using a fit model to evaluate aesthetics, fit, and comfort. Upon detecting a quality, design, or fit issue, the prototype is sent back to the previous step for further modifications. This cycle would continue until the most desirable prototype is achieved (Gaskill, 1992).

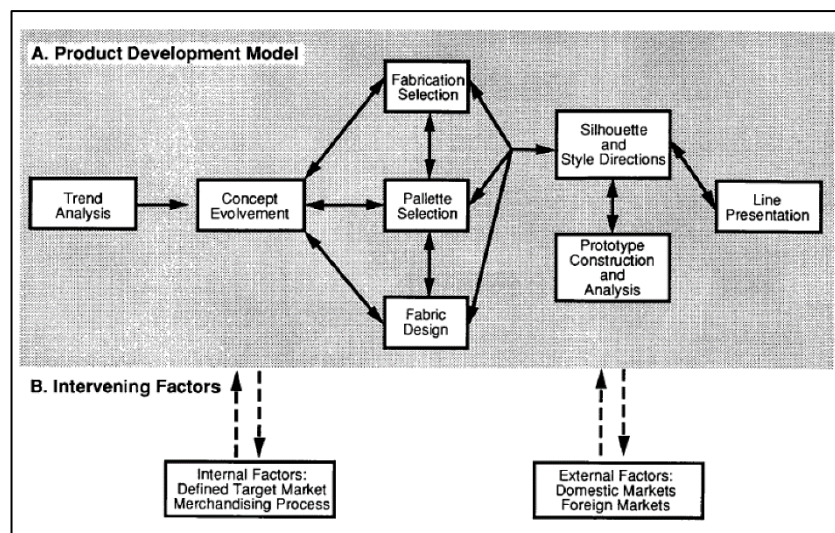


Figure 7. Retail PD Model by Gaskill (1992).

Retail product development model: revision. Wickett, Gaskill, and Damhorst (1999) developed a new model to include the post-adoption PD process and to validate their existing PD model. The new model was developed based on qualitative data obtained through interviews with 21 men's, women's and children's specialty store retailers. The main activities in the first model were trend analysis, concept evolvement, palette selection, fabrication selection, fabric design, silhouette and style directions, prototype construction and analysis, and line presentation.

The new model added five functional stages during the post-adoption PD process. These processes are: fit and style perfecting of garment; production and pattern making; material specifications; production sourcing; final cost estimation and specification determination. In addition to adding five more stages, the step names were changed to better represent the actual process. One new important stage added to the new PD model was testing and evaluation, including material performance. The modified retail PD model is presented in Figure 8.

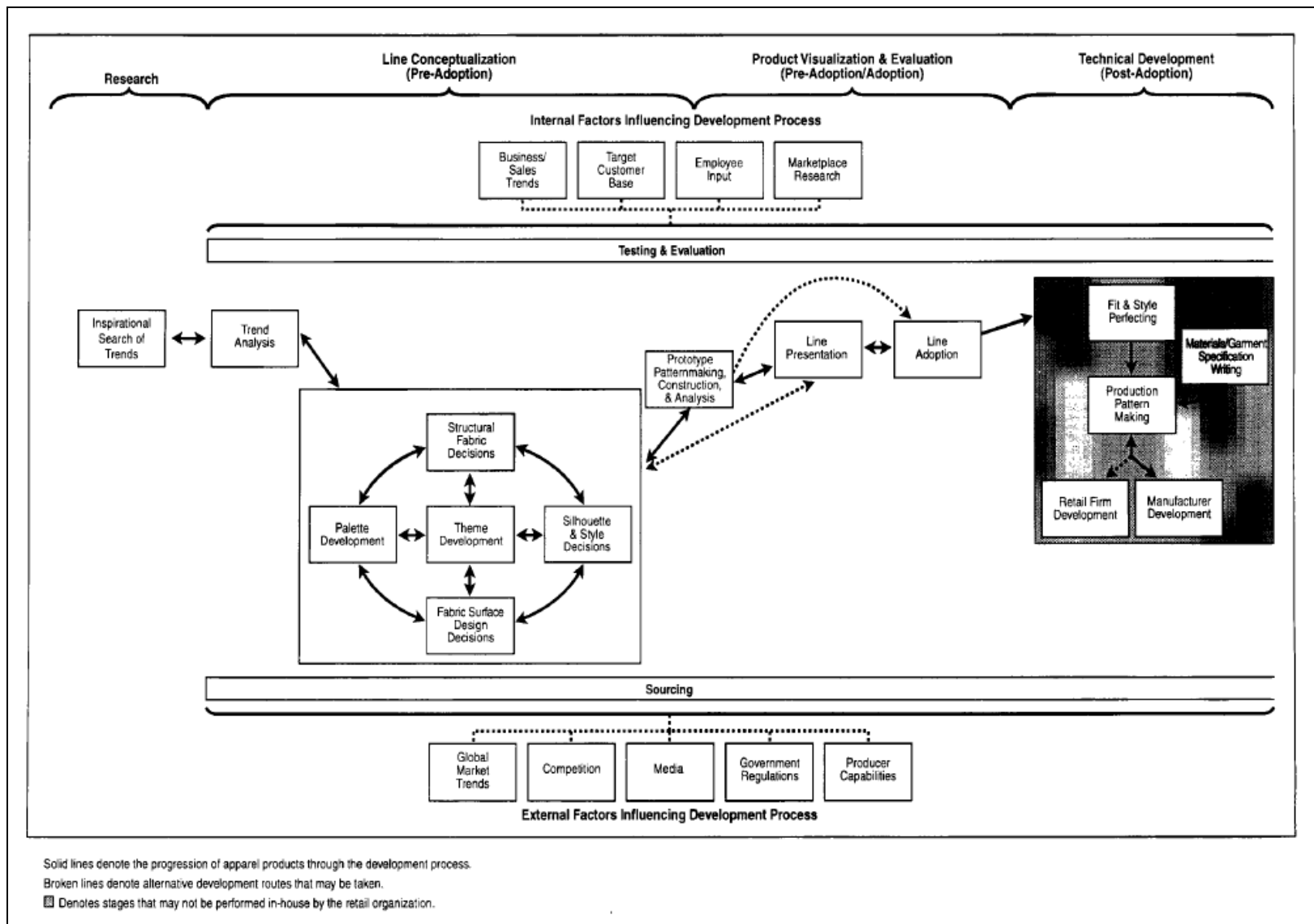


Figure 8. Revised Apparel Retail PD Model by Wickett, Gaskill, & Damhorst (1999).

Proactive product development integrating consumer requirements (PPDICR).

May-Plumlee and Little (2006) developed a consumer-focused model using consumer's purchase criteria (Proactive Product Development Integrating Consumer Requirements (PPDICR)). Their model (Figure 9) was based on a previous apparel PD model (created by the authors), the Non-Interval Coherently Phased Product Development (NICPPD) as well as the EBM (Engel, Blackwell, and Miniard) model for consumer purchase decision. This incorporates the results of previous studies on consumer's use of a set of evaluative criteria during their purchasing decision. These evaluative criteria are extrinsic (brand image and Aesthetic design) and intrinsic (technical design). The NICPPD consists of six integrating phases (line plan and research, design /concept development, style selection, marketing the line, preproduction, line optimization). In a textile and apparel firm, each functional segment is responsible for carry out these steps. These segments are marking, merchandising, design and development, and production. In the PPDICR, the product development process starts with integrating consumers inputs. Unlike the traditional product development models, consumers' requirements, inputs, and evaluative criteria are built into the process and the related information is linked to the corresponding phase of the PD process. This would enable firms to create successful and more profitable products for these target consumers (2006).

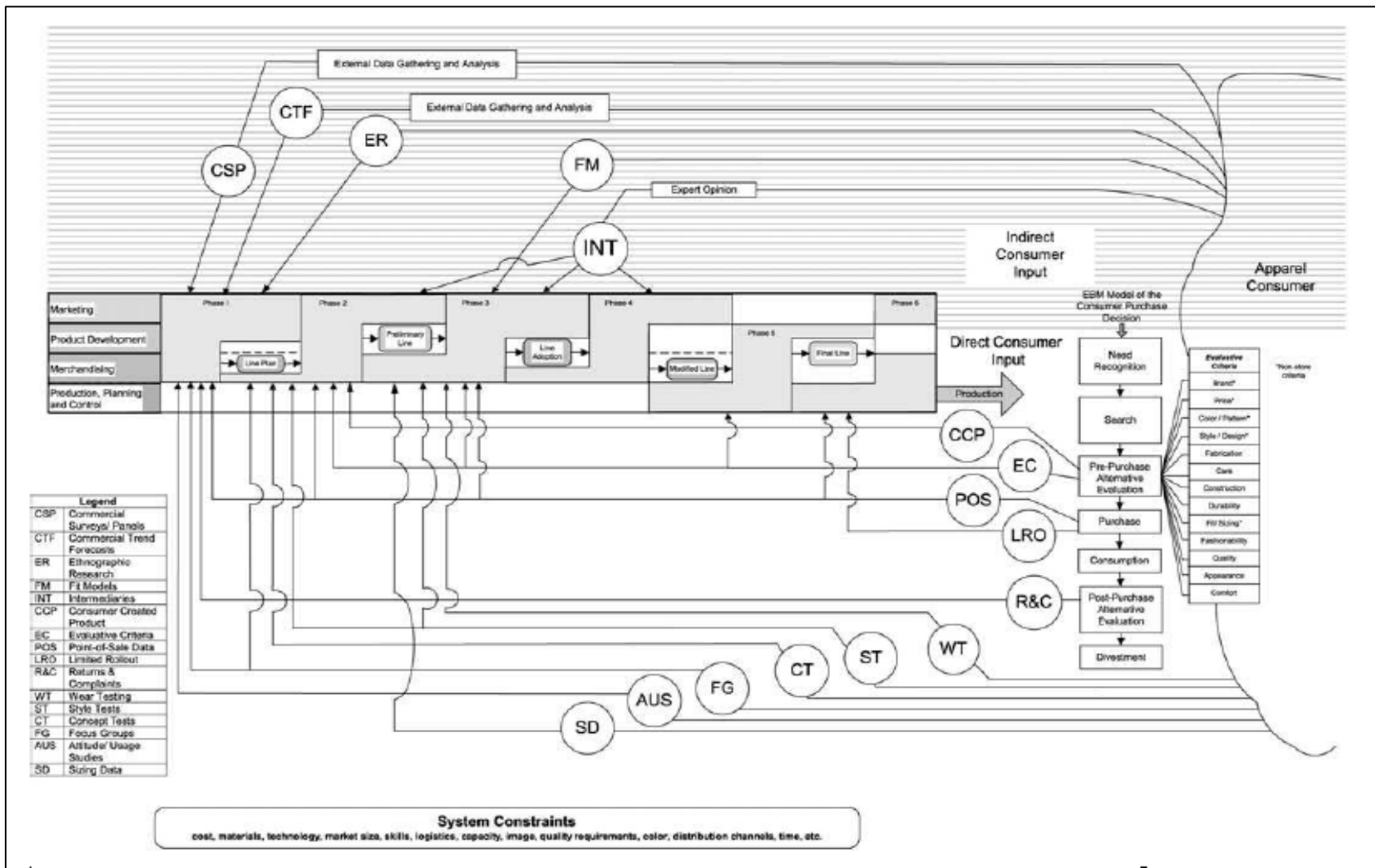


Figure 9. PPDICR Model by May-Plumlee and Little (2006).

The importance of product development practices for TFE. Product development practices can determine the success or failure of a company, making it critical to assess the risks associated with the various stages of product development (Tucker, Friar, & Simpson, 2012). In large established firms, the common practice is that team members with different areas of expertise (e.g., engineering, sales, marketing, and manufacturing) collaborate on each new product development project under the supervision of a project manager. This creates a sense of belonging among team members, and removes barriers that prevent innovative solutions (Cooper, 2000). They also plan and follow a predetermined and detailed methodology during the product development process.

Another critical point in such firms is their emphasis on early market research, which would lead to defined product parameters and ultimately to desired outcomes (Cooper, 2000). However, entrepreneurs and small firms may not have enough financial or human resources to follow the traditional product development procedures utilizing structured cross-functional teams or organizations. For these early-stage firms, the product development projects are relatively small and usually carried out by founders or other external contractors. They might even use virtual team members that could offer their functional expertise into the project when needed (Tucker et al., 2012).

Tucker, Friar, and Simpson (2012), conducted an in-depth case study with two early-staged consumer goods companies to compare their PD process versus large established firms. The results of their study suggest that the NPD process in startups can be informal and unstructured, without written procedures, and progress and development meetings are rarely turned into paper-based deliverables or clear steps. An entrepreneur's main goal is to get a product to market as soon as possible, making them more focused on the target rather than

managing the process. The new projects are mainly driven by teams' skills, product specifications, and the pressure to commercialize the final product. In terms of pre-product development practices and market research, new firms would usually limit themselves to a very informal benchmarking and market investigations, without involving potential consumers in the design process (Tucker et al., 2012). Market research is done internally by relying on team members' expertise or following a "learn as you go" approach. This issue was mainly due to lack of financial resources and entrepreneurs' demand to push the product to market faster. In early-stages firms, the initial idea for a new product typically starts by teams' observations and experience within the field or their identified gap in the current marketplace. This means that entrepreneurs often put themselves in the place of an experienced shopper, and design a product based on their own standards and not to those of their actual end users (Tucker et al., 2012).

Product Performance Measures

Due to potential financial risks associated with developing products, companies should evaluate the product development process as well as the final product prior, during, and after its launch to market. Griffin and Page (1993) suggested sixteen performance measures used by researchers, companies, and based on related literature. Out of seventy-five measures, only sixteen measures were common across all three types of sources (Griffin & Page, 1993). The proposed product performance measures were characterized into five themes (Table 2).

Table 2. Product Performance Measures Suggested by Griffin & Page (1993).

| Product Performance Themes | Product Performance Measures |
|-----------------------------------|---|
| Customer acceptance | Unit sales, market sales, revenue, revenue growth, customer acceptance, customer satisfaction |
| Financial performance | Margin, profitability, break-even time, IRR/ROI |
| Product-level | Cost, launched on time, product performance level, quality, speed to market) |
| Firm-level | Percent of sales by new products |
| Program-level | |

The Griffin and Page (1993) performance measures have been used by Jang and Dickerson (2005), through a qualitative approach, to explore how the performance of apparel products is evaluated in the textile and apparel industry. The results of their study suggested a multidimensional performance measure for apparel items with consumer acceptance and financial performance such as sales and profitability being the most used performance measures used by textile and apparel firms (Griffin & Page, 1993).

Senanayake and Little (2001) suggested eleven financial-focused product performance measures that could be used in the textile and fashion industry. They proposed “benchmarking the new product development process” as an effective tool in controlling and improving different areas of the operation (Senanayake & Little, 2001). The product performance measures suggested in this study are found in Table 3.

Table 3. Product Performance Measures Suggested by Senanayake & Little (2001).

| Product Performance Measure | Description |
|--|--|
| Sample Adaptation Ratio (%) | Percentage of product development samples implemented into a line |
| Product Development Cycle Time (weeks) | Length of time from designer's idea to production order |
| Manufacturing Cycle Time (weeks) | Time that takes from receiving a new order to shipping the product to customer |
| Sell Through (%) | Percentage of a product that is sold by a retailer |
| Pick and Ship Time (days) | Length of time from receiving and order in the distribution center to shipping the product |
| Return on Equity (%) | Net income divided by total equity |
| Return on Net Assets (%) | Earnings before interest and tax divided by the net assets |
| Investment per Sale (%) | Percentage of each sales (dollar) that is used for system improvement |
| Forecast Accuracy (%) | Ration of actual demand to forecasted demand |
| GMROI (%) | Gross margin return on investment |
| Cost Conformance (%) | Cost of compliance to specifications divided by operation costs |

Integrating Consumer Requirements into the Product Development Processes

Product development requires resources such as research and development (R&D), engineering, and testing. However, a considerable amount of resources is spent on failed products that never reach the target market. Therefore, the return on investment of the successful products should cover development costs as well as the failed or shelved products (Senanayake & Little, 2001). Success or failure of a product often depends on how well a new product meets the company's planned financial targets (Jang, Dickerson, & Hawley, 2005). Senanayake and Little (2001) categorized the reasons behind the failure of new products into internal and external. The external causes are market size, lack of unique features in the product, competitors' response, variations in consumer taste, and environmental changes (Senanayake & Little, 2001). The new products might be unsuccessful in the market due to internal reasons such as misunderstanding consumer's needs, lack of product conformance to company's mission, weak channel of distribution, poor organizational structure and communication, and forecasting errors (Senanayake & Little, 2001). The determinants of product's success have also been identified by researchers. On-time delivery and quality assessment of the final product compared to quality standards are some of the criteria used for measuring products success (Wickett, Gaskill, & Damhorst, 1999). The success of a product can also be determined by assessing the value that it offers to consumers. In this case, value is described as superior quality, right price, trendy, wearability, and versatility (Jang et al., 2005). Tzokas et. al (2004) study shows that companies believe that the integration of consumers during idea and concept development, market testing, and post launch analysis are critical to the success of a new product.

Companies rely on many methods to achieve success in the new product development process. In the attitude and usage technique, descriptive information about consumers' attitude,

past behavior, and intended behavior are collected (Urban & Hauser, 1993). Another strategy for assessing new products is the Delphi method. Delphi method uses quantitative and qualitative data, obtained from the opinions of identified experts, to evaluate the performance of a new product (Bourgeois, Pugmire, Stevenson, & Swanson, 2006). Quality-function deployment is another method that conducts home usage tests or wear tests by prescreened consumers in order to evaluate new products. This assessment becomes the basis for estimating market share or making product improvements (Tull & Hawkins, 1993). Quality-function analysis is often carried out in conjunction with Kano Model analysis (Shen, Tan, & Xie, 2000). Kano's model (1984) offers a relationship between consumer's satisfaction and product's attribute and performance. Kano's model classifies product's features into three categories of "Must-be attributes", "One-dimensional attributes" and "Attractive attributes". The absence or presence of the features in each category influences customer's satisfaction (Kano, Seraku, Takahashi, & Tsuiji, 1984; Shen, Tan, & Xie, 2000). The consumer's response to each product attribute is obtained through the Kano questionnaire which help product developers determine the relative importance of the individual attributes from the consumer's perspective.

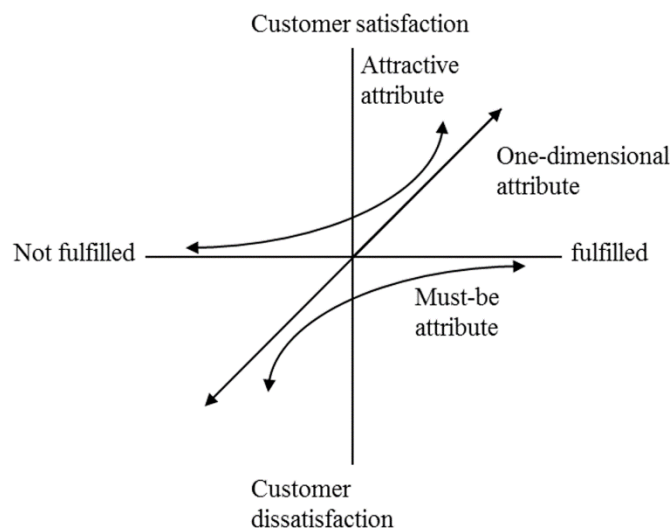


Figure 10. Kano's model of customer satisfaction (1984)

Product life-cycle models help a product developer determine evolution and direction of a trend and a product. The bell-shaped fashion life-cycle diagram has three stages: introduction (rise), acceptance (peak), and regression (decline). Each stage targets specific consumers with their unique product desires and needs (Kincade, Gibson, & Woodard, 2004). This model assists product developers in determining the time that a product should be replaced with newer, fashionable, and more profitable products (Urban & Hauser, 1993).

Focus group is another strategy to evaluate consumers' attitude toward purchase and use of a product (Engel, Blackwell, & Miniard, 1990). Focus groups can offer insights into consumers' preferences and decision priorities (May-Plumlee & Little, 2006). Focus groups help developers extract and incorporate consumers' needs through direct contact. Moreover, focus groups can discover product functions that have been overlooked or identify the problems associated with the daily use of existing products (McDonagh-Philp & Bruseberg, 2000). Limited rollout or test marketing is another widely used method in which a new product marketing program in a specific and limited geographic region is conducted to determine market acceptance (Tull & Hawkins, 1993). In the textile and apparel industry, fashion products are often presented to buyers for test marketing, rather than the final consumers (May-Plumlee & Little, 2006).

The survival of TFE depends heavily on the success and failure of their products in the market. Due to the risks associated with missteps in PD process, understanding the PD process and factors influencing the products' success is very critical.

Quality

The definition of quality varies within the available literature. Oxford online dictionary defines quality as "The standard of something as measured against other things of a similar kind"

(Oxford Dictionaries, n.d.). Quality is also defined as the degree of excellence of an item or service (Meriam-Webster Dictionary, n.d.; Oxford Dictionaries, n.d.). The American Society for Quality (ASQ), defines quality as a subjective term specifically defined based on industry or sector (ASQ, n.d). Quality can be the features of a product or service that can satisfy predetermined needs or a product or service free of deficiencies (ASQ, n.d). Juran and Godfrey (1999) provide a more customer and income-oriented description: the attributes of a product that meet customers' needs, improve customer satisfaction and eventually, lead to higher sales income. A quality product is free from deficiencies and defects that would require rework, result in customer dissatisfaction, or product return (Juran & Godfrey, 1999).

Garvin (1984) suggests five major approaches to define quality: the transcendent approach, the product-based approach, the user-based approach, the manufacturing-based approach, and the value-based approach. Since the definition of quality varies among the people interacting with the product (e.g. marketing department, manufacturing department, consumers, etc.), Garvin felt the need for synthesizing the varying approaches and dimensions of consumer goods quality. The transcendent approach illustrates an absolute definition of quality, synonymous with innate excellence (Garvin, 1984). In the product-based approach, quality is explained by the comparing the number of unpriced product features to the number of priced attributes (Leffler, 1982). This approach defines quality based on the amount of desired characteristics that have built into them. For example, high quality sheets and linen have a higher thread count, and superior rugs tend to have more knot per square centimeter. Since this definition explains quality in terms of the presence or absence of quantifiable features, the quality can objectivity evaluated (Garvin, 1984).

The user-based approach defines quality from the consumer's perspective, based on how successful the product or service is meeting consumer expectations and needs (Sebastianelli & Tamimi, 2002). The manufacturing-based definition explains quality in terms of a product's conformance with design specifications (Garvin, 1984). Finally, the value-based approach which is derived from a transitional economic model defines quality as performance and conformance in relation to price (Garvin, 1984).

Textile and Apparel Product Quality

Quality dimensions of apparel can be identified as characteristics that appeal to consumers as well as those that influence the ease and final costs of production. Textile and apparel quality can vary depending on product type and intended use (Chuter, 2002). Kincade (2008) states that product quality can be measured in quantifiable terms that are consumer-defined and these terms should be built into products from the design process to consumer purchase and use (Kincade, 2008).

Chuter (2002) identified *physiological safety*, *image enhancement*, *excellence of fit*, *degree of uniqueness*, *value*, *affordability*, *retention of desired quality*, and *ease of care* as the most important dimensions of garment quality. Scheller & Kunz (1998) interviewed 47 apparel production managers and operators in the United States to define apparel product quality from manufacturers' perspective. Their research identified *structural integrity*, *aesthetic presence*, and the *power of appeal* as the three components of apparel product quality. *Sturdiness/durability*, *style/aesthetics*, and *lasting/care* were also identified as apparel product quality dimensions by Forsythe, Presley, & Caton (1996) in a study on 122 adult shoppers. The purpose of their study was to find the intrinsic product quality dimensions used by consumers in product evaluations. Bubonia (2014) identified *performance*, *durability*, *serviceability*, *conformance*, and *aesthetics*

as the five elements of apparel product quality. Based on the overview of the current literature, it seems that Bubonia was able to incorporate all of the elements and aspects of apparel product quality into the five dimensions mentioned above.

Performance. Performance is a combination of user-based and product-based quality approach. A garment's performance includes all of the functional elements and feature for its intended use. The Performance features are determined by consumers' expectations and needs and product end use. The tangible product features such as raw material, construction, and fabric finishes define product performance (Bubonia, 2014).

Durability. Durability is the length of a product's usability for its intended purpose (Kadolph, 2007). Durability is determined by evaluating a garment's ability to resist physical deterioration or lose its function over a specific period of time (Bubonia, 2014). The durability of apparel and textiles differ based on their intended use.

Serviceability. A textile product is serviceable when it meets consumers' demands and performance expectations (Kadolph, 2007). Serviceability also refers to garment's ease of care, cost of maintenance, and the ability to sustain its shape after wear and laundering (Bubonia, 2014).

Conformance. Conformance is the extent to which a garment meets its predetermined standards and specifications established by product developer, designer, and manufacturer. A quality textile and apparel product should conform to the material specifications (fabric, trims, etc.), design specifications (style and design features), and product specifications (size, fit, performance) (Bubonia, 2014).

Aesthetics. Aesthetics, a user-based element of quality, describe the product in terms of appearance, fit, style, and fashion preferences (Kadolph, 2007). Aesthetic characteristics

determine the overall attractiveness and uniqueness of an apparel product as well as its appearance during wear and post-sales care. Aesthetic characteristics can also be objective. Standard procedures have been developed to measure fit, fabric wrinkle, color fading, pilling, and dimension change after wear and laundering.

Textile and fashion product quality is defined by quantifiable and measurable attributes. Such attributes are intrinsic to the product, meaning that they cannot be manipulated without altering the physical characteristics of a product (Olson & Jacoby, 1972). Specific attributes can be physically measured in order to evaluate the “degree of excellence” of each apparel product quality dimension. Table 4 consists of product quality dimensions identified by Bubonia with their relevant measurable attributes identified by researcher.

Table 4. Summary of Apparel and Textiles Product Quality Measurable Attributes.

| Quality Dimension | Measurable Attributes |
|--------------------------|--|
| Performance | Performance attributes are set based on product’s end use. Examples of performance attributes are water repellency, flammability, UV resistance, thermal resistance, and thermal and evaporative resistance. |
| Durability | Breaking strength, tear strength, abrasion resistance, bursting strength, |
| Serviceability | Dimensional change, colorfastness after laundering, colorfastness to crocking |
| Conformance | Fiber and yarn content and construction, fabric count, thickness, and weight, construction inspection |
| Aesthetics | Fit, wrinkle recovery, crease retention, smoothness of seams and fabric, appearance of seam pucker |

Textile and apparel product quality integration and evaluation. Quality evaluation procedures help designers, developers and manufacturers ensure that a product meets its

determined quality standards. When quality is built into a product from the start of design and development, the potential for return, repair, and replacement is reduced. Moreover, delivering high quality products enhances a brand's image and increases consumer's satisfaction (Bubonia, 2014). The product that reaches the consumer is the result of several quality integration practices in each sector of the supply chain. The final textile and apparel product quality is the outcome of a coordination between design, raw materials selection as well as the manufacturing process. In order to clarify quality integration activities, specifications of the finished product should be prepared prior to the PD process, and be used as a reference point for evaluating and integrating quality during the production process (Romano & Vinelli, 2001).

The product quality is measured against established specifications, features, and standards. Product quality standards are created internally by the manufacturer or established by national and international organizations. Standards contain test methods and specifications for measuring product quality (Bubonia, 2014). The most important organizations developing standards in the textile and apparel industry are AATCC (American Association of Textile Chemists and Colorists), ASTM (American Society of Testing and Materials), and ISO (International Organization for Standardization). Depending on the attribute being evaluated, these tests can be conducted on raw material as well as the finished garment. For example, raw materials are usually tested in advance so that actions can be taken prior to the PD process. However, some attributes (e.g. colorfastness, wrinkle recovery etc.) are tested at the garment level to evaluate quality during wear and after care.

The current review of literature shows significant coverage of quality and product development in the textile and fashion industries, but a lack of research in the application to textile and fashion entrepreneurship. Most of the available studies were conducted in the distant

past and were focused on established textile and fashion companies. The background of literature justifies the need for an in-depth research about the processes used by TFE during their PD process, as well as the strategies they use for integrating consumer-driven quality attributes and their product quality evaluation methods.

CHAPTER THREE

METHODOLOGY

This chapter presents the overall research design and methodology, including sample selection, data collection, and data analysis procedures.

Research Design

This study incorporated a mixed methods research design to address the research objectives. The mixed methods (Creswell, 2014) approach is also called multi-methods (Brannen, 1992), or mixed methodology (Tashakkori & Teddlie, 1998). The mixed method research employs different research design and data collection methods to address the research objectives. This can result in a more comprehensive and accurate understanding of the subject under investigation (Creswell, 2014; Leavy, 2017). The mixed methods approach is based on “methodological eclecticism”, which is the process of selecting and incorporating the most suitable research technique (quantitative, qualitative, or mixed methods) for exploring a phenomenon (Teddlie & Tashakkori, 2010). Mixed methods research helps to answer the research objectives that cannot be answered by use of quantitative or qualitative methods alone (Creswell, 2011). A mixed methods approach can address a diverse range of research questions and can provide a collection of divergent results and inference (Teddlie & Tashakkori, 2010).

This study used a survey and case study to address the research objectives. The integration of these two data collection and interpretation approaches does not essentially indicate uniformity of the data. The two types of data are synthesized separately in a research design so as not to distort either process but to provide a better understanding of the entire phenomenon (Salkind, 2010).

Quantitative research is a method for testing objective theories by analyzing a series of variables collected by an instrument. The researcher interprets the meaning of the data based on the results from a specific statistical analysis (Creswell, 2013). Use of quantitative data in this study is minimal and is limited to simple descriptive statistics that were used to analyze demographic information such as TFE age and location as well as specific data related to their existing business. The quantification of this demographic data provided a profile of the TFE used in this study which assisted the researcher in the interpretation of the subsequent qualitative data.

Qualitative research design is typically used for “exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell, 2013, p.4). Qualitative research design is appropriate when the purpose of the study is to gain an in-depth understanding of a phenomenon based on the detailed information from a sample (Leavy, 2017). The qualitative approach enables the researcher to address the purpose of the study through the use of qualitative data collected from subjects in a natural setting (Silverman, 2010). In this study, the researcher employed a qualitative approach to obtain an in-depth understanding of the TFE perception of product quality; the PD processes used by TFE; the identification of quality specifications, and the integration and evaluation of product quality specifications in the PD processes.

The following section of the chapter outlines the detailed characteristics of the inquiry as well as data collection, data analysis, and writing for Survey and Case Study research methods.

Survey

Survey is a data collection method in which participants respond to a set of specific questions (Salkind, 2010). Surveys can provide a quantitative and qualitative description of the status, attitudes, and opinions of the sample. The purpose of the survey method is to generalize

the characteristics, behaviors, and attitudes of the sample to a population (Creswell, 2013). This research used secondary survey data on TFE provided by the Carolina Textile District (CTD). This includes demographic data, plus responses to open-ended questions. The demographic data provided a profile of TFE across the United States. The responses to open-ended questions assisted in identifying themes in which product quality is defined by TFE (Research Objective 1).

Sample description and selection. The Carolina Textile District was established in 2013 and is located in Morganton, NC. The mission of the CTD is to help both textile and fashion entrepreneurs and existing companies throughout their supply chain by connecting them to a network of textile manufacturers and other related resources. For TFE, the initial requirement for working with CTD is to submit a client application in the form of a survey. The applications are reviewed with CTD members to determine suitability for intake. CTD then assists the TFE throughout their product development process by finding a support contractor (designer, production, sourcing etc.). A total of 1,319 CTD intake surveys (applications) were used for this study. The data was collected from May 2013 to April 2018. The participants of the survey are TFE and existing or established textile and fashion companies across the United States. The respondents of the survey need assistance from CTD in the areas of marketing and development, testing and certification, design, and sourcing. This study selected entrepreneurs and existing companies that have been in business for less than five years as the sample. The literature defines entrepreneurship based on “pursuit of opportunity” rather than active year in business (Eisenmann, 2013). However, the author selected the “five year in business” criteria to exclude the mature companies with the more resources, skills, and technical knowledge about product

quality and product development process. Also, young entrepreneurs and companies have less POS data, market research data, and customer feedback for developing product specifications.

Incorporating CTD intake survey as the data source was a convenience sampling method. CTD intake survey is appropriate data to answer the first objective of this study due to CTD's mission, which is providing support to textile and apparel small and medium-sized companies looking to develop their U.S. supply chain. The CTD has gained popularity among TFE in the United States due to the services they provide in the areas of product development and domestic production support and materials sourcing. Moreover, the ethical and sustainable values of the CTD (fair trade wages, zero waste facilities) distinguishes the organization from other U.S. competitors (Carolina Textile District, n.d.)

Data collection. Intake survey data from the CTD over a period of five years (March 2013-April 2018) were used for a portion of this study. The online survey/application is located on the CTD website and respondents are required to fill out and submit the survey as the first step of their application process. The first version of the survey rolled out in 2013 contained 30 questions; however, the number of questions was reduced in 2017 based on CTD needs as well as client complaints about the length of the survey and repetition. As of 2018, the total number of questions in the survey is 20. The survey begins with demographic questions followed by more detailed and specific queries about the nature and the status of the respondent's business. The respondents are then asked to describe the characteristics of their products and specify the type of resources they require as well as their project needs, using closed and open-ended responses. A current copy of the CTD application is presented in Appendix A. Responses from three demographic questions in the survey were used to create a profile of the TFE for the study. Responses from two open-ended questions were used to respond to RQ1.

Data analysis. Before responding to RQ1, data were extracted from the demographic questions of the CTD survey. The responses to these questions were analyzed using JMP Statistical Analysis Software. The variables selected for descriptive analysis are respondent's state, product category, stage of company (startup or established). The simple descriptive statistical analysis of these variables provided us with a profile of the sample being studied. The researcher also used Tableau Software for Desktop for data visualization. The results were reported visually and in tables in Chapter 4.

Qualitative data from open-ended questions were extracted and analyzed to answer Research Objective 1 (TFE perception of product quality). In order to capture the perception of product quality from TFE perspective, the responses to questions related to product description and attributes were used. The researcher decided to exclude the close-ended questions for data analysis because they were not related to the objectives of this study. Three related open-ended, descriptive questions were initially selected from CTD survey. The selected open-ended questions asked TFE to provide a description about the characteristics and details of the product and raw material as well their desired projects need and outcomes. However, Carolina Textile District decided not to share the responses to one of the questions to protect the identity of their customers, as some of the information was proprietary. Therefore, this study could only use responses from two open-ended questions for final data analysis. The removed question, which was in the pilot data set shared with researcher was: "Please provide a brief description of your product. Including the number of 1) styles, 2) colors/prints, and 3) sizes you are looking to start with."

The data were analyzed using QSR Nvivo software version 11. Nvivo can be used for the organization and analysis of text, image, audio, and video data. Nvivo enables the quantification

of qualitative data, which assists researchers in data evaluation (Creswell, 2011). The primary purpose of this analysis is to define quality based on product quality dimensions and their measurable attributes addressed by TFE. A word frequency query ran to generate a list of most frequent terms used by the sample in their open-ended responses to help researcher identify the theme of TFE responses. Then, using “quality” as a keyword, a text search query was carried out on TFE responses to the two open-ended questions (Appendix B). The references that contained the keyword (quality or qualities) were looked at in context and coded into themes or Nodes. In Nvivo, the label of a Code, category, or concept is presented by a Node. When a text is Coded into a specific Node, the relevant reference to the original document can be extracted from the Nodes (Bassett, 2010). The emerging references were used for further analysis to identify TFE perception and definition of product quality. By using established product quality dimensions extracted from the literature review, as well as the new product quality dimensions emerged from TFE responses, the researcher was able to investigate the language and attributes that TFE use to define quality in their products. Figure 10 summarizes the data analysis procedure for Research Objective 1 using CTD survey data.

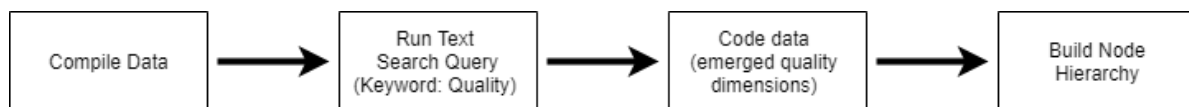


Figure 11. Summary of data analysis diagram.

Case Study

In a case study, one or multiple subjects or phenomena are explored in depth (Given, 2008). A qualitative case study is also defined as an ‘in-depth’ description and analysis of a bounded system” (Merriam & Tisdell, 2016 , p.38). Researchers in a case study collect detailed information during a period of time using different data collection methods (Creswell, 2013). Case studies are bounded in terms of time, place, and activity. In management and business research areas, case studies are used to explore problems that are difficult to investigate with quantitative research methods (Mills, Durepos, & Wiebe, 2010). The selection of this research method is based on the qualitative nature of research objectives and the need to explore the product development approaches of TFE in an in-depth manner. Case studies have advantages over large number studies when the research is more focused on descriptive-interpretive elements rather than the breadth of the study (Given, 2008).

This study used a multiple-case design which enabled a more detailed understanding of phenomena raised through the survey data exploration (Mills et al., 2010). Multiple-case studies are extensive exploration of a number of cases in order to improve generalizability, the external validity of the results and provides the ability to find similarities across cases (Merriam & Tisdell, 2016). In this research, the case studies have an un-sequenced structure, indicating that each case is investigated without any particular order (Yin, 2014). The qualitative data obtained through cases helped researchers identify the PD processes used by TFE (Research Objective 2); the identification, integration, and evaluation of consumer driven product quality attribute in the PD processes (Research Objective 3).

Sample description and selection. One of the critical steps in a qualitative case study is the selection of cases. The samples in a case study are selected strategically and in compliance

with the research purpose and objectives (Mills et al., 2010). Due to the descriptive nature of the research objectives, multiple cases with similar characteristics were studied separately. The number of selected cases depends on the type of research objectives. In qualitative multiple-case studies the recommended range of samples is from four to 15 (Mills et al., 2010). This study used six cases. In this study, TFE in their early stages of development, with company age of five years old or younger, were selected as samples. The selected entrepreneurs are located within the United States and create their products inside or outside the United States. Detailed information about each case is presented in the following sections.

Company A. Located in North Carolina, Company A designs and creates performance sportswear for women. This business was started based on entrepreneur's personal experiences and after identifying a market gap for women who want to exercise but cannot find a garment with good fit and compression characteristics. At the time of the interview, Company A was in the sample production stage.

Company B. Located in Oregon, Company B started their business in 2014 with an idea of creating performance underwear and t-shirts for men who exercise. Their focus is on providing good quality performance gear with custom-rise hemming, flat seams, and soft material. At the time of the interview, Company B had launched their product for sale on their website.

Company C. Located in Los Angeles, California, Company C launched their business with the goal of reducing pedestrians, bicyclists, and motorcyclists' accidents caused by low visibility at nights. In order to achieve its goal, Company C designs technology enhanced apparel (wearable electronics) and accessories such as jackets, shirts, backpack, and wristbands that are

featured with LED lights that show turn signals, brake lights, or pace lightening. At the time of the interview, Company C was in the sample production stage.

Company D. This company is located in North Carolina. Inspired by the owner's heritage, Company D manufactures women's apparel and accessories using ethically sourced fabrics produced by artisans in Central America. At the time of the interview, Company D had products for sale on their website.

Company E. Company E is also located in North Carolina. The business began in 2017 with the idea of reducing textile waste by creating unique pieces from used apparel, fabric deadstock, and surplus events t-shirts and uniforms. They produce a variety of apparel products and accessories. At the time of the interview, Company E has products for sale on their website.

Company F. Located in North Carolina, Company F started their business with the mission of ending the cycle of poverty endured by seamstresses and their families by providing them with living wages and safe working conditions. Company F produces ethical and sustainable clothing for women. At the time of the interview, Company F had offered products for sale on their website.

Data collection. Qualitative data were obtained from the semi-structured interviews and observations during case studies. Interviews can provide a large assortment of data but combining interview data with field notes from qualitative observation and other source of information can enhance the depth and breadth of a study (Mills et al., 2010). Prior to collecting the data, a consent form approved by the International Review Board (IRB) of Human Subjects at NC State was given to the interviewees to guarantee their anonymity for this study (Appendix C).

Interview. Phone and Skype interviews were conducted with five TFE to answer Research Objective 2 and 3. One TFE was interviewed in person. Interviews are one of the most critical sources of information in a case study (Yin, 2014). Interviews are guided and purposeful conversations that can help us understand how a particular process occurs (Yin, 2014). The qualitative interview process encourages the interviewee to describe a process or phenomenon through directed questions. The investigators can then use these descriptions for analysis and interpretation (DiCicco-Bloom & Crabtree, 2006). Depending on the research framework and research objectives, an interview can be structured, semi-structured, or unstructured. This study used a semi-structured interview process. Semi-structured interviews start with a set of predetermined open-ended questions. The interviewer might ask additional questions or let the interviewee elaborate more about a specific subject as the conversation continues. The semi-structured in-depth interview is a widely used data collection tool for qualitative studies (DiCicco-Bloom & Crabtree, 2006).

A first draft of the interview questions was sent to two experts in the field for evaluation. After receiving feedback from the industry and academic experts, the questions were slightly modified to make it more comprehensible for the interviewees. The four interview questions that were asked in consecutive order are presented in Table 5. The duration of interviews was between 15 to 30 minutes. After obtaining participants' consent, all interviews were audio recorded and transcribed to assist in data analysis. Follow-up questions were also sent to three TFE to clarify the information mentioned during the interview.

Table 5. Interview Questions.

| # | Interview Questions |
|---|--|
| A | Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market? |
| B | Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc. |
| C | Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications? |
| D | Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you? |

Qualitative observation. In order to obtain further data to answer RO2, the researcher planned to take field notes by observing the cases at the product development site. Observing and recording the TFE activities during the development process enabled the researcher to gain a richer picture of the phenomena being studied. Observations took place at a time mutually agreed upon by subject and researcher, and at a time that allows the researcher to gain as much insight into the product development process as possible, design and concept development, tech pack development, materials selection, and pattern making. Photographs of observations were taken using researcher's personal camera. The observations gave the researcher first-hand experience by recording the information as it occurs (Creswell, 2013). Direct qualitative observation also gives the researcher an opportunity to interact with entrepreneurs during the PD activities (Mills

et al., 2010). Moreover, the elements that entrepreneurs forget to mention during the interviews can be recorded during the PD process.

Data analysis. Case study data were used to fulfill Research Objectives 2, and 3. The audiotaped interviews were transcribed by the researcher. The transcribed texts were used for content analysis. The responses from each question were analyzed separately across all cases.

Research Objective 2-interviews, observation. Responses from Interview Question A were used to answer Research Objective 2. The key steps in the PD processes defined by TFEs were identified. The researcher also observed and documented (photographs) the PD practiced by a TFE during the production of an apparel item as mentioned in the previous section. The researcher incorporated any additional visual documentations related to PD process. Then, a visual illustration in (consecutive order) of the PD process practiced by TFE was created. The results were compared across cases to identify the similarities and differences between the PD processes used by each case.

Research Objective 3-interviews. Data obtained from Interview Question B, C and D were used to answer Research Objective 3. The approaches and processes used by TFE to identify consumer-driven product attributes were determined and compared within TFE cases. TFE integration of product attributes during design, development, and production were identified using TFE responses and process observation. In this step, it is critical to determine what resources the TFE use, how they document the process, and in what steps (design, development, and production) they integrate product attributes into their products.

The responses from Interview Question D help determine the product quality evaluation process by TFE. The researcher is interested in identifying how many of the interviewed TFE actually evaluate product quality and at what points in the process. Review of literature suggests that

product quality should be evaluated during product development, during production process, and after sales to the consumers.

After collecting and analyzing the data, this study delivered a demographic profile of the TFE across the United States. The methodology of this study helped the researcher identify TFE perception of product quality (Research Objective 1) through use of CTD intake survey. The interview responses and observation helped this study create a comprehensive PD process used by TFE and answer to Research Objective 2. Finally, the description of consumer-driven product quality identification, integration and evaluation were identified through interviews. This enabled the researcher to determine how TFE are defining, integrating, and evaluating quality specifications in their PD process (Research Objective 3). A summary of Research Objectives, along with their data collection and data analysis method is presented in Table 6.

Table 6. Summary of Research Methodology.

| Research Objectives | Data Collection Methods and Sources | Data Analysis |
|--|---|---|
| 1. Identify TFE perceptions of product quality for their products in their business context. | CTD Survey | Content analysis through Nvivo software |
| 2. Examine the PD processes used by TFE. | Case study interviews (Question A), process observation | Content analysis |
| 3. Examine how TFE are defining, identifying, integrating, and evaluating quality specifications in their PD process | Case study interviews (Questions B, C, and D) | Content Analysis |

Reliability and Validity

In qualitative studies, terminologies such as credibility, transferability, and trustworthiness are used to evaluate the reliability and validity of the research (Golafshani, 2003). This study engages multiple methods of data collection (interviews, survey, and observation). Using different methods and instruments will result in a more valid, reliable and diverse construction of realities. The interview questions have been tested and validated by an expert in the field (fashion product developer) as well as a faculty member with experience in fashion product development. The PD process framework developed from the results of this research was shared with a CTD staff for additional comments and suggestions. Verification strategies such as sampling sufficiency, ensuring methodological coherence, and developing a dynamic relationship between sampling, data collection and analysis would ensure reliability and validity of the study (Morse, Barrett, Mayan, Olson, & Spiers, 2002). This study creates methodological coherences by ensuring that the research objectives can be addressed through the

selected mixed methods approach. A pilot test on a sample of 25 CTD survey intakes showed that respondents used literature-specific quality dimensions and attributes to describe their products and project needs. This indicates that CTD intake survey can be a suitable tool to identify TFE perception of product quality (Morse et al., 2002).

CHAPTER FOUR

RESULTS

Research Objective 1

The first objective of this study was to identify Textile and Fashion Entrepreneurs' perceptions of product quality for their products in their business context. Research Objective 1 used data acquired from Carolina Textile District (CTD) intake survey from March 2013 until April 2018. For data analysis, the study utilized responses from participants who identified themselves as "Startup" or "Existing or Established" companies that have been in business for less than five years. This selection criteria would exclude the establishments with more experience, knowledge, and resources from data analysis, in order to provide comparable units of analysis. Responses from companies originating outside the United States were also eliminated. After refining the data, the total number of responses was 1,319.

Prior to exploring the first objective, demographic variables, established by CTD including State, Product Category, and Stage of Company were selected to create a profile of the samples being studied, using simple descriptive statistics. Also, a word count frequency query on two open ended question with QSR Nvivo was conducted as a preliminary step to determine the nature of the language and topics mostly used by TFE. The results show that CTD clients are distributed across 49 states of the United States and the District of Columbia. The majority of respondents were located in North Carolina (35.7%), followed by New York (6.6%), and Georgia (6%) (see Figure 11). The higher number of clients in North Carolina could be explained by the geographic location of CTD relative to the clients in North Carolina.

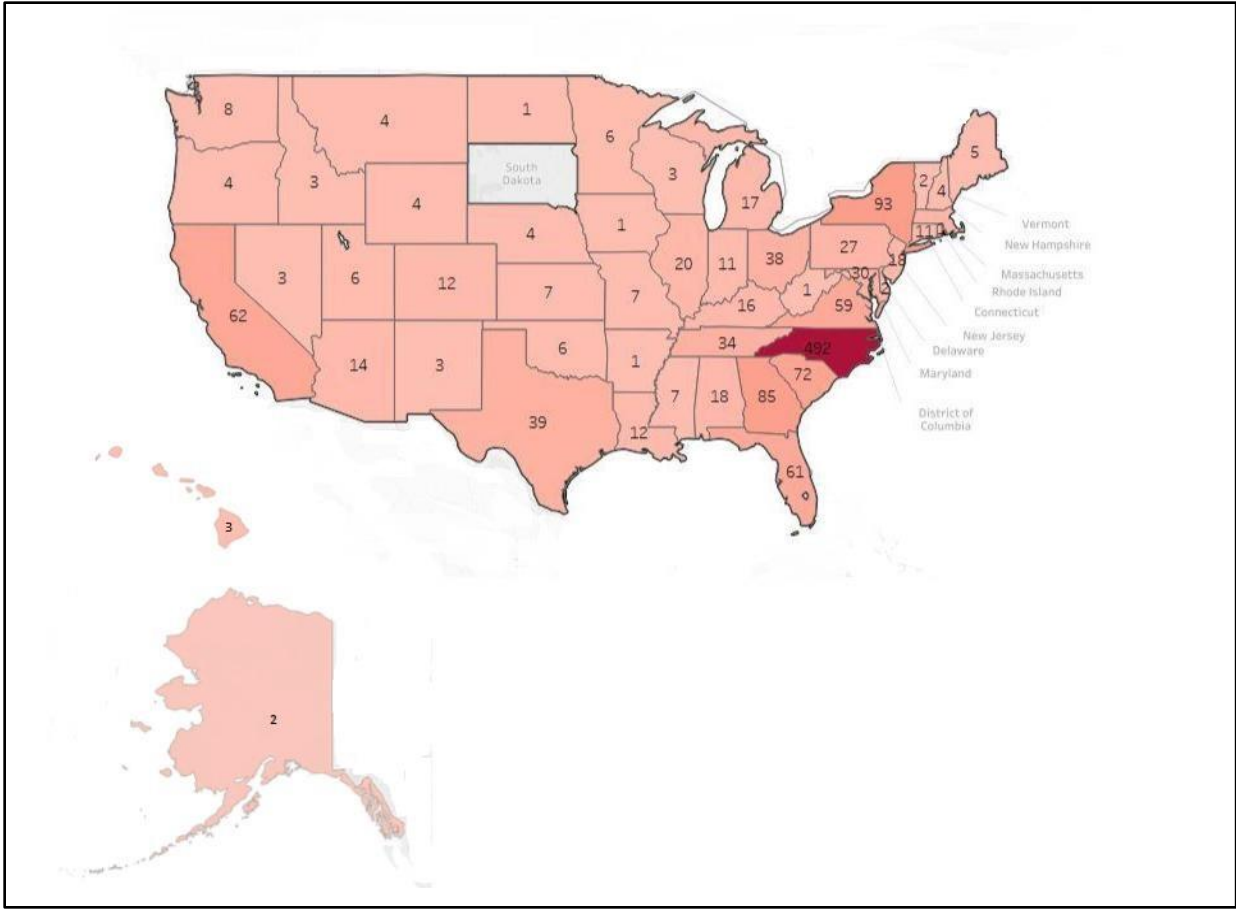


Figure 12. Heat map of the respondent's location by state.

Note. Heatmap is a geographical representation of data, in which the density of occurrence in locations are presented through color intensity. This figure was created by the researcher using Tableau Software.

The product category (Table 7) most often cited by respondents was casual apparel (25%), followed by performance and sportswear (16.5%), fashion apparel (12.8%), and home-decor and bedding (12%).

Table 7. Product Category distribution (product category names established by CTD).

| Variable | Frequency | Percentage % |
|----------------------------|------------------|---------------------|
| Casual Apparel | 330 | 25.0 |
| Performance and Sportswear | 222 | 16.8 |
| Other | 218 | 16.5 |
| Fashion Apparel | 169 | 12.8 |
| Home Décor and Bedding | 159 | 12.0 |
| Accessories | 155 | 11.7 |
| Bags and Suitcases | 151 | 11.4 |
| Children’s Apparel | 136 | 1.3 |
| Under Garments/Swimwear | 93 | 0.7 |
| Hosiery | 54 | 0.4 |
| Outdoor Gear | 33 | 0.2 |
| Maternity Apparel | 16 | 0.1 |
| Pet Product | 8 | 0.1 |
| Total Responses | 1318 | |

The stage of company included startups and existing companies that have been in business for less than five years. 76% of the sample identified themselves as “start-up” and 24.3% acknowledge their company as “existing or established” (Table 8). The “start-up” and “existing or established” designations are established by CTD and the company self-selects into one of the categories.

Table 8. Stage of Company distribution (stage of the company names established by CTD).

| Variable | Frequency | Percentage % |
|-------------------------|------------------|---------------------|
| Start-up | 990 | 76.0 |
| Existing or Established | 312 | 24.0 |
| Total | 1302 | 100 |

A word count frequency query on two open ended questions (Table 9) with QSR Nvivo was conducted as a preliminary step to determine the nature of the language and topics that was mostly used by TFE (a detailed explanation of the two open-ended questions is provided in this chapter). The query was run under the following conditions: a) minimum word length of four letters, which would remove most propositions and conjunctions, and b) grouping with stemmed words. This means the word's stem and their affixes (e.g. manufacture, manufacturing) were grouped together. A word cloud of the query result was also created and is shown in Figure 13.

Table 9. Word Count Frequency Results*.

| Rank | Word | Count | Weighted Percentage** (%) | Similar Words |
|-------------|-------------|--------------|----------------------------------|-----------------------------------|
| 1 | Fabrics | 628 | 2.22 | Fabric |
| 2 | Product | 471 | 1.66 | Production, Productions, Products |
| 3 | Cotton | 384 | 1.36 | Cottons |
| 4 | Source | 310 | 1.09 | Sourced, Sources, Sourcing |
| 5 | Needs | 288 | 1.02 | Need, Needed, Needing, |
| 6 | Looks | 279 | 0.98 | Look, Looked, Looking, |
| | Total | 2,360 | | |

**Only words with weighted frequency percentage of 1 (approx.) and more are included in the table.*

***The frequency of the word relative to the total words counted.*

Table 10. Word Count Frequency Results for Materials.

| Word | Count | Weighted Percentage (%) | Similar Words |
|-------------|--------------|--------------------------------|-----------------------|
| Cotton | 384 | 1.36 | Cottons |
| Polyester | 135 | 0.48 | Polyesters |
| Spandex | 127 | 0.45 | |
| Nylon | 97 | 0.34 | |
| Lining | 89 | 0.31 | Line, Lined, Lines, |
| Knitting | 82 | 0.29 | Knit, Knits, Knitted, |
| Zippers | 72 | 0.25 | Zipper |
| Buttons | 64 | 0.23 | Button |
| Thread | 50 | 0.18 | Threads |

In order to capture TFE perceptions of product quality for their products in their business context (RO1), the researcher had initially planned to use three open ended questions contained within the CTD intake survey. One of these questions was: “Please provide a brief description of your product. Including the number of 1) styles, 2) colors/prints, and 3) sizes you are looking to start with.” This question had been present in the initial pilot data shared with the researcher and was selected due to the use of quality attributes used by TFE to respond to the question.

However, between sending the pilot data and sending the final data for analysis, Carolina Textile District decided not to share to the responses to this question to protect the identity of their customers, as some of the information was proprietary. Therefore, this study could only use responses from two open-ended questions for final data analysis. Furthermore, the wording of these two questions changed at the beginning of 2017, as shown in Table 11. The change in nature for the second question opened the information up to include non-material information provided by the TFE.

Table 11. Open Ended Question Obtained from CTD data.

| No. | Questions (2013-2016) | Questions (2017-2018) |
|-----|---|---|
| 1 | Please list details of your preferred fabrics. | Please list details of all of the materials needed to produce your product and your current sources for these materials if you have one |
| 2 | Please list any material sources you are currently using and provide any other comments that will help us better understand your project needs. | Please provide any other comments that will help us better understand your project needs |

Data from these four questions (2013-2018) were analyzed using QSR Nvivo 11 Pro software, to understand the context in which the word “quality” was being used by TFE, and the type of language TFE adopted to describe quality in their business. This was explored by running a “Text Search” query in NVivo. The search criteria were set to look for word “quality” with stemmed word (e.g. qualities). The results show that “quality” has been used 68 times throughout the entire set of responses (n=1,319).

An analysis of text search query data using QSR Nvivo 11 software resulted in the occurrence of categories and subcategories. These categories and subcategories were classified in the software through Nodes and Codes. As mentioned in Chapter Three, according to the QSR NVivo software, Coding the data is the process of compiling all References to explain a specific topic or theme. References are the sentences or paragraphs in data that contain the word “quality” or “qualities”. The References about the specific theme are Coded under a single Node (QSR NVivo , n.d.). Prior to processing the data, the researcher decided to Code the data according to the stratification of textile and apparel product quality dimensions suggested by the literature. These five apparel product quality dimensions were performance, durability, serviceability, conformance, and aesthetics (Bubonia, 2014).

The Codes were gathered under the “Quality-Intrinsic” Node, since they have been used to explain intrinsic attributes of product quality. However, after reviewing the references that contained the word “quality”, the author decided to add and remove some dimensions to better represent and categorize this data, since some of it did not fit the pre-determined categories from the apparel literature. The review of References revealed that TFE often used “quality” in general terms to describe how “good” a product is or how it should be manufactured, solely based on their perception and subjective expectations. In these responses, expressions such as “good quality”, “high quality”, “boutique quality”, and “product quality” was adopted by respondents to describe a product and assert their expectations from a product. Therefore, a new category, “Quality-Undefined” was created and the references were Coded accordingly. The other additional category was “Quality-Extrinsic”, which was created to group the contexts in which quality was used in reference to extrinsic attributes. These were: country of origin, altruism, and sustainability. These attributes will be explained in detail in this chapter. Finally, material and manufacturing were added as intrinsic product quality sub-category. The rationale behind including material and construction was the respondent’s frequent use of “quality” in conjunction with fabrics, other raw materials, and cut and sew processes. Figure 13 summarizes the data Coding system that includes the quality dimensions that emerged among respondents’ answers to the questions.

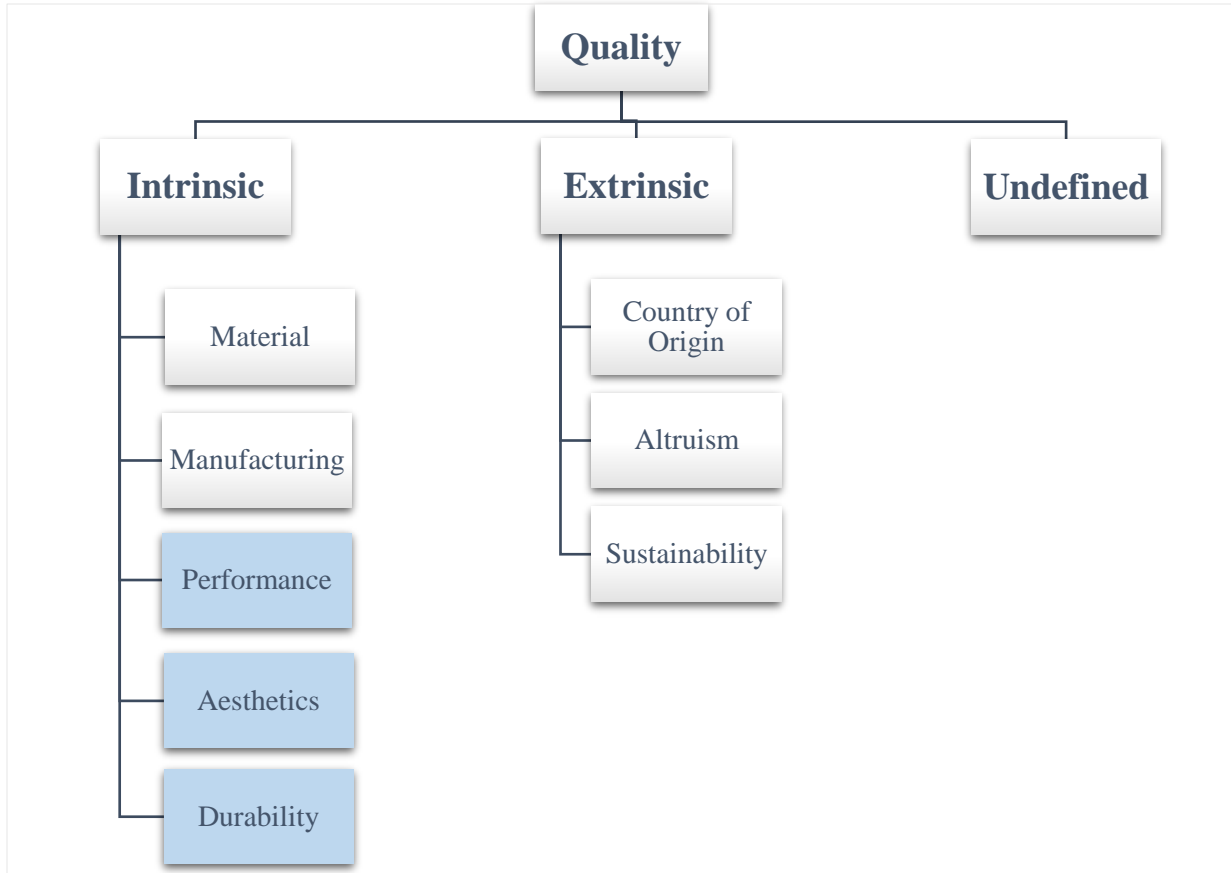


Figure 14. Data Coding System

*Note: The colored boxes represent the quality dimensions identified by Bubonia (2014)

The author identified “Quality-Intrinsic”, “Quality-Extrinsic”, and “Quality-Undefined” as the main themes of product quality described by the TFE. The results of the qualitative data analysis showed “Quality” and its stemmed word, “Qualities” were used 68 times in the data set. Each reference contained subcategories related to one or multiple Nodes and Codes. Material was rarely used alone and was frequently used in conjunction with other attributes. The references to “Quality-Intrinsic” Node appeared more frequently in the data (67) followed by “Quality-Undefined” (15) and “Quality- Extrinsic” (13). The breakdown of the number of

references assigned to each Node and Code can be found in Table 12. A full explanation of each Node follows, together with direct quote taken verbatim from the responses.

Table 12. Breakdown of the Number of References.

| Name | References |
|-------------------|-------------------|
| Quality-Intrinsic | 67 |
| Material | 33 |
| Manufacturing | 17 |
| Performance | 10 |
| Aesthetics | 5 |
| Durability | 2 |
| Quality-Extrinsic | 13 |
| Country of Origin | 9 |
| Altruism | 3 |
| Sustainability | 1 |
| Quality-Undefined | 15 |

Quality-Intrinsic Intrinsic quality attributes are the characteristics of a product related to its physical composition (Zeithaml, 1988) that cannot be changed without transforming the product (Olson & Jacoby, 1972). The intrinsic quality dimensions identified by the researcher in this study were material, manufacturing, performance, aesthetics, and durability. A discussion of each dimension follows.

Material. Material emerged as the most common subtheme in the data analysis. This could be attributed to the nature of the survey question, which asked participants about the details of their required material. Key terms such as cotton, silk, fabric, and adjectives such as pure were used to define this quality dimension. The respondents mainly used generic words to

describe the material attributes and did not use more technical and specific terms to identify their needs. For instance, one participant stated:

“I need high quality towel fabric and uncertain if it is available here. We have made some phone calls and have found there aren't very many mills producing what we need”

And another:

“A specific plastic proven to produce a high quality product in a pearl color as used in standard dress shirt buttons.”

And another:

“I found fabric to work with (very nice) but still looking for specific quality and have not found it yet.”

Manufacturing. Manufacturing was the second most widely used subtheme to define product quality. The keywords used to describe this dimension were manufacturer, construction, stitching, and finishing. The majority of participants employed the manufacturing quality subtheme to express their concerns over the quality of the cut and sew operations. One respondent stated:

We went through a process to get the feel of our shirts that we have now, and it is one of our major selling points that we use when selling our apparel now. But since then, there has been so many quality issues that we have dealt with. From wrong sizes, pieces sewn wrong, no effort shown in printing and many more.

Performance. The respondents referenced quality in performance-themed contexts by using words such as light, comfort, compression, functional, performance. This is in accordance with definition of performance as products' measurable features and attributes (Osteras, Murthy, & Rausand, 2006). For example, a respondent noted:

My main and initial goal at this stage is to find a fabric supplier that can provide a fabric that is thick enough (opaque) and also has the compression qualities that I need. I have received many sample fabrics but all of them are too thin. Having a sample manufacturer that also is able to provide the right fit will be important for the compression to work well.

In this example, the respondent describes the performance dimension of quality by stating attributes such as thickness, compression, and fit. However, these attributes were all related to another dimension which was material.

Aesthetics. This dimension of quality which, according to Kadolph, can be both subjective and objective involves the overall style, fit, and appearance of the product (Kadolph, 2007). The participants used attributes such as style, unique, and fit to describe the aesthetics quality of their desired products. One respondent used “appealing designs”, “beauty”, and “fit” to describe aesthetic quality as stated below:

” believes in ensuring high-quality, functional, and appealing designs intended to enhance beauty and fit of everyday items accessorized by our brand.”

Durability. Durability is the degree of a product’s use before it becomes physically deteriorated (Garvin, 1984). This dimension was rarely used in describing product quality. References referring to this dimension contained attributes such as “durable” and “built to last”. One example would be the following response:

“High Quality/Durable Satin (top layer) and Durable Cotton or Microfiber (sides and back) or micro fiber instead of cotton”

To summarize the findings related to “Quality-Intrinsic”, based on the number of References Coded in the text search results, it can be argued that TFE in this study define quality

mostly based on material and manufacturing characteristics. Although the CTD asked for material details and project needs, the participants' responses were limited to general terms and lacked specific details of the quality attributes they desired. The results suggest that the term "fit" was used across multiple dimensions of quality: performance, aesthetics, and manufacturing. Also, the terms "price" and "cost" were used interchangeably to evaluate perceived product quality. A summary of Intrinsic Quality dimensions, along with the attributes found in this study is presented in Table 13.

Table 13. Summary of Intrinsic Quality Dimension and Attributes.

| Intrinsic Quality | | | | |
|---|--|--|------------------------|---|
| Performance | Aesthetics | Material | Durability | Manufacturing |
| Performance, light, cool, protect, warm, comfort, comfortable, functional, compression, maintain shape, opaque, fit, sportswear | Style, unique, well designed, fit, appealing designs, design, beauty | Material, silk, fabric, cotton, pure, organic, canvas, satin, microfiber, blends, buttons, grommets, zippers, spandex, polyester, plastic, fleece, linens, price, cost | Durable, built to last | Manufacturing, sew, cut & sew, manufacturer, fit, construction, stitching, finishing, price, cost |

Quality-Extrinsic. Consumers use extrinsic product attributes to evaluate product quality, especially when they have limited information available. Consumers' assessment of product quality based on these extrinsic attribute (e.g. brand image, appearance, price) influences the perceived quality of the product (Zeithaml, 1988). The results of the researcher's investigation suggested that TFE also use extrinsic attributes to define product quality. Therefore, a new category, "Quality-Extrinsic" was created to address the definition of product quality based on extrinsic attributes. The following discussion provides further explanation and examples of the new category in more depth.

Altruism. Altruism can be defined as “Disinterested and selfless concern for the well-being of others” (Oxford Dictionaries, n.d.). This theme emerged because some respondents used empowering and giving back to community in combination with quality. For example, one respondent stated:

To provide a quality product that will protect and keep the ears warm with style to benefit all individuals while connecting and giving back to the community as business allows throughout each year

Country of origin. Some respondents used fabric’s country of origin and location of cut-and-sew production to describe the quality of a product. TFE used “China” and “Out of the Country” to refer to their perception of low-quality products. On the other hand, “locally”, “US”, and “North Carolina” were used to describe their perceived premium level of product quality. As one respondent noted:

“Quality is the utmost important. China is cheaper but the quality is not there. We are a military family and take great pride in "Made in the USA" items. Looking for a quality reputable, dependable manufacturer to work with”

Sustainability. One respondent used sustainable to define her desired quality of the fabric. It was stated:

“I am hoping to have the samples made with good quality and sustainable fabrics”

Table 14 shows the terms and categories details of “Quality-Extrinsic”.

Table 14. Summary of Extrinsic Quality Dimension and Attributes.

| Extrinsic Quality | | |
|---|-----------------------|--|
| Altruism | Sustainability | Country of Origin |
| Giving back to community, Empowering | Sustainable | NC, US, region, domestic, out of the country, China, here, locally, source, USA made, Pakistan, North Carolina, United State |

Quality-Undefined. From a consumer’s perception, the definition of quality can be limited to their emotional experiences and personal expectations of the product (Hull, 2010). For example, when a product meets or exceeds consumer’s expectation, it would be reflected as being of a “high quality” (Hull, 2010). The results of this investigation show that TFE use similar strategies to define quality and to describe their desired products. Instead of using specific terms and precise characteristics, TFE used broad terms such as “quality product”, “great quality”, and “designer quality” to describe their preferred expectation of a product. Therefore, a new category was created to address this TFE definition of quality (Table 15). For instance, respondents stated:

“Our clothing is unique because we offer quality girl’s clothing in hard to find sizing”

And another:

“I would like to offer the best quality of sock to incorporate the design and I would like to discuss options from your company”

And another:

As a father of three (all under 7) this is something I have researched and worked on over the last 7 years. I see a huge niche for an great American made product of designer quality, made with amazing materials.

Table 15. Undefined terms used to define quality.

| Quality-Undefined |
|---|
| Quality product, quality, high quality, quality clothing, boutique quality, best quality, great quality, designer quality |

Summary. The purpose of Research Objective 1 was to identify TFE perception of product quality for their products in their business context. Due to the nature of the survey questions, the researcher expected to only find intrinsic quality attributes. However, the qualitative analysis of data showed that some TFE also define quality based on extrinsic and attributes. The findings suggest that TFE perceive quality in a number of ways. The variety of terms used by the TFE were organization into three categories: Quality-Intrinsic, Quality-Extrinsic, and Quality-Undefined. The quality dimensions emerged from the intrinsic quality were performance, aesthetics, material, durability, and manufacturing. The data showed that TFE also use undefined attributes and terms to define quality. A description of quality, Quality-Undefined included the general and unspecified terms used by TFE to express their preferred quality level of their product.

Research Objectives 2 and 3

In order to answer Research Objectives 2 and 3, the researcher employed a qualitative research design. Interviews with six TFE were conducted to obtain data about the PD processes, quality integration and evaluation methods used by TFE. The data were obtained through interviews. The recorded audio was transcribed by the author. The transcripts are available in Appendix D. The interviews included four open-ended questions (Table 16). Examples were embedded within each question to assist the participants in their responses by providing a consistent example. The interviews were audio recorded and transcribed by the author to assist in

data analysis. All interviews took place in the Fall of 2018, either in person, or via phone or Skype. The researcher planned to use observation to further verify the responses of TFE. However, due to logistical issues, only Company D was used for qualitative observation.

Table 16. Interview Questions.

| # | Questions |
|---|--|
| A | Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market? |
| B | Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc. |
| C | Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications? |
| D | Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you? |

Respondent Profiles. The interviewed TFE were located within the United States and were developing a variety of products. The TFE in this study had been in business for less than five years. Two of the TFE had Bachelor’s degrees in fashion, while the four others did not have extensive experience in this field before launching their startup. The IRB consent form signed by the interviewees guaranteed their anonymity for this study. Therefore, the description of each TFE includes product category, target market, and location of each company only, without any further identifying information (Table 17).

Table 17. Profile of TFE*.

| Company | Product Category | Target Market | Location (State) |
|---------|-------------------------|---------------|------------------|
| A | Performance Wear | Adult Women | NC |
| B | Performance Wear | Adult Men | OR |
| C | Wearable Electronics | Adults | CA |
| D | Apparel and Accessories | Adult Women | NC |
| E | Accessories | Anyone | NC |
| F | Apparel | Adult Women | NC |

*The product category and target market description assigned by author.

Research Objective 2. This objective was proposed to identify the Product Development (PD) process used by Textile and Fashion Entrepreneurs (TFE). Interview Question A (see Table 16) was used to answer Research Objective 2, along with an observation of one company. The author used tables to summarize the product development steps for each company. The “Actions/Comments” column was written using TFE language. The summary of TFE responses follows.

Company A. The product development process for Company A starts with an idea or a concept. The idea is then hand sketched and evaluated multiple times by a group of “core friends and colleagues” including spouse, friends, and family. After revisions to the design, based on this feedback, Company A carries out online market research, followed by fabrication and sourcing research, and cost analysis. The next step is prototyping, which is done by a cut-and-sew facility in South Carolina. The prototype is evaluated by two focus groups; one that does not include TFE acquaintances, and then another by a core group of friends and family. A new prototype is created based on feedback and recommendations of the core group, as well as a textile professional who is hired to modify the patterns and prototype. After the product revision is

finalized, Company A sends the product for a small run production, as a “soft launch or a roll out”. Finally, based on the performance of the product and consumer’s feedback from the small run, the company decides for full-scale production. Table 18 summarizes the steps involved in Company A’s product development process.

Table 18. Product Development Steps for Company A.

| # | Step | People Involved | Action/Comments |
|---|---------------------------------|----------------------------|---|
| 1 | Ideation | TFE | |
| 2 | Design and Concept Development | TFE | Draws sketches by hand |
| | Evaluation & Revision | Spouse | Gives feedback |
| | | TFE | Applies feedback to design |
| | Evaluation & Revision | Friends and Family | Give feasibility feedback |
| | | TFE | Applies feedback |
| 3 | Market Research/ Product | TFE | Internet research, searching for distinction and uniqueness |
| 4 | Material Research and Selection | TFE | Finds material according to product specification. |
| 5 | Cost Analysis | TFE | Feasibility and profitability analysis |
| 6 | Prototyping | Industry Professional | Observes the appearance |
| | Evaluation | Unaffiliated people | Product assessment though focus group |
| | Evaluation & Revision | Friends and Family Mentors | Give feedback, give referral for expert in the field |
| | | Industry Professional | Revise pattern and design, new prototype |
| 7 | Pilot Production | Manufacturer | Small run production |
| | Evaluation | Target consumer | Consumer feedback |
| 8 | Full production | Manufacturer | Full scale production |

Company B. The product development process for Company B starts with market research and identifying the needs for their target consumers, who are adult men, age 25 to 35 who are working out. They engage in consumer research, by asking their target market directly about their needs and expectations from a workout apparel, for example, a t-shirt. After identifying the consumer's needs from a product, Company B creates the silhouette and then sources the fabric that is visually and functionally appropriate. Then, a prototype with the selected fabric is manufactured.

The prototype is market tested and feedback is obtained through a wear-test method, by asking the target market to wear the product and engage in high and low intensity exercises. Then, the product undergoes a pilot production and is market tested again with 15 to 20 men involved in exercise routine. After evaluating the feedback, the product goes into full-scale production. Table 19 summarizes the product development steps for Company B.

Table 19. Product Development Steps for Company B.

| # | Step | People Involved | Action/Comments |
|---|--------------------------------|-----------------|---|
| 1 | Ideation | TFE | |
| 2 | Market Research/Product | TFE | Market search for alternative products to satisfy target consumer needs |
| 3 | Design and Concept Development | TFE | Build silhouette |
| | Evaluation & Revision | Target Consumer | Get feedback from target consumer about product's style |
| 4 | Material Search and Selection | TFE | Finds fabric according to product specification |
| 5 | Prototyping | TFE | Develop prototypes |
| | Evaluation & Revision | Target Consumer | Get feedback from target consumer through wear-test |
| 6 | Pilot Production | Manufacturer | Small run production |
| | Evaluation & Revision | Target Consumer | Get feedback from target consumer through wear-test |
| | | TFE | Revise based on feedback |
| 7 | Full production | Manufacturer | Full scale production |

Company C. Company C begins its product development process with thorough market research by comparing their ideas to the current similar products in the market and their potential competitors. Then, the market research expands to interviewing prospective customers, friends and family. The information gathered from this market research is translated into a specification sheet that includes general product features, and projected cost to consumers. A hand-drawn sketch is created and shared with team members for internal evaluation. The next step would be getting customer feedback through interviews and survey, on a very small scale (one or two).

After refining the concept according to feedback, a tech pack that includes hardware, software, material, sizing, and anything that a product requires is developed. Then information

from the tech pack is used for creating a request for proposal, which is sent to manufacturers to get a quotation of the manufacturing costs and timeline. Because of the high costs associated with wearable electronics, a very small-scale production takes place to manufacture prototypes (about three). The prototypes are evaluated internally to review them based on the intended product specifications. Then, a small-scale production takes place and the product is tested internally and is sent to testing agencies as well as consumers for evaluation. Feedback is gathered, and if applicable, revisions are made before full scale production takes place. A summary of product development steps for Company C is presented in Table 20.

Table 20. Product Development Steps for Company C.

| # | Step | People Involved | Action/Comments |
|---|--------------------------------|---|--|
| 1 | Ideation | TFE | Identify general product features and cost |
| 2 | Market Research | TFE, Target consumers, Friends and Family | Market search for current market, and identifying customer needs |
| 3 | Design and Concept Development | TFE | Hand drawn sketches |
| | Evaluation & Revision | TFE | Get feedback from team |
| | Evaluation & Revision | Target consumers | Get feedback from consumers |
| | | TFE | Revision based on team and consumers feedback |
| 4 | Tech Pack Development | TFE | Create the tech pack |
| 5 | Cost Analysis | TFE | Get quotation and timeline from factories |
| 6 | Prototyping | TFE | Develop Prototypes |
| | Evaluation & Revision | TFE | Evaluate internally |
| 7 | Pilot Production | Manufacturer | Small scale production |
| | Evaluation & Revision | TFE, Testing Agencies, Target consumers | Evaluate product specification and performance |
| 8 | Full Production | Manufacturer | Full scale production |

Company D. The product development process for Company D begins with an idea, followed by a hand sketch of the garment's silhouette. The width of fabric that this TFE uses are only 36 inches, therefore, the fabric has an impact on design. After refining the design, a Computer Aided Design (CAD) sketch of the product is made using Adobe Illustrator, and color selection and blocking of the design is determined. Color blocking is arrangement of different colors based on the color wheel. The next step is creating prototypes using a sample fabric to view the flow and appearance of the garment on the body. Based on the appearance of the prototype, a few revisions are made to the pattern. After making the revisions, a new prototype is made with the final selected fabric, and photographs of the prototype is sent to previous customers for evaluation. When the final revisions are made based on customer feedback, the patterns are evaluated by the production manager, and the product goes into full production. The product development steps for Company D are presented in Table 21.

Table 21. Product Development Steps for Company D.

| # | Step | People Involved | Action/Comments |
|---|---|--------------------|---|
| 1 | Ideation | TFE | Generate idea |
| 2 | Design and Concept Development | TFE | Hand drawn sketches |
| | Evaluation & Revision | TFE | Refine the preliminary design |
| 3 | Color Selection and Pattern Development | TFE | Create the color blocking and developing patterns |
| 4 | Prototyping | TFE | Develop Prototypes |
| | Evaluation & Revision | TFE | Evaluate the appearance, revise the patterns |
| 5 | Pilot Production | TFE | Create sample with final fabric |
| | Evaluation & Revision | Previous consumers | Evaluate the product |
| | | TFE | Revision based on feedback |
| 6 | Full Production | Manufacturer | Full scale production |

Company E. Company E begins the product development process with ideas or concepts given to them by the consumers through sending a new order. As mentioned in Chapter 3, Company E creates unique pieces from old memorable pieces collecting dust or fabric deadstock. Therefore, the idea for a product is mainly generated by their clients. If the concept is new for the company, a market research study with a focus on the specific product is carried out. The purpose of the research at this point is to find different product ideas in the market and show it to the potential customers, so that they can select the exact product that they are looking for. For example, a consumer wanted to order a wall hanging, which Company E did not produce before. Company E would research the market for existing product designs and will show alternative designs to the consumer to determine their exact need. The next step is developing prototypes and determining the process timeline and required material. The prototyping is then followed by quality evaluation and revisions to the construction of the product. Finally, after multiple

revisions, the product is sent to the final production. A summary of the product development process of Company E is presented in Table 22.

Table 22. Product Development Steps for Company E.

| # | Step | People Involved | Action/Comments |
|---|---|------------------|--|
| 1 | Ideation | Target consumers | Consumers give TFE ideas |
| 2 | Product Research | TFE | Search for alternate products in the market |
| 3 | Pattern Development | TFE | Create patterns |
| 4 | Prototyping | TFE | Develop Prototypes |
| 5 | Material Selection and Process Evaluation | TFE | Determine the material needed and process timeline |
| | Evaluation & Revision | TFE | Evaluate the product quality |
| 6 | Full Production | Manufacturer | Full scale production |

Company F. The product development process for Company F initiates with design sketches and then paper patterns for their target market, who are women between the ages of 25 to 39 interested in ethical and sustainable fashion. Company F talks with their target market to identify their needs and requirements and incorporates that into their design of the product. After making paper patterns in three sizes, an online tech pack is created. The fabric and color scheme are also identified. Once all the information in the tech pack is gathered, a prototype is manufactured by the contractor. The prototype is sent back to the TFE and evaluated according to specifications in the tech pack. If discrepancies are found, for example the manufactured measurements were different than what specified in the tech pack, company F will ask their manufacturer to revise the prototype and send a new sample. After confirming the appearance and construction of the new sample, the product is sent again to the manufacturer for full production. Table 23 contains the product development steps for Company F.

Table 23. Product Development Steps for Company F.

| # | Step | People Involved | Action/Comments |
|---|--------------------------------|-----------------------|---|
| 1 | Ideation | TFE | |
| 2 | Design and Concept Development | TFE | Create hand drawn sketches |
| 3 | Market Research | TFE, Target consumers | Talking with target consumers to identify their needs |
| 4 | Pattern Development | TFE | Create paper pattern |
| 5 | Tech Pack Development | TFE | Create the tech pack |
| 6 | Material and Color Selection | TFE | Determine the material specification and color |
| 7 | Prototyping | Manufacturer | Create the prototype |
| | Evaluation & Revision | TFE | Evaluate the product specification and appearance |
| 8 | Full Production | Manufacturer | Full scale production |

Qualitative observation. In order to verify the product development process indicated by TFE and to gain a richer picture of the PD process, a qualitative observation was conducted by the researcher. Company D was selected for qualitative observation. The researcher met with the TFE on November 13th, 2018, at 2:00 pm in the TFE home, where all the product development steps except full production were conducted. During the observation process, the TFE was in attendance and was in the process of working on a new product. The researcher reviewed the PD steps that the Company D indicated during the interview and matched it with the steps that were conducted by the TFE. The PD steps, as previously indicated by the TFE are idea generation, design and concept development, color selection and pattern development, prototyping, and sample production. The researcher was able to verify that this TFE is following the steps as indicated in the interview by capturing the visual evidence in the PD space. For example, for idea generation and design and concept development the researcher observed multiple hand drawn sketches and notes. A concept board that included swatches of different fabrics and colors was

created which indicated the color selection step. The researcher also viewed paper patterns as well as a prototype made with a test fabric. At the time of the observation, the TFE was working on a sample product with the final selected fabric. Visual documentation taken from the PD process conducted by Company D can be found in Appendix E.

Summary. A summary of TFE product development steps are presented in Table 24. The PD steps followed by TFE (in chronological order) were ideation, concept development, market research, tech pack development, cost analysis, prototype development, pilot production, and full production. Three main evaluation and revision steps were integrated into the process after concept development, prototype development, and pilot production. Evaluation and revision mean that product or concept is being assessed (by either TFE, consumers, or both) and revisions are made based on the assessment. TFE start their PD process with ideation, which comes from a variety of sources. From looking at the data, we are making a case for there being a variety of reasons to develop a new product. Concept development, which includes design development, is where the idea is transferred to a visual understandable format. TFE used hand drawn sketches or CAD to create product concept. TFE then conducted market research by looking at current trends, consumer needs, and similar products in the market. The next step was to identify the color themes, materials, patterns, and measurements, which are the components of the tech pack. Although all TFE talked about identifying the component of tech pack, only two of the TFE used the actual phrase. Cost analysis which was only followed by two TFE, was the process of estimating the material and production costs, and the overall cost feasibility of the product. TFE created one or multiple prototype to have a physical and 3-dimension visualization of the product. In this study, prototypes served as a critical tool for assessing a product internally as well as evaluating consumers' attitude towards the product, before it goes to full production. In

the pilot production, sample products are created and evaluated by consumers. Two TFE eliminated this step, since prototypes served as their samples. After making all the necessary revisions, the product is sent for full production.

Table 24. Identified product development steps for TFE.

| Company | Ideation | Concept Development | E&R | Market Research | Tech pack Development | Cost Analysis | Prototype Development | E&R | Pilot Production | E&R | Full Production |
|---------|----------|---------------------|-----|-----------------|-----------------------|---------------|-----------------------|-----|------------------|-----|-----------------|
| A | | | | | | | | | | | |
| B | | | | | | | | | | | |
| C | | | | | | | | | | | |
| D | | | | | | | | | | | |
| E | | | | | | | | | | | |
| F | | | | | | | | | | | |

Time

Note1: E & R indicate evaluation and revision process.

Note 2: Market research step for Company B and C (highlighted in red) were conducted prior to the concept development.

Note 3: Blank boxes indicates the step missing from the company’s product development process.

Research Objective 3. The third objective of this study is to examine how TFE are identifying, integrating, and evaluating quality specifications in their PD processes. Interview Questions B, C and D (see Table 16) were used to address Research Objective 3. The summary of TFE responses follows. The quality attributes in the quotation marks are taken verbatim and are in order of how they were mentioned by the TFE. The activities summarized in tables below are written in chronological order.

Company A. This TFE *identifies* the preliminary quality attributes of the products through personal experience while engaging in an active exercise training. Then, these quality characteristics are confirmed by holding focus groups with workout partners and other potential customers. The discussions with the focus group enables A to identify the missing quality attributes for the product or to eliminate the ones that were originally thought to be necessary, but in fact were not desired by consumers. The examples of the consumer driven quality attributes identified by the TFE are “moisture wicking”, “compression”, “core stabilizing”, “fashionable”, “coverage”, “durability”, “function”, “comfort”, “length”, “drape”, and “thickness” (Company A, Personal Communication, August 29, 2018).

After identifying the desired quality characteristics, Company A *integrates* them by selecting fabric and supporting materials that will address the previously mentioned attributes. However, fabric selection is mediated by the cost to ensure that the targeted consumers can afford the finished product. After selecting the optimal fabric, the characteristics such as “coverage”, “fashionable”, and “length” (Company A, Personal Communication, August 29, 2018) are incorporated into the design and construction of the product. Company A is still in the pilot production stage and does not have any sales (as of the time of the interview), which would assist in evaluation of product by target consumers. However, quality is planned to be *evaluated*

through consumer reviews on the company’s website and their feedback after wearing the product for workout and exercise. A summary of the quality attributes identification, integration, and evaluation are presented in Table 25.

Table 25. Quality Attributes Identification, Integration, and Evaluation Methods-Company A.

| Identification | Integration | Evaluation |
|--|---|---|
| <ul style="list-style-type: none"> • Personal experience • Focus group | <ul style="list-style-type: none"> • Design development • Fabric selection • Construction process. | <ul style="list-style-type: none"> • Website reviews (planned) by consumers. |

Company B. The quality attributes are *identified* by Company B via doing research in the workout space and talking directly to target consumers. The attributes obtained from this research were “antimicrobial”, “reducing odor”, “wicking”, “hand feel”, “less chafing”, “comfort”, and “style” (Company B, Personal Communication, September 19, 2018). The TFE orders fabric from a mill based on the attributes and the availability of the fabric. While waiting to receive the fabric order, Company B is focused on *integrating* the quality attributes through developing and modifying the design and construction of the garment. The examples given by the TFE are “stylized silhouette”, adding collar and pockets, and using a “certain hem” type. Company B *evaluates* the quality attributes through wear tests and feedback about garment’s construction as well as the fabric. The other evaluation tool that Company B relies on is survey feedback from consumers. The criteria for changing an attribute of a specific product is when the consumer’s satisfaction of that attribute is below 50%. Company B explained the evaluation process by providing an example of a recent quality issue incident. The reviews of a men’s performance underwear showed that consumers were complaining about the waistband. After reviewing the product and consumer’s comments, B decided to fix the quality issue by adjusting

the waistband design and using a new material. A summary of the quality attributes identification, integration, and evaluation are presented in Table 26.

Table 26. Quality Attributes Identification, Integration, and Evaluation Methods-Company B.

| Identification | Integration | Evaluation |
|--|--|--|
| <ul style="list-style-type: none"> • Market and product research • Consumer interviews | <ul style="list-style-type: none"> • Design development • Material selection • Construction process | <ul style="list-style-type: none"> • Consumer survey • Wear test |

Company C. As mentioned in Chapter Three, Company C is a wearable textile startup. Company C’s approach for *identifying* consumer quality attributes is through researching existing products measuring the success of other products in the market. The next step is interviewing a small group of friends and family as well as an in-house discussion about product quality characteristics. After identifying key product attributes, these attributes are ranked based on consumer preferences while considering the cost associated with incorporating each attribute into the product. This TFE indicates that although the product has a higher price point and the company is more flexible in adding extra features into the product, they still try to stay within consumer’s desirable price boundaries. The final step is to again assess the attributes based on the existing products in the market and to analyze how C can advance beyond their competitors. The quality attributes mentioned by Company C were “durability,” “washability,” “water repellency,” “leaking,” “not overheating,” (Personal Communication, September 17, 2018) and battery efficiency. The *integration* of the attributes for wearable electronic product offered by Company C comprises two main parts: fabric and material, and electronic. The specifications of fabric and other support materials are predetermined by the factory that Company C is working with. The second step is finding suppliers that can provide them the certified electronics parts

with given specifications. After securing the material, C ensure the quality and specification integration through building and revising the prototypes. The direct engagement of consumers in this stage is very minimal.

Company C *evaluates* the quality attributes internally to ensure that the product is performing based on the predetermined specifications. Because of the incorporation of electronics, Company C is also legally obligated to evaluate the product through an external testing agency. After getting the required certifications, sample products are sent to a small group of consumers (“beta testers”) for quality evaluation. The consumers are asked to wear the product and send their feedback and comments about the performance and quality of the product. A summary of the quality attributes identification, integration, and evaluation are presented in Table 27.

Table 27. Quality Attributes Identification, Integration, and Evaluation Methods-Company C.

| Identification | Integration | Evaluation |
|--|--|---|
| <ul style="list-style-type: none"> • Market and product research • Friends and family interviews | <ul style="list-style-type: none"> • Material selection • Prototype revision | <ul style="list-style-type: none"> • Testing agencies and certifications • Wear test • Consumer feedback |

Company D. Company D uses consumer feedback (through survey, email or in person) from the previous collections to *identify* quality attributes. D also adds the features that deems desirable based on personal experiences or based on consumers’ comments. Examples for the desirable product attribute included invisible “pockets” for dresses and skirts. This feature is *integrated* during the design development step by modifying the lines and color blocks of the fabric. The fabrics for Company D’s products are handmade outside the United States, so the TFE has minimal control over the quality attributes of the fabric. However, prior to submitting a

new order, Company D asks for fabric samples and *evaluates* the appearance. A prototype is created with fabric samples and laundered using a washing machine to evaluate the garment’s appearance after wash. Company D also relies on consumer surveys to get feedback about pieces in the collection. An incentive in the form of a discount towards next purchase is used to encourage consumers to respond to the survey. A recent example of quality issues that Company D noticed after receiving the reviews were product sizing and skirt length. The feedback information was further used to solve the quality problem for the next collection. A summary of the quality attributes identification, integration, and evaluation are presented in Table 28.

Table 28. Quality Attributes Identification, Integration, and Evaluation Methods-Company D.

| Identification | Integration | Evaluation |
|---|--|---|
| <ul style="list-style-type: none"> • Consumer feedback from previous collection • Personal experience | <ul style="list-style-type: none"> • Design development • Construction process | <ul style="list-style-type: none"> • Post laundering assessment • Consumer survey |

Company E. The consumer driven quality attributes are *identified* by product and market research and reviewing consumers reviews on similar products in the market to identify desired attributes. Company E also conducts initial interviews with consumers and then shows them the prototypes of the products and ask them about the attributes they require and the attributes that they want to be improved. Company E provided an example of a recent product which is a quilt produced from a consumer’s old but valuable apparel. The key quality attribute for this product was identified as “warmth”, “durability”, and a “good representation” (Company E, Personal Communication, October 17, 2018) of the initial apparel. Company E *integrates* the quality attributes by mainly selecting suitable material based on product’s end-use. For example, as mentioned by the TFE, for a makeup case the main quality attribute is washability. Therefore, E

decided to use vinyl for the lining to simplify the cleaning process. Company E also try to integrate the strongest fabric (“fibers aren’t all rubbed off and there aren’t a lot of nips outside” (Personal Communication, October 17, 2018)) to ensure the structural integrity and functionality of the final product.

Company E *evaluates* the quality of the products by using the prototypes in-house and assessing the performance of the product during use. Company E also relies on electronic or in-person consumer’s feedback for assessing product assessment. Company E is in the process of building a new website with a capability of posting reviews, so consumers can add feedback for each product. A summary of the quality attributes identification, integration, and evaluation are presented in Table 29.

Table 29. Quality Attributes Identification, Integration, and Evaluation Methods-Company E.

| Identification | Integration | Evaluation |
|--|--|--|
| <ul style="list-style-type: none"> • Product and market research • Consumer interviews | <ul style="list-style-type: none"> • Material selection | <ul style="list-style-type: none"> • Wear test (in-house) • Consumer feedback • Website reviews (planned) |

Company F. Company F *identifies* the quality attributes by directly talking to their target market and asking about their needs and wants in terms of product quality and design. The identified attributes included “comfort”, “durability”, “sustainable”, “breathability”, maintenance, “color”, “complements most body types”, “style”, “professional”, and “modest” (Company F, Personal Communication, October 23, 2018). Company F *integrated* these attributes by using the material that the TFE believed would exhibit the desired quality characteristics. For example, most of the pieces are manufactured from natural fibers such as

“100% organic cotton”, “100% silk, and “100% pineapple fiber” (Company F, Personal Communication, October 23, 2018). Some attributes such as color, length, and style are integrated during the design step of the product development process. Company F also sustains the durability of the product by using skilled cut-and-sew labor and ensuring sewing quality. Sustainability is an important value for this TFE consumers using sustainable material and transparent supply chain are emphasized.

The quality is *evaluated* through wear testing by the TFE. The TFE wears the apparel to assess the comfort and durability of each garment during wear and tear. The products are also laundered to evaluate the color change and “how it will withstand against being washed and dried” (Company F, Personal Communication, October 23, 2018). In addition, Company F also relies on consumers’ reviews and feedback to improve the quality of the next collection. A summary of the quality attributes identification, integration, and evaluation are presented in Table 30.

Table 30. Quality Attributes Identification, Integration, and Evaluation Methods-Company F.

| Identification | Integration | Evaluation |
|---|--|---|
| <ul style="list-style-type: none"> • Consumer interviews | <ul style="list-style-type: none"> • Design development • Material selection • Construction process | <ul style="list-style-type: none"> • Wear test (in house) • Consumer feedback • Post laundering assessment |

Summary. A review of TFE responses to Interview Question A (see Table 31) shows that TFE use different steps in their product development processes and that these steps are not taken in the same order. Responses to Interview Questions B, C, and D show that a number of different methods, procedures, and tools are employed by TFE to identify, integrate, and evaluate

consumer driven quality attributes. A summary of processes for identifying, integrating, and evaluating product quality is presented in Table 31. This comparative table shows that TFE mainly rely on personal experiences, consumer feedback, and market research to identify product attributes. The integration of quality appears to occur during design and concept development, material selection, and the construction process. TFE did not design their own fabric, but they ensured that quality attributes are integrated by selecting the fabric and material that exhibits desired characteristics. Five out of six subjects did not have an in-house full production facility, but they try to select high quality cut-and-sew contractors. Quality evaluations took place through consumer reviews, surveys, feedback and wear testing; post laundering assessment by the TFE, and prescribed quality tests through external testing agencies. The most commonly used methods for evaluating quality were consumer surveys and feedback (e.g., email) after sales. Chapter 5 includes the concluding remarks regarding the rationale behind the responses from individual TFE.

Table 31. Quality Attributes Identification, Integration, and Evaluation by TFE

| | Identification | Integration | Evaluation |
|----------|--|--|---|
| A | <ul style="list-style-type: none"> • Focus group • Personal experience | <ul style="list-style-type: none"> • Construction process • Design development • Fabric selection | <ul style="list-style-type: none"> • Website reviews (planned) |
| B | <ul style="list-style-type: none"> • Consumer interviews • Market and product research | <ul style="list-style-type: none"> • Construction process • Design development • Fabric selection | <ul style="list-style-type: none"> • Consumer survey • Wear test |
| C | <ul style="list-style-type: none"> • Friends and family interviews • Market and product research | <ul style="list-style-type: none"> • Material selection • Prototype revision | <ul style="list-style-type: none"> • Consumer feedback • Testing agencies • Wear test |
| D | <ul style="list-style-type: none"> • Consumer feedback • Personal experience | <ul style="list-style-type: none"> • Construction process • Design development | <ul style="list-style-type: none"> • Consumer survey • Post laundering assessment |
| E | <ul style="list-style-type: none"> • Consumer interviews • Product and market research | <ul style="list-style-type: none"> • Material selection | <ul style="list-style-type: none"> • Consumer feedback • Wear test (in-house) • Website reviews (planned) |
| F | <ul style="list-style-type: none"> • Consumer interviews | <ul style="list-style-type: none"> • Construction process • Design development • Material selection | <ul style="list-style-type: none"> • Consumer feedback • Post laundering assessment • Wear test (in house) |

CHAPTER FIVE

CONCLUSION

The textile and fashion industry is experiencing a growth in consumer interest and aesthetic desire for artisanal products that are ethically produced on a small scale by entrepreneurs and have higher perceived quality than fast fashion apparel (Pookulangara & Shephard, 2013). The growing presence of textile and fashion entrepreneurs and small business owners in the United States is an outcome of this phenomenon. According to the Census Bureau (2018) small textile and apparel manufacturing firms (less than 20 employees) account for 82% of the total manufacturing firms in the industry (US Census Bureau, 2018). According to a report by McKinsey & Company (2017), venture capital investment in the fashion system is expected to grow, as investors will be competing to acquire or invest in the most attractive startups.

The product development process, as a series of steps in which an idea transforms into a product, is critical to the survival of each entity. Textile and fashion companies employ innovative methods and resources to use customer insights as a source of differentiation and to enhance their product development process (McKinsey & Company, 2017). However, due to Textile and Fashion Entrepreneurs' (TFE) limited access to a large amount of marketing data and evaluation tools, TFE may not be able to fully connect with their consumer. Regardless of the differences in the PD processes, textile and fashion companies should ensure that the final product conforms to predetermined specifications and standards in terms of design, performance, and quality (Senanayake, 2015). Although several product development processes have been created for established textile and fashion companies, the use of a formal product development model by TFE has not been fully investigated, therefore the integration of consumer-driven product quality attributes into the PD process by textile and fashion entrepreneurs is unknown.

The purpose of this study was to identify the perceptions of product quality of Textile and Fashion Entrepreneurs, examine TFE processes, and then examine how product quality is integrated into their stated product development processes. The objectives of this study were as follows:

1. Identify Textile and Fashion Entrepreneurs perceptions of quality for their products in their business context.
2. Examine the product development processes used by Textile and Fashion Entrepreneurs.
3. Examine how Textile and Fashion Entrepreneurs are identifying, integrating, and evaluating quality specifications in their product development processes.

This study used a mixed method research approach to address the research objective. The mixed method research design comprised survey data analysis and a case study. The survey data was obtained from Carolina Textile District (CTD) and was used to answer Research Objective 1. The data were collected from May 2013 to April 2018 and the number of usable data points was 1,319. The selected participants for this research were TFE and existing or established textile and fashion companies across the United States that were in business for less than five years.

A case study research method was employed to address the Research objectives 2 and 3. Semi-structured interviews consisting of four interview questions (see Table 5) were conducted with six TFE. The interviews were audio-taped, and these files were transcribed for data analysis. In order to get a broader picture of the studied phenomenon, a qualitative observation of one of the TFE (Company D) development process was conducted. The major findings are discussed in this chapter based on the concluding summary of each research objective.

Research Objective 1. Identify Textile and Fashion Entrepreneurs' Perceptions of Quality for their Products in their Business Context.

The results of text search query on CTD data (n=1,319) shows that the word “quality” has been used 67 times. The CTD questionnaire asked respondents to provide the details of fabrics, materials, and any other project needs. Since this objective was focused on TFE perception of product quality, the author decided to code the data according to five product quality dimensions (performance, durability, serviceability, conformance, and aesthetics) suggested by the literature (Bubonia, 2014). However, further investigation on the context in which “quality” was used revealed that TFE use intrinsic, extrinsic, and undefined attributes to describe product quality. Therefore, the researcher created three main categories of “Quality-Intrinsic”, “Quality-Extrinsic” and “Quality-Undefined” and classified the data based on these three categories. None of TFE responses could be categorized into serviceability and conformance. Conformance is the extent in which a product meets its predetermined specifications (Bubonia, 2014), which means a product should be manufactured in order to evaluate its conformance to specification. Since TFE were investigating production, talking about product’s conformance would not be relevant at this point. Two new categories of material and manufacturing were developed to represent their responses. Each of these categories contained sub-categories that were identified by the researcher based on respondent response and the literature (Table 32).

Table 32. Identified categories and subcategories of product quality dimensions expressed by TFE.

| Quality-Intrinsic | Quality-Extrinsic | Quality-Undefined |
|--------------------------|--------------------------|--------------------------|
| Material | Country of Origin | |
| Manufacturing | Altruism | |
| Performance | | |
| Aesthetics | | |
| Durability | | |
| Sustainability | | |

In the “Quality-Intrinsic”, the word “quality” was widely used in conjunction with material, followed by manufacturing and performance, which shows the areas where TFE were more concerned regarding the quality of their final product. However, this could also be attributed to the nature of the survey question. The importance of these attributes for TFE was similar to those of consumers, as in a study by Swinker & Hines (2006), who found that fabric, construction, and performance quality influences consumer perception of product quality. “Fit” and “cost” was also used across multiple dimensions of product quality. This is due to the multidimensional definition of “fit” in apparel, which is related to performance, aesthetics, and manufacturing (Keist, 2015). The terms “price” and “cost” were used interchangeably to describe material and manufacturing quality. Cost is the expense, or the amount of money needed to acquire a product or service, whereas price is the amount of money that a consumer is expected to pay to purchase a product (Friedman, 2000). The responses suggest that TFE could not differentiate cost from price, but they used both of these terms to describe product quality and make subjective inferences about material and manufacturing quality. This indicates that TFE

have a similar mindset to consumers by considering price as a product quality indicator (Hines & Swinker, 2001; Moore & Carpenter, 2008).

TFE also described quality with extrinsic product quality attributes such as altruism, country of origin, and sustainability. Country of origin attributes were used to make a distinction between the perceived quality of domestically sourced products and the quality of products that were manufactured in other countries. This means that similar to consumers (Ha-Brookshire, 2012; Inch & McBride, 2004; Veale & Quester, 2009), country of origin influenced TFE perception of product quality. The TFE placed emphasis on sourcing locally grown cotton and USA-manufactured products, which could also be influenced by their target market demand. According to a study by Ha-Brookshire (2012), consumers perceive apparel product made in the United States with U.S. cotton to be of a higher value. They also believe the price of such a product would be almost twice that of the product made in China with Chinese cotton.

TFE also described quality using broad and unspecific terms which did not fit into the established categories; therefore, the author created another product quality category: “Quality-Undefined”. The results of this study suggest that some TFE relied on describing their desired product quality level based on general words (e.g. quality product, designer quality, high quality) instead of using technical terminologies or providing detailed descriptions of their needs. This level of communication with CTD could ultimately result in receiving unsatisfactory results in the development and production phases. It is also suggested that TFE tried to communicate about product conformance to their desired attributes through non-technical language by using phrases such as “designer quality, or “good quality”. It appears that they are using comparative context to describe their products, where a brand designation embodies the feeling of quality, rather than any specific attribute.

The outcome of this study suggests that TFE mainly used generic words to describe product quality attributes and did not use technical terms specific to the industry to identify their needs. The language used to describe product quality attributes was more similar to consumers' language, compared to the language used in technical documents and references or by the experts in the textile and fashion industry. As mentioned in Chapter Three, this study only used responses from TFE who had been in business for less than five years. TFE limited use of technical terms for describing the product quality attributes could be attributed to lack of experience and exposure to the textile and fashion industry. In this research, TFE used intrinsic, extrinsic, and undefined attributes to describe product quality. TFE broad definition of quality can be shown in the varied approaches that they used to define quality. As mentioned in Chapter Two, quality can be defined based on transcendent, product-based, user-based, used-based, manufacturing-based, and value-based approaches (Garvin, 1984). The researcher expected TFE to describe quality in product-based (presence and absence or the quantity of measurable attribute according to product (Garvin, 1984)) and manufacturing-based (conformance to predetermined specifications (Garvin, 1984)) approaches. However, the outcome of this research indicated that TFE also used a user-based approach which includes any product attributes (intrinsic or extrinsic) that satisfies consumers (Garvin, 1984).

Research Objective 2. Examine the Product Development Processes Used by Textile and Fashion Entrepreneurs.

This study identified the steps, process, and people involved in the development of a product by TFE. The main PD steps identified by the researcher (in chronological order) were ideation, concept development, market research, tech pack development, cost analysis, prototype development, pilot production, and full production. The product development steps and the order

in which they were carried out were almost consistent among TFE. Three product development steps: concept development, prototype development, and pilot production, were followed by evaluation and revisions. In order to better display the PD process, steps, and their sequence, as well as the integration of evaluation and revision steps in the PD process, the researcher created a suggested process model (Figure 14). The developed model is based on the New Product Development model published by Tzokas et al. (2004). The suggested model is a sequential stage-gate model which means the process includes decision points referred to as Evaluation and Revision. This model is derived from the case study data of six TFE used in research. The model includes a post-launch evaluation to better reflect the TFE responses as well as the available models in the literature.

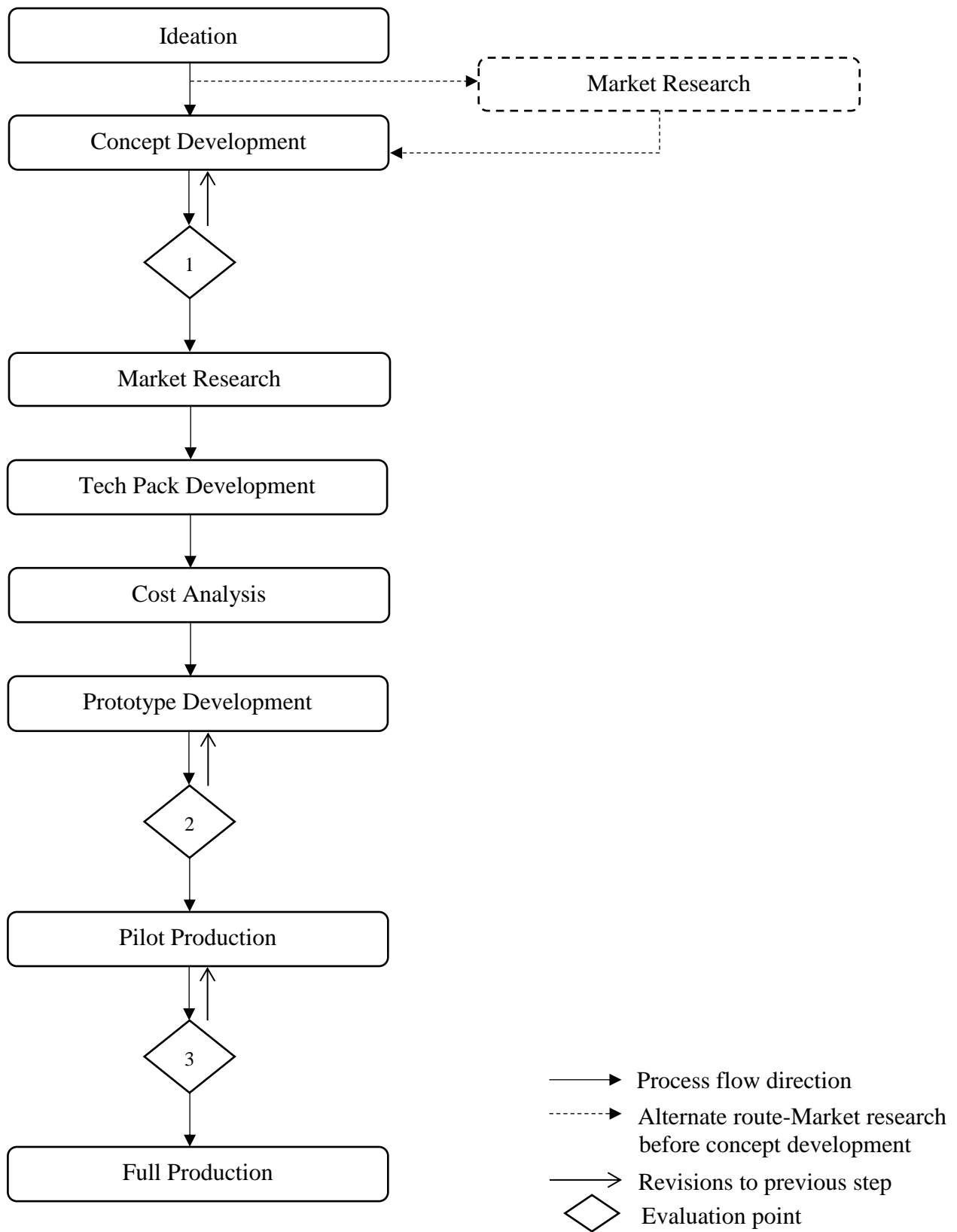


Figure 15. Suggested Product Development Model for TFE

In established fashion companies, product development activities are conducted by specialized groups. May-Plumlee and Little (2001) categorized these functional groups into marketing, product development, merchandising, and production planning and control. However, in this study, most PD steps are conducted by TFE themselves which can be attributed to limitations in resources, including capital, and labor. The point of Ideation, as the first PD step, was driven by a variety of reasons. The results of this research suggested that TFE generate new ideas based on their personal experience or needs, market research according to their product category or target consumer, and direct consumer input. Ideas generated through TFE personal experiences had different drivers. Three of the TFE experienced a lack of products in the market to satisfy their specific needs functionally, whereas three other TFE started their business with an idea to create products with sustainability-oriented attributes. In established companies, idea generation for a product or a line of products is a result of an extensive market research, trend analysis, and use of previous sales data (May-Plumlee & Little, 1998; Senanayake, 2015). In companies such as Zara, cross-functional teams with experts from fashion, commercial, and retail cooperate with the design department to create ideas that are based on international trends, consumer's direct inputs and sales record, and social media trends (Hanbury, 2018; Senanayake, 2015). This study suggests that TFE relied on internet search or interviews with target consumers, friends, and family for market research. This can be attributed to TFE lack of resources, specialized groups, and capital necessary for conducting extensive market research.

In established companies, ideation and market research would then drive development of product specifications, to ensure conformance to consumer needs. These specifications are typically documented in detail in a series of formal and technical documents, known as a "tech pack" (Keiser & Garner, 2012). However, in this study, the tech pack development process was

informal and less structured, compared to established companies. In established companies, tech pack development is followed by a thorough product cost analysis. In this study, only two of the TFE talked about analyzing product financial feasibility or cost optimization through cost analysis. This might be due TFE use of cost-plus pricing strategy, which includes summing the total cost of manufacturing a product and then adding a specific markup to arrive at a price. This strategy is often used by companies that produce few-of-a-kind products (Kerin, Hartley, & Rudelius, 2012). TFE apparent absence of cost analyses could also be due to understanding of their niche target market who is willing to pay the premium price to get their desired unique products, or their lack of understanding about incorporating costing into product development.

The prototype development and pilot production were the most important steps for TFE in evaluating consumer acceptance and satisfaction. This step enabled TFE to view their ideas in physical format and make adjustments based on the intended visions, predetermined specifications, and consumer inputs before pushing the product for full scale production. This step is also considered very important for established textile and fashion companies (Mahajan & Wind, 1992; Tzokas, Hultink, & Hart, 2004). In each evaluation and revision step, the concept or product was evaluated by either TFE, TFE target market, friends and family, or a combination of both. After each evaluation, the product was revised accordingly to better represent consumers and TFE concerns. The evaluation and revision processes are critical in the PD process as they are emphasized by the literature (Gruenwald, 1992; May-Plumlee & Little, 2006; Tzokas et al., 2004; Wickett, Gaskill, & Damhorst, 1999). However, compared to established companies, TFE had limited resources to carry out the standardized evaluation procedures in larger scale, so they relied on in-house capacity and use of small groups of people to assess a product.

The results of this research show similarities between the PD processes of TFE and literature (e.g. Tzokas et al., (2004), Lamb and Kallal (1992), Wickett, Gaskill, & Damhorst (1999), May-Plumlee and Little (2006)). However, the PD steps for TFE were less documented, structured, and formal compared to the PD process of established textile and fashion companies. This may be attributed to smaller company size and lack of TFE professional experience in the industry. Liu (2003) conducted a study on 83 research and development engineering and managers from different industry sectors to identify the importance of product development process based on organization characteristics (Liu, 2003). The results of his study show that smaller companies with less experienced people have less formalized product development process (Liu, 2003). In this study, most PD tasks were conducted by one person (TFE) or by a very small group of people. Compared to established companies that employ specialized staff to carry out specific steps, TFE had to be multifunctional and supervise different tasks by themselves. Since TFE in this study were in their early stages of development, it seemed that capital constraints were a barrier in employing experienced personnel. This barrier is common among TFE, as Almanza and Van Den Berg (2016) study shows limitations in capital and workforce as a challenge in completion of product development activities.

Research Objective 3. Examine how Textile and Fashion Entrepreneurs are Identifying, Integrating, and Evaluating Quality Specifications in their Product Development Process.

The results of this study suggest that TFE use a variety of methods to identify, integrate, and evaluate quality attributes in their PD process. Identifying quality attributes for TFE was based on their personal experience or consumer's needs. Consumer's needs and wants were identified through informal focus groups, market research, consumer, friends, and family interviews, and consumer feedback from previous products. The most common method for

identifying quality attributes were consumer interviews and market research. The TFE integrated the consumer driven quality characteristics through design development, material selection, and construction process. In this step, consumers' involvement in the process were minimal. After identifying the consumer driven quality attributes, TFE make decision about design development, material selection, and construction process by themselves but based on consumer inputs. Consumers are then integrated directly or indirectly into the process once a prototype or a sample is ready for evaluation. The product quality was evaluated through consumer reviews, feedback, and survey (post purchase), or by wear test, post laundering assessment, and testing agency certification (during development). The most common quality evaluation method was consumer survey and feedback and wear test (in-house or consumer).

The outcomes of this study suggest that, the methods and scope of identifying, integrating, and evaluating consumer driven quality attribute is limited compared to established companies. While developing product concepts, established companies use existing market data, commercial surveys, extensive trend analysis, focus group, and concept testing to identify quality attributes desired by consumers and asses their attitude towards a concept (Mahajan & Wind, 1992; May-Plumlee & Little, 2006). The results suggest that TFE understand the value of consumer inputs, however, they rely on informal interviews and conversations to identify quality attributes. This could be attributed to TFE limited knowledge about the existing methods or the capital and workforce constraints for carrying out extensive market research and large-scale consumer interviews. Established companies also have the resources to use fit models, style testing, sizing data, wear testing, and marketing and sales data mining (May-Plumlee & Little, 2006), to integrate consumer's input during design development, material selection, and construction process. However, the results indicate a gap in TFE integration of consumer

involvement between design and concept development and prototype development (during material selection and construction process).

This study suggests that TFE evaluate product quality after prototype development, pilot production, and full production (post purchase). Compared to established companies, the quality evaluation processes were less formal and were mostly conducted by TFE themselves through in-house wear test and laundering assessment, or by obtaining consumer post purchase experience (survey or feedback). In established companies, product quality testing is conducted before launching the product to the market through standardized procedures (Tzokas et al., 2004). This could eliminate the cost of return and consumer loss due to delivering low quality products. The lack of formal and structured quality testing processes can be attributed to the nature of the business as well as the limitations in resources. The mandatory regulations for textile and apparel items are focused on children's products, fabric's flammability, toxic substance contents, fiber content, country of origin, and labeling. In this study, none of the TFE were producing children's products. Since most TFE outsource their materials, the manufacturer or importer of raw materials (e.g. fabric, linings) is responsible for ensuring safety regulations and disclosing fiber content and country of origin (Lisa M. Benson & Karen Reczek, 2016). Finally, although companies are obligated to accompany care label to apparel products, the creation of care labels through formal testing agencies is not mandatory. As a result, due to the integration of electric parts, Company C was the only TFE that was mandated to certify its products through external testing agencies.

The outcome of this study suggests that TFE rely on their own judgment as well their friends and family to identify, integrate and evaluate product quality. This could create potential bias since such opinion can be subjective or in contrast to target consumer needs. This study

found that consumer driven quality attributes differ based on TFE nature of business. For example, the quality attributes for TFE who made performance apparel or wearable electronics were identified and integrated into the product (e.g. wicking, compression) to satisfy their tangible needs. However, for sustainability-focused TFE, the quality attributes were based on consumer values and TFE missions, such as use of sustainable materials, creating jobs, reducing waste, fair trade, or creating a piece that shows wears' love of their heritage. Therefore, these TFE balanced sustainable product quality attributes along with product design or fit by selecting appropriate material and manufacturing partner. Their business approach also influenced the quality evaluation process. The results of this study suggested that TFE with a sustainability business approach had fewer and less standardized consumer focused evaluation and revision activities in their PD process. As mentioned before, the quality attributes for their consumers were more value-oriented. Therefore, it seems that as long as the product is visually appealing, and is created with sustainable values, TFE did not seek to evaluate the product through consumers.

Concluding Remarks

This research provides insight for textile and fashion entrepreneurs and small sized companies. TFE mainly use nontechnical and unspecified terms to describe product quality. They perceive quality through intrinsic, extrinsic, and undefined attributes. The results of this study suggested a lack of formalization and standardization in TFE product development process. TFE would benefit from following a structured formalized process (such as Figure 14) since it could help them navigate through different steps of a product development process. In addition, lack of a set of formal professional standards in fashion and textile design and development contribute to the lack of knowledge in evidence in survey and case study data.

This dissertation makes a case for TFE to strengthen the product quality evaluation process (Table 31) and consider consumer feedback as an important data source during product design, development, and production. TFE use of a more objective and standardized evaluation procedure based on consumer needs and product predetermined specification (in tech pack) could help them make accurate necessary revisions to the product. The author suggests TFE utilize people outside of their group of friends and family for product quality attribute identification and evaluation to reduce the potential bias and to increase the chance of reaching their target market. Finally, this study demonstrates the importance of the prototype and pilot production assessments in the PD process. Revising product specifications (based on target consumer outputs) prior to mass production can help TFE avoid costs associated with product return and subsequent loss of customers.

CHAPTER SIX

LIMITATIONS AND RECOMMENDATIONS

Limitations

A number of limitations are identified in this study. Carolina Textile District (CTD) secondary data analysis was originally planned to be carried out on responses to three open ended questions within the CTD intake survey. However, between sending the pilot data and sending the final data for analysis, CTD decided not to share to the responses to one of these three questions in order to protect the identity of their customers, as some of the information was proprietary. Therefore, this study could only use responses from two open-ended questions for final data analysis. The removed question was:” “Please provide a brief description of your product. Including the number of 1) styles, 2) colors/prints, and 3) sizes you are looking to start with.”. The CTD open-ended questions used in this study were focused on materials and sourcing, consequently, the quality dimensions and attributes identified in this study were frequently related to raw materials. In addition, incorporating CTD intake survey as data source was a convenience sampling method. Due to the geographic location of CTD, most CTD respondents were located in North Carolina and were looking for US-based production assistance.

The number and types of TFE used in the case study served as a limitation on this research. Due to the limitations in resource and time, only six companies were selected for participation. The TFE selection method for the multiple case study was also convenience sampling. This study also planned to include qualitative observation of all case studies, however, due to limitations in resources and time, and TFE distance from researcher’s location, only one

TFE was selected for qualitative observation. Moreover, some TFE did not have an established supply chain which prevented researcher from conducting a direct observation of the process.

Recommendations for Future Studies

1. Future studies should further investigate the definition of quality based on the nature of TFE business and their product type. For example, the differences and similarities of the definition of quality between TFE that create performance wear, fashion apparel, and wearable electronics can be assessed.
2. Since the results of this study suggested a difference in PD process among TFE, a larger study could look at product development process and quality evaluation scope and methods of TFE operating in different product categories.
3. Further research should also study the effect of TFE related professional experience and academic background on their product development process and use of technical language.
4. The relationship between the level of consumer integration in the PD process and the financial success of the product in the market can also be investigated.
5. Future studies can survey a larger number of TFE to validate or refute the suggested product development model developed by the author.
6. Conduct a longitudinal study format on the six TFE to follow up on their success and to study the possible changes in their PD and quality evaluation process.

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APPENDICES

Appendix A

Carolina Textile District Survey

Carolina Textile District
Client Application

Thank you for taking the first step in working with The District. Your answers will help us determine if we can assist you and make the best use of everyone's time.

Your application will be shared with CTD members to determine if they are a fit for your project. ©

First & Last Name *

Company Name *

Today's Date *

Email Address *

Phone Number *

Physical Street Address: *

NO PO BOXES

City *

State *

Zip Code *

Country *

How did you hear about Carolina Textile District? *

- Opportunity Threads
- Manufacturing Solutions Center
- A textile manufacturer/business (such as cut & sew factory, designer, patternmaker, fabric supplier, etc.) (please list name below)

A pipeline partner of the District (Factory 45, Brooklyn Fashion + Design Accelerator, Nashville Fashion Alliance, Fashion Brain Academy, SEAMS, etc.) (please list name below)

A business or education ally of the District (SBC, SBTDC, NC State, Dept. of Commerce, EDPNC, etc.) (please list name below)

Internet search (Yahoo, Google, Bing, etc.)

Media/Social Media (newspaper, magazine, facebook, instagram, etc.)

A former or current CTD client (please list name below)

Please provide the individual's or company's name who referred you

Please provide any internet links you may have (Website, Etsy, Facebook, Amazon, Kickstarter, etc.)

You must make sure that your link uploads completely before moving to the next question.

Add another

Please provide an Image or sketch of your product. (.jpg .gif .png .bmp)

Other file documents (such as PDF, excel, etc.) can be attached at the end of the survey.

Add another

Please choose the category below that best describes your product. *

Casual Apparel (t-shirts, pants, skirts, shorts, sleepwear, etc.)

Children's Apparel

Performance / Sports / Outdoor Apparel (fitness apparel, jackets, etc.)

Fashion Apparel (dresses, slacks, suits, gowns, etc.)

Under Garments / Swimwear (lingerie, underwear, panties, bras, bathing suits, etc.)

Hosiery (socks, stockings, etc.)

Home Decor (bedding, linens, towels, pillows, drapery, decorations, etc.)

Bags/Backpacks/Luggage (wallets, purses, diaper bags, briefcases, suitcases, etc.)

Accessories (headbands, hats, hair ties, scarves, belts, jewelry, etc.)

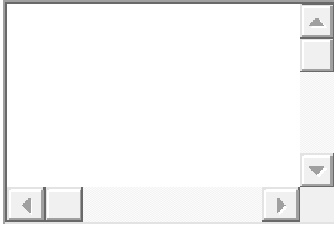
Outdoor Gear (covers, tents, hammocks, handle covers, etc.)

Pet Products (leashes, collars, toys, pet beds, etc.)

Other

Please provide a brief description of your product. Including the number of 1) styles, 2) colors/prints, and 3) sizes you are looking to start with. *

The number of styles means different versions/products



What are your target price points for 1) Production cost, 2) Wholesale price, and 3) Retail/Online price? *

Production Cost = Your cost to make the product / Wholesale Price = Price stores & boutiques pay for product / Retail & Online Price = Price customer's pay for product



Do you have a specific timeline for completion of 1) samples and 2) production? *
If yes, please provide the target dates for each one.



What is your requested quantity for your first production run? *
Requested quantity for your first order only.

- Not sure yet
- Less than 100 units
- 100 - 250 units
- 251 - 500 units
- 501 - 1,000 units
- 1,001 - 5,000 units
- 5,001-10,000 units
- More than 10,000 units

What stage is your company? *

- Start-up
- Existing or Established

If established, how many years in business

How much capital do you currently have on hand, to put toward product development and your first production run? *

This does not include funds from future crowdfunding or potential investors.

- None / \$0 at this time
- Less than \$1,500
- Between \$1,500 and \$5000
- Between \$5,000 and \$10,000
- More than \$10,000

Where do you primarily intend to distribute your product? *

- Online (product/company website, Facebook, Etsy, Amazon, etc.)
- Boutiques
- Retail Stores
- Trade Shows

Please indicate which of the following applies to this particular product: *

- This is a new product and this is my first time launching a sewn goods product
- This is a new product, but this is NOT my first time launching a sewn goods product
- I've been producing this product by myself or with a local seamstress, but sales are growing and I need to find a manufacturer.

I'm currently in production in the U.S. and want to switch to a new or secondary manufacturer.

- I'm currently in production overseas and want to switch to a domestic manufacturer.

What type of support do you need? *

Please check all that apply for this project.

- Material Sourcing (fabric, buttons, zippers, etc.)
- Testing (flammability, content, sustainability, etc.)
- Design / Prototype Development (first draft of your product design)
- Patterns (digital, paper, tag board)
- Sample Development (final draft of your product design)
- Sales Samples (multiple samples)
- Production
- Printing (screen, sublimation, digital, heat transfer, etc.)
- Packaging (package that the product is sold in)

- Tagging (labels, hang tags, size stickers, etc.)
- Fulfillment (warehouse storage that will pack items in boxes and ship as needed)

Do you have any of the following? *

Check all that apply

- Sketches/Drawings
- Product Specifications
- Digital Patterns (created on software program used with laser cutters)
- Paper Patterns
- Oak Tag / Oak Board Patterns
- Tech Pack (completed by a professional designer or patternmaker)
- Prototype (rough draft of your product and will need some changes)
- Sample (final draft of your product and is exactly what you want to produce)
- Production Ready Sample (matches your production ready patterns exactly)
- None of the above

What is the primary fabric being used to create your product? *

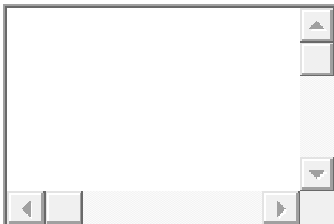
- Knit Fabrics
- Woven Fabrics
- Non-Woven Fabrics (mesh, filters, rubber, etc.)
- Specialty Fabrics (leather, suede, fur, etc.)
- Technical Fabrics (outdoor fabrics for tents, awnings, hammocks, etc.)
- Not Sure

Have you found a source for these materials? *

- Yes
- Some, but not all
- No

Please list details of all of the materials needed to produce your product and your current sources for these materials if you have one *

list detailed info of fabric, trims and hardware being used



What is your commitment to domestic sourcing and production throughout your supply chain? *

- I am committed to 100% US sourcing and production.
- Final cost is my highest priority, so that will determine where my product is sourced and produced.
- I plan to source my materials overseas and produce in the US.

The following values are important to me and my business *

Please check all that apply

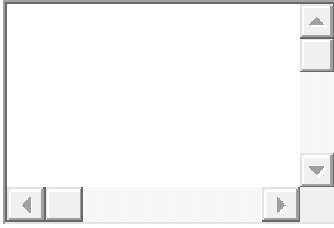
- Working with domestic manufacturers to help create American jobs
- Working with manufacturers that pay a living wage
- Working with manufacturers that provide good benefits and stable, quality jobs
- Working with manufacturers that are environmentally friendly or operate zero waste facilities
- Working with manufacturers that have a democratic business model and work environment
- Ensuring my product has a low carbon footprint and/or is made from environmentally friendly or locally sourced materials
- Ensuring my business operates as a social enterprise (meaning some aspect of your business improves human or environmental well-being)

None of the above

How old are you?

- 20 years old or under
- 21 - 30 years old
- 31 - 40 years old
- 41 - 50 years old
- 51 - 60 years old
- 61 - 70 years old
- Over 70 years old

Please provide any other comments that will help us better understand your project needs



The District offers both workshops and webinars for Sewn Goods 101. These classes provide an overview of the domestic production process and we strongly recommend them for clients with little or no textile production experience. Would you be interested? *

- Yes
 - No
 - Maybe
- Attachments
Add another

Appendix B

Carolina Textile District Text Search Query Results

Reference 1

The mission and vision of Ear Coats is to provide a **quality** product that will protect and keep the ears warm with style to benefit all individuals while connecting and giving back to the community as business allows throughout each year.

Reference 2

Your consideration in helping me accomplish my dream of providing a **quality** produce that will be a blessing to many is exciting and gives me reassurance and energy to keep moving forward. Please let me know if you have questions, concerns or need additional information.

Reference 3

I need 4 colors of the same fabric. I am looking for good **quality**; 5% spandex 95% polyester fabric. Moreover, I am looking for labels and buttons.

Reference 4

It's our hope to create a product brand to compliment both our brick-and-mortar efforts (compliment the other brands in our shop) as well as a brand that has the following **qualities**:

Built to Last

Focus on Fit and Comfort

Unique and Well Designed

Reference 5

I started a company called Equal Apparel with a friend of mine last year, right as we graduated from school. That year (2016), we created a website and got all of the appropriate permits City of Boston to open a fashion business out of my home. The company is called Equal Apparel and our mission is to provide comfortable, high-**quality** clothing to people regardless of their gender identity. Equal Apparel aims to promote Gender Neutrality in the Fashion World by our sizing system, clothing models, and community involvement. We have already created garment designs, began working on prototypes, and figured out an appropriate Gender Neutral sizing chart. Shortly after we began, we got hired into the "real world". Unfortunately both of our full time jobs take time away from growing this project. There is an incredible need for clothing like this in the world today, and we would love to work with a factory to make ours and others' dreams a reality. We already have several tech packs and fabric suppliers, but were never able to put the time in to getting the business off the ground. We would like to make a variety of garments: Pants, Yoga Tights, Tank Tops, T-Shirts, Sweatshirts, etc. There are 5-10 styles that we are debating having made and at least 10-20 of each of them in various sizes.

Reference 6

Our clothing is unique because we offer **quality** girl's clothing in hard to find sizing. Many times girls size out of age appropriate clothing at a very young age. I experienced this with my own daughter, so I started our line in order to solve a clothing challenge for my daughter as well as other girls.

Reference 7

Our clothing is boutique **quality** and our designs are created so that our girls can feel both comfortable and confident.

Reference 8

I'm looking to partner with someone who can develop a kids clothing line, Smaller Things, that focuses on high-**quality** basics (t-shirts) but with embroidered details. Eventually I want to build an entire collection, but want to start small with the coolest kids t-shirts with big meaning. The brand is all about celebrating kids individuality, positivity, being yourself, encourages our youngest generation that the smaller things we do in this world WILL make a difference (being kind to one another, serving/helping in communities, etc). My brand is a \$\$\$ higher end price tag for a kids basic shirt so I'm looking to make the best possible product. Some brands we want to "hang with" in a store setting are mini rodini, stella mccartney kids, tiny cottons, and bobo choses to name a few. I have a sample from Spiritex fabric with my embroidery, but need to make trim and size adjustments. Spiritex can provide their pattern to make adjustments. I've attached my branding to give more insight into the brand feel and how the product will live on our website. I've also attached an image of my first sample with embroidery work on it. :)

Reference 9

Being new to textile production, I need some assistance with locating **quality** cut and sew manufacturers as well as guidance with the final production stages. A great amount of time and money has gone into developing the product, securing samples, and defining the company.

As a personal comment, I am an attorney by day.

Reference 10

I am very much interested in a full service manufacturing company that offers design development, sourcing/compliance, **quality** control, branding and logistics services. As this is my first endeavor in this industry I would appreciate a team that I can consult with beyond just the manufacturing end of the product. My primary goal/intent is towards a long-term manufacturing relationship with any company that can offer most or all of these services. I need a company that can work as part of a larger team with my designers.

Reference 11

Woman owner looking to empower others through looking good. I want a **quality** product that will launch my brand, so that I can be establish as a great brand. I hope to expand to other styles, once the skirts are successful.

Reference 12

I have been in the mens retail clothing business for over 20 years. I have owned my own store and understand the retail environment. I would like to produce the best socks possible (style/**quality**/value) I would like to produce my products in USA if possible. Thank You

Reference 13

I currently have a Succesfull business on Amazon Selling Electronics, Where I manufacturer the product and sell on Amazon directly. I want to expand my business model to Mens Underwear, selling amazing **quality** products, with premium manufacturers.

Reference 14

Faux Llama 30 pile minky + 100% Cotton. Artwork on the 100% cotton is designed by me and manufactured with Spoonflower at this moment. If there is somewhere else to manufacture the same **quality** at a better price im interested.

Reference 15

My company will be a platform for customers to design their own home décor and apparel with consultation services available in areas of difficulty to ensure production of a **quality** product. I would also like to provide the customers with the option of fabric type, patterns, color variation and size of either fabric alone or finished product.

Reference 16

Considering high **quality** beach towel as first product. prefer natural materials - cotton. grown picked and spun in NC if possible.

Reference 17

First I want to get a mens short sleeve collar shirt made. For this shirt I was looking for high **quality** silks. A very light and cool fabric to wear especially in the summertime

Reference 18

Next I would like to get a pair of mens trousers/trackpants made. For this I would need help sourcing performance/ sportswear fabrics. I wanted the same feel as a pair of high end mens trousers with the same **quality** and features of a mens trackpant.

Reference 19

100% Supima Cotton in jersey luxe OR 100% pima cotton of the highest **quality** 100% Supima Cotton ribbed

Reference 20

I would like to custom make or source high **quality**, 100% supima cotton t-shirt blanks for my clothing company. These shirts will 60% pocket shirts and 40% regular crew-neck shirts. I will provide the fitting guidelines for the shirts in all three sizes of small, medium and large. To start, I would like to produce or purchase anywhere 250 to 500 total shirts if possible and work from there as I am quantifiably trying to gain proof of concept (though my customer feedback has been very strong with the sample shirts that I have sold with Comfort Colors blanks). I would like to work with a manufacturer that accepts low minimum orders and one that has solid values as well.

Reference 21

I recently open a sales representative firm specializing in textile and furniture products. My goal is to represent a number of American businesses in these industries to help them sell into the Vietnamese market and represent Vietnamese companies selling into the US.

I'm especially interested in niche products with high **quality** and artistic values. Apparel for niche fashion brands (http://www.***.us) is an example. In the future, I would love to work with a few US designers to source and produce their products in larger quantities than what's possible making by hands. The "Made in the USA" movement is growing strong, and I find it imperative that I learn and understand what it takes to source a product in the US in order for me to be effective at what I do. My goal for this workshop is to broaden my knowledge about the textile industry and establish relationships that I know will be beneficial for my work in the future.

Reference 22

My name is ***, I am the Chief Operating Officer of ***, a Richmond, VA based online startup offering organic, luxurious cotton linens at accessible prices. We are a family owned, community focused business. Our mission is to bring you an exclusive collection of high **quality**, pure, organic cotton linens that are reasonably priced to fit the needs of today's family.

Reference 23

Various denims, mostly produced by ***, mostly via ***

Haven't found a reliable source for a **quality** canvas, but may go with *** Textile. Would really, really, like to find a source for the lightweight, tightly woven canvas used for hunting jackets and vests from the 1940's-1960's.

Reference 24

Some of the questions above do not have enough options. I understand you are trying to gather information however I'd include the following options for the following questions.

- 1) The amount of capital that is going to be put towards this project is going to be based on the estimates you come up with to design, source materials and produce my product. If it's a fair price the amount of capital will continue to increase.
- 2) Types of fabrics. I chose woven but would like to do vinyl as well. Think guitar straps that become belts.
- 3) My commitment to domestic is going to be based on **quality** and costs. If those to are satisfactory by all means I will stay domestic.

Reference 25

I recently moved back to my hometown from NYC . I have been in the Fashion/jewelry business most all my career and when I moved back (to Martinsville, Va) I wanted to begin a business creating fashion forward, green, locally handmade, handbags. I have had difficulty with finding locals women (and men) to sew my handbags. This has been a disappointment as my ideas are superb and many people have expressed an interest in my bag line (and in some instances want to buy more). I initially had about 10 of the leather tote bags made that were of the **quality** I needed.... These were sold asap but the lady who had made these had hurt her leg and was not able to continue.....I have been trying to find local sewers but to no avail for various reasons..... mostly lack of the proper machines or the design challenges were too great. Your assistance would be greatly appreciated as I have both individuals and retail stores ready to buy my items. I am not sure where you are located, I think maybe the Asheville area? I would welcome the opportunity to get together and begin the sample processmoving into production.

Reference 26

I'm currently trying to figure the fabric situation. Been dealing with a mill in Italy but the **quality** is not there yet.

Reference 27

- We use 5-6 oz chrome oil tanned leather from Weaver Leather.
- We use hardware that is solid brass with polished nickel finish from Buckle Guy- double cap rivets, Dees and Loops.
- size 207 thread
- heat embossed logo on leather

In reference to the following question, We want to produce our product in the US, preferably within our region. We currently use materials that are manufactured out of the country. We would love to have domestic materials, but are striking a balance between **quality** and price points. We hope to get a better sense of what the different options might be.

Reference 28

I am hoping to have the samples made with good **quality** and sustainable fabrics.

Reference 29

High **Quality**/Durable Satin (top layer) and Durable Cotton or Microfiber (sides and back) or micro fiber instead of cotton

Reference 30

high **quality** blends, buttons, grommets and zippers

Reference 31

Greetings,

My name is *** and I am starting a new high end, luxury menswear label. I have worked in the apparel industry for several different companies, designing, consulting, and printing. I love fashion and clothing and I finally want to start my own high-end luxury designer brand and I'd rather deal with an all in type of company and I see that you can be that company for me. Right now I'd be in the Pre-Production phase and I am ready to source my fabric and I am wondering if you have a book that has all of your fabric samples in it? I have a couple of high end shirts and I have fallen in love with the feel and look of one particular one. Its a 24 single and I know that the weight is higher than 4.4oz, but don't know the specific weight. It's 100% cotton, but almost has a sheen to it which is what I'm looking for. Do you carry Pima or Supima Cotton with a heavy weight as well? I would also be interested in having this company cut and sew my shirts as they will be custom pieces. My

company will be doing limited edition runs so small batches are a MUST. Probably less than 50 per month to start out with since its new. I would be creating men's wear only and starting with a high end t shirt. I want a black and a white version. They will be tagless, but have the label information heat transferred in the back. There will also be a heat transfer text on the front chest and along the back, lower seam. Each shirt would then have my logo embroidered on it on the left shoulder. There is then what I call the unique identifier piece that magnetically attaches to the back of the shirt along the upper shoulder blades so I would want a little magnetic piece sewn into the back of the shirt. This metal piece may be a little confusing at first and most likely will have to be explained over the phone. I understand that there is cost involved with all of this and money is not the issue and I want these shirts to be of highest **quality**. Retail will be over \$100 and depending on

everything maybe more. I would be interested in having the samples and tech package created with you. If this is something that you think your company can accommodate, please give me a call or email. Let me know if you need any other information.

Thanks,

Reference 32

Quality is the utmost important.

Reference 33

China is cheaper but the **quality** is not there. We are a military family and take great pride in "Made in the USA" items.

Reference 34

Looking for a **quality**, reputable, dependable manufacturer to work with.

Reference 35

We relaunched *** last year, and upon relaunching, we went with a company in India to do our cut and sewing for us. We went through a process to get the feel of our shirts that we have now, and it is one of our major selling points that we use when selling our apparel now. But since then, there has been so many **quality** issues that we have dealt with. From wrong sizes, pieces sewn wrong, no effort shown in printing, and many more. Last month was the final straw, which led us to look for another cut and sew company.

Reference 36

We are a small company, but growing. We only have Shirts and hats right now, but are striving daily to becoming a full fledged clothing line. Our biggest concern now is **quality** and matching the unique feel that our shirts have now. We are also wanting to release, and want to know if you make scarfs, jogging pants, dresses, belts, socks, hats, and jeans. We would love to set up a meeting to sit down and discuss some things if our line is one that you would be willing to work with.

Reference 37

No preference, I would like to offer the best **quality** of sock to incorporate the design and I would like to discuss options from your company, and recommendations.

Reference 38

I do have towel fabric samples from overseas, but would prefer to source domestically if possible. I need high **quality** towel fabric and uncertain if it is available here. We have made some phone calls and have found there aren't very many mills producing what we need.

Reference 39

If we must, for the **quality** of our product, we will import fabric and produce here.

Reference 40

we are currently using the fabric we can find locally, however, are willing to fabric source for better **quality**.

Reference 41

I purchase the stretch lace in 3 colors from Fabric.com. The clasps are purchased wholesale online. Thanks for your help in sourcing a manufacturer (hopefully in NC) to sew these stretch lace garments. My assistant and I have been sewing these for some years on industrial Juki sergers and Juki topstitch/coverstitch machines. I am concerned that we can achieve the same **quality** of construction in this delicate, lightweight fabric in a factory.

Reference 42

This project is still in the planning stages but it something I would like to see carried out. I also think that there is a large market for a USA made fitness apparel that is of great **quality**. It is very hard to find anything like that in retail stores if at all. I really want everything made in my company that is bought to be truly valued by a customer.

Reference 43

I always prefer to source USA and work with high **quality** fabrics but will make selections based on price and how much fabric is needed/any style limitations. I actually have no idea if you choose fabrics first and then make patterns based on that or vice versa (I think it's pattern than fabric)

Reference 44

Cotton, polyester nylon, soft **quality** fabrics, others (need to be discussed)

Reference 45

I'm looking for strong support materials for the fabric of the hosiery and support **quality** materials for the support of the foot part of my project.

Reference 46

-I am using elastic for the pants (waistband and ankles). The elastic is sourced from a factory in Rhode Island. If you know of a source closer to your network, I would be open to using it... I'm happy to make the supply chain as tight as possible. I also will be using thread for sewing, but haven't sourced it yet. I am waiting to connect with a production facility, and to find out from them their preferred thread for this kind of project... and their preferred source. I would like to use cotton/poly thread made in the USA... this is what has been recommended for strength and durability. I am also curious to know if there is a good organic cotton thread that could be used. I

plan to do my grading and marking here in NYC, with a recommended company. Once this is complete, I will have digital versions of the patterns that I can send to you.

-I am happy with my prototypes, and am also open to feedback about what would make production simpler or better. The prototypes communicate my designs clearly, but do not have the exact stitching and finishing that I want on the final product (because my seamstress doesn't have the machines.) I would like to speak with my potential production partner about what kind of stitching and finishing options are available for better-market cut/sew knits. (i.e., I am specifically hoping to find a facility that has skill and experience in creating finely finished casual-wear. I'll be selling to a higher price-point, in boutiques, etc... I want my product to reflect that level of **quality**.)

Reference 47

A specific plastic proven to produce a high **quality** product in a pearl color as used in standard dress shirt buttons.

Reference 48

Per phone call with ***, I will be looking to find the best **quality** for the highest value of the different material types that I have included above that will make the best sheets and blankets.

Reference 49

*** believes in ensuring high-**quality**, functional, and appealing designs intended to enhance beauty and fit of everyday items accessorized by our brand.

I have prototypes from current material and have produced small quantities of my new product. This is a totally new invention with no competitors in this area to my knowledge. The patent is pending and expected to be approved soon. I would like to improve the material and look of the product for retail sales and aesthetic purposes, while maintaining the overall design and functionality. I am not clear on which material will work best for market appeal. I am seeking a manufacturer to assist with determining best material for final production, provide samples if such, ensure proper labeling and disclaimers on packaging, and ensure mass manufacturing for retail sales. I will also need guidance in determining if manufacturing agreements should be cutting only and shipping to me for local assembly and distribution, or is it more cost effective to have manufacturer assemble and distribute. I anticipate needed supply sources for all parts of the design. Interested in expediting process as much as possible to get product on market as soon as possible. Would like a non-disclosure agreement before sharing photos, samples, drawings, or functional details.

Reference 50

I am a seasoned entrepreneur and business executive but am new to the world of textile, and textile production. I have some retail experience and some retail distribution experience. I have a fantastic product but I am alone. I need just a little push of help to get this company off the ground. I envision *** pillows in Bed, Bath & Beyond within the next 2 years. That is my goal.

I would like a reliable manufacturer that is easy to work with, treats its employees well and shares my vision for producing a high **quality** but fun, bold & inspiring product. In addition to my Roo Pillows I have a design for college bedding - sheets and comforters that I would like to introduce to my line within the next few years so I would hope my manufacturer would have capabilities along these lines as well. I would like for them to be within easy travel distance of Asheville so that I can visit. I have not yet ruled out the possibility of starting my own manufacturing facility. Sounds like fun! :)

Reference 51

My dream is to create a multi-product home decor company with a focus on bedding that delivers fun, bold and inspiring products on a consistent high **quality** value chain to my target market of free-spirited positive thinking forward looking world changing women between the ages of 12 and 45. I expect to build a company on a foundation of giving, fairness and fun. NPTK stands for n'importe quoi which is French for "whatever". When the kids in France text "whatever" they text NPTK. I want to take the stuffiness out of home decor and replace it with "whatever" is fun, bold and inspiring.

Reference 52

I have a competitors product that I can send for research to see what the competition is doing. I want better **quality** materials and I want to focus on a comfortable fit.

Reference 53

Looking for a fabric similar to the sample, a middle weight blend, preferably no polyester

Light and flow but good **quality**

Reference 54

We have found a fabric source in Pakistan for the desired **quality** of cotton fabric.

Reference 55

We are, however, very open to finding a textile mill in the United States, preferably North Carolina, that can produce the same **quality** fabric.

Reference 56

My main and initial goal at this stage is to find a fabric supplier that can provide a fabric that is thick enough (opaque) and also has the compression **qualities** that I need. I have received many sample fabrics but all of them are too thin. Having a sample manufacturer that also is able to provide the right fit will be important for the compression to work well -- ideally I would work with someone who has developed such a product previously.

Reference 57

We are open to a product name change - in the following we refer to the product as ** (Take along Throw and Jacket). Sales history listed is for the adult fleece version of the product that we were manufacturing. A children's version is also requested by consumers. The patent covers the manufacturer of any flexible pliable material.

When we started out with sales in 2001, Laura and I were producing the product (60 x 84 adult version) in the evening/overnight and selling them direct retail to customers at craft shows on the weekend. Our first show, we made 20 *** of some high **quality** fleece and sold them for \$64.99 each (1,299.8). We found the product very marketable and filled the next selling season (eight weekends in the Fall direct retail to customers) for *** with Arts & Crafts Shows throughout the Midwest. In the fall of 2002 we sold over 200 *** (60 x 80) at \$34.99 each. At this point we did not have a consistent supply of fleece, as our previous suppliers went out of business.

In 2005, we worked with Colorado Contract Cut & Sew to produce the *** (60 x 80) from fleece we purchased from Asia through FleecePro. Again selling direct retail at craft shows, in 2005 Fall selling season we grossed over \$6,000.00 at local Arts & Craft shows. Again Laura and I selling the product on weekends. In Aug 2005 FleecePro provided a quote to manufacture in China. (\$7.25 each fob New Jersey. The price includes all import fees, customs, duty etc.).

After the success we experienced and the response we received from customers we were encouraged to get big school names and mascots on the Thraket. We then contacted CAMEX --to become vendors for their college book store show. At this venue we were selling wholesale to college bookstores. At that show we had an overwhelming response and took orders for over \$5,000 in one day of sales. Our sales were limited to those schools that owned their own trademark. Many other bookstores showed great interest and requested that we get licensing agreements to personalize the Thraket so they could purchase from us (like Ohio State Buckeyes and other marks that would cost us around 5,000 per mark to get started). The buyers at this show did not want a blank product. We had numerous requests for orders if we could manufacture with the school logos and mascots.

Reference 58

For the top and bottom layer I buy from Nature's Fabrics in Pennsylvania. For the interior I buy from Wazoodle Fabrics in New Jersey. Ideally, I would like to find a different fabric to use for

the middle (I use the Zorb inside to maintain the appropriate shape and width of the bib, but I would prefer a material that is similar in **qualities**)

Reference 59

I hope Opportunity Threads has the capability to produce "My Doll, Joy" in order to improve **quality** of life for the adult and geriatric population.

Reference 60

I spoke with *** on the phone today, and suggested this survey. We are currently producing only tshirts, with very little customization. We order the shirts in bulk from an online website (Comfort Color shirts) and have them screen printed here in Raleigh. We are looking to have our own shirts made, with our own tags sewn into the back, with a higher-**quality** fabric, and our own color options. We are hoping to also start designing and producing an embroidered logo t-shirt with a front pocket, as well as button-down shirts. We hope to find a local or state manufacturer that can help us achieve this goals as soon as possible. We are looking to expand and start our own production, but we are looking for the right manufacturer that can help us with our minimums as well as bring our costs down as much as possible. We are currently based in Raleigh.

Reference 61

I have sourced them, but I'd be interested in you shopping for better price/**quality**.

Reference 62

yes and no.

I found fabric to work with (very nice)but still looking for specific **quality** and have not found it yet.

Reference 63

It is very important to me to use a US based company to create my product. I believe there are enough people in the US who can produce **quality** products and help build our economy and create jobs.Previously I worked with a company to manufacture my product and they closed. For a few of the bags I plan to use I have the patterns I would like to use. I have a place where I can purchase my fabric. I will need assistance larger bag I want to design

Reference 64

I've got several organizations waiting for bands- but my current manuf has not been able to deliver a proper **quality** product nor have they been able to deliver on time. We sell to events that have critical deadlines - were very small and trying to get out into the market -- but cannot if you dont have product and cant deliver.

The two companies Im working with now have great potential for lots of bands-- but hard to sell something if color off or no product.

Below are attached pictures of our first products-- blingbands-- we are not longer doing the bling on the bands- just logos and prints....and these are ones sewn on my machine.

I would like to add to bada bands and eventually do bada socks and bada caps...but first I need a reliable manufacturer to make the product so then I can sell sell sell.

Reference 65

I am hoping to get to get through design, prototyping and sales samples in the next few months.

As a father of three (all under 7) this is something I have researched and worked on over the last 7 years. I see a huge niche for an great American made product of designer **quality**, made with amazing materials.

The fact is that 60% of all children will get attached to a security blanket/ transitional object whether the parents want them to or not. If i knew that 7 years ago, I know my parenting life would have been easier.

Reference 66

Please contact me as soon as possible. I am in South Carolina and I would like to come visit. Belk manufactured my line themselves last season and now I am responsible for doing it. I am very concerned with **quality** and keeping the price down for Belk's retail.

Reference 67

I have samples from my line this previous season at Belk that will show the exact **quality** I am looking for. I have not previously worked with fabric sourcing and am interested in what you have to offer.

Reference 68

I originally began buying fabric and designing these linens because I couldn't find anything of good **quality** or the patterns and colors I wanted in cottage chic style to replace worn out linens

in my own home. My children have probably heard me say a thousand times over the years, "We can make that." Though I've always wanted to learn to sew I'd never done much of it until I launched myself head on into this project. While I absolutely love the whole process, from choosing fabrics and combining them in original ways, to the cutting and sewing, I am far from an accomplished seamstress. But I am extremely particular about doing it right! As far as sewing items, I need the most help with tablecloths and duvet covers. I'm already making pillowcases, dinner napkins, potholders, (and place mats would be the same kind of construction). In addition, I want to make tablecloths with borders in one or two contrasting fabrics with mitered corners and I want them to have finished seams on the wrong

side of the fabric. One possibility is two sided tablecloths with all the seams hidden on the inside. So far I have not experimented with making these. Napkins and placemats could perhaps be made with left over fabric, or might require additional yardage. Because I work full time as a teacher I don't see how I can possibly, by myself, sew enough of an inventory to go to craft fairs, farmer's markets, or stock an online store, though I could create sets slowly over time and add them to an Etsy shop as they are completed. This was my original plan. I can make pillowcases, napkins, and such small items with a fair amount of ease, but don't have enough room space (or a table big enough) or the skill at the moment to make larger tablecloths and duvet covers. I also can't turn out anything in quantity in a reasonable amount of time. I'm very excited to learn about your organization and hope that we can work together to produce linens that are well made, long lasting, and are a delight to

have in one's home. From the very beginning I've felt nothing but positive excitement about this endeavor.

(Just as a side note, as a teacher with eighteen years experience I no longer consider myself to be middle class, my standard of living has been on a downhill slide for some years now and has reached the critical point where I have to do something to bring in more income. If that means leaving teaching for another pursuit I'm ready to go for it!)

Appendix C

IRB Forms

Consent Form

**North Carolina State University
INFORMED CONSENT FORM for RESEARCH**

Title of Study: Perceptions and Integration of Product Quality by Textile and Fashion Entrepreneurs (TFE)

Principal Investigator: Behnoosh Ghaani Farashahi
applicable): Katherine Annett-Hitchcock

Faculty Sponsor (if

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue.

You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. If you would like, a copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named above.

What is the purpose of this study?

The purpose of the study is to examine perceptions of product quality of Textile and Fashion Entrepreneurs (TFE) and examine how quality is integrated into their product development (PD) processes

What will happen if you take part in the study?

If you agree to participate in this study, you will be asked to answer four open-ended interview questions. The interview will take about one hour and it will be audio recorded for transcription and verification purposes only.

The researcher would also like to observe one of your product development processes in your production plant and take notes while the process is being performed. The researcher would also like to take photographs for documentation, where necessary, to assist the understanding of a process, but any identifying information will be concealed from all visuals. The duration depends on the selected product development process.

Risks and Benefits

There are minimal risks associated with participation in this research. There are no direct benefits to your participation in the research. Your participation will help us to get a better understanding of the product development process employed by TFE. Moreover, the results will help us identify how TFE integrate and evaluate product quality in their business context.

Confidentiality

The information in the study records will be kept confidential to the full extent allowed by law. Data will be stored securely in password-protected files in a NC State computer and secured storage area. No reference will be made in oral or written reports which could link you to the study.

Compensation

You will not receive anything for participating in this study.

What if you have questions about this study?

If you have questions at any time about the study itself or the procedures implemented in this study, you may contact the researcher, Behnoosh Farashahi, bghaani@ncsu.edu, 859-684-1905

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the NCSU IRB Office via email at irb-director@ncsu.edu or via phone at 1.919.515.4514.

Consent To Participate

“I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.”

Subject's signature

Date _____

Investigator's signature

Date _____

Interview Protocol

Title of Study: Perceptions and Integration of Product Quality by Textile and Fashion Entrepreneurs (TFE)

Principal Investigator: Behnoosh Ghaani Farashahi

Faculty Sponsor: Dr. Katherine Annett-Hitchcock, TATM Department, College of Textiles

Interview Location and Time: (The location will be determined later, upon agreement between the researcher and each participant. It is most likely that the interviews will be conducted either off-campus or via Skype. The participants will be contacted in advance via email to schedule a time for interview).

Number of Participants: Four, each will be interviewed separately.

Hello my name is Behnoosh Ghaani Farashahi and I want to thank you for agreeing to meet with me to answer a few questions. The purpose of this study is to examine perceptions of product quality of Textile and Fashion Entrepreneurs (TFE) and examine how quality is integrated into their product development (PD) processes. Before moving forward with our interview, I need to give you this consent form which includes the necessary information about this study. Please take a few moments to read it, and sign the bottom of the paper if you are willing to participate in this study.

(Collecting the consent form)

As mentioned in the consent form, I'm going to audio record this interview and transcribe it later for data analysis, but the information will be kept confidential and identifying information will not be used for the publication. There are minimal risks associated with participation in this research. The approximate interview time is one hour. In this interview you are going to be asked to answer to four open-ended questions:

- 1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?**
- 2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc.**
- 3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?**
- 4. Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?**

With this introduction, I'm going to start our interview.

(Begin audio recording the interview, starting with question one)

(End audio recording when the interview is finished)

Thank you for your time. I will contact you again to schedule a time for the observation.

Observation Protocol

Case study participants (n=4) will be contacted to schedule a time and location to observe one of the product development processes carried out as stated in their initial interview. The consent form has been given to the participants before the initial interview.

Upon agreement, researcher will observe participant and/or personnel working on a specific task (e.g. generating ideas, pattern making, prototype development, etc.), and/or conducting a process meeting, in a way they do on a normal basis. The researcher will take notes from the activities in the product development process over a course of a day. The notes will then be typed into a Microsoft Office word file. The researcher will take photos of the process, including tools and materials involved in product development, which will assist in the analysis of the product development practices of these companies. The data will be stored in a password protected computer for further analysis by the researcher.

Appendix D

Cast Study Interviews

Company A

1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?

Okay, I try my best to answer that. Well it starts out with an idea (a thought) and then there is my amateur sketches that I do it and I try to get it out of my head, to be...something that I can actually visualize, and I can actually show to someone else.

The first person that I want my sketch and my idea is my husband, which is, he is a very honest person, and he will give me his honest feedback on that, I'll take any critics or suggestions that I have that may be applicable and apply it to that design.

Then I'll take it through a , I would say a core group of friends and colleagues that I have again, I and I take their ideas and bounced it off a little bit and see how feasible it is. We might have something there. Once I get to a point where someone says I can see your vision, I can see where you are going with that, then I kind of take that visualization and start doing some research. Some internet research to see if there is something similar to my idea out there. And if it is something out there, and if there is anything similar. is there any distinction? Or if there is a way that I can make a noticeable distinction to products, and if I can do that, then I move forward to the next step.

I'm not really... I guess my ..taking any idea and making it a concept and then bring it to a product, for me, it has to be something unique and different. I don't really want to do a unique creation of something else. I want to take something else and add value to it, take it to the next step. So once I find out that I can do that with a product, then I start doing some research, then I start looking into the materials that may take to bring that product to fruition. Then I look at the cost, in the relation to bringing that into something feasible, that I think that I can make a profit from, then I move on to the next step.

In between somewhere, I go to do some prototypes, to see how it looks, from a, I guess like a 3D or real time position. And then if I can see it or it looks pretty decent, after my prototype looks decent, then I figure out if I need to have a focus group, of people who I don't know, and to have a approve of my core advisors, which is family and friends. And I know a lot of people say that may be not your best start = because they are going to kind of , I guess be biased, but I have a group of advisors/family and friends that I choose that I know they will be 100% honest with me because we are kind of interacting a business. We have a business relationship as well as a personal relationship. So they are going to give me feedback, and they are going to give me

honest feedback and from then they are going to give me referrals (e.g. maybe you should talk to this person in regards to you know whatever it is, or maybe an expertise that they lack and they know someone else have) and they are going to point me a that direction. I also have some mentors, who score that kind of, kind of lure me and give me some honest critic and feedback also about which direction I should go in or if I should just swallow it up or not.

So I kind of answer that question. Well I'm kind of on that cost of production right now, I have my prototypes done, there are some revisions that I want to make it to the design, so I have taking on the services of a design artist in Asheville who is working with me to make some minor revisions to that design, and have also consulted with me on finding the best and most practical fabrics for the product also.

So once I have my samples made for the , she is going to redo the pattern for me also, to include those revisions to the product design, once I have that then I have to move into the, getting into the new prototype and samples, make sure that they are flowing and they work properly and have the right looks ,and then we will move on to production. We'll do a small run, like about maybe 200 units, and just to see how that, when rolled that out we see the feedback we get of consumers, and from that point on we will decide how we want to move on to full production.

2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc

Since it is a product that I'm working on now, since it has some personal attachment with it, primary some attributes are based on what I be? It's a workout active gear garment and it is also performance driven, not just for active wear so some of the attributes is have moisture wicking fabric, compression units, like stabilizing the core while you are working out, we also want to look cute and fashionable, and some of these attributes are from women whom I work out with , actually next month I'll be holding two focus groups to get more feedback from women like what my ideas and my concept for the product would be as well as women that I talked to that have actually seen the product and we have made some adjustments and we design based on their feedback now with that product we want to have focus groups to see if there are any things that I have missed, maybe something that I could capitalized on that I wasn't thinking about, maybe something I was thinking about may just sound good in theory but not practical. So basically getting that kind of feedback in focus group setting I think will help me to identify whether I'm on the market?! I'm missing the market? Or I need to add more so I can get the market.

3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?

Part of the physical product that I'm working on is about having some performance driven active wear that provides coverage. So being part of the durability, part of the function is to provide core stabilization, so that would require me to identify fabric that would stabilize the core and

work when someone is working out intensely or whether it's just walking to kind of get fabrics that would support the core.

Cause it is different when we say when we have been to the fabric store for core stabilization then I need to identify the most cost effective fabric but also the fabric that would stabilize this, that would hold you in place so it is really taking this consideration since like wait training belt or compression garments there are different levels of thickens, do you want to use 1mm 2mm ? but to give the best performance of the garment we have to use the best and most effective fabric while also considering the pricing. Because want to stay in the ideal price point and stay within those margins, and want to stay in this price point and make sure my customers afford the finished product. But as the same time I wat to make sure that I'm using the right fabrics that going to attain what I'm putting the product out there for.

Coverage is also considerate cause a part of the design of the product is to provide modest coverage when women are working out, the basis of the product is like if I want to go to gym and work out and have that on a yoga pants and leggings you want to still be comfortable.

So it's getting the right drape, the right length of the cover-up, and also make sure that it flows and it's not going to get in the way of the workout and at the same time look cute, so have feminine quality to it so that it's the season at the time and matched it up when other items like athletic footwear and matched it up with colors that are coming out with other popular sneaker designers.

4. Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?

Right now we haven't got to sales yet, but what I'm envisioning is that through the website consumers will be able to post reviews and for video testimonials and for women that have purchased the products to show themselves wearing it while being active, to hold idea and our mission along with off course we want to make money but at the same time also to motivate women who normally workout or exercise and stay active because of excuses which are comfortability, insecurity, and I would love their feedback if the product has in any of those way has helped them to overcome some of those obstacles and challenges that they initially has when working out.

Follow up email:

You mention that you use prototypes to see how your product looks. Could you please tell me if you make the prototypes by yourself or you outsource it by asking a cut-and-sew expert make it for you?

I outsourced to a cut and sew facility in South Carolina for the 1st prototype and Asheville NC with a seamstress for the samples. I hope all is well with you and I would love to hear (or read) your final analysis or summary thereof.

Company B

1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?

Yeah it's actually, when I was reading through that, we are actually developing a new t-shirt right now, yeah we just decided to do that. I think looking at it, to begin answering to the question, I kind of starts from , what kind of company you are, who your market is, I think you first start with that is there is a need in the market place for that then your bandwidth as a brand to like create, to create a t-shirt so if you are for instance we are, as a man apparel company so we do looking for men working out and so then we examine that space and see , talk to our guy who is age 25 to 35 and ask them what are missing from a gym shirt? And where can we satisfy you? We can't be lululemon and engineer amazing fabric for certain sweat zones but maybe we can stylize something different that they don't see or maybe make something more comfortable and simplicity.

And so that's what we did, we set out to see, and went to look at what are you missing and what? And we just talked to 10 to 15 guys that workout consistently that are aged 25 to 35, young professionals that like to do CrossFit running, personal gym exercises, and it was, and it came down to mostly style thing, not overly branded shirt but it also is wicking enough, that you can wear out, so is more of that athleisure piece, so is about finding fabric that felt like , you know as a natural fiber, super luxurious, but also had enough polyester to wick sweat away. So that was kind of our balance to what it was.

First, build the silhouette, and test the silhouette with our guy, make sure we like the visual aesthetic, and next thing was to find fabric that can suffice visually but also performance wise, and that's where we ended up with it. And then we just went market test, considerably, whether that's the look of it and or the performance aspects. And our market test that is give it to our guy, let them sweat in it, let them wear it out, and then get feedback, repeatedly.

No, I mean, the general process is that once we prototype it with ourselves, and give it out to few close athletes then we broaden it to our top 15- 20 athletes, and then the next step is eventually production yes, the which we are currently in stage of.

2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc

Those, I looked at those attributes in the statement and in the question and for those attributes , I mean, I would love, I think, it depends on what market you are going into, so I would just say it will depends on your consumer and who you are talking to.

So that's just again what they are missing in the, in a workout space those attributes are generally antimicrobial, they are reducing odor, increasing wicking of sweat, it's basically like I mean, how do you deal with sweat? Are the only ways we can engineer fabric to create attributes that are nice and hand feel I guess. So the less chafing you can get.

I guess those are the ones that we would research and so again is about talking to your consumers, knowing exactly what they're going through...what are the challenges since we are in the athletic space and generally those challenges that have to do with smell, odor, wicking, comfort, and then lastly I would say style. So that's kind of how we approached those.

3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?

To begin it starts with, you get your hands-on first, do develop fabric takes a bit of time so I guess we would start with silhouette building, so we just used fabric that we have and try and build a stylized silhouette if there are any attributes that we want test construction models on our own we want to add a pocket, we want to add a certain kind of collar or a certain hem we test those before we get the fabric. Cause you don't want to waste your fabric. And then once we get our fabric that's when ..it's just a longer timeline. I'm sure you are aware but if you want to incorporate antimicrobial, you want to do a certain weight of fabric you want certain heather or a certain brushed feel, those all take, you know, I don't know, two to eight weeks to get back. So once you get it then you have to go make your refined style, give it to the consumer, have them test these, not only constructive models that you have decided on but also the fabrics and then go back , so then this can take you know one time, or can take five to six times. And then it's a repeated step so that's how we are going about it construction first, and then hope that your fabric comes in okay. And then repeat this with your consumer, three to six times.

4. **Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?**

Year, we are actually going through, we finally have been able to, I mean we only have been in business for two years, but surveys are incredibly valuable, when customers give you survey feedback when you think you have a good idea and you think that people you talked to were positive but once you reach out to one or two hundred other people that are telling you differently, if there is a majority, anything over 50% is considered a high majority, of a product attribute that was not well liked, that's the time to change or you realize you did something wrong. So like for instance we do men's underwear, and we were thinking we did all right but

our waistband was tanking at reviews so now we have a new waistband and we changed certain design elements and threads of the shaping that we thought was chafing which we thought were good but now they were not. So I guess after market it's not much you can do but satisfy consumers with a return and wait till your next production run and change it which what we have been , what we have to do specially since we are small, we can't really adjust that quickly.

Follow up email:

Do you design & make your own fabric (order it based on your specification from a mill) or do you buy it from a vendor based on their availability/specifications?

Currently we buy from our mill. We plan orders 4-6 weeks out and reserve yardage that would be considered "stock" I guess. Colors and weights they generally have on hand. We have a new fabric in the works we have developed with them. Our same fabric, but in a lighter weight and are working on developing our own colors. This is still very much in testing phases.

Do you make your prototypes by yourself or do you outsource it?

For some products I sew fit samples myself.. If we are making any marketing or salesman samples I will outsource that work.

Company C

1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?

My product development process is a little bit different because it includes electronics, as a wearable tech company and so really I think the first step in that is to put together a customer interview, and figure out kind of, what our product is, put together a spec of features, pricing, general kind of cost to consumer, in terms of what we think, and then kind of sketch that out, hand-drawn sketch, and then, the next step in the process would be take that internally to our team and figure out if they agree with everything we've put together so far.

And then after that the next step is to get a few customer feedback, so go do some interviews, do customer surveys, really at this point in this stage is very light, just simple simple simple, nothing too deep, no big paid customer interviews, just one or two more thoughts from people. And so from there we kind of take it and refine it again and make sure that we got the right steps, put together a product requirement document and put together a request for proposal. So the product requirement document goes to hardware, software, soft-goods, sizing, and everything that we think the product will require, and then the next step would be putting that into a request for proposal which we put out to, it depends on, if it is a new product that we don't think we will be working with our factories that we worked with or if it's a product that we can send to our existing factory. And if it's an existing factory, then we do more kind of a product requirement document that is focused on a request for proposal, but with the request for proposal we are sending that out to two different factories to get their pricing, get their quotation, timelines, and so that will be the first big step and kind of taking it from concept to what we are going to build.

2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc.

So I think we start with doing a deep dive of existing products, seeing what other products have been built, what else is on the market that is similar to what we have so we can identify if there's something that exists today.

And have customers paid for it, and how much are they paying? So first we do a competitive analysis before going direct to consumers. And I think the good reason for that is we want to see if someone has already done this, have they tried to do this, has it failed? Has it succeeded? And then we can see generally why customers may or may not had a similar product in there that we don't have, before we go to consumers. But if we identify that there is something in there that has been successful or hasn't been successful.

We could do some very light customer interview, mostly just friends and family style and internally within our communities, and then once we kind of talked about the consumer attributes, we look at the existing cost of what it is going to be to put these attributes in there versus kind of if there is something in there kind of ranking we ask them to do about the durability or water repellency or washability and then we rank those against each other so that we can figure out we are making sure we are building what people want but also at price point that still works within their boundaries, and for our brand, and I think that is a big piece, understanding what our company and our brand, what is it that we are focused on and we are a bit more high-end because we focus on warble tech and because of that it allows us to kind of hone in on some of those things that other brands can't do. Again I think the focus is on what else is on the market, again after we have gone through that process. So we do that at the beginning, talk to consumers, and do it again at the end to see how we stack up against the existing competition that might be kind of an alternate purchase.

3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?

So I would say that for us, when we look at those kind of attributes, we plan around building the.. I guess, when we have a product, we have someone in-house who really looks that on a more of CAD build materials level, What is it going to require for us to go out and outsource, what are we going to be able to do in-house? In-terms of electrical engineering or kind of, again as I said we are a little different than the traditional textile company because we have these other elements. So what can we do in-house? What do we have to outsource? And then outside of that is looking at who do we have as suppliers in our network who can do that, and are we going to have to find a new supplier and how long is it going to take us to determine if we can work with them. So I think timing becomes a big piece of that, more than some other companies, because we know we have to do testing but with us we have to do electronic certifications, so the Bluetooth, the US consumer electronics, the Koreans consumer electronics , southeast Asian

acific, the EU and so with this we are going to look what is the cost is going to be certify these thing that we build into, so when we look at the quality and material consideration and specification, then the specifications are really focused on the electronics more so because we know that the materials and fabric can be done, because we work with the factories, and so when we kind of come back to design and development and production process, it is really about making sure that before we even produce hand samples, because for us hand sample aren't just kind of a cotton or even a Gore-Tex really nice pressed shirt, it's the bill of material being put in a circuit board and that circuit board being programmed by hand and build by hand and soldered, so for us we go through a very expensive short-run prototyping process, and so we do about three hand samples, that cost about a \$1000 apiece to make sure that what we are building is what we need before we go to any of these next steps and then kind of pin that process. We try to still include the customer in terms of interviews and asking what they think but at this point we moved a little bit away from the customer.

4. Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?

So I mean one of the big things for us is that we are legally required to evaluate these with an external source. So a testing agency has to be hired to make sure that what we are building is not going to explode in someone's hand or someone's body or in a washing machine. And so we first do some initial testing in house to make sure everything is good and works to our specifications. But then we send it off, so we send off our first pilot production units to be tested, to be certified, and so in that certification process we really get a high level view of that, but once we shipped to consumers we try, in at least in an ideal world, to do a beta test first, because we want to be able to get the first 100 units out there before we mass produce the first 5000 and 10,000 to make sure those are working properly and we are not having a breakage point, they are not leaking, they are not overheating and the batteries are working sufficiently, and so we really go from in-house testing at the factory level doing some QA to then sending those QA units off to a TUV Rheinland or one of those certification agencies and then separately we send the first 50, 20, 100 units to beta testers, to say hey, use this, tell us your thoughts, give us your feedbacks, and it's because we are a young early company we can do that in a way, that we go to have to do that but also can do because we need to certify, and that is one of the things that we have to do in terms of beta testing and it feeds it all to a little bit more and just kind of an up & up in terms of making sure that before we do a mass production, and during those kind of pre-production pilot production, we are getting those consumers directly and users to give us their feedback as they would use the product as opposed to early where it's all kind of conceptual and we say how you would think you would use these attributes, and now it is saying don't even think about the attributes, just use it, and tell us your feedback and what you think is important once you got it in hand. So I think that is a big step for us at least.

Company D

1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?

So, when I start with an idea, I usually start with a sketch and so what I'll do is then I kind of refine the sketch, and more likely the silhouette. Because of the fabrics that I work with are only 36 inches wide, So I just have to be very aware of what the silhouettes look like because sometimes the fabric will inhibit that. So after I kind of process that then I take it from hand sketches to computer so I usually work with Adobe Illustrator and from there I start to just play with different color ways and what those colors can look like if there is any color blocking involved or anything. After that is , after I have an idea of what this is going to look like in terms of pattern and everything, then I take it to prototyping. And once I prototype, I try to have I guess the design down pat. I don't want to experiment more into prototyping on the computer and once I have already once I prototype that when I start to see you know how is it laying on the body like what is draping well enough I just, once it is physically on me or on the dress form then I just make a few alterations to the pattern and from there I start to play with the actual fabric that is going to be used and yeah as I'm experimenting when I'm making the stuffs I tend to just take pictures and just send it to people that have bought from Descalza to see if this is something that they are willing to wear , like you just get their feedback on it and if I use that feedback and make a little bit more small adjustments, nothing too big, it's still the concept is still there but I make like slight differences and yeah, then I make it out of the fabric and we meet our product manager and she looks over patterns and we start production.

2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc.

So I think.. I. some of the products I try to use last collection as a starting point for the next collection. So, a lot of feedback that customers gave me is what I try to like change for this collection. One thing that I'm very strong about as a female is always moving around you know going from one place to another place, having a place to have my phone and keys is really important so I'm really, I'm a strong advocate for pockets and having pockets in skirts, having pockets in dresses so that's an attribute that I myself want to see in my own clothing so I've added it to the clothing that I make. Other attributes that consumers have spoken to me about is sometimes ...trying to think right now...the only small thing is like the lengths of skirts are a big thing but as far as right now...I think yeah.. I think the pockets is something really big but everything else.. I'm trying to think...if there is anything else.

3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?

Okay, so when I'm doing the sketching and I'm working on just the silhouette of the product if it's a skirt for sure like I add the pockets right in what I've playing with is just to see how pockets can be included in the product but not necessarily shown so how is it that I can make it look in a way invisible you don't know the pockets are in there till someone puts their hands in them so that's just a matter of playing with lines and so for example i have this one dress that I did a little bit of color blocking in the front and when you see it you don't .. you just think it's different you know fabrics that have been put together to create a color blocking but when you look at it closely, in those lines there is hidden pockets. So it's a feature you know I guess like for aesthetics, for us to see how it looks like but at the same time if the pockets are in use like they don't have to be shown. So yes that's .. so when i'm in the very beginning when I'm doing the silhouettes that's when I start to play with the idea okay how I'm going to have this pockets this time. And are they going to be shown or they're going to be invisible.

4. Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?

So one thing that I have tried is surveying. So what I'll do is create a small survey , and this is usually towards the end of the collection and is to get people's feedback you know what works and what does not work, what would they like to see what were they surprised about that didn't expect. And then with that feedback I take it into the next collection and I try to you know in response for them to responding to the survey taking a time to do it all trying to get a small discount on the next collection or the product that we are selling. This information sometimes gets a little delayed, just because you know I don't have inventory from the beginning. I create a product after the customer has requested it so like for that right now most of the time the customer emails me tells me hey by the way my skirt didn't fit me it was too small, it was too large, and so right there our conversation starts and I try to take the next step and solve that problem. Right now when the product is too small we just make another one, and when the product is too large then they just send it back to me and I make the adjustments and send it back to them.

So I'm familiar with the process they do to develop the fabrics, and so I work with cooperatives that kind of manage the artisans and what we'll do is when we are starting a collection or something and we want to look into fabrics I request fabric samples so I get those samples before I get a bulk and from those samples what I'll do is ...I ask them questions because they are very aware of what these fabrics look like, you know what their performances are, but what I'll also do is you know what I've read is I'm thinking of I try to that prototype and put (11:28) that in washer just to see how it reacts. I know these fabrics are handmade so they do require a little bit more of delicacy. We are taking care of it but yeah just staying and being open and transparent with the artisans that I work with and then you know requesting samples just to make sure what I'm going to request is what I'm seeing in the computer.

Company E

1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?

So whenever we get our concepts, so concepts that we come across are either something that our consumers asks us directly about, like hey do you make this? And we'll say no or yes we already have that in stock. So if it's a product that we don't normally do, we kind of take whatever they are going for, whatever their idea was so somebody wants to make a wall hanging or something, we don't normally make those we have to kind of do some research on what they are exactly looking for and kind of bounce ideas off of them so that we make sure that we like nail exactly what they are going for. And then, I'll go through and being director of product development I will do the prototyping make the patterns, all that stuffs, so that we can actually move it through. So each prototype kind of helps me figure out the process that it will take to make it, the time, what materials we need, that kind of thing. And then it also is kind of the quality control section so I'll see hey where're using this stitch on it and we can actually use this one and the product would be a little bit better. So we kind of monitor quality during that stage and then when we get to the final production of it we've already worked out all the kinks and all the issues.

2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc.

So we have so many different ones that each need different features. We just started working on an apparel memory quilt (3:42)? so not ? features but using any apparel to make a quilt. And we are kind of evaluating what we want from that. We are thinking about warmth, durability, and a good representation of what they gave us. So we are making sure that we are showing the logos of the t-shirt, we are using every single piece of clothing that they send us, and really representing them and their memories well. So kind of taking those three key ideas and keeping those in mind when we went forward and make prototypes that kind of, how we integrate what they are looking for. So we do rely on what we know about the product and the market. But we also, we did a bunch of interviews with people at the beginning of our company, to kind of see what they wanted from products. We had prototypes there, to show them what they look like, what would they want improved, the uses, what would they want different that kind of thing. So we did some of that and also just seeing what is in the market already and what the reviews are on those items. That helps us to identify what people want.

3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?

So when we are trying to figure out like if you... let me just think of a product... okay, so we do a makeup case and when we do that make-up case for a consumer there are a couple of things

that we have to source to make that work the best so we use vinyl for our linings. So that you can take it if someone spills some make-up in it, they can take that out and wash it by just flipping the inside of the bag out and then put it back in. so you are cleaning up, you are not ruining the bag, and you are not messing up the fabric, it's really like a clean process. And we got that concept of making sure that these items are going to last for long time and they are going to be easy to use and they are going to exceed expectations by including that vinyl lining. When we are making any of our products, we have to kind of identify the best parts of each garment to use so yeah we want to play up any logos or anything that really makes that shirt or that item unique. But we also have to find parts of it that aren't too worn-out already. so if these garments have already been worn we have to identify parts of it that are still strong, still have the fibers aren't all rubbed off and they aren't a lot of nips outside, we have to make sure that there are really good pieces of fabric that will function well in whatever final product that they are going to be.

4. Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?

So we, right now we are building a new website, and I think we'll probably have a space on there to give reviews then. Cause right now our website isn't good enough to do that all thing. I don't know how all these, how to set that up but I think that also some of the people that get products from us when we mail it to them or if we know the person like give it back to them if they are in Raleigh, they give us their feedback and then for testing, we do some kind of field testing so Emily had one, she uses our scrunchies. and she test our keychains and stuffs like that to make sure that they are still functioning well and they can handle everyday life. We also, just with prototyping and stuff, using those prototypes around the office or we're like, when I was a student I would take a laptop sleeve that we made to class to see how well it function in everyday life to make sure it wasn't something that I ,we just use once and set aside and that it was something that I would use everyday and how easy it was to use.

Company F

1. Please describe the steps that you take in order to bring an idea from a concept to a completed product ready for sale to a consumer. For example, you have an idea for a new t-shirt. What are the steps that take place to bring that t-shirt to market?

Yeah sure, all of our designs starts with basic sketches. From that sketch we will translate that into a pattern. So primarily I have been working with paper patterns, and we actually start with a size medium, and from there we grade it up to a large and to a small. So we get all these made as paper patterns, then we'll also create an online tech-pack with it. So that just includes all of the measurements you know digital diagram of how to make the clothing and once we have that I send it to my manufacturers along with information about what type of fabric I want to use, what

type of like..., basically everything about the fabric between like the material, the weave count, and the color.

So we use a Pantone book in order to make sure that we both talking about the exact same colors, and once we have all of that information it is sent over to them, they create the first sample, and once they have that sample made, they ship it over to me. I take that sample and compare to what we have created here in North Carolina and if the sizing is correct, we give them the go ahead to start manufacturing. If it is not, we will point out the discrepancies of like oh hey this is actually supposed to be longer, like this arm whole supposed to be half a few more inches added on to it. So basically if there is anything that shows that their sample is different from these samples that we created here, we will like point out those differences and ask them to make those adjustments over on their facilities and once we have the samples showing that it is the corrected size that is when we will start the manufacturing process.

2. Please describe how you identify consumer-driven attributes for your product. These attributes could be, for example, durability, water-repellency, etc.

Yeah sure, so we definitely focus on durability, and quality of the product, so making sure that all of the seams are durable like you know they are not going to fall apart. We definitely make sure that, we look into what colors and styles our market is looking for right now. So I am working with the market of women between the ages of 25 to 39 and we actually shift it to this market because they are people that care about the ethical and sustainable fashion and they have a better income meet the higher prices of the ethical and sustainable fashion. And something that we noticed we the younger target market is that they are still really consumed with the fast fashion trends and it's just difficult to keep up with their desires you know cause we are a slow fashion company. So we basically, I have talked to bunch of people that are in our target market and asked them about what kind of colors they wear, what kind of events they attend so that you know we know what type of things they are dressing for. So from that you know we figure out like what kind of silhouette they are looking for and what kind of length they want. So, you know these women they don't necessarily want something super tight or body hugging but still something that is flattering to their shape. And you know they usually want something of a bit of longer height, so about knee length. So basically we listen to them, talk to them about what they want and start incorporating that into our designs. We also talk to them about what type of events they go to, so you know like they want clothing that they can wear to work or to like bridal showers and brunch like you know just going to different events downtown, so basically something that is professional and modest enough to wear to work but still has a bit of fun design that you can also wear to an event with friends and something that doesn't necessarily require a professional look so something that is versatile enough to be used for multiple aspects of their life. And because of that we also really do focus on durability and high quality goods so because we are very focused on sustainable we don't want this to be a piece that we are going to buy, wear a few times and then falls apart you know we want this to be a something that last in closet for years to come.

So because of that we definitely try to make sure that all of the seams are like sewn properly in a way that they are going to you know stay secure and we also make sure that we are using good materials. So we also use, focus on using 100% natural materials so we use items like 100% silk, 100% cotton, organic cotton, and the 100% pineapple fiber. So we do this for two reason, because of the sustainability aspects of their material this is something that we pretty heavily have incorporate into the mission of 700rivers , but we also focus on the comfort for our consumer. So all of these clothing they are comfortable and they can be flattering on the body but they are also going to be cotton and pineapple fiber they are very breathable, and it just makes it , it's like a noticeable comfort wearing cotton versus wearing this polyester and spandex. That's just kind of like hugs your body and doesn't give you that same breathability. So yeah we basically talked to our consumer in order to find out what she wants, where she want she is going to wear this pieces and decide according to what she wants.

3. Please describe how you build those attributes into your product during design, development, and production. For example, for durability, does that come into consideration while you develop material specifications?

Yeah, absolutely, so kind of like what I was saying. We start thinking about everything that our consumer wants, from the design aspect. So a lot of this honestly we started doing a lot of this by looking into how we can incorporate sustainability into our company and you know ethical fashion into our company and I started doing a lot of target market research about who would care to you know go out looking for ethical and sustainable fashion and what she wants. And like I was saying because we have we are catering to these women between 25 to 39 and they are spending a bit more money on this pieces we want to make sure that they are high quality pieces. We also talked to them about like, it's mainly, it really comes down to quality, comfort, and color. Sometimes some people have brought up the fact what is it... that care, it's something to consider. So you know like cotton can go to washer and drier but our silk pieces need to be dry cleaned. So you know like because we are working with older demographic, or you know like a reasonably kind of middle tier here... that is like okay for them, but obviously there is just there is a lot of more convenience behind washing and caring for your cotton pieces. So this is something that we also like to think about. We also think about this like when are taking about the design, so this is like what I was saying like you know we thought about where our target women is going and design according to these events.

4. Please describe any steps that you take to evaluate how these attributes perform either during development or after sales to the consumer. For example, do you offer consumers a way of giving feedback on the product they purchase from you?

So I wear a lot of my pieces myself, so I do a lot of my own testing for like comfort and durability. You know seeing like how it will withstands against being washed and dried and how material reacts to that if there is like any color change from the original dress to after its being washed. And you know just doing my own qualitative testing on comfort and just like seeing

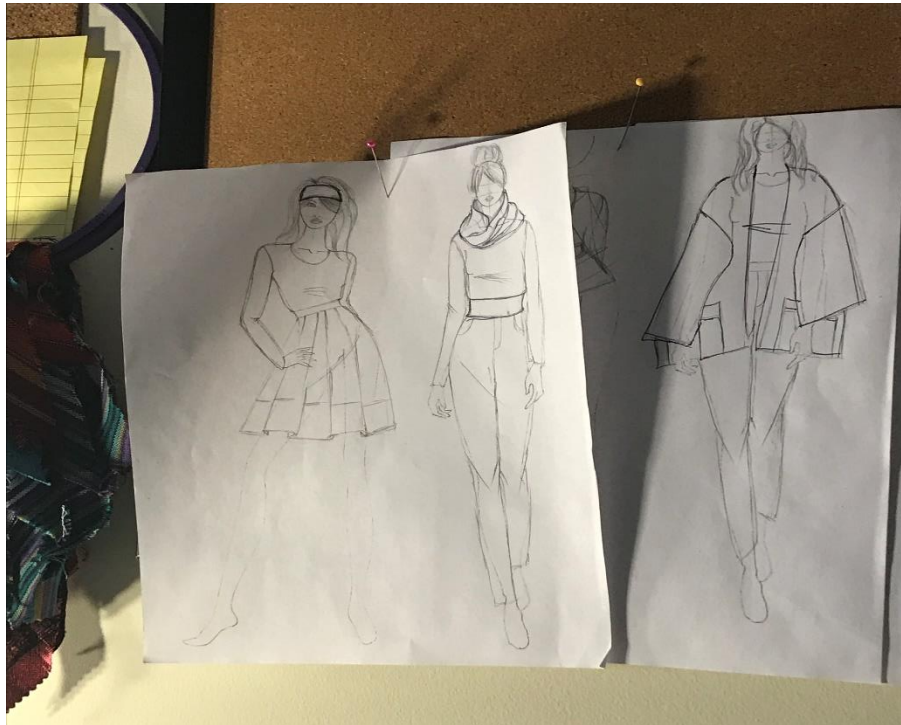
how well my pieces last. And I love hearing back from our consumers. So far pretty much every single consumer has come back to me with a positive response. But yeah I am trying to make sure that we um.. and hear from them so that we know how its improved for the next run. So you know like one of the challenges is creating a piece that complements most body types you know like , yes you can say that someone is a size 8 but like you know there are like hips might be bigger or you know there are so many differences in women's bodies you I just like really listening to that and trying to make sure that we are accommodating as many people bodies and shapes sizes as possible. Other than that I haven't heard back anyone saying that there pieces were low quality though I'm always open to hear about that. But like I said most of the reviews that I've gotten back because I do keep up with our customers have been very positive.

Appendix E

Company D Observation

Product Development Steps and Coordinating Pictures

Ideation and
Concept
Development



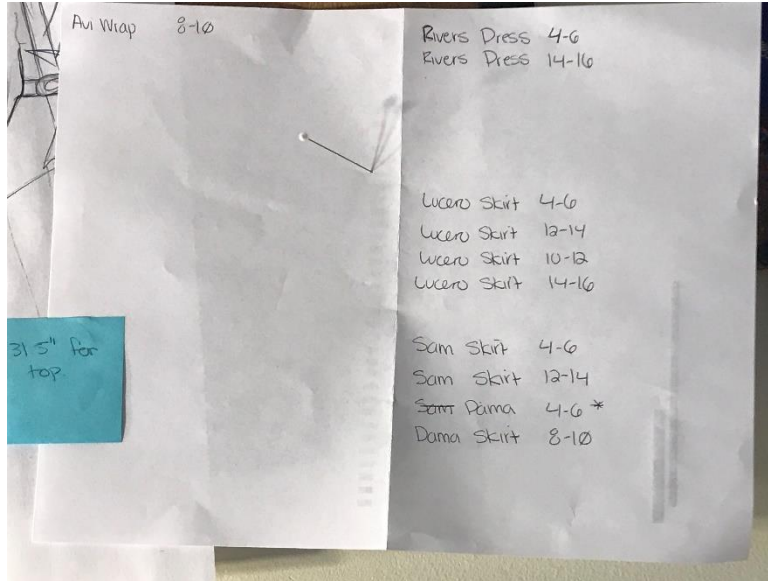
Tech Pack
Development



Tech Pack
Development



Tech Pack Development



Prototype Development



Prototype
Development



Pilot Production

