TECHNICAL SOURCEBOOK FOR APPAREL DESIGNERS

3RD EDITION

Jaeil Lee • Camille Steen

FAIRCHILD BOOKS

Technical Sourcebook for Apparel Designers

THIRD EDITION

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Preface

Thanks to technology, apparel production has come to rely heavily on international industry, and specification buying has become a standard way of manufacturing apparel products. As a result, the knowledge and training related to technical design have become more important for both designers and merchandisers, and it has become a specialty in its own right, one in high demand. However, only a few apparel textbooks addressed this increasing need, covering the basic concepts sporadically. Thus, we published *Technical Sourcebook for Designers* in 2010, a comprehensive textbook dedicated solely to a holistic perspective of technical design processes.

Technical Sourcebook for Apparel Designers, 3rd Edition, is an advanced textbook completely devoted to preparing students for the growing demand in the apparel industry. It is a comprehensive compilation of technical design processes and principles in current apparel manufacturing practices. This book was written to inspire students to delve further into the commercialization process, developing designs into successful products. It provides a conceptual understanding and practical applications of the role of technical design in apparel production, including how an original design is created and communicated; how fashion trends, target markets, budgets, and construction details influence design; and finally, how products are commercialized for consumers. It presents practical guidelines for developing the skills to write concise instructions for prototypes and revisions and to conduct a fit session. This book meets the needs of courses such as apparel product development; apparel product quality evaluation; apparel design, construction, and fit; CAD (computer-aided design) for apparel design; and flats and specs for designers in the fashion industry.

This book integrates fundamental knowledge that students have gained from previous related courses in construction, pattern making, apparel design, textiles, illustration, and CAD drawing in order to provide them a holistic view of the current apparel product commercialization process. Furthermore, the book provides practical exercises that apply the current standards used by designers and other professionals in the fashion industry.

New to This Edition

As a result of its popularity since release in 2010, *Technical Sourcebook for Designers*, 2nd Edition, was published with a new Chapter 8 on sweater product development, which is one of the most popular product categories in the apparel product market. We are excited to publish this 3rd edition as the *Technical Sourcebook for Apparel Designers*, which contains more practical and updated knowledge; exercises practiced in the industry incorporated in each chapter; and more visuals—including a second color in many of the drawings—to improve readers' understanding of the subject matter. The 3rd edition contains the following updates:

- Current retailing and apparel product trends in the industry (Chapter 1).
- Expanded boxes with real-life jobs and descriptions (Chapter 1).
- Updated cost sheets and information (Chapter 3).
- More examples of supportive materials for underwear (Chapter 12).
- Increased examples of labels (Chapter 14).
- More in-depth examples of sizing and measurements (Chapter 15).
- Applicable "Study Questions" and "Check Your Understanding" sections throughout the book.
- Style Banks for Chapters 5 and 6 available in the STUDIO.
- A set of thumbnail sketches representing editable styles and pocket details in two different digital formats in the STUDIO. Appendix C features thumbnail clip art for all of these styles; the live files are available for download in the STUDIO.
- Updated Instructor's Guide includes more questions using updated examples of styles, tech packs and new added assignments, activities, discussion questions, and a test bank.

Organization of the Text

In 16 chapters, this book follows a logical progression to introduce readers to the role of technical design in apparel product commercialization. Chapter 1 describes the global nature of the modern apparel industry and the route of apparel products from producers to their target customers at the retail level. It suggests the importance of understanding technical design for designers and other industry professionals to perform their jobs effectively. Boxes featuring career profiles and job descriptions show the skills and knowledge needed for each industry profession. We also included new global trends of retailing and apparel production practices in this chapter. Chapter 2 demonstrates the understanding of technical design that apparel producers need to turn design concepts into actual garments that will appeal to the fashion sensibilities and budgets of their ultimate consumers. Chapter 3 explains the contents of the tech pack and the purposes of each item listed on each page. Costing sheets are the new adds-on to Chapter 3.

Chapters 4, 5, and 6 focus on the visual and verbal information that technical designers prepare for tech packs. Chapter 4 presents drawing conventions for technical sketches and step-by-step instructions for drawing various apparel products to scale. Chapter 5 defines technical terms related to silhouettes and design details. Garment terminology used in technical sketches is elaborated with ample examples. Styles, lines, and details used for garment shaping are identified in Chapter 6. Technical aspects of garment shaping devices are also demonstrated, with examples for effective communication in written and oral formats.

Chapters 7 through 13 discuss the reasons for design decisions, including the selection of fabrics and design details that will work well together to achieve quality commensurate with the costs of production. Chapter 7 provides practical knowledge of various fabrics and discusses layout and cutting instruction for tech packs. Chapter 8 covers one of the most important and popular product categories in apparel: sweaters. This chapter explores sweater design and manufacturing, recognizes the differences between knit and sweater apparel products, identifies the essential components of sweaters and the main types of sweater construction, and demonstrates how to create and build sketches and technical design packages. Chapters 9 and 10 identify the stitches and sewing machines for various end uses and examine practical considerations, such as whether particular seams or edge treatments are appropriate for fabric of a particular weight.

Chapter 11 provides construction-related design details such as pocket options and reinforcement stitches. Chapter 12 explains underlying fabrics and support materials used for various design details. Support materials for underwear are also included in the 3rd edition. Chapter 13 explores options for fasteners, including selection, details of each category of fasteners, and technical aspects of communicating information about them in writing and orally.

Chapters 14, 15, and 16 take the reader from the prototype in the sample size to issues related to production and marketing. Chapter 14 explains legal requirements and marketing considerations for information on labels, hang tags, and packaging. We added more examples of labels to the chapter. Chapter 15 discusses how to measure, size, and grade various product categories. A size chart with information for underwear is the new addition to Chapter 15. Evaluating and adjusting the fit of the garment, the topic of Chapter 16, demonstrates the importance of well-executed designs and clearly written tech packs and fit comments to the apparel production process.

Among the major strengths of this textbook is its extensiveness. To facilitate learning of this complex subject, each chapter begins with a set of objectives and a list of key terms, which are also defined in a comprehensive glossary at the end of the book. The text covers a variety of women's and men's product categories for different target consumers. To provide an opportunity to consider the different characteristics of product specifications and fabrications, wovens and knits are also covered.

A second strength is its real-life applications, based on the authors' hands-on knowledge, experience, and expertise. Exercises incorporating up-to-date industry standards and practices provide a practical learning experience. A fictitious company, XYZ Product Development, Inc., serves as a model to engage students in the subject matter. The book approaches the subject with the same industry tools and standards that an apparel company uses, focusing on the importance of specification for fabrics, findings, and design details. End-of-chapter study questions and activities that use industry-focused materials and terminology give students an opportunity to apply their knowledge and perfect their skills.

Third, the textbook includes ample visuals related to fabric cutting and layout, design details, flats, and examples of tech packs, to familiarize students with the apparel industry's standards for communication. Appendix A includes industry standards for seams and stitches, to which students can refer throughout the course. The technical aspects of product development are also explored, with great emphasis on the tech pack as a means of specifying the details of a design so that the prototype will fulfill the vision. Appendix B features a tech pack for a women's shirt in print, and the STUDIO includes a collection of additional tech packs for various product categories for study and reference. In this 3rd edition, the technical packages have been expanded to include one for a bra, to showcase a greater variety of those used in the industry. Appendix C, new to the 3rd edition, includes a set of thumbnail sketches representing editable styles of various designs from various product categories. These feature 101 pockets with various design details and are a new bonus to the 3rd edition that will be incorporated into classroom learning activities. These thumbnail sketches are included in Appendix C in the book in order to provide a clear visual understanding.

The STUDIO provides a library of editable style flats in two different digital formats (Adobe Illustrator and JPEG), allowing students to engage in interactive learning. They can download and import these flats into blank tech pack documents (also found in the STUDIO) to prepare tech packs for products of their choice.

Using this textbook, students will be able, first, to obtain solid design development and related hands-on knowledge. Second, they will understand the technical design processes used in apparel firms. Third, they will gain specific knowledge and skills for technical design, such as flat sketch, measurement, sizing, fit, and grading. Fourth, they will be able to practice what they learn by using the STUDIO to create their own tech packs and will thereby become familiar with industry computer technology and terminology related to technical design. Fifth, they will be prepared to apply their understanding and skills to real-life situations when they begin their careers. Finally, this textbook will help them develop critical thinking and problem-solving skills in analyzing garments with an eye toward maximum customer acceptance.

Teaching Resources

- The Instructor's Guide includes updated course outlines, group projects, assignments, more interactive learning activities, discussion questions, a test bank, and more
- PowerPoint presentations available for each chapter

Technical Sourcebook for Fashion Designers STUDIO

Fairchild Books has a long history of excellence in textbook publishing for fashion education. Our online STUDIOS are specially developed to complement this book with rich media ancillaries that students can adapt to their visual learning styles. The *Technical Sourcebook for Apparel Designers* STUDIO features include online self-quizzes with scored results and personalized study tips and flashcards with terms/definitions to help students master concepts and improve grades. The STUDIO also includes standards for seams and stitches, examples of flats, technical packages, and a style bank with photos of apparel product examples of each design detail and style. All materials included in the STUDIO are provided in full color where applicable.

The *Technical Sourcebook for Apparel Designers* STUDIO can be accessed at www.fairchildbooks.com.

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1

Overview of the Industry

Chapter Objectives

After studying this chapter, you will be able to:

- Describe the apparel industry and its production process
- Survey apparel product categories
- Identify different professionals involved in the product development process in the industry and describe their roles
- Survey different kinds of ready-to-wear apparel companies
- Identify the role of private labels in the industry
- Survey new product development and retailing trends in the industry

Key Terms

agent
carry-over styles
child labor
colorist
crowd sourcing
dual distribution
globalization
graphic designer
haute couture
horizontal integration
lab dip
lead time
line plan
merchandiser
moda pronto
multi-channel retailing
national brands
omni-channel retailing
pattern maker
prêt-á-porter
private label
product lifecycle management
quality assurance professionals
ready-to-wear
rep (representative)
reshoring
retail store brand
sample maker
social responsibility
specification buying
specifications (specs)
sweatshop
tech pack
technical designer
technical package
textile designer
textile lab technician
vertical integration

Since the Industrial Revolution, the apparel industry has been one of the most important economic sectors in the world. This chapter presents a general overview of current trends in the apparel production process and the ready-to-wear apparel industry. Apparel products are also introduced based on merchandise segments, and the work of the main professionals in the industry who participate in the apparel product development process is also explored.

The Global Apparel Industry

Welcome to the global apparel industry. Considering everyone, from farm workers who grow cotton to mills that produce yarns and fabrics to companies creating designs and products for the selling floor, the apparel industry is one of the biggest economic sectors and one of the most important sources of income for many parts of the world economy. The textiles and apparel industry is one of the most powerful sources of industrial employment, providing jobs for millions of people worldwide (Kunz, Karpova, and Garner, 2016; Dickerson, 1999).

In the industry's production processes, apparel manufacturing is no longer a matter of domestic in-house production. Although simple domestic manufacturing methods exist for independent, small-scale designers, most apparel is currently produced in large-scale operations, with the manufacturing of domestically created designs outsourced.

The apparel industry is one of the most globalized businesses, with different sectors of production, marketing, and distribution channels in different regions in the world working as one unit. Simply check the labels of garments you have now. You are likely to see names of various countries in different parts of the globe. The unique characteristics of the apparel industry make it stand out as the leader in **globalization**. Globalization is a modern trend of interaction among countries, governments, and businesses, regardless of their defined borders and boundaries (Daly, 1999). Globalization enables people around the world to function together as one unified, single entity, joined by the main economic flows of goods and services, labor and people, capital, and technology (Bhagwati, 2004). Globalization unites people in the industry throughout the world to produce apparel products. Changes in procedures and processes influence all sectors of the apparel industry as a global complex.

Availability of Labor

One factor contributing to the industry's leadership role is its very labor-intensive character. For that reason, the industry's manufacturing regions have always been shifted to where lower labor costs are available for production. Throughout history, the apparel industry has boosted economic power to those less-developed countries to stimulate their economic growth.

More fashion trends can also be introduced to people who live in less-developed countries, where new fashion information was rarely available in earlier times, because they now participate in the apparel production process. We now see a trend of global fashion that is led by the globalization of the apparel production process (Dickerson, 1999).

Taiwan, China, Hong Kong, and South Korea were given the nickname "four dragons in Asia," signifying their important role in the 1980s and 1990s. The apparel industry was a point of entry for these countries moving into export-led businesses. The industry requires only simple technology (that is, simple machinery such as sewing machines), and thus has low start-up costs for the less-developed countries, which, in most cases, have ample labor forces. Also, a labor-intensive activity, such as a simple assembly process, does not require a formal education. Thus, it is easy to start a business in less-developed countries.

China, Vietnam, and Indonesia are among the most active countries producing apparel lines. China is the most influential role player in current apparel production, as exemplified by U.S. consumption of apparel products, including actual consumer consumption in the United States and imports (at the wholesale level), which increased 6.1 percent to 20.5 billion in 2005 from 2004 (American Apparel and Footwear Association, 2006). In 2005, China's textile production accounted for one-third of the world's textile supply. That year, China exported a total value of US$22.4 billion to the United States, and in 2006, its exports reached US$27.8 billion. China became the single largest source of imports of textiles and clothing for the United States during the past decades (Shen, 2008).

The United States imports most of its apparel and fashion products—more than 95 percent of its apparel and 99 percent of its shoes—from other nations (American Apparel and Footwear Association, 2009).

Availability of High Technology

The industry also requires high-technology components for apparel production processes, such as computer-aided design (CAD) programs. But the combination of low- and high-tech characteristics of systems allows companies in the highly developed countries to use high technology to design apparel products and hire contractors for the low-tech, labor-intensive production activities in less-developed countries. Usually, with the help of an **agent** who acts as a go-between, a company that designs and a factory that manufactures collaborate to produce apparel products (Bonacich et al., 1994). The agent decides which factory would be best suited to a product; negotiates prices; and helps to solve production, scheduling, and shipping issues. Technology such as websites, email, and design software enables apparel companies to conduct business globally.

Worldwide Collaboration for Global Production

Because manufacturers from many countries participate in the production process of apparel, the finished products become global products. The apparel you are wearing now may have traveled thousands of miles to come to you.

Figure 1.1 illustrates the global production process for apparel. For example, a jacket designed by an apparel company in the United States is made through a contracted agency such as Li and Fung, headquartered in Hong Kong. The fabric for the garment is woven in Thailand; the prototypes are developed in Shanghai, China; the production is done in Zucheng, China; and the finished goods are shipped to San Francisco, trucked to the distribution center in Reno, Nevada, and shipped out to individual retail stores all over the United States.

The Impact of Global Economic and Political Factors

Current issues related to political and economic factors around the globe—for example, a sluggish economy, rising fuel costs for

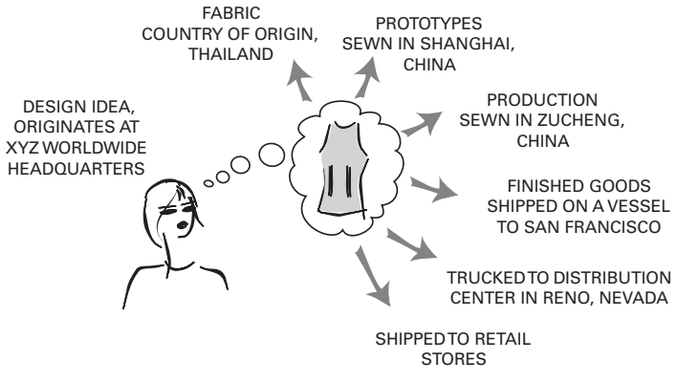


Figure 1.1 Globalization.

transportation, and limited fossil fuels for synthetic fibers and global production—also influence apparel production. Considering soaring fuel costs, one can predict that domestic manufacturing may be a better solution to cut down the total cost of future apparel production. Considering the fast-paced nature of fashion, success in the industry also requires an understanding of its manufacturing processes and trends for shortening the time between the design and the completion of final products in retail stores.

Ready-to-Wear Apparel

In early times, clothing and shoes were custom made; that is, made for an individual according to that person's own measurements. Apparel was cut, sewn, and fitted by a dressmaker or tailor, one customer and one garment at a time. There were no "sizes." The **ready-to-wear** industry started in the early nineteenth century, and mass-produced garments were introduced in the 1850s. Ready-to-wear was started for lower-class people who were not able to afford the cost of custom-made garments, and later was accepted by middle-class people. After the invention of the sewing machine by Walter Hunt (1832), Elias Howe (1845), and Isaac Singer (1846), ready-to-wear apparel could offer mass-produced products to the majority of consumers (Burns, Mullet, and Bryant, 2011). Thanks to high demand and the availability of sewing machines, more tailors who previously custom made garments worked for the ready-to-wear garment business.

With the standardization of sizes for military uniforms and less attention to individual fit issues, men's wear set a trend in the ready-to-wear apparel market, and women's wear and children's wear followed. Men's ready-to-wear was available in the mid-nineteenth century and the women's ready-to-wear industry expanded its business by the late nineteenth century. In the early twentieth century, ready-to-wear skirts and shirtwaists were available for sale in the market (Burns, Mullet, and Bryant, 2011).

Today, apparel products can be divided into two main categories based on their manufacturing practices: ready-to-wear and couture design. Ready-to-wear—**prêt-á-porter** in French and **moda pronto** in Italian—means ready to be worn, off the rack. It means customers can buy apparel products that are created based on standardization of sizes. It is different from couture design, also called **haute couture**, which means "high sewing" in French (Burns, Mullet, and Bryant, 2011). Haute couture is the design of apparel collections, in most cases produced in small quantity by high fashion designers such as Christian Dior, Chanel, and Givenchy.

Authentic haute couture collections are created by a very small group of designers, regulated by the Chambre Syndicale de la Haute Couture in France. The use of the term *haute couture* is regulated by law by the French Ministry of Industry, which ensures that the finest fabrics and most skilled technicians are employed to create these designs. In the 1950s there were more than 100 companies, or design houses, who were members of the haute couture. The organization dictates that to be a full-fledged member, a couture house must be in France, must employ at least 20 full-time people in its workshop, and must present at least 50 original designs to the press twice a year. In 2009, there were nine companies that comprised the haute couture; about twice that many participate in the couture shows, but are not full-fledged members; for example, companies in other countries, such as Valentino in Italy (O'Hara Callan and Glover, 1998). The term *couture* is bandied about with great abandon these days, but a garment that has a size tag is ready-to-wear, not couture, no matter how expensive.

Though not members of the haute couture, many designers have a structure in which their custom or high-end label is extended to include a lower-priced brand as well. Many produce custom-made apparel for their exclusive clients and sell these items in a very high price range. However, many designers extend their design influence into high-end ready-to-wear. Designers have their own house design line as well as a ready-to-wear line that is sold through department stores. A good example is Saint Laurent and its ready-to-wear line, Rive Gauche.

Categories of Ready-to-Wear Brands

There are several categories in ready-to-wear, distinguished by the relationship between the producer and the retailer.

Brands That Are Strictly Wholesale

Many brands are produced strictly for sale by the wholesale manufacturer to retail buyers. Underwear brands, including Hanes and other brands familiar to store buyers but not well known to the general public, also belong to this category. Most companies begin this way, and as their brand becomes stronger they may open their own retail store for greater visibility and promotion of their brand, even though the retail element may not be part of their primary business model.

An example is 7 For All Mankind, a brand that was mainly sold to consumers only through various retailers such as department stores and independent boutiques, but has added selected retail stores as well. Another example is Columbia Sportswear, a very successful wholesaler who also maintains a flagship store in Portland, Oregon, near its headquarters. The retail element enables the brand to display its complete line in its own environment as it was originally envisioned.

Business plans change constantly, and companies may add or subtract retail stores according to the business climate and to their marketing strategies.

Brands That Are Both Wholesale and Retail

Some brands have their own stores but also sell in other retail outlets. Some of these are **national brands**, to which consumers attach specific images, quality levels, and prices, such as Nike, Polo Ralph Lauren, and Liz Claiborne. They use **dual distribution**, which means selling their products through their own retail stores as well as to department stores that carry their

Figure 1.2 **Designer Tommy Hilfiger.**

brands. It means they can access more consumers through the conduit of other retail channels. Having their own stores allows the brands to showcase these products to their best advantage.

Some brands find their way into department stores through an exclusive arrangement. An example of this is Tommy Hilfiger (see Figure 1.2), who signed a contract with Macy's roughly 800 stores in the United States beginning in the fall of 2008. As part of the agreement the line was no longer carried by rival department stores such as Dillard's.

Private Label Brands Sold Through Their Own Retail Only

Companies that create their own products and distribute them exclusively through their own stores are called direct market brands or **retail store brands**. These well-known brands have exclusivity of designs and develop their own brand message, supported by their store layouts, custom fixtures, and ad campaigns. Consumers have wide recognition of their brand image. Abercrombie & Fitch, Gap, Victoria's Secret, and Anne Taylor are examples of this category.

The Gap Stores, Inc., includes Old Navy, Gap, and Banana Republic. All of their apparel is created through their own design teams and sold through their own retail stores. Although these stores are owned by The Gap Stores, Inc. (parent company), one cannot purchase the product of any of these chains in other stores of the parent company. For example, you cannot purchase Old Navy products in a Banana Republic store.

Private Label Brands Developed by Retailers

Some retailers develop **private label**, or store brands that they sell alongside their many other brands. Macy's, as a department store retailer, carries I.N.C., which is a private label created by Macy's and sold exclusively through its own department store, along with many other brands.

Nordstrom is another example of a retailer that has several of its own private label lines such as Classiques Entier, B.P., and Caslon. Nordstrom Product Group, a division of Nordstrom, creates its own private label products, and the in-house buyers purchase the styles to sell through Nordstrom stores only.

Arizona Jeans is another example of a brand that is exclusive to a retailer—JCPenney—that also carries many other brands. REI (Recreational Equipment Incorporated) carries many outdoor equipment brands in addition to developing its own branded products. The advantage of this arrangement is that in addition to building customer loyalty it also provides a measure of pricing freedom which can potentially boost the bottom line.

All of these private labels have their own design and product development teams and use **specification buying** as outlined in this book. That means that they oversee the production process, although the actual cutting and assembling process is done by their hired manufacturers. Ready-to-wear is created by mass production and sold wholesale for distribution by retail stores and department stores. Therefore, we can consider these retailers as manufacturers, although, technically, their apparel products are cut, assembled, and packaged by hired contractors who manufacture the apparel products for them.

Private Label with Retail Store Name

Some companies do not manufacture their own merchandise but rather buy their products from wholesale manufacturers and assign it their retail brand name. Forever 21 is an example of a retailer that in the past did not create products but bought from wholesalers. Recently, Forever 21 began their own private label brands, producing their own products instead of buying from other manufacturers. Forever 21 owns its own retail stores and buys the majority of their merchandise from multiple manufacturers, relabeling it with the "Forever 21" label.

Some companies sell mainly through catalogs and the Internet, but even they often have some retail stores or outlet stores. Primarily mail-order catalog companies such as Coldwater Creek, Land's End, and L.L. Bean often source products from a number of manufacturers but need to ensure that different styles will fit the same customer the same way. For example, a customer needs to be able to predict that she will be a size 10 in whatever garment she orders from a given company; this is particularly important in a mail-order company because it's not possible to try a garment on before purchase. By providing consistent sizing, companies can reduce return rates, and build loyalty and customer satisfaction. For all of these development processes, the technical design aspect is crucial.

Unbranded Products

Different from private labels, these are generic products that are created and sold to retailers and wholesalers. Such a product does not have its own brand name attached to it. It is sold and assigned its brand name according to the name of retailer or wholesaler. Branded products are sold to retail-only private labels with their own brand name and retail-only private labels under one store name and sold to the consumers.

The product development information in this book applies to any type of organization because both the processes of design and manufacturing go through similar specification steps.

Merchandise Segments

There are different ways of segmenting apparel merchandise. It is divided based on price range, on target consumers' demographic characteristics such as gender or age, and on product category.

Price Range

Wholesale price is a good indicator of ready-to-wear apparel companies as well as products. There are various product lines available based on their price range.

- *High* or *designer price zone* is the most expensive of the wholesale prices. Designers' collections such as Calvin Klein, Donna Karan, Yves Saint Laurent, and Chanel are included in this price zone. The introduction of new price ranges of designer products is an interesting phenomenon of the industry. New, high-end merchandise such as Purple Label from Ralph Lauren is a good example of a price line even more exclusive than the designer's name brand (Figure 1.3).
- *Bridge* is the category between the high or designer and better price ranges. It includes the less expensive lines of designers, but is a bit higher range than the better price lines. Two examples of designer bridge lines are cK by Calvin Klein and DKNY by Donna Karan. Other brands in this category are Ellen Tracy and Emporio Armani.
- *Better* includes national brands that are widely recognized by consumers. Tommy Hilfiger, Liz Claiborne, Jones New York, Reunion, Nike, and Nautica are examples. Store labels such as Ann Taylor, Talbot, and Banana Republic are also included in this price range.
- *Moderate* is a category including many private labels such as Guess, Levi's, and Gap (Figure 1.4).
- *Mass market or budget* is the price range for merchandise carried in discount stores such as Target and Kmart. It is the least-expensive merchandise found in the markets. Wholesalers such as Costco's Kirkland brand, Swedish apparel line H&M, and retailers' product lines such as Forever 21 are examples. Currently, mass market or budget companies such as H&M and Forever 21 have reached their heights of popularity (Figure 1.5).

Many apparel companies expand their acquisition by adding a new apparel line in various price ranges. Vera Wang, a top wedding dress designer for celebrities, expanded her business by adding a new women's ready-to-wear line at the moderate market. The Simply Vera label was introduced at Kohl's, the department store chain well known for its value-oriented products and price (Crawford, 2007). After witnessing the fall of Halston, a famous designer in the 1960s and 1970s, after he sold his line at JCPenney and lost his high-fashion image, the fashion industry is paying attention to see what comes of Wang's bold move.

Figure 1.3 **Trademarks for high-price zone brands.**

Figure 1.4 **Guess is an example of a brand in the moderate price zone.**

Figure 1.5 **Tracy Feith for Target Go International.**

Figure 1.6 **Forever 21 is an example of a brand in the mass or budget price range.**

Figure 1.7 **The design process in the past.**

Forever 21 is one of the leaders of the "fast fashion, cheap chic" trend (Figure 1.6). The clothing company has grown tremendously over the last decade since its foundation in 1984. This retail powerhouse relentlessly keeps up with trends and is widening its market to men and women, from toddlers to adults. It is known for its strategy of catering to entire families rather than focusing on teens or fashion-forward women. It also carries product categories such as women's footwear, lingerie, plus sizes, and cosmetics (La Ferla, 2007). It added more categories such as men's wear in 2006 and children's apparel in 2010. The company has also added several additional women's lines, including the plus-sized collection Faith 21 and the more envelope-pushing Twelve by Twelve, which is its most high-fashion line (Holmes, 2010).

A privately held company, Forever 21 has continuously expanded its stores under branch brands such as Forever 21, XXI Forever, Love 21, 21 Men, Heritage 1981, Faith 21, Forever 21 Girls, and Love and Beauty throughout North America, Asia, the Middle East, Europe, Mexico City, and Latin America, as well as a Korean e-commerce site (http://www.forever21.co.kr). Forever 21 interprets cheap fashion at a faster momentum—typically six weeks—than other leading fashion companies; for example, Marc Jacobs may take six months (La Ferla, 2007).

Gender and Age

Merchandise segmentation is determined by one's target consumer's demographic profile, with special attention to gender and age. Many companies own multiple brands to reach out to various ranges of consumers who are distinguished by their demographic characteristics. As previously mentioned, The Gap Stores, Inc. owns Banana Republic, Gap, and Old Navy. Each brand has its distinct price range and its unique styles geared to its own target consumers. Each brand owns its own merchandise segments based on their gender and age; for example, Old Navy caters to men's, women's, boys, girls, babies, maternity, and women's plus segments.

Based on these categories, apparel products are broadly divided into men's, women's, and children's. In the past, the women's line was the main focus in the industry; however, over time, with men paying more attention to their style, men's fashion has been growing, and different brands based on various target consumers have come to the industry. The decision for a given brand to expand from a successful women's line into men's and children's is not taken lightly because success in one area does not guarantee success in another. A separate staff with expertise in the new area is needed to successfully bring the products to market.

Many apparel companies expand their business by adding more brands. Apparel companies find it easy to expand their business because they have their own know-how of product development and distribution channels. For example, Abercrombie & Fitch plans to add a new apparel line every two years. Abercrombie kids, Hollister, and Ruehl No. 925 are examples of brands added to the company's brand lines. The company's main idea is to cover all the customers in various demographics. The customers who grow up with abercrombie kids can move to A&F in their teens and college years, and then move to Ruehl No. 925 in their 30s when they want an age-appropriate feel of Abercrombie & Fitch for themselves.

Table 1.1 shows how the broad market segments of men's, women's, and children's wear are further segmented by age and other demographic characteristics.

Product Category

Apparel products are subcategorized based on end use. Product categories included in Table 1.1 and the following list of women's apparel product categories are not mutually exclusive.

- Outerwear: coats, jackets, vests
- Dresses
- Blouses, shirts
- Sweaters
- Skirts
- Suits and coordinates
- Knits and tees
- Swimwear
- Sportswear and active sportswear: golf wear, tennis wear, skiwear, snowboard wear, yoga wear
- Eveningwear

Table 1.1 Merchandise Segments Based on Gender, Age, and Body Type

Men's Wear	Women's Wear	Children's Wear
Men's	Missy	Infants (3, 6, 12, 18 months)
Big and tall	Women's large	Toddler (2T to 3T)
Young men's	Petite	Children's (3 to 6X)
	Tall	Boy's (8 to 18)
	Maternity	Boy's husky (8 to 18)
	Juniors	Girl's (7 to 16)
		Girl's plus (7 to 16)
		Young junior (3 to 13)

- Bridal and bridesmaid dresses
- Maternity wear
- Uniforms
- Intimate apparel (foundations): bras, girdles, and other shaping garments
- Sleepwear and loungewear
- Accessories, bags
- Shoes
- Hats, scarves, and gloves
- Socks and hosiery
- Furs
- Leathers

Generally, apparel companies specialize in one of several categories of products. An interesting current trend is the success of specialized apparel lines such as the Portland, Oregon-based swimwear company Jantzen Inc. and Victoria's Secret, a Columbus, Ohio-based brand specializing in intimate apparel as well as sleepwear and loungewear.

Professionals in Apparel Product Production and Distribution

To be successful in the industry, it is important to understand its structure, including both the manufacturing and retail sides, as well as to be up to date in knowledge of the market and product trends. Apparel products are produced by teams of creative professionals. Owing to globalization, specification buying is a current trend that is widely practiced in the industry.

Influence of the Specification Buying Process on Roles

In the past, the design process was more commonly based on in-house production (Figure 1.7). Designers designed and produced a style on a small scale, and production was more like the process for custom-made apparel. Later, the design would be produced in-house by the company's own factory. However, after mass production became the norm and ready-to-wear had come to dominate the industry, production began to be done on a mass scale in other countries.

Currently most ready-to-wear apparel producers practice specification buying. The majority of companies in the United States do not own their manufacturing facilities. This means that a company works with the agents and factories it hires to produce its apparel products; in most cases, these agents and factories are overseas. Companies specify the production process, approve the creation of designs, and stipulate the materials and the details of designs. However, actual cut, assembly, tagging, and shipping are done by hired contractors. In this sense, on the one hand, the apparel companies are buyers who pay money to the manufacturers who manufacture the products for them, following the specifications given by the companies. On the other hand, they are manufacturers who design and dictate the product specifications. The U.S. companies are buying the products from the offshore manufacturers who make the product on the basis of designs provided by the U.S. companies, and according to those companies' own specifications such as specific design details, trims, fits/specs, grades, constructions, labels, and finishes set by the in-house design teams.

Specifications (specs) are written guidelines for a style that include all the specific information related to producing a certain garment. Because specifications are used as a tool to communicate between design teams and contractors, it is very important to write clear as well as complete specifications. The written specification is called a specification package or **technical package—tech pack** for short. (See Chapter 3 for more information on technical packages.)

Private label companies commonly practice specification buying in their apparel production process. The products are created based exclusively on the company's specific, established standard specifications. On this point, there are various advantages of private labels. First is the exclusivity of design (Brown and Rice, 2014) in that the designs are created by the in-house design team based on their brand image for target consumers. They carry the products only in their retail stores so they can easily create their own exclusive brand images, using advertisements, signage, and other forms of promotion. Private label companies such as Polo, Gap, Abercrombie & Fitch, and most apparel companies are included in this category.

Second, it is easy to set up or dissolve the business because it does not need the startup investment of setting up an actual manufacturing plant. The design company can easily hire contractors to fulfill its orders (Brown and Rice, 2014).

Third, the company does not need to worry about personnel issues. The workers are contracted through the hired agents or contractors, and it is not the company's direct responsibility to meet with each individual worker and union to take care of any issues (Brown and Rice, 2014). However, contracting for manufacturing can raise huge issues related to sweatshops and child labor for the brand because the U.S. public is becoming increasingly demanding of ethical labor standards in the factories that produce their clothes. Consumers are holding companies responsible for selecting manufacturers that treat their workers humanely.

A **sweatshop** is a working condition with very unhealthy, difficult, or hazardous situations; in most cases, workers do not have unions or collective bargaining rights to protect themselves and are often forced to work long hours for little or no pay. On April 24, 2013, the Rana Plaza garment factory building in Savar, an industrial suburb of Dhaka, the capital of Bangladesh, collapsed and killed 1,127 people. It is the deadliest disaster in the history of the garment industry. The building was constructed with substandard materials and in blatant disregard for building codes. The factory owners urged workers to return to their jobs despite evidence that the building was unsafe (Yardley, 2013).

Sweatshops also frequently engage in **child labor**. Child labor is the employment of children under an age determined by law or custom. Each country has its own standard for setting the minimum age of workers. Under the child labor laws in the United States, the minimum age to work in an establishment without parental consent is 16. More information on sweatshops and child labor can be found on the following websites:

- Fair Labor Organization: www.fairlabor.org
- Sweat Shop Watch: www.sweatshopwatch.org

Apparel companies should monitor the working conditions in manufacturing factories to avoid sweatshop and child labor issues. Most apparel companies require manufacturers to abide by the regulations regarding working conditions and labor issues spelled out in their contract. For example, Nike developed its own requirements from its past mistake of hiring children as young as ten years old to make shoes, clothing, and footballs in its Pakistani and Cambodian manufacturing facilities (www.commondreams.org/headlines01/1020-01.htm).

Horizontal Integration Versus Vertical Integration

There are two different kinds of organization in the apparel industry. One is **vertical integration**, which means that the company owns the production process facilities, and employees from management to line workers may work under one roof. There are several advantages to this kind of production: easy control of the production process because all personnel can check the process on the spot; ease of communication with everyone who is involved in the process; and the absence of need to physically move the product for the production process.

The Spanish company Zara (a producer of apparel in the moderate price zone) is a great example. The company has total control of its management (Figure 1.8) from design to production, including most of its supply chains and even distribution. Interestingly, most of the production facilities are owned by Zara and are located in Spain. Zara produces an average of 50 percent of its apparel products by dozens of company-owned factories in Spain; 26 percent is from factories elsewhere in Europe, and 24 percent is from factories in Asian countries and the other parts of the world. Zara wins over other competitors by shortening its **lead time** (the amount of time needed between creating a new design and moving it into retail stores) to two weeks using its domestic manufacturing facilities (Ferdows, Lewis, and Machuca, 2004). Only staple items, for example basic T-shirts, which stay a longer time on the shelf, are outsourced to low-wage and somewhat far areas from their company such as Asian countries and Turkey.

Considering the importance of timing in the fashion industry, other companies, which in most cases outsource to Asia and have nine months lead time, cannot compete with Zara. Creative decisions made at Zara, stemming from impromptu discussions at Inditex headquarters, occur in an open workspace slightly bigger than a soccer field. Everyone from designers and commercial staff to store managers around the world are closely connected in their manufacturing processes through electronic and telephone contact. Store managers frequently visit the corporate headquarters to consult, view samples, and help improve designs in an informal capacity. These practices result in Inditex's speedy conception and production in a two-week cycle (Kowsmann, 2016).

Figure 1.8 Zara, a leading retail brand known for its vertical integration.

The high-end apparel brand Saint John is another good example. Located on a campus in Irvine, California, the company owns all of its manufacturing facilities, from yarn producing to sewing. It is easy for all the professionals involved in the production process to communicate and check progress. Because they produce their own yarns and cut and assemble them themselves, it is possible for them to maintain quality and exclusivity.

The other type of organization is **horizontal integration**, whereby each part of the production process is owned and completed separately. This means all of the processes involved in creating materials, such as trims and fabrics, cutting, assembly, and packing, are done by different parties, and all the parties work separately in different places. It is applied to most brands, such as Ann Taylor, Abercrombie & Fitch, and Banana Republic. Disadvantages of this process are that unlike vertical integration, it is not easy to control each production process or communicate among personnel. Also, the products must physically move around, as must the employees who check the process; therefore, it may take more time to complete production. However, considering the labor-intensive nature of the apparel production, if the company can take advantage of cheaper labor from overseas manufacturers, it may be a good way to produce the products compared to domestic vertical integration. This would be a practical method for a start-up company without the high investment.

Main Professionals

Before entering the industry, it is important for prospective fashion designers to understand the roles of the three main professional groups in the production process. In the big picture, professionals are involved primarily in the distribution process, the production process, or the product development process.

Distribution Process

Retailers create private label products and set up their own design team. They then produce their own products, or hire **vendors** or **contractors**. The words *vendors* and *contractors* are used interchangeably. Vendors oversee production to ensure that the products meet the quality standards set by the design team. In

the case of overseas manufacturing, the workers usually do not understand English, so bilingual agents direct the production process.

Production Process

A product coordinator's job responsibilities include coordinating production and dealing with contract information and deliveries. Product coordinators work with contractors and agents. Real-Life Job Description #1 is an example of an actual production assistant position for a medium-size private label company.

The responsibility of contractors hired by apparel companies to manufacture products is to produce those products based on the specifications set by the apparel companies. The contractors actually manage or own and manage the sewing plants. One of the biggest international contractors in the world is Youngone Corporation, which is based in Korea.

Wholesalers produce products under their own label and sell those products to retailers. Considering the retailer's or manufacturer's side, there are different positions specifically related to the design process.

Product Development Process

Merchandisers analyze the market, review the best-selling styles from the previous season, and provide direction to the design staff. In many companies they work with the designers and have a good feel for the customer and what styles will be accepted and successful. They act as a bridge between the buyers and the designers, interpreting the next season, what styles will be needed, and what colors and trends are relevant to the brand. They also ensure that the new styles offered will be what the target customers will be looking for at the price they want to pay.

Merchandisers spend time working on budget and sales data spread sheets. Communication skills and critical analysis of trends, designs, and sales data are essential for merchandisers. They monitor both the new and **carry-over styles**, which are styles that were popular in a previous season and are repeated in the next season, and have a feel for what is trending up or down. Based upon the sales figures and their own experience and perspective, they provide a key document each season called the **line plan**, which is an outline of all the styles to be produced for the season. See Table 2.1 in Chapter 2 for a sample line plan. Real-Life Job Description #2 is an example of an assistant merchandiser position for a medium-size private label company.

Apparel designers create actual styles for apparel products. They work far ahead of the delivery season based upon the lead time (the time it takes a factory to develop a style from the moment it receives the design instructions until the time the goods arrive in the retail store, usually six months to one year). Their designs are based on in-depth research of past and current trends. They often travel to get inspiration from different places and sources, including textile trade shows, before beginning a new season and creating designs with the inspiration. This position requires the ability to understand cultural diversity and interact with overseas workers. Real-Life Job Description #3 is an example of an assistant designer position for a medium-size private label company.

In large companies, the technical design department is separate from design and includes the apparel engineers who specialize in making designs into real products. The technical designer's job description includes reviewing tech packs (manuals of each style) initiated by the apparel designers' computer-aided design skills, fitting, writing fit comments, and so on. Technical designers closely direct the production process. Creativity and problem-solving skills are required to create functional as well as aesthetically pleasing garments that meet the quality standards set by the specifications. One of the most important issues, cultural sensitivity, is essential to working with manufacturers, given that most production is outsourced overseas. Understanding diverse cultures will ease work stress and avoid problems in interactions with workers in these factories. Real-Life Job Description #4 is an actual example of a job posting for a technical design assistant position in a large private label company.

The people who create graphics of apparel products, packages, labels, embroidery designs, and signage of the product are the **graphic designers**. Creativity and critical analysis are important for this job. An art background with an emphasis on color and design is needed for this work.

Textile designers design new fabrics for apparel products. Knowledge about various colors, design motifs, printing techniques, and fiber and fabric structure as well as CAD skills are important for a textile designer, as is a knowledge of the technology of printing. Designing textiles is an important job, especially for the men's and women's woven area. To create styles in keeping with current trends for specific target markets, it is essential to create unique textiles.

An appealing color is often the first thing that draws a customer's eye. Every season, new color influences arise and the **colorist** works with the forecasting companies, researches color trends, and develops storyboards to present new color direction or new ways to present carry-over colors to the design team. Colors are often given poetic names in an effort to target the market segment, and the colorist is often in charge of managing the color names. For example, rather than calling a color "dark gray," the colorist may give it the name "anthracite" to tie in with other jewel tone names within a certain seasonal palette. When the color story is set each season, requests go out for lab dips of all the fabrics in each new color. A **lab dip** is a small swatch of the fabric that has been dyed to match a standard (for example, Pantone colors, a widely used standardized color reproduction system created by Pantone Inc.). The colorist manages this process. Real-Life Job Description #5 is a job posting for a textile print designer and colorist position for a large private label company.

Real-Life Job Description #6 describes a raw materials developer. This person handles new fabrics, new trims, and coordination with the mills. In some companies the duties of the raw materials developer and colorist (see Real-Life Job Description #5) may be combined. In these examples they are split into two distinct positions.

If a company has its own sample room, it will include the areas of **pattern maker**, sample maker, and cutter. The sample department personnel will create patterns and samples for fitting and review in the technical design process. In some cases, in a smaller organization, pattern makers are also sample makers, and possibly cutters as well. The advantage of having a staff pattern maker is that the pattern and fit can be approved early in the process, saving development time. Other companies outsource the pattern-making process to the factory producing the goods. The advantage to using the factory pattern maker is that the pattern can be closely engineered to run through the factory in the smoothest way possible. If the factory is furnished with block (or

basic) patterns, which the company has already fit and approved, the garment fit can be consistent. Real-Life Job Description #7 provides information about pattern makers.

After the pattern maker has created patterns, **sample makers** create the first prototype samples for style. Similar to pattern making, sample making is often one of the responsibilities of contractors. Many companies do not own their sample rooms and rely on manufacturers for sample making. **Quality assurance professionals** work in the design division and deal with the product quality issues. When received, products are inspected to make sure they meet the expectation of the tech pack. These professionals perform quality audits on incoming shipments by examining specs (that is, measurements for fit and trims). Understanding various quality issues related to products, such as garment washes, is an important part of this job. Quality assurance personnel work closely with other design teams so communication skills are vital. Real-Life Job Description #8 is an actual posting for an apparel quality assurance professional-assistant position for a medium-size private label company.

Textile lab technicians, usually part of the quality assurance department, test the fabric and textile requirements for apparel products. *Dimensional stability* is the term used to describe shrinking or stretching during washing or dry cleaning. Other important standards that must be met include tension, tenacity, crocking (color rubbing off), and color fastness to light and to washing. Evaluating how well textiles meet these standards is central to the job of this professional.

The product line manager (PLM) oversees the whole development process and takes full responsibility for the overall product planning assortment and the line plan creation process. Real-Life Job Description #9 shows the job description of the product line manager.

Because the Internet and electronic commerce is such a big area of selling, an **e-commerce manager** oversees the direct-to-consumer website as well as related mobile sites and social media. Collaborating closely with management, product development, sales, customer service, and information technology (IT) is key for success in this position. Real-Life Job Description #10 demonstrates a job posting for this position.

The **brand manager's** main goal is to create and develop strategic private-label brand plans that create revenue for the company through developing products that satisfy consumers' ever-changing needs and wants. The brand manager works closely with the merchandising design teams to ultimately meet their goals and establish their brand power and more sales. Real-Life Job Description #11 provides a job description for the position.

Selling Process

Larger companies show their lines to the retail buyers in a showroom. Another type of selling structure entails company representatives, either in-house (a salaried company employee) or independent (self-employed, paid by commission, usually with multiple lines), who cover a regional territory. They are known as **reps (representatives)**. The garments are shown at regional trade shows where the retailers come to place their wholesale orders.

Introduction to the Design Department

The design department is structured in different ways, depending on the size or type of the company.

Small- to Medium-Sized Companies

In terms of what exactly a given department designs, a small company encompasses more categories. For example, in a small company, one designer may handle all categories of women's products, and another designer will handle all men's. They may also take on more than one role within the process. The designers participate in the whole process of production. At a medium-sized company, such as Union Bay, the designers may decide the colors for the season, create textile prints, style the garments, create the technical package, participate in the fit process, and complete the production process. They take care of various production processes from designing to fitting to finalizing garments. Because each company is structured in its own way, it is advantageous to have a thorough understanding of all of the processes. In a smaller company, a new, aspiring designer can get a position closer to the design department, and peripheral skills such as an understanding of technical design will help.

Large Companies

A large company splits its departments into more narrow categories, and a designer handles, for example, all missy career knits or all men's woven casual bottoms. Also, there are clear job distinctions among colorists, textile designers, creative designers, and technical designers. In a large company such as Nordstrom Product Group, each division has its own job description, and each employee deals with a clearly defined aspect of the process. Recent graduates who get their first job in a large company learn a more specific part of one production process and become an expert in one specific area. However, the job would not provide a holistic perspective of the apparel production process. The first-time employee needs additional preparation to be well rounded and avoid being limited to following one specialty throughout his or her career.

Figure 1.9 provides a detailed look at an organization chart for XYZ company's product development team, and how it relates to the company as a whole. The highlighted positions have job descriptions in Boxes 1 through 11.

Designing for Movies, Plays, and Theater

Boxes 1 through 11 provide job titles and their descriptions related to ready-to-wear apparel production. For those interested in costume design and production for film or theater, Boxes 12 and 13 showcase positions for a costume designer and costume director.

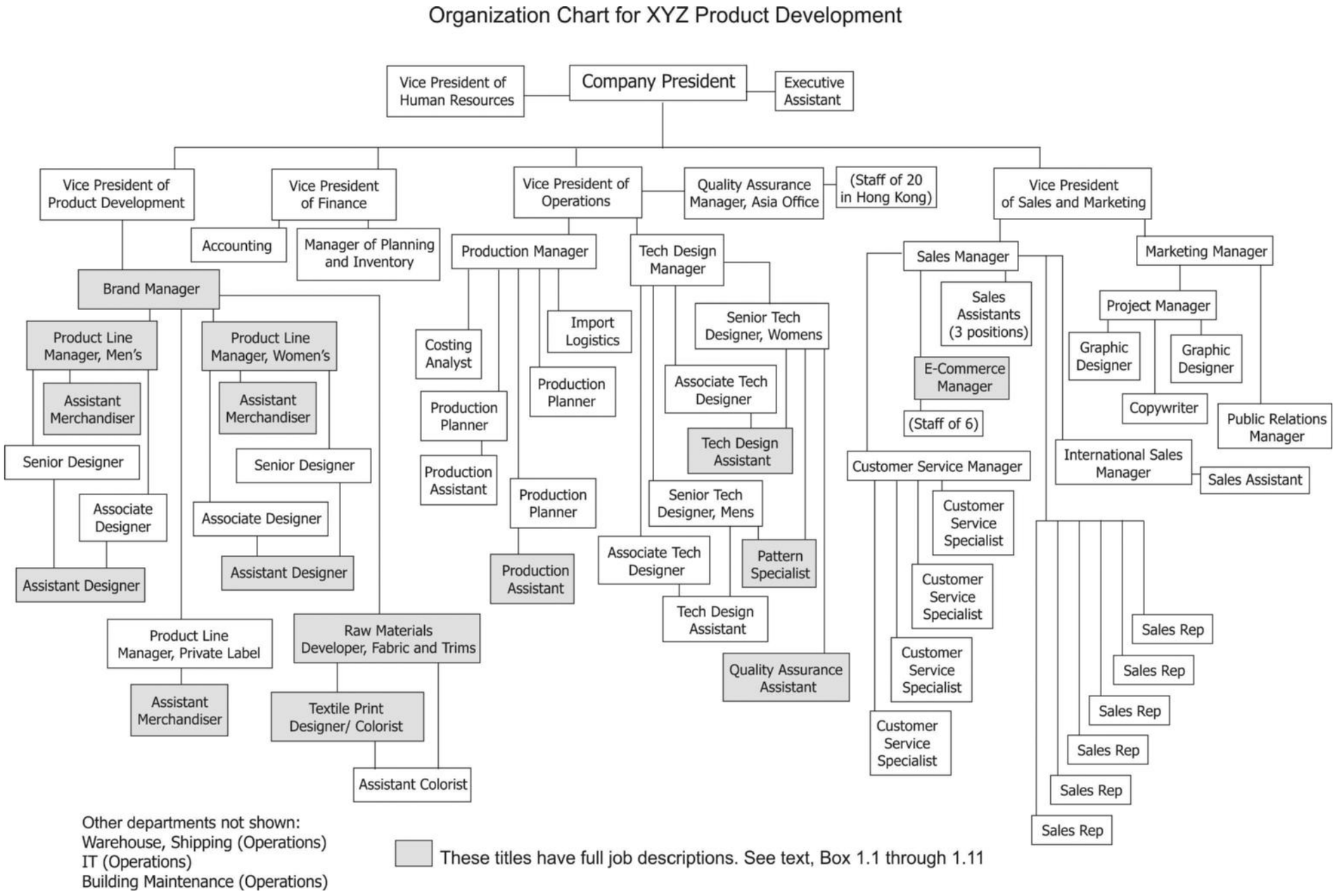


Figure 1.9 **Organization chart for XYZ Company.**

Box 1.1 Real-Life Job Description #1

Job Title: Production Assistant
Reports to: Production Planner, various divisions

Primary Purpose: An entry-level position created to provide broad exposure to employees with an interest in production and merchandising. Employees in this position will be assigned projects and responsibilities that will allow them to learn product management processes and procedures at our company. This position is rotational and will require a minimum of two different division assignments within the first year of employment.

Major Responsibilities:

- Enter data into the computer system; maintain and coordinate production and contract information to include Stylemaster, availability file codes, contract entry and revisions, and shipping notices.
- Assist with issuing sample, fabric, and development purchase orders.
- Identify, analyze, and research production and delivery problems to maximize customer deliveries and minimize negative impact on inventory levels and product profitability. Review solutions with business product managers.
- Order and follow through on customer samples and sales reps' samples, including specification changes and quality checks as needed.
- Research, audit, and update production status including cost sheets and delivery/shipment issues, i.e., monitor work in progress (WIP) report.
- Communicate via phone, email, and/or fax on production issues to agents (international and domestic) and internal customers (allocations, customer service, shipping, and sales).
- Undertake special projects and tasks as requested by the divisions.

Qualifications:

- Minimum of one year of production scheduling, inventory control, buying experience, or other office-related experience, preferably within the apparel industry.
- Data entry experience required, including a minimum typing speed of 45 words per minute.
- Personal computer skills and proficiency in Word and Excel required. Familiarity with software applications as they relate to the apparel industry preferred.
- College degree in business, clothing, and/or textiles, or equivalent work experience preferred.
- Excellent written and oral communication skills.
- Ability to work well independently. Strong organizational skills. Ability to analyze and prioritize critical information, handle multiple tasks, and meet deadlines.
- Flexibility to adapt to business changes. Ability to work well under pressure.

Box 1.2 Real-Life Job Description #2

Job Title: Assistant Merchandiser
Reports to: Product Line Manager

Division: Apparel

Primary Purpose: To support the Merchandising Division in driving sales profitably through systems maintenance, sourcing support, sample management, and tactical execution.

Major Responsibilities:

- Weekly selling meeting preparation
- Item setup in product profile for all styles
- Mechanical proofing for items, prices, hangtags, etc.
- Photo and inline sample ordering and check-in/tagging
- Represent merchandisers when out

Key Interfaces:

- Product Line Manager
- Sourcing Manager
- Planning
- Marketing Tech Design
- Design

Qualifications:

- Merchandising degree and/or equivalent business experience
- The ability to communicate and work well in a team environment, as well as independently
- A strong knowledge of PC-based systems such as Windows, Excel, Lotus, and Word
- Prior retail business knowledge and experience preferred

Box 1.3 Real-Life Job Description #3

Job Title: Assistant Designer, Men's Wovens Product Category
Reports to: Senior Designer, Men's Collection

Primary Purpose: Assist in men's division with the design and development of the clothing line, with emphasis on the woven shirt product category.

Major Responsibilities:

- Assist and support in other product categories as needed.
- Assist the design team in color selection, styling, fabric, fit, and spec development.
- Provide input for fabric designs, coloring, prints, and technical drawings in Illustrator.
- Assist in preparing sample orders for initials and sales rep samples. Track, maintain, and execute design information, including sample orders for initials, sales rep samples, and production with accurate spec, fabric, accessory, and detail information.

- Provide accurate and complete communication and documentation of design information to international and domestic agencies.
- Maintain a strong familiarity with the men's casual target market with regard to demographics, lifestyle, fashion trends, and consumer habits.
- Travel as required, internationally and/or domestically.
- Other duties and special projects as assigned.

Qualifications:

- Bachelor's degree in fashion merchandising or apparel design, or equivalent work experience, preferably in men's contemporary market
- PC proficiency with Illustrator and Photoshop computer design programs, and Microsoft Word and Excel
- Strong technical skills in regard to fit and construction
- Excellent organizational skills and attention to detail
- Excellent written and oral communication skills
- Ability to work both collaboratively and independently; consistently self-motivated

Box 1.4 Real-Life Job Description #4

Job Title: Technical Design Assistant
Reports to: Senior Technical Designer

Primary Purpose: We are currently looking for a committed individual with a positive/energetic attitude to join our team! A successful technical design assistant is responsible for supporting fit and construction of fashion products.

Major Responsibilities:

- Assist in maintaining consistent size and fit standards, grade rules, and tolerances
- Support the maintenance of construction and quality standards
- Collaborate with technical design team to resolve fit and construction issues
- Prepare for and participating in fit sessions
- Assist in developing and maintaining complete and accurate spec packs
- Understand and interpret the designs as accurately as possible
- Work collaboratively with the brand team
- Assist with the appropriate resources on blocks and pattern development
- Utilize digital tools, Web PDM, and Microsoft Office proficiently
- Track product development against workflow dates
- Work productively with close supervision
- Develop and maintain strong partnerships with internal and external partners

Qualifications:

- Degree in pattern making, clothing and textiles, or related field
- Experience in apparel or textile industry preferred
- Experience in pattern making preferred
- Factory exposure a plus
- Excellent computer skills: Excel, Word, and Outlook

Note: This job description has been designed to indicate the general nature and level of work performed by employees within this classification. It is not designed to contain or be interpreted as a comprehensive inventory of all duties, responsibilities, and qualifications required of employees assigned to this job.

Box 1.5 Real-Life Job Description #5

Job Title: Textile Print Designer/Colorist
Reports to: Design Manager

Major Responsibilities:

- Main contact for supplies related to color and artwork
- Utilize CAD tools to create color repeats and colorways based on the print designer's direction
- Match colors by establishing color standards
- Build accurate color-ups on all artwork for production
- Evaluate lab dips and communicate clearly to achieve desired color results
- Approve strike-offs and knit-downs for print and pattern
- Keep abreast of copyright laws and new technological advancements with regard to CAD
- Work with brand team/vendors to create electronic art transfers between systems to reduce lead times
- Maintain color reference library
- Assist with color presentation materials for buy meeting
- Comment on strike-offs and bulk fabrics to ensure textile artwork is approved and executable in production
- Assist with approving knit-downs for patterns
- Comment on all bulk production colors with patterns
- Assist team with buy meeting preparation
- Take on additional responsibility as needed

Qualifications:

- Ability to follow through all news for a pattern from inception through to production
- Ability to follow through on all color-related issues for adopted color standards
- Ability to match colors; must have a high score on Farnsworth Munsell Hue Test
- Ability to approve color and layout for patterns

- Ability to create multiple colorways of textile artists' prints/patterns
- Ability to interpret art concept into finished product
- Ability to achieve deadlines established by brand calendar
- Degree in art, clothing, and textiles or related field preferred
- Broad textile media experience preferred
- Experience with CAD system scanner use
- Ability to utilize the following programs/tools: Excel, Word, and Outlook Microsoft applications, Ned Graphics, Photoshop, Illustrator, Color Test

Box 1.6 Real-Life Job Description #6

Job Title: Raw Materials Developer
Reports to: Sourcing Director

Primary Purpose: Work closely with the Product Group to provide sourcing for on-trend textiles and color direction for each season. Interface closely with Design, Merchandising, and Production.

Major Responsibilities:

Essential Functions, Fabric:

- Act as a resource for the product team, researching fabric direction.
- Coordinate textile and trim sourcing with factories and mills, including QA testing and approvals. Provide alternatives for failed trims.
- Coordinate mill communication and introductions to insure smooth development and handoff to Production.
- Coordinate color lab dips and approvals with vendors.
- Negotiate textile pricing.
- Manage all fabric testing and approval status.

Essential Functions, Color:

- Complete understanding of the science of color within a textile setting and how to evaluate it effectively, passing results of color testing a requirement
- Create and maintain textile and trim piece goods and pricing matrix in collaboration with Product Line Manager and Costing Analyst
- Develop and maintain internal physical and online textile and trim library, including documentation of current and revised fabric standard, lead time, care recommendations, and fabric minimums
- Complete and maintain accurate material adoption specs (MAS)
- As requested, attend fabric shows, research, and communicate trends to all product teams
- Coordinate tracking of textiles for initials and sales samples and provide seamless handoff to Inventory Managers and Production Planners for designated team
- Ensure invoice accuracy for all textile purchases
- Interface with Import to insure compliance with U.S. Customs

Qualifications:

- Strong knowledge of textile construction, dyeing, and finishing, including expertise in cutting-edge finishes and wet processing
- Excellent understanding of both natural and synthetic fibers, and their specific limitations
- Must have knowledge of existing textile mills and contacts
- Must be highly self-motivated and be a team player with a sense of urgency
- Must have excellent communication skills, oral and written, especially with people of diverse cultures
- Must have excellent organizational and prioritization skills, including ability to multi-task while working within a deadline structure
- Must have strong negotiating and analytical skills, including strong mathematical skills and accuracy
- Must have a good working knowledge of PC operations, Word, Excel
- Must be willing to learn product data management system as needed to fulfill job requirements
- Must evidence a professional manner and appearance as a representative of the company
- Must be willing and able to work overtime and travel when needed
- BA degree in design or a technical AA degree or equivalent; fashion design/merchandising or textile degree preferred
- Minimum five (5) years of progressive and diverse experience/practices in design and/or textile sourcing including experience in color evaluation

Box 1.7 Real-Life Job Description #7

Job Title: Pattern Maker
Reports to: Product Manager

Primary Purpose: Build and maintain pattern block library to support the development and distribution of pattern specifications with vendors

Major Responsibilities:

- Organize and manage pattern block library for specified divisions.
- Keep accurate spec details on all existing blocks, update them as needed and provide that information to technicians on a regular basis.
- Adjust existing blocks in reaction to vetted stakeholder feedback on returns or testing performance.
- Communicate with vendors about block updates and processes.
- Order fabric to create block mock ups in-house. Direct the sample maker in block garment creation.
- Update block patterns in the system to keep them current as we alter fits.
- Update block spec packs whenever block number or critical specs change.

- Make recommendations to Technical Designers and Designers about appropriate blocks to use to achieve desired fit intent.
- Manage the hardware and software needs of the digitizing and plotting equipment.
- Send and receive pattern electronically to/from vendors.
- Digitize and plot patterns as needed.
- Review vendor graded nests for adherence to company standards.
- Assist in training Technical Designers on the e-pattern system, and offer technical support as needed.

Qualifications:

- Five years of pattern making/block development and technical design experience
- Excellent written and verbal communication
- Thorough understanding of design, development, pattern making and production
- Degree or certificate in apparel or fashion design a plus

Box 1.8 Real-Life Job Description #8

Job Title: Quality Assurance Assistant
Reports to: Quality Assurance Manager

Primary Purpose: Assist with processing quality control audits on incoming production shipments, based on established standards and tolerances. Report results and help maintain accurate records of audits and libraries of reference resources at the distribution center.

Major Responsibilities:

- Compare shipment samples to a standard with regard to:
  - Color
  - Construction
  - Packaging and labeling
  - Specs
  - Workmanship
  - Fabric/materials
- Measure garments and recording specs and deviations
- Note measurements that exceed tolerances
- Identify flaws, defects, discrepancies
- Sort and re-package as needed
- Handle special projects as needed in preparation to be well rounded and avoid being limited to following one specialty throughout his or her career
- Assist in training new employees and/or temporary staff

Qualifications:

- Associate apparel degree desired
- Ability to read a spec pack
- Ability to communicate in English
- Demonstrated ability to measure accurately
  - Add and subtract
  - Convert fractions and decimals
- Superior ability to distinguish color
- Garment construction knowledge
- Fabric structure knowledge
- Attention to details and accuracy

We are full of smart, creative people. We support a work-hard, play-hard culture, and hope you are ready for the challenge. We provide excellent compensation packages, including medical/dental/vision benefits, a 401K with company match, generous clothing discounts, paid time off, and much more.

Box 1.9 Real-Life Job Description #9

Job Title: Product Line Manager
Reports to: Product Line Director

Primary Purpose: Responsible for overall category planning and the product creation process. Lead, drive, and communicate product and business strategies that meet the financial objectives, maximize profitability, and gain market share.

We are seeking a creative person with innovative ideas and a love for outdoor sports to develop and execute product line plans. The position's primary accountabilities center on bringing successful products to market in a timely and profitable manner. The position works closely with the Brand Manager, Marketing, and Sales, and is a hands-on development position requiring strong market understanding and technical capabilities.

As the Product Line Manager, you will work with key management and research and design comprehensive collections that are in line with product philosophies, and coordinate with marketing and other departments to complete projects within company timelines.

The Product Line Manager will inherently find the development of the multiple markets exciting and will look forward to broadening the product's reach even further. This opportunity is awaiting an individual who recognizes that the business is poised for growth, offering for him or her the chance to create their business legacy by applying their talents and skills.

The Product Line Manager will be responsible for domestic markets. This position reports to the Brand Manager and Vice President of Product Development.

Major Responsibilities:

- Bring market channel expertise to drive market penetration.
- Develop and execute product line plans based on company's marketing strategy and objectives.
- Create and propose comprehensive line planning recommendations.
- Actively participate with end users and attend events to gain consumer insight.
- Maintain up to date knowledge on category trends and competitive activity. Keep abreast of the market

conditions, consumer preferences, competitive products, and current trends by attending trade shows, consumer events, industry sites, visiting retailers, and social media.

- Research consumer needs, new technology, and innovation. Share findings to internal team.
- Drive ongoing product development, including recommendations on new product design, materials, market strategy, sales forecast, and price structures based on market research.
- Work with external design partners or vendors to assure that new products are developed on time and meet quality, price, and margin requirements. Develop product briefs for designers to follow, including styling, color, fabrication recommendations and prototype, production sample reviews, and testing.
- Manage the development process calendar including costing, quality evaluation, fabric trim, and color approvals.
- Coordinate and lead product development meetings.
- Develop and maintain product communication process. Manage and maintain accurate marketing product specifications and feature benefit details.
- Identify and develop annual marketing objectives and strategies consistent with annual long-term business plan strategies. Develop and manage appropriate expense budgets to support the product/marketing plan.
- Collaborate and partner with Marketing Manager in overseeing the execution of marketing materials including catalogs, advertisements, point of purchase, hang tags, and sales materials.
- Participate in sales meetings and activities as necessary to support the sales effort as well as obtaining insight on market trends and conditions. Meetings and activities include major account presentations and market shows.
- Lead presentations of new product lines to sales forces to support the sales and marketing efforts of Sales Manager to ensure continuity in the message being delivered.

Qualifications:

- Seasoned category management experience directly relevant to the categories and distribution channels
- Proven ability to lead product introductions and line extensions
- Demonstrated experience and success in building a brand
- Strong project management abilities and follow-through with great attention to detail
- Strong written, verbal, and quantitative skills
- Ability to present information effectively
- Strong problem solving and negotiation skills
- Creative thinker
- Bachelor's degree in related area
- Five to seven years of experience in product management within multisport, outdoor, running, or consumer product industry
- Strong knowledge of design and development process
- Proficiency with MS Office (Word, Excel, and PowerPoint)
- Passionate interest and active participation in related sports
- Willingness to travel

Competitive pay and benefits package includes medical, dental, LTD insurance, 401K with company match and generous holiday and vacation benefits.

Box 1.10 Real-Life Job Description #10

Job Title: E-commerce Manager
Reports to: Merchandise Manager

Primary Purpose: This position is responsible for managing our company's direct-to-consumer (D2C) website and related mobile and social initiatives. Will oversee day-to-day operations, including production and content of the website, as well as strategic planning, developing, and executing marketing initiatives, budget management, brand stewardship, performance analysis, and guiding overall workflows. This position works closely with management and cross-functional teams—Sales, Sales Ops, Creative Services, Product Development, Finance, Customer Service, and IT—and supervises the E-commerce team as well as strategic vendors and partner relationships.

Major Responsibilities:

- Oversee day-to-day management of (D2C) channel, including site functionality, site improvements, brand execution, overall product strategy/mix, customer experience, and revenue performance
- P&L responsibility, monitor budgets and forecasts and evaluate channel performance
- Identify customer segments and acquisition targets, create strategic messaging and marketing programs, and drive their development and deployment
- Ensure that all customer touch points from website to marketing communications to packaging to customer service messaging are consistent and brand appropriate

- Negotiate and manage relationships with vendors and partners for the D2C channel
- Identify and prioritize site improvements, building and presenting business cases as necessary
- Advocate usability, functionality, and customer experience best practices
- Create promotions for the D2C channel, adhering to corporate markdown schedule, writing and submitting proposals to the executive team, and communicating with appropriate internal stakeholders
- Ensure that D2C channel policies including privacy, terms and conditions, shipping, and returns and exchanges are current, accurate, and communicated appropriately
- Supervise upload of merchandise assortments for inclusion on the site, including copy and imagery

Education and Experience:

- 5+ years leading online and/or software development projects
- 5+ years leading multi-channel consumer direct marketing initiatives
- 3+ years progressive experience managing direct-to-consumer site(s)
- Demonstrated experience developing business strategies, creating marketing plans, and improving website usability and functionality
- Demonstrated ability to develop and oversee marketing, SEO, SEM, and email campaigns
- Experience driving operational efficiencies and marketing strategies through data and metrics
- Strong understanding of creative processes and online marketing and e-commerce best practices
- Proven outstanding leadership, communication, presentation, and interpersonal skills
- Excellent organizational and program management skills
- Demonstrated ability to work independently and effectively with daily time constraints in a high pressure environment
- Ability to be an effective leader of large, complex projects
- Strong writing skills
- Understands how to communicate difficult/sensitive information tactfully
- Mitigates team conflict and communication problems
- Flexible, "make-it-happen" attitude with willingness to seek out new responsibilities and opportunities for growth
- Apparel industry experience preferred
- Proficiency with Microsoft Office and Adobe CS
- Bachelors Degree or related experience required; MBA preferred

Box 1.11 Real-Life Job Description #11

Job Title: Brand Manager
Job Summary: This job contributes to the company's success by leading a team of Product Line Managers (PLMs) to achieve sales, margin, and in-stock goals for $90–$150MM in company annual sales. Develops strategic private label brand plans that support the company's corporate policies, drive financial performance, focus on the customer, and guide product line development. Directs and manages private label brand positioning, marketing, merchandising, category and collection development, and financial planning. Works collaboratively with PLMs, Design Teams, and various cross-divisional partners to ensure cohesive customer facing presentation of brands, products and stories within product development, marketing, e-commerce, direct mail, visual merchandising, and retail. Models and acts in accordance with company's guiding values and mission.

Major Responsibilities:

- Creates and implements the one-to-five-year brand plan that communicates priorities, collections, strategies, customer, and marketplace trends
- Partners with VP of Product Development to create brand and specialty shop financial goals based on corporate and brand strategic objectives and financial, market, and industry trends
- Ensures identification of key market, lifestyle, and product trends affecting the brand and their category responsibilities and develops brand and collection plans to meet market opportunities
- Creates business plan for new category development by researching sales potential, market size, assortment requirements, and relevance to the brand
- Ensures product line offerings and initial margins support brand and divisional goals
- Collaborates with PLMs to develop strategy and ensure appropriate brand positioning, collection, gender, and cross department consistency in product line execution
- Collaborates with Brand Manager to create one-to-five-year product planning direction for division and shared vision consistency across departments
- Creates and coordinates cross department collections, stories, and themes to create cohesive merchandising for seasonal product launches
- Provides content and brand priority stories across marketing programs, public affairs, and sales channels
- Ensures integrity of brand creative, positioning, and differentiation in product line management and collateral
- Creates strategy and direction for brand sales staff training and supporting materials
- Creates strategy and provides support for private label brand connection to our customers including market research, social media, and retail events

Box 1.12 Real-Life Job Description #12

Job Title: Costume Designer
Job Summary: The artist who creates the look of the clothes for a production based on collaboration with the director and costume staff.

Major Responsibilities:

- Reads script and determines the costume needs of the production
- Meets with the Director of Production to determine the concept which all artists will work within
- Researches period details, fabric availabilities, and rental possibilities
- Creates the color scheme to be used in the production
- Sketches ideas into renderings for director and actor approval, and as working drawings for costume construction team
- Determines fabrics and/or fabric modifications necessary to fulfill ideas determined on renderings
- Meets with costume shop personnel as necessary to facilitate the interpretation of the costume rendering into three-dimensional costume
- Attends rehearsals as necessary
- Attends fittings as necessary
- Meets scheduled design deadlines

Qualifications:

- Experience in script analysis for a variety of theatrical styles
- Excellent research skills
- Excellent knowledge of costume and fashion history
- Excellent knowledge of fabrics, trims and notions
- Good knowledge of basic theatrical culling and sewing
- Excellent knowledge and experience in the basic principles and elements of design
- Good drawing and painting skills with a variety of media
- Ability to work as a member of a collaborative design team
- Excellent interpersonal and communication skills
- Good time management skills
- Ability to remain calm in high stress situations

Box 1.13 Real-Life Job Description #13

Job Title: Costume Director
Job Summary: The individual responsible for the planning, development, budgeting, and control of all costume and wardrobe areas for a specific theatrical organization.

Major Responsibilities:

- Oversees the completion of all costume elements of a production to the theater's and costume designer's satisfaction
- Supervises staff in all costume/wardrobe areas including, but not limited to, workroom, crafts, dye shop, wardrobe, wig shop, and costume storage
- Determines, interviews, and hires staff for all costume/wardrobe areas
- Determines the yearly budgetary needs for all costume/wardrobe areas
- Manages budgets for all costume/wardrobe areas
- Advises and oversees the season schedule for the costume/wardrobe areas including, but not limited to, designer residency, costume staff work dates, and wardrobe staff schedule
- Determines and maintains a costume production quality of the highest standard
- Analyzes scripts and creates costume plots
- Participates in the long-range planning for the theater
- Performs other duties as assigned by the production manager or artistic director

Qualifications:

- Knowledge of and basic experience in all areas of theoretical costuming
- Knowledge of and experience in basic accounting procedures
- Demonstrated experience in personnel management
- Demonstrated experience in time management and work flow analysis
- Working knowledge of costume and fashion history including costume manufacturing history
- Working knowledge of costume materials including historical references and modern availabilities
- Working knowledge of safety standards and the implementation of same
- Excellent interpersonal and communication skills
- Excellent organizational skills

Launching a Career in Apparel Design

To be successful, it is important to find the most current information about fashion trends and the design production process. Various websites are useful for researching these topics. Professional organizations provide connections with professionals in the industry and academia. The International Textiles and Apparel Association (ITAA) is the premiere academic clothing and textiles association. ITAA sponsors a fashion design contest, awards scholarships, and provides other opportunities to learn the industry. Students in the clothing and textiles areas can also apply for Student Fashion Group International membership where members enjoy opportunities to connect with professionals in the industry and win scholarships.

For fashion trend research, Worth Global Style Network (WGSN) is one of the leading fashion forecasting websites (www.wgsn.com). This London-based online company provides free membership to students who are enrolled in a clothing and

textiles program in a college. First View (http://firstview.com) and Style sight are another popular ones (https://fashionista.com/tag/stylesight), providing services through the Internet. This website is known for its cutting-edge global fashion trend research. Also, *Women's Wear Daily* (WWD) is one of the leading trade and trend publications and Business of Fashion (https://www.businessoffashion.com) is a popular online fashion news portal that provides the most up-to-date information on the fashion industry. Spoonflower (https://www.spoonflower.com) is one website students who have interests in fabric design can purchase fabrics with creative prints and also upload their created prints to produce fabric.

If LinkedIn is a business-oriented social networking service for all areas of the industry and all majors in fashion studies, students in the design area can create an online portfolio using the web platform Coroflot (http://www.coroflot.com). Many design-driven companies globally use it to recruit for their companies. Wix (http://www.wix.com) is another web platform students can utilize to create online stores, a résumé, and portfolio.

Current Trends in the Fashion Industry

Global Sourcing and Reshoring

Global sourcing and manufacturing became a norm of the industry. Global sourcing is the process of selecting the final supplies or materials used for product development including fabrics, zippers, threads, and buttons in the global supply channel. But global sourcing also means the process of selecting factories that will assemble and manufacture apparel products. As trade regulations and standards change rapidly, understanding the competitive advantages at all market levels globally has been a main focus of retailers. In order to create a successful global apparel product, it is necessary to critically and creatively analyze the past, present, and future state of supply chain sourcing opportunities utilizing strategies of competitiveness, design, distinctive content, market timing, responsiveness, reliability, and integrity.

Reshoring is the trend of bringing back manufacturing of a broad range of products to the United States (i.e., the opposite of globalization). Global sourcing pushes the manufacturing means away from U.S. soil to take advantage of cheaper labor. However, many manufacturers recently reached the conclusion that U.S. production is a smarter business decision in that U.S. manufacturing is not only price competitive, but also offers distinct strategic and logistic advantages, such as effective communication within closer time zones and with fewer language challenges. It results in a faster and smoother production process and can also shorten the product development processes, shortening the turnaround time of prototypes and sample approval (Le, 2013). Although reshoring is not a definite answer for all manufacturers, it has recently become a popular option.

Social Responsibility

Emphasizing **social responsibility** has become an important issue in order to make ethical and socially responsible decisions. Every step of the apparel and textile product development and retailing process requires socially responsible decision making. This includes examples such as selecting sustainable labor forces without child labor and sweatshops, growing and processing eco-friendly materials, selecting eco-packing and marketing, and retailing products to efficiently operate and reduce emissions and carbon footprints. Social responsibility includes socially responsible supply chain management, that is, the process of socially responsible design, production, marketing, and distribution process. Tragedies at clothing factories in recent years—including a 2013 Bangladesh factory collapse due to an unstable building structure that took about 1,100 garment workers' lives—clearly brought retailers' attention to the importance of making socially responsible sourcing decisions. To solve the issues the industry currently faces, all participants, such as retailers, manufacturers, and consumers, should take responsibility to increase the safety of workers.

Crowd Sourcing

Product development used to be solely the domain of the design and product development teams within a company. However, **crowd sourcing** is a new way of creating products by soliciting contributions from people who are not related to the company rather than from traditional employees or suppliers. Internet technology has made it possible for companies to solicit ideas from the online community. In the fashion industry, there have been several popular websites; for example, www.designcrowd.com asks for consumers' direct participation in designing and creating products like T-shirts.

Omni-Channel Retailing

Omni-channel retailing is a new trend in fashion retailing. "Omni" means "all" in Latin and "channel" means a route of distribution and retailing of products. Omni-channel retailing is a strategy combining the consumer experience of online and offline together, centered on providing customers with a seamless and satisfying retail experience.

Omni-channel is different from multi-channel—in **multi-channel retailing**, sellers exist separately and operate separately. Some examples are pure online sellers (such as own-branded online stores), third-party online marketplaces (e.g., eBay, Amazon, Zulily), mobile stores, comparison sites (e.g., Shopzilla), general retailers selling via brick-and-mortar stores, or one or more of the above.

In contrast, omni-channel is a retailer selling through incorporating all or some of the above channels together to provide a combined experience of selling. An example is "click-and-collect," which means customers use an online shopping experience to view the product and then go to a brick-and-mortar store to purchase and collect the product. A second example is "in-store purchased and home delivered," which is when a customer reviews the products and makes a purchase in a brick-and-mortar store, but has the product delivered to their door.

Zara's new retailing strategy, "Bigger bricks and more clicks," demonstrates a successful story of incorporating omni-channel strategy into their retailing practices (Kowsmann, 2017). Zara recently opened a new flagship store in its hometown of La Coruna, Spain, with over 54,000 square feet and five stories. This clearly demonstrates its new winning strategy of retailing ahead of its rivals (e.g., Neiman Marcus). Inditex believes this is the right direction to fully integrate the brick-and-mortar store and online experiences. Zara began closing smaller stores and setting up larger stores instead. These newer megastores will showcase its full collections of numerous trendy styles. Zara's expectation that it would drive more consumers to visit the stores to see a

greater number of products and ultimately buy more proved to be right (Kowsmann, 2017). Inditex's net profit jumped 10 percent in 2016, while its sales hit a record of 23.31 billion euros (US$24.72 billion), according to figures released in March 2017. That momentum continued into 2017, with 13 percent growth in store and online sales in constant current terms over a six-week period. Sales of Inditex increased at least 8 percent more in the first six weeks of the 2017 fiscal year after opening the stores (Kowsmann, 2017).

Closing of Brick-and-Mortar Stores

The revolution of the digital world brought dramatic changes in fashion retailing. Easy access to the Internet through personal computers and mobile devices has shifted consumers away from spending at brick-and-mortar stores. Recently, Macy's has announced it will close 63 stores; Sears, 15; The Limited, 250; BCBG Max Azria, 120; Guess 60; American Apparel, 104; Abercrombie & Fitch, 60; and JCPenney, up to 140 (Helmore, 2017).

It is not the end of the story. There is no exception based on price point, with stores at both ends of the price spectrum preparing to close their doors. The long-time dominant shoe chain Payless Inc. filed for bankruptcy and announced plans to shut down 400 stores. Ralph Lauren Corp. is a new victim of the retail trend (Rupp, Coleman-Lochner, and Turner, 2017). It will close its flagship Fifth Avenue Polo store—a symbol of old-fashioned luxury that no longer resonates with today's shoppers. Shoppers are used to discounts and are less likely to seek out old-fashioned luxury brands (Wong, 2017).

Teen-apparel retailer Rue21 Inc. is another casualty. It currently has about 1,000 stores, which are preparing to file for bankruptcy. Bloomberg Intelligence reported they are not sure how many malls can reinvent themselves (Rupp, Coleman-Lochner, and Turner, 2017). Table 1.2 demonstrates the clear closing increase in 2017.

The rapid change of the retailing landscape may cause more than 10 percent of U.S. retail space, or nearly 1 billion square feet, to close, according to data provided to Bloomberg by CoStar Group. It will also be taking a toll on jobs. According to Labor Department figures released in April 2017, retailers cut around 30,000 positions in March (Rupp, Coleman-Lochner, and Turner, 2017).

One the contrary, Amazon, the Seattle-based online retailer, announced 53 percent e-commerce sales growth in 2016, according to EMarketer Inc. (Rupp, Coleman-Lochner, and Turner, 2017). The company is now the world's fifth most valuable listed company (C.H. 2017). Amazon launched seven fashion brands while ramping up hiring for its own clothing line. Amazon has been increasingly spending more on fashion, scooping up online fashion stores like Shopbop, MyHabit, and East Dane. Last year, it sponsored New York Men's Fashion Week for the first time (Kim, 2016). Fashion is a relatively high-margin business and it could contribute to Amazon's profitability.

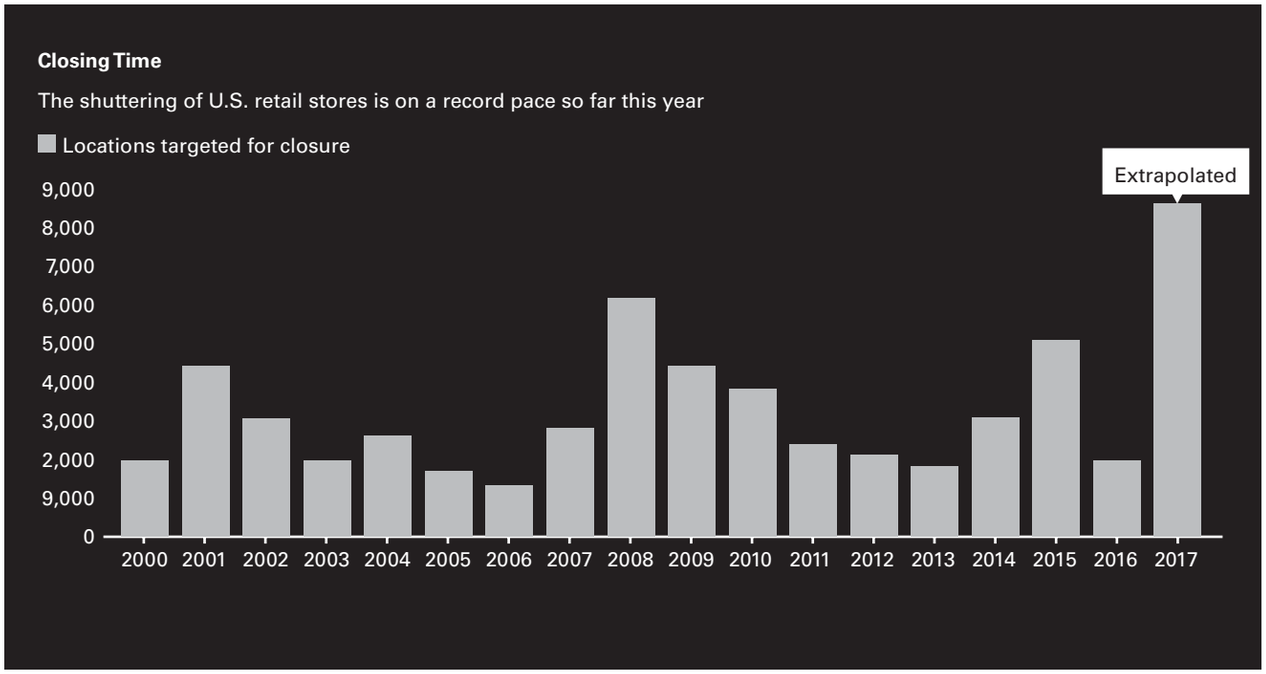
With the rest of the industry sharing the remaining 47 percent (as Amazon accounts for 53 percent of e-commerce sale growth), some fashion retailers are trying to survive by re-emerging as e-commerce brands, such as Kenneth Cole Productions and Bebe Stores Inc. (Rupp, Coleman-Lochner, and Turner, 2017).

The key is creating the right experience, whether it's online or off. Retailers should "refocus on customers" (Rupp, Coleman-Lochner, and Turner, 2017). Brick-and-mortar stores will exist in the future as people are social and they would like to have a place to share ideas and be entertained. However, there will be fewer (Synchrony Financial Report, March 18, 2017).

New Consumerism: Transparency

Consumers are more educated than ever, and they are reassessing their priorities in their fashion purchase behavior. One strong characteristic consumers focus on is the "transparency" of the retailer. Consumers are keen on the environmental issues

Table 1.2 Record Closings of U.S. Retail Stores in 2017



of manufacturing and the working conditions of workers. Consumers clearly respond to retailers with transparent business practices. Some retailers, for example Reformation, a Los Angeles-based private label brand, focus on sustainable design and manufacturing processes to attain success (Hoang, 2016).

Transparency is one important factor that is not an option, but rather is an expectation of consumers, says Reformation founder Yael Aflalo. Revealing business practices brings more engagement with customers in a new way, opening up more conversation and creating more stories, which is far different from traditional global conglomerates that kept such information under wraps (Hoang, 2016).

Sharing business practices also allows for a company like Everlane, a direct-to-consumer fashion brand rooted in "radical transparency," to become a leading fashion retailer (Kansara, 2016). Michael Preysman started his fashion brand for today's digital world, where e-commerce and social media help to remove high-cost intermediaries and allow retailers to sell directly to consumers online, keeping margins high and prices low. The brand embraces "radical transparency," revealing the cost breakdown for every aspect of the production process, including figures for materials, hardware, labor, duties, and transport, alongside Everlane's retail price (marked up 2 to 3x cost) and the traditional retail price (marked up 5 to 6x the cost). Everlane has no stores, no advertising, and no discounts. It does not have seasonal collections. They introduce products one by one. As Preysman mentioned in the interview (Kansara, 2016), they are focused on the idea of trying to create the best products possible, one at a time. Figure 1.10 shows their cost segmentation of their best-selling women's linen shirt.

Technological Advancements in Product Development

The apparel industry and consumer market is competitive. Consumers expect higher levels of innovation, greater selection, and better quality, for increasingly less cost. As a result, companies put increasing pressure on their product teams to improve margins and cut costs, while reducing lead times. At the same time, an increasing number of products are developed globally in partnership with suppliers, and government requirements on material content, testing, disposal, and recycling continues to increase.

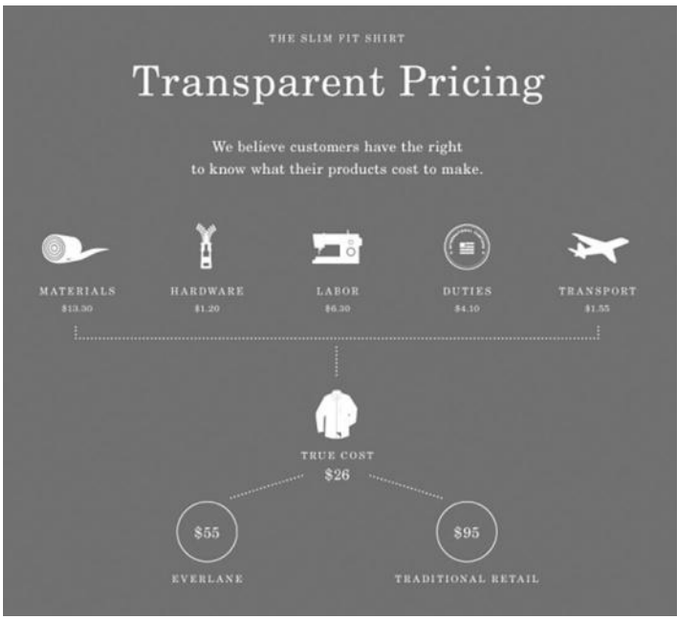


Figure 1.10 Cost segmentation of Everlane's best-selling women's linen shirt.

The development of technology accelerates the current trends of the fast fashion phenomenon. Technology examples include design development software programs such as **product lifecycle management** and its sub-program product data management, and 3D virtual fitting programs such as Optitex and Clo.

Product Lifecycle Management

More and more companies are adopting product lifecycle management systems to help them better manage the entire lifecycle of products from concept through design, development, sourcing, and manufacturing. Product lifecycle management systems provide infrastructure for more streamlined, collaborative, and faster product innovation with fewer errors, reduced time to market, and reduced product cost. They also allow global product teams increased visibility and transparency to shared data, schedules, and product information in real time.

Product lifecycle management systems are comprehensive software tools that can become the backbone of a company's entire product development process. Merchandisers can create seasonal calendars and line plans. Designers and developers can create tech packs including design details, bill of materials and measurements, and manage sample orders and sample reviews with vendors. Materials developers can manage lab dips, strike-offs, materials quality requirements, and materials testing. Sourcing and production teams can manage cost sheets and production schedules with vendors and factories to ensure orders are delivered on time. Product lifecycle management systems can also be integrated with other corporate systems including merchandising, purchase order, and fulfillment systems for seamless corporate data sharing and decision making.

A variety of product lifecycle management companies have surfaced over the past 5 to 10 years to help meet the needs of the market. These include systems that can sometimes be costly even for the largest apparel companies, including PTC (FlexPLM), Gerber Technology (YuniquePLM), and niche providers including Lectra PLM (fashion focused) and Texbase, Inc. (materials focused). More recent entries in the market, including ChameleonPLM, offer robust yet affordable product lifecycle management solutions using cloud-based software as a service technology.

3D Virtual Fitting programs

Optitex (http://www.optitex.com) and Clo (http://www.clo3d.com) are the virtual fit simulation programs recently adopted in the apparel product development process (Figure 1.11). Both programs create 3D virtual prototyping, real-life sample fitting, and virtual fabric simulations. They can save lead time dramatically as designers can create prototype samples and then view and edit them in one place, reducing the time of sending patterns back and forth to manufacturers. As a result, the product can become available to the market quickly.

In addition, 3D-created fit model avatars can be modified with wide flexibility of changes in fit. 3D simulations can also make the product easily fit by modifying design details, for example,

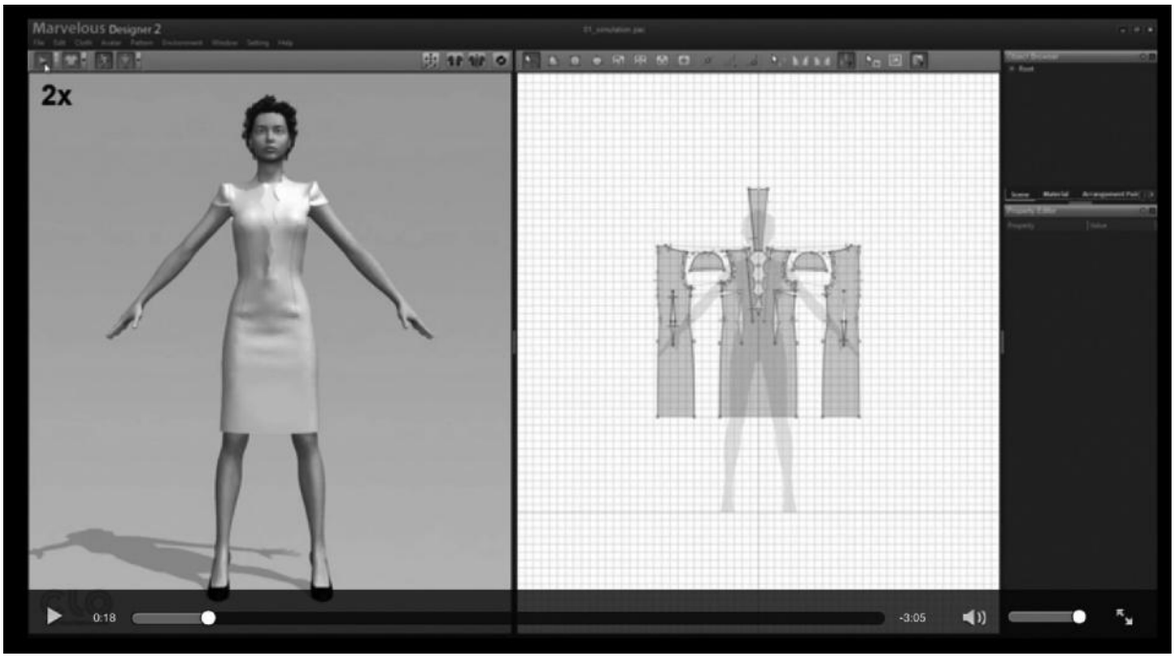


Figure 1.11 **CLO 3D: Apparel CAD and 3D simulation software.**

changing the sizes of trims such as buttons, zippers, and rivets. It can also adjust seam finishes such as adding topstitchings as well as design elements such as adding pleats, facing, and interlinings.

Although 3D software programs have some shortcomings—such as the challenge of accurately creating the stretchability of different knit fittings on the body—it is an innovative approach that can bring tremendous outcomes in apparel product development by accelerating production accurately and cost effectively

Sustainability and Fashion

Consumers are more conscious of and sensitive to the environmental impact and sustainability issues of fashion than ever before. Recent trends show companies creating products targeting this growing number of consumers. Thanks to the advancement of technology, many products using upcycle and recycle practices are in the news. Adidas, a Portland-based athletic wear company, is leading the trend. Adidas released the first mass-produced ocean plastic shoe, "UltraBOOST Uncaged Parley running shoe," created using plastic waste retrieved by clean-up operations in the Maldives (95 percent) and recycled polyester (5 percent). Each of the 7,000 pairs created is made with eleven plastic bottles. Parts of the shoe, such as laces, heel cap bases, heel webbing, heel lining, and the sock liner cover, are also made with recycled materials. Freitag, shown in Figure 1.12, is another company using upcycled truck tarps and transforming them into highly functional and uniquely styled bags.

Figure 1.12 **Freitag products and advertisement.**

Adidas also created the world's first performance shoes from "future craft bio-fabric" made from bio-steel fiber, which deconstructs within a day and a half after the introduction of a particular enzyme. They are an alternative to harmfully toxic plastic materials that are being thrown into the garbage and sitting in landfills for indefinite periods of time before breaking down. The biodegradable shoes are made by a biotechnology firm called AMSilk. The materials of the top part of the shoes are made from the same silky materials that spiders produce for their webs. Only the soles of the shoes will not be biodegradable. Adidas displayed the shoes in 2016, and they will be available to consumers in 2018 (Aamir, 2017).

Wearables

Innovation in wearable technology has become a new trend in the fashion industry. Fashionable Google Glass and smart watches are examples. Smart watches that monitor wearers' steps, sleep patterns, heart rate, and other bio information are steadily becoming the norm for modern consumers. High performance base layers (https://www.liveathos.com/athletes) or sports bras and jogging tops that monitor and transfer extensive muscle and heart rate data to computerized gadgets such as smartphones are not just for special athletes or patients. They have become a fashionable as well as functional item for many consumers.

Levi's partnered with Google to create new practical functions for wearables via Bluetooth. Google's project the Jacquard Initiative started out of its Advanced Technology and Projects (ATAP) group and provides a great future for many fashion inventions. "Jacquard makes it possible to weave touch and gesture interactivity into any textiles using standard, industrial looms," according to Google (Sherman, 2017). Google representative Ivan Poupyrev noted to Business of Fashion, "on the same loom you can create millions of shapes, colors, and patterns—which bridges the gap between technologies and aesthetics . . . Everyday objects such as clothes and furniture can be transformed into interactive surfaces" (Sherman, 2017).

The first product of the collaboration, the Levi's commuter trucker jacket embedded with Jacquard by Google, became available in stores as of September 2017 with a price tag of $350. It is a machine-washable denim jacket that allows a wearer to control a mobile device through a patch of fabric on the left-hand sleeve cut. A dongle (known as the "Jacquard Tag") is hooked into the sleeve and allows connectivity between the sleeve and the device. Via an interactive haptic motor by hand touch and LED lights, the wearer can receive alerts for phone calls, play or pause a song, check the weather, or consult maps to plan a commute (Sherman, 2017).

Summary

This chapter presented an overview of the apparel industry and its product development process. Various categories of ready-to-wear apparel products based on their relationship between manufacturers and retailers were surveyed. Various private label brands were categorized with examples, and current trends in the industry were explored. Merchandise segments based on price range, gender, and age were described. The main professionals who take important roles in the apparel production process and distribution were explored, with actual examples of job postings from the industry providing a preview of the real world of the industry. New trends of retailing and the fashion industry were provided.

Useful Websites

Professional Organizations

- International Textile and Apparel Association: www.itaaonline.org
- American Association of Family and Consumer Sciences: www.aafcs.org
- American Association of Textile Chemists and Colorists: www.aatcc.org
- The Fashion Group International, Inc.: http://newyork.fgi.org/index.php

Other Links

- Worth Global Style Network (WGSN): www.wgsn.com
- Daily News Record (DNR): www.dnrnews.com
- Fashion.net: www.fashion.net
- Fashion Center—New York City
- First View.com: http://firstview.com
- Just Style: www.just-style.com
- Women's Wear Daily (WWD): www.wwd.com
- ApparelSearch.com: www.apparelsearch.com
- Fabric University: www.fabriclink.com/university/index.cfm
- Fiber World
- Business of Fashion: https://www.businessoffashion.com
- Spoon Flower: https://www.spoonflower.com
- Coroflot: http://www.coroflot.com
- Wix: http://www.wix.com
- Promostyl: http://www.promostyl.com/en
- Fashion Trend Forecast: https://fashionista.com/tag/stylesight

Study Questions

1. Visit two women's wear apparel company websites to compare the product categories for each company. List the names of the companies, their price ranges, and the product categories they offer. Are there any differences in product categories? If so, why do you think they are different?
2. Find one related news article from *The New York Times* on apparel production and the industry. (Note: The Thursday Styles section and daily Business section are where you are likely to find such articles.) The article can be about anything that directly or indirectly influences the industry and its future; for example, the stock market, export and import, or global warming. What is the topic of the article? Why is the topic related to the apparel industry? How might it influence the future of the apparel production process? Please print the article and attach it to your written homework.
3. Visit two retailers that serve the same age and gender target consumers, but are positioned in two different price ranges. List the name of each brand and its web address. List the target consumer profile and price range. Select two similar garments sold by both retailers. Examine the product characteristics.

What influences the difference in the prices? Consider fabric costs, findings costs, and labor costs. Check where each garment was made, and try out your assumption about why the labor cost may or may not be a factor in the retail price. What other factors do you find?

4. Select one garment. Examine it and list three features that you, as a manufacturer or retailer, would be willing to sacrifice to reduce costs. Choose three features that you, as a consumer, would be willing to sacrifice to reduce the price. Are the features you chose as a manufacturer or retailer the same as those you chose as a consumer? What accounts for the similarities and differences?
5. What are some current trends on the horizon for fashion retailing? How do those trends affect apparel product development processes?

Check Your Understanding

1. What is ready-to-wear? What is couture?
2. Why is globalization necessary for the apparel industry?
3. What is your forecast for the future of apparel manufacturing?
4. What are the advantages and disadvantages of globalization for the apparel industry?
5. What is the role of the technical designer in the apparel design process?

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2

The Apparel Product Development Process and Technical Design

Chapter Objectives

After studying this chapter, you will be able to:

- Identify the apparel design calendar
- Examine the related production processes in the apparel design calendar
- Understand the various steps of producing samples
- Define technical design
- Understand the application of the principles of technical design as it relates to styling techniques

Key Terms

color story
colorways
commercialization process
concept board
construction details
development window
FOB (free on board)
findings
forecast companies
landed price
line plan
preproduction sample
prototype samples
sample evaluation comments
silhouette
size set sample
stock-keeping unit (SKU)
style number
technical flat
tolerance
top of production sample (TOP)
trade show
vendor manual

In the scope of this book, *product development* refers to the creation of new apparel products for production. Various stages are involved in the creation of each new garment, from the initial idea to its completion and delivery, and each stage has its own unique steps. This chapter provides opportunities to look at each step of the apparel product development process. As we move more into the production process, samples at each stage are explored.

Design Development

The first stage of creating new apparel products is the process of design development. The design development calendar is often short and crowded. Most women's apparel categories have at least four—and possibly as many as six—seasons. Each season is often split into multiple deliveries so that fresh merchandise can appear in the stores every month or so. Designers are often finishing one season, developing another, and planning a third simultaneously, so the ability to multitask is one of the main keys to success for designers.

The Role of Designer

The **team** nature of apparel development cannot be emphasized enough. Who are the team members? See the organization chart in Figure 1.9 on page 11. Initial direction for designing comes from a senior person, the design director, product line manager (PLM), or senior designer. The job of designer is one of constant and creative problem-solving. A new design will be successful if it fits the customer well, hits the target price, and fits into the line as a whole. The designer's job is to create wonderful designs that fit into important parameters. Some of the key parameters are listed in Figure 2.1.

Most designers begin their careers in a supporting role, such as assistant designer. This involves developing an understanding for the calendar and deadlines, a sense of urgency, and a willingness to do what the job requires. Various routine tasks—such as approving labels and communicating details to the agent or factories—are likely to be part of the mix. Most jobs include important but unexciting tasks, and apparel design is no different.

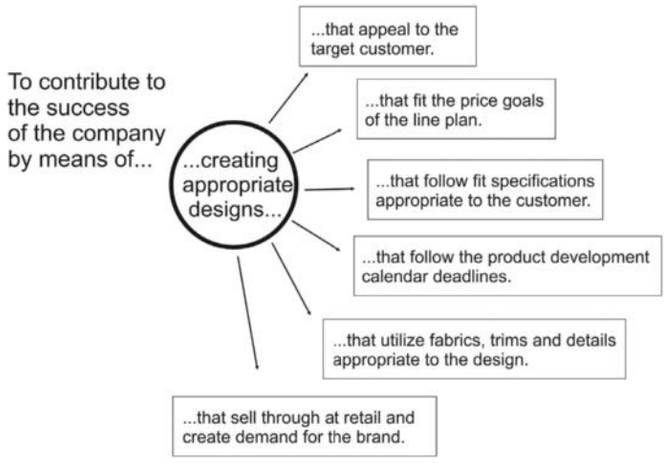

Figure 2.1 **The role of designer.**

On the other hand, every day is different, and the atmosphere is very dynamic. In addition, as in sports, being part of a successful team is very rewarding.

The Role of Product Line Manager

The PLM is responsible for overall category planning and the product creation process. Another common name for this job would be category manager, and different organizations have different titles and slightly different duties. But for all, the job is to lead the design team, create product and business strategies to meet the financial goals each season, and gain market share. At the beginning of the season, the PLM will prepare a preliminary framework from which to develop ideas that are appropriate for the company. After research is completed, a spreadsheet known as the **line plan** is prepared as a list of all the styles and projected prices required for the season, including any carry-over styles. The line plan is also a sales plan, with an estimate of the sales volume of each item projected.

Table 2.1 shows the tasks involved and who is mainly responsible. Many tasks are collaborations among many departments.

Target Market

The apparel company has a good idea of its target customer based on his or her sales history, and the better it can provide for its customer, the more successful it will be. In the past, customers were more dictated to by the apparel brand and advertising, but younger consumers rely more on word-of-mouth, online reviews, and the advice of their friends.

Four other guidelines that are keys to the apparel company's understanding of their customers are listed in the following sections.

Table 2.1 Tasks of Each Product Development Professional

	Tasks for Line Development	Principal Owner of Task	
1	Seasonal line plan creation	Product Line Manager	1
2	Design / Research / Sketch / Color stories	Designer	2
3	Fabrics, prints and colors chosen / Request for lab dips and strike-offs	Designer / Fabric specialist	3
4	Team meetings / Concept boards / Approve styles for 1st protos	Product Line Manager / Design / Production	4
5	Arrange for fabrics to be sent to factories for prototypes	Fabric specialist	5
6	Tech pack / 1st proto request	Designer	6
7	Make pattern / Make sample / Assemble cost estimate / Send 1st proto sample to apparel company, with cost sheet	Agent / Factory	7
8	Department Review, Fit 1st proto samples, costing	Brand Manager/ Product Line Manager/ Designer / Tech Designer / Product Planner	8
9	Approve to Salemen's samples or request 2nd proto sample (if time allows)	Product Line Manager/ Designer / Tech Designer / Product Planner	9

Target Consumers' Age, Size Range, and Gender

Consumers' age, size range, and gender are important factors to consider and are all related to each other. Size range particularly requires a different approach to styling. For example, fit and styling for teens is quite different from fit and styling for men and women in their 50s. Gender is also an important factor. Fit for women has different considerations than fit for men, with certain areas of the body emphasized or de-emphasized. For example, a men's tailored shirt is usually baggier than a women's tailored shirt because women generally prefer a more body-conscious fit. In any apparel item, it is important to understand the customers' expectations of fit.

It is imperative to create apparel products that are functional, comfortable, and flattering for the intended customers, whatever their age or sizing range. When an age range becomes part of the brand identity, any deviations from it should be done with caution.

Several companies have been known to court a younger, hipper customer only to leave their existing customers behind. A move toward another target customer can be successful, but it usually needs the support of another brand name, a new marketing campaign that includes a new brand image to connect with the new customer, and probably an additional product development team. Abercrombie & Fitch is an example of a brand that managed this shift successfully. For many years, it specialized in upper-class safari and hunting wear, and then moved its target market to young teens and 20s. But lately, they have shifted again to a more classic fashion customer and new store layouts. Fashion retailing is about newness and novelty, and as the customer "ages out" of a concept, they will cease to shop that brand.

Price Range

Each company has certain price parameters to which buyers look. Consumers have an idea of the product characteristics of each company, as well as its price. For example, a lower-end company would not be successful with a higher-end garment no matter how wonderful because that is not what its customers, the buyers, expect. In addition, to maximize one's profit, the lower end of the market will have higher volumes, and the styles must appeal to a broader segment of the mass market. For this type of brand, very specialized trends catering to a small number of ultra-high-fashion consumers will not be appropriate. At the same time, designers and merchandisers should develop items in the right price range, and with stair-step increments (also called price tiering) that support the different prices. For example, in the line plan in Table 2.2, skirt 1 has a wholesale price of $34 and skirt 2 has a wholesale price of $56.75. The reason for such a difference must be obvious to the buyer. All the items must fall within the target price range set for the product line.

Target Consumers' Lifestyles

Each target consumer group has a different lifestyle for which the designers create their products. If the target consumer's lifestyle is casual, a very sporty or comfortable style of garment will be well understood by the buyers, but formal suits and dress pants will not. In addition, a garment that must be dry cleaned or ironed after each washing may be considered too much trouble for a customer concerned with "easy care." An unmarried consumer will often follow trends more closely, and may have more discretionary dollars to dedicate to fashion apparel. A family with young children will have more of their clothing budget going to outfit their kids. A university student can dress largely however

Table 2.2 XYZ Missy Career Line Plan, Spring 20XX, Alfresco

XYZ Missy Career Line Plan, Spring 20XX, Alfresco

Item (new or carry-over)	fabric	colorways	size scale	projected units	F.O.B.	landed cost (w/duty, shipping)	wholesale	sugg. retail	Ext Wholesale Cost
skirt 1,	stretch twill	lavendrine	2-16	2600	$12.75	$17.00	$34.00	$68.00	$88,400.00
A-line	"	bamboo	"						
(C/O)	"	black	"						
skirt 2,	silk jersey	honeycomb	2-16	1850	$23.41	$31.21	$56.75	$113.50	$104,987.50
cigarette	"	white	"						
(new)	"	black	"						
skirt 3, sarong	dot print	print-multi	xs-xl	900	$22.05	$29.40	$49.00	$98.00	$44,100.00
(new)									
Dress 1	crepe	bamboo	2-16	3100	$18.56	$24.75	$49.50	$99.00	$153,450.00
(C/O)	"	black							
pant 1	crepe	honeycomb	2-16	2900	$21.14	$28.19	$51.25	$102.50	$148,625.00
(new)	"	black	"						
jacket 1	stretch twill	lavendrine	2-16	2200	$26.33	$35.10	$67.50	$135.00	$148,500.00
(C/O)	"	white	"						
	"	bamboo	"						
jacket 2	crepe	black	2-16	1200	$30.73	$40.98	$74.50	$149.00	$89,400.00
(new)	"	honeycomb	"						
top 1, tie blouse	voile print	honeycomb	xs-xl	1250	$12.68	$16.91	$29.15	$58.30	$36,437.50
(C/O)	"	lipstick	"						
top 2,	large gauge	lipstick	xs-xl	1800	$13.46	$17.94	$34.50	$69.00	$62,100.00
halter sweater	"	honeycomb	"						
(C/O)	"	black	"						
top 3	silk jersey	light lipstick	xs-xl	4000	$12.56	$16.74	$31.00	$62.00	$124,000.00
knit tank	"	light honeycomb	"						
(C/O)	"	white	"						
	"	light lavendrine	"						
	"	light bamboo	"						
	"	black	"						
						total wholesale dollars			$1,000,000.00

he or she likes, but upon entering the job market, they will need to conform to the level of dress at their new place of employment. A very active person, one who rides a mountain bike, hikes, or does snow sports each weekend, often adopts casual clothing with stretch characteristics and performance styling such as flatlock seaming and with durability cues such as reinforced areas. A successful company will understand the lifestyle-related issues of its consumers so that it can approach them effectively.

Image

Consumers' lifestyle is closely related to a company's brand image. Traditional garments can be high end or low end, and at the other end of the style scale, so can fashion garments. The general character of the garments must clearly conform to the brand image, aside from questions of price. A successful company creates its own consistent brand image, which appeals to its customer. The product should conform to what people expect in terms of a "look" from that company, from fashion-forward on one end of the spectrum to conservative on the other. The apparel company Tommy Bahama created a fictitious person, Mr. Tommy Bahama, to create the company image and the company continuously educated customers about who he is (including how he spends his time and leisure) and what he wears.

Often a person's desire for upward mobility will move them to adopt the styles and brands of their target lifestyle. Brand image plays an integral part to reach and educate a certain target consumer, encouraging them to adopt the lifestyle the brand portrays by wearing its products.

Tools for Designing

Forecast companies are organizations that specialize in researching colors and trends and creating books that predict the direction of fashion from 18 to 24 months in advance. Forecast companies are often hired to give presentations about upcoming influences. An apparel company may also have an in-house trend director to assist in interpreting the current fashion direction. These companies also have an in-house library of newspapers, magazines, and trend reports, as well as fabric swatches, buttons, and trims for inspiration. The plan will be discussed with the design staff, and the influences that are fitting for the company will be defined. The line plan is a key document for each season.

Designing for the Target Market

Based on the information gathered from various sources of inspiration, designers begin the design process. Every season, there are many influences on fashion. Research, research, and research! A lot of research on the current trends comes from the street, television, runways, magazines, news, movies, music videos, and other sources. For example, young men's apparel direction is often influenced by famous athletes. Sports stars, skateboarding, and snowboarding have had a big influence on fashion, as has hip-hop music. However, it is important to understand each company's unique target market and its product characteristics. Each company caters to a particular consumer and market segment, so not every trend is right for every line. For example, adding a smart phone pocket for outerwear is something designers would consider for target customers in a younger age bracket rather than for target customers in an older age bracket.

Basic Season Outline

A **line** is a group of related products. How is a line developed? By the process of trend research and market analysis with input from people on the team and from others within the industry. The following is an example of some typical milestones in the process of developing a line for XYZ Product Development, Inc., the fictitious company for which we will be developing products throughout the rest of the book.

This line is part of the Missy Career Division for Spring 20XX, and is called "Alfresco." Our target customer for this line is female missy size range, 25 to 45 years old, and a working professional who buys in the mid-price range (better to moderate). Styling is classic, and semi-fitted styles sell well for this line. Let's walk through the steps together to understand how the creation process moves forward. A number of steps proceed more or less in tandem, with touch points for the principal developers, depending on the working style of the company.

Market Research

The merchandiser reviews trends, analyzes sales, and comes up with the line plan. It is based on the budget for the department, and on projected sales, as in the example in Table 2.2. The design team gathers information from forecasting companies such as Promostyl, which combines both color and trend information.

The Color Story

An early step in the product development process is developing a color story. Designers and colorists select colors for the upcoming season, with input from color forecasting companies, which develop colors one to two years in advance. A color forecast consists of sets of fabric swatches, color chips, or yarns arranged into color groups or color stories. The **color story** is a palette of related colors that follow a theme.

The forecast companies create seasonal books and sell them to people in industries for which color trends matter. Clients of color forecasters include automobile manufacturers, interior designers, cosmetic companies, and furniture designers in addition to apparel companies. The Color Association of the United States in New York and the Color Committee in New York are some examples. These color forecasters use sources of colors from magazines to designers' color choices in Europe to fashion innovators' color choices to consumer's color preferences by sales data to determine the directions of future color palettes (Burns, Mullet, and Bryant, 2011).

After a set of colors that complement each other is selected, names are assigned for the colors according to the themes of the season, and to the sophistication level of the customer. For example, one company may call a color rust and another may call that same color iron oxide. Children's wear color names are often whimsical and playful, menswear may be more automotive or equipment-related, and so on. The identical shade of green could be named kelly green, emerald, leaf, parrot, or grassy knoll, depending on the line, and apple may be green in one line but red in another. It just depends on the season's themes and on what may appeal most to the buyers.

Alfresco means "taking place in the open air," so the theme for Spring 20XX in our example has a springtime feeling—fresh, feminine, and floral. The color names are lipstick, bamboo, lavendrine, honeycomb, black, and white. This palette is a mix of

classic and fashion colors; lavendrine, bamboo, and honeycomb are new fashion colors this season, black and white are carried every season with occasional variations, and the fashion color lipstick is a carry-over color, which was a great success last season and is being repeated. The garments offered last season in lipstick really "sold in" (were picked up by the buyers) and the color also had high "sell through" at the retail level. The name "lipstick" doesn't quite follow the Alfresco theme, but because the color is popular with the buyers, and changing the name may confuse the fabric mill, it stays. The popularity of colors run from previous seasons is closely tracked by the company to follow whether they are trending up or trending down.

Prints

Another step is developing print designs for fabrics. These are developed for the season by in-house fabric designers, or bought from independent companies (e.g., Patricia Nugent Textiles) that specialize in fashion prints. Some apparel markets, such as swimwear, use many prints each season, and some, such as outerwear, use relatively few. There are in-house fabric and print designers in a large company, but in small- or medium-size companies, developing prints may be the designers' responsibility. In developing the prints for the spring Alfresco line, the staff researched many ideas, some of which fit the target customer whereas many did not. Some of the many color and print directions forecast for the season were white on black, antique tropicals, scarf prints, retro florals, stylized polka dots, border prints, paisley, graphic foulards, trellis, texture prints, batik-type, digital prints, geometric dots, stenciled motifs, watercolor effects, and logo prints.

Fabrics

Developing various fabrics is a key step, and identifying trends in fabrics is an important element in planning the new line. Designers and merchandisers may attend international fabric trade shows such as Interstoff in Germany or Premier Vision in Paris, where a great deal of fabric, trend, and color information is presented. Another source of information is sales representatives (fabric reps) who work for textile mills and visit the design department with fabric swatches. There are also textile trade magazines, trade newspapers such as *Women's Wear Daily* and *DNR*, and trend reports. Designers also have personal files of tear sheets—photographs taken from magazines—which they collect continuously to use for inspiration, and they also draw from their own style notebooks (see Chapter 4).

Certain fabrics in a season may be developed either as an *exclusive*, meaning a custom weave or print ordered from the textile mill, or as existing fabrics (called *running fabrics*). If a fabric is not a running fabric, the planners must factor extra time into the production schedule. For an exclusive print that no other company is buying, a careful calculation must be made of how many yards of that print will actually sell, because the printing house will have a minimum order, for example, 3,000 yards. The fabrics are selected by designers and merchandisers, who, after their study of the market direction, select new fabrics that will blend with repeat fabrics, appeal to the target customer, and fit within the target price.

Trend information for fabrics, in addition to identifying specific fabrics, also points to the general direction of the look for the season with descriptive information such as two-tone effects, silky hand, tactile qualities, and sanded surfaces. Interestingly, knits and wovens are different in their properties, and often follow different trends.

Some of the knit directions highlighted in the trend information for the Spring 20XX season are pointelle and pointelle borders, silk jersey, wide ribs and rib textures, matte jersey, cut-and-sew sweater knits, and drop-needle stripes. Some examples of general trends forecasted for woven fabrics for Spring 20XX are delicate shine, gauzy transparency, lighter suitings, and smooth surfaces.

More specific information on woven fabric direction highlights pearlized shantung, tattersall check, yarn-dye stripes, floral stripes, openwork stripes, crepe, voile and printed voile, chiffon, washed linen, linen/cotton blends, stretch linen, workwear casuals, "denim" linen, hand-woven looks, and deck-chair canvas stripes. The fabrics chosen for the Alfresco line appear on the line plan in Table 2.2.

Silhouettes

The fourth step is outlining the silhouettes for the season. **Silhouette** refers to the general shape of the garment; specifically, it means what part is tight, what is loose, what part of the body is covered, and what part is uncovered.

Trend reports are often targeted to specific market segments, such as active, which gets direction from sports; young men's, with direction from music and street trends; and so on. Trend report books have sketches showing what shapes are directional and often include photographs of retail window displays from popular fashion-forward stores around the world, and street trends in key places such as Tokyo, Barcelona, and Saint Tropez, as well as the capital cities of the United States and Europe.

For women's wear, the trends and silhouettes often begin in high fashion and filter down slowly, depending on what is acceptable to the target customer. For example, if a trend appears in Paris or London for jackets with very fitted waists, that is not a style appropriate for every customer; however, after a season or two, if that look takes hold, a jacket may be developed with vertical seaming that gives the effect of a fitted waist without being overly slim-fitting.

Each women's product category—for example, tops, bottoms, dresses, and outerwear—has its unique silhouettes. The forecast information for women's Spring 20XX silhouettes targets general themes such as dress-up, clean lines, obvious construction, sixties-inspired, Spanish flamenco, ladylike and playful, and asymmetric details. General trend directions for women's product categories are as follows:

- *Skirts*: gypsy skirt, flip and flare, pencil skirt, dirndl, petal skirt, pleat details
- *Pants*: side closures, riding pant, knee pant for evening, Hollywood waistband, slim trouser with sports detailing, diagonal seaming
- *Blouses*: the new romantic blouse, ribbon details, tie closures, sleeve volume and details
- *Dresses*: the chiffon dress, very long or very short lengths, romantic details, sheer layers, draped bodice, and collar details
- *Suits and jackets*: the pajama jacket, the big blazer, the little jacket, mismatched suit, the short jacket over a long skirt
- *Details*: military, pleats and tucks, frog closures, tie neck, high necks, cowl neck, contrast buttons, structured seaming, concealed closures, newest metallic is copper

What is a person to make of all this sometimes contradictory information? Certain unfamiliar terms may be included that must be researched, and ultimately many of the trends will never be right for XYZ Career. But some will work next year, when the customer is ready for them, and some can be used right now to add a fresh direction to the Spring 20XX Alfresco line. Figure 2.2 shows the ones chosen as right for this customer and season. Figure 2.3 shows the line approved for development.

Concept Board

Based on the direction meeting, designers will prepare their ideas for presentation, making use of their research and their own feelings about the season. If they have ideas other than what is on the preliminary line outline prepared by the merchandiser, this is the time to present them, because some extra styles are needed and a certain percentage of the ideas presented will be dropped or modified.

Designers' presentations will often be in the form of **concept boards** or focus boards, which are presentation boards upon which are mounted sketches, swatches, and other inspirations for the season. Foam-core board is popular for this purpose because it is both lightweight and rigid. Figure 2.2 shows an example of a preliminary concept board. This style of board includes fashion illustrations and colors, and may include inspiration photographs, swatches of fabric, prints or painted mock-ups of prints, and samples of trims such as buttons and stitching details. It does not have all the details represented or all the styles, but it has the ones that are directional.

The merchandise manager will review the concept boards and use them to discuss the proposed designs with the designers. Individual designs will be decided upon, based on the previous season's selling patterns and on trends going forward. The use here of swatches and **findings**—that is, all the smaller items, other than the fabric, that are used for sewing and garment construction, such as the proposed buttons, and a sample of the stitching details—helps to sell the idea and shows that the designer has taken steps beyond just a sketch and toward problem-solving all the related elements of these designs. The concept board helps communicate the intent of the design group and speeds communication. It also shows how garments are intended to coordinate as well as other strategies of successful styling.

Presentations

Presentations are an important part of the designer's job, and concept boards are a vital tool used as a springboard for discussing the upcoming line development. Early in the development season, the designer will present ideas to the merchandiser, and will have many subsequent meetings, both formal and informal, as the season progresses. Learning to talk about one's ideas is an important skill, as is a familiarity with fashion and garment terminology. Part of the presentation is to

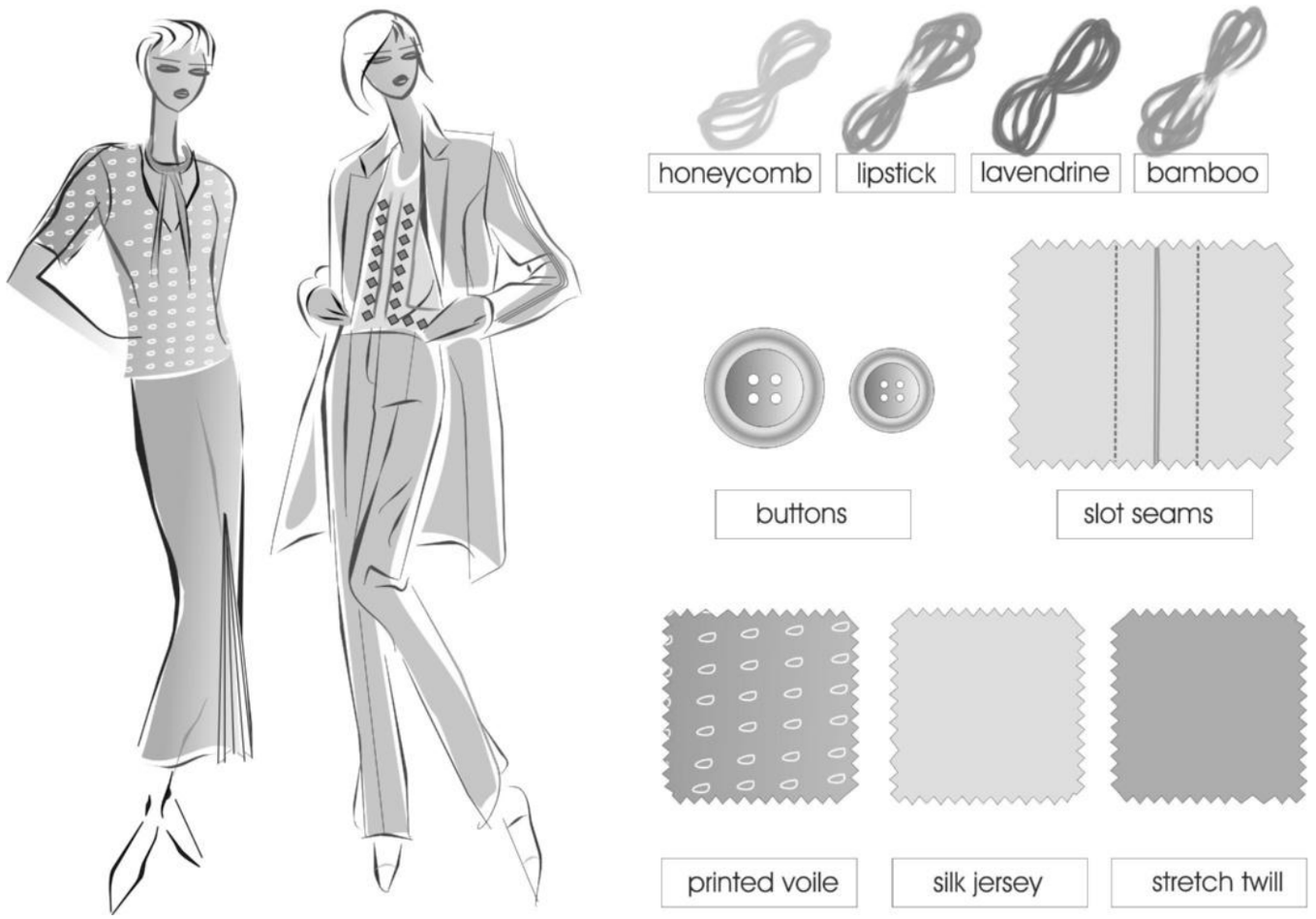

Figure 2.2 **Concept board for Spring 20XX Alfresco line.**

Figure 2.3 **Completed Alfresco line.**

discuss the designs being proposed in terms of current trends, and how they fit into the company and appeal to the target customer.

There is always a learning curve for a new designer in considering his or her design as a product, rather than in a more personal way. Hearing an associate criticize a favorite creation requires some adjustment, but such comments should be considered as constructive attempts to maximize the effectiveness of the line as a whole. If a particular style is in some way an outlier in cost, does not apply to the target customer, or would not be accepted by the buyer, then it will need to be revisited. Even two great designs in the exact price point are not always desirable because they may split sales. For example, placing 5,000 units of each would not be as good as 10,000 units of one consolidated style, since greater volume will provide a price break.

Each design needs a reason to be and a logical place in the line plan. If the design concept is not clearly communicated to the PLM, a certain design may not be accepted for the season. The other team members in the production process also need to clearly understand the designs and what is desired, and the designers, in turn, need to understand the challenges of the production staff to avoid delays or quality problems.

Figure 2.3, the completed Alfresco line, shows this particular merchandise group completed. Some changes were made to help the items sell in higher volume and fit in with each other. For example, the skirt in Figure 2.2 has pleat detailing at the hem, but the final fabric chosen is a knit, which does not take crisp pleating in the way that was planned. Figure 2.3, skirt 2, shows the final style without pleats. The slot seam detail in jacket 2 has been revised to triple-needle topstitching because slot seams don't work well on a curve, and a tailored sleeve is curved. That also led to triple-needle topstitching at the waist of pant 1, which ties the two items together visually. The top shown under jacket 2 was originally planned as a scarf print (a type of border print), but it was deemed too busy and not versatile enough. Instead, the colors will be based on the jacket and pants, but lighter coordinating pastels because few people would be interested in a head-to-toe matching outfit.

Line Plan

The line plan is the puzzle needing completion, and the designs are the puzzle pieces. The styles all need to fit together to encourage multiple sales and successfully complete the plan.

Overview of Line Plan

The line plan is developed in tandem with the styles. Each season has only so many openings for new styles, and a great deal of strategic thinking goes into the offerings. Table 2.2 is a (somewhat simplified) line plan for the Alfresco line. A line plan could be considered as one large riddle with many smaller riddles inside. The answer to the large riddle is already known: the $1,000,000.00 sales goal for this season. The smaller riddles are: How many? What designs? How many colors, and which colors for each? At this point, the quantities outlined by the PLM are based on a best-guess estimate.

The total of all of the prospective items must add up to the budget of $1,000,000.00, which represents how much must be sold to pay for the company expenses and overhead and to make a profit. Of course, if more is sold, the profit for the season will be greater. But if, for example, twice as much is sold as planned, it may be difficult to finance because it far exceeds the budget, and more money will be needed to purchase the goods. Predictability of the sales outcomes is an important challenge for the PLM.

The line plan has a certain number of tops and bottoms, presented in a calculated way to maximize the sales volume. An example from Table 2.2 shows jacket 2, a new style in crepe, paired with pant 1, in the same fabric and with similar detailing, offered in the same colors. That encourages the shopper to buy both items and make an outfit.

The line plan illustrates various merchandising and selling strategies, and follows certain principles proven in the sales history of the XYZ Missy Career, such as the fact that there are often fewer colors offered in bottom styles because people prefer neutral and darker colors for bottoms; that white jackets sell well in the spring, and that spring tank styles do well in every color.

There are many costs to each garment, all of which need to be captured to maintain profitability. The line plan breaks the costs into different components. The original price quoted by the agent will be the **FOB** price, which stands for free on board. If the garment price is quoted as, for example, FOB Shanghai, the garment factory quotes the price of a garment to the nearest port (in this case, Shanghai), so the price quote includes fabric, cutting, sewing, finishing, folding and bagging, boxing, and sending the goods to the port for shipping. It does not include ocean freight, duty, and transportation to the destination warehouse, which need to be calculated separately. The price with all of those costs included is called the **landed price**.

One last change was made to the line after the line plan in Table 2.2 was handed out, but before the tech packs were begun. The plan in Table 2.2 shows sarong skirt 3 with projected units of 900, which is not sufficient to use up the 3,000-yard minimum of the custom dot print. In addition, based on sales history, fewer people will purchase a print skirt than a print top. So the decision was made to move those units into a tank top using the dot print, to complement the halter sweater tank (top 2) and solid knit tank (top 3).

SKU and Line Plan

Another tracking method for the line plan is based on the SKU count. **SKU** stands for stock-keeping unit, and is calculated by

multiplying the **colorways** (color combinations in the same garment) offered times the size scale. For example, the first item in the line plan, skirt 1, is offered in eight sizes (2, 4, 6, 8, 10, 12, 14, and 16) times three colorways (lavendrine, bamboo, and black) for a total SKU count of 24.

For line planning purposes, a simpler definition of SKU is used, just "item multiplied by colors offered," excluding the sizing information, which in this case is three SKUs. After a certain point (different for different companies), if a SKU is added, such as one extra color, another one must be dropped to avoid having too many SKUs and diluting the line.

The line plan is an important framework within the **commercialization process**, in which a concept is turned into an actual product. All the styles need to fit into it so the company can avoid offering too many or too few items. After the concept boards are signed off on, the designers turn their attention to the technical design aspects of each item, and to creating tech packs in the race for producing apparel products.

Technical Design in the Design Process

Technical design is an important element of the commercialization process. It involves analyzing designs and design details, creating and editing CAD sketches for accuracy, understanding how the garment should fit, working with the factory to communicate precisely what is wanted, confirming all the details, and acting as the last pair of eyes on the tech pack before it's sent out for production.

The discipline of technical design is key to the product development process. It is often a specialty on its own, but apparel designers need to speak the same language as the technical designers with whom they collaborate and know how to get what they want on a technical level; otherwise, their designs may not actually work. In any given week (or perhaps just one very busy day), a designer may ponder issues such as:

- Should I use flatlock or top-and-bottom coverstitch at the armhole?
- How many inches wide should the leg opening of this pant be?
- Should this top get bust darts or yoke gathers? How many gathers will equal a dart?
- How can this high-fashion runway look be adapted to be flattering for average-height people?
- What is a good but inexpensive substitute for $100/yard Italian wool doubleface?
- Do I know what my boss means when she asks me to design a "Spencer jacket with passementerie trim, and leg-o-mutton sleeves"? Do I know how to find out?
- And the eternal question, do I have time to request another prototype?

In brief, the technical design aspect of the product development process can be defined as:

- Creating the blueprint of apparel products; that is, proportionally correct sketches including front and back views and details
- Assigning the correct measurements appropriate to the fabric and the design
- Including the construction details that achieve the look and price
- Evaluating the **prototype samples**; that is, the first actual garments provided according to the instructions in the tech pack, analyzing the garment fit, and following up as needed
- Communicating clearly with the factory about revisions and corrections

Developing the concept and look of the design is the beginning step, and the next step is to make all the instructions for reproducing it. That is essentially what a tech pack is, and it enables manufacturers in the factories, perhaps on the other side of the world, to reproduce the intended design properly.

The knowledge of the technical side of design will enable one to work through design projects efficiently, to have a firm grasp of what makes a style successful, and to have designs be adopted into a line with as few prototypes as possible. Because most of the production process is executed by hired overseas manufacturers, the tech pack should be simple, precise, and accurately written for effective communication. (See Chapter 3 for more information about the tech pack.) At this stage of product development, the tech packs are prepared to send out, so that the first prototype samples can be developed and reviewed.

Developing Samples

After the tech pack is prepared and sent out to the agent, the first sample is developed and returned to the design team. One of the responsibilities of the agent, who acts as the middleman for a number of manufacturers, is to return the completed samples within the contracted time period, generally within two to three weeks. In most cases, the manufacturers are overseas, and they send their products by express mail or courier services, such as FedEx.

Information on the Sample Tag

Each stage of product development has samples with a different name and purpose, and when any new sample arrives, it is carefully dated, measured, and tracked. Some companies assign a special identification number, and some track samples with bar codes. To create quality apparel products, it is necessary to review samples in each stage of the apparel production process, from first prototypes (called protos) through to the final production sample. Therefore, it is very important to keep an accurate record of each sample, designating each development stage. Figure 2.4 shows an actual sample tag for XYZ Product Development, Inc., and illustrates the wealth of identifying information on the card.

The following information should be noted by the factory, and will be attached securely to the garment:

- *Date when sent*. The receipt date should also be noted by the person processing the sample.
- *ID #*. A number unique to this individual garment, used for evaluations and for records.
- *Style number*. The **style number** incorporates much important information, and is the way that tech packs are filed in the computer. For that reason, the name and description alone are not enough information. The first part of the example here is of a "smart" style number; MWT stands for Missy Woven Top. Other tech pack systems assign numbers on a strictly sequential basis, such as the last part of the number, 1770.
- *Status*. Where the sample is in the development process. There may eventually be multiple versions of the style, each with

Figure 2.4 **Actual sample tag for XYZ Product Development, Inc.**

slightly different measurement specs or details, so it is crucial to keep them identified and differentiated. The status will have been assigned in the last set of comments. For example, the status of the sample in Figure 2.4 is the second proto. The previous sample was the first proto, and if approved to go ahead, the next sample set will be the sales samples.

- *Department name and product category*. Men's casual, women's career, girl's sleepwear, and boy's outerwear are examples of departments. Each department is divided into product categories such as woven top, sweaters, and so on, and not every department runs every category.
- *Agent and factory names*. Every agent may represent numerous factories in various countries, so the factory name is important. In addition, certain factories specialize in certain operations, so the factory name will help confirm that the style has been assigned to the most appropriate factory.
- *Selling season* (Spring 1, Summer, Back to School, Holiday, and so on). It is important to note the season, so the **development window**—the time frame for style development this season—is obvious. This also helps to distinguish between carry-over styles.
- *Color and code*. Colors and shades evolve from season to season, and that must be documented by the color code.
- *Fabric and content*. The fabric and fabric content should be noted. Fabric supplier and dyer are often noted. For sweaters, the yarn information is key.
- *Yarn details*. In the case of sweaters, weight per dozen needs to be specified as a standard way of assuring the final product quality for sweaters. The tag in Figure 2.4 shows a woven garment, so this area is blank.
- *Substitutions*. If the correct findings are not yet available at the time of the sample making, information on the tag can make clear that their absence is not an oversight of the factory. This spares the need for mentioning it in an email. It is important to stress to the factory to note all substitutions on the sample card.

Kinds of Samples

The following is one model of the life of a prototype, and all the sample versions it may go through throughout the commercialization process, until it is finally produced, shipped to the stores, and sold. First comes a wonderful idea, which begs to be developed.

First Prototype

After the idea has been presented (see Figure 2.5) and is chosen for development, it is translated into a tech pack similar to the one in Figure 2.6 and sent to the factory to be made into a sample. Sometimes the correct fabric is not yet available, especially in the case of a customization like an exclusive print. In that case, a substitute fabric with a similar weight and drape may be used for this initial stage of production for a first prototype sample.

The sketch on the tech pack in Figure 2.6 is in quite a different drawing style (called a **technical flat**) from that of the fashion illustration. We will look more at sketch styles and their differences and usage in Chapter 4. Figure 2.6 shows the initial request for a first prototype. It shows the first page of the multipage tech pack.

The factory receives the tech pack and then develops the first proto sample (see Figure 2.7). The style is a sleeveless blouse in the Alfresco dot print, which is replacing skirt 3 on the line plan in Figure 2.3. The back view details for this new style are the same as the front, four vertical darts in Figure 2.7. The neckline closure is a back neck button with self-fabric loop. It is fitted through the waist and also has a zipper closure at the left side seam.

It is the factory's responsibility to return the first prototype sample within two or three weeks. When the first proto arrives, it is measured and reviewed for fit and quality, usually within a short time frame of two to three days. During the fit session, the garment is evaluated by the product development team (e.g., designers, technical designers, and merchandisers) to determine how it fits into the line as a whole, whether it will appeal to the target customer, and whether it will sell well at the intended price.

Figure 2.5 **It begins with an idea.**

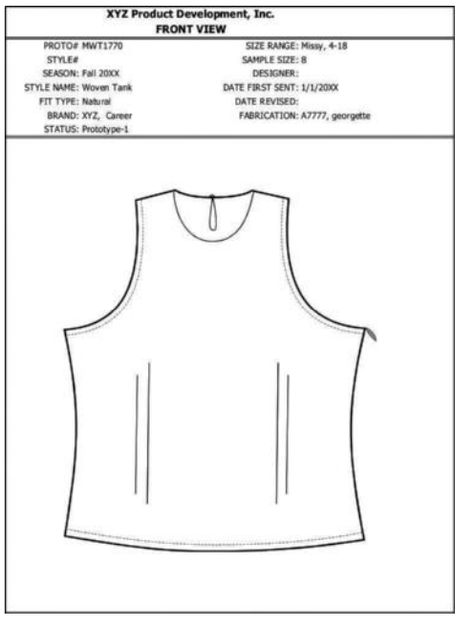

Figure 2.6 **Tech pack for the tank top, first proto.**

Figure 2.7 **First proto sample, available fabric.**

The garment fit is checked with the help of a dress form or fit model, and all the elements are reviewed. Dress forms are often used to check the general fit of the garment at this stage. However, using a live fit model is very important to finalize a fit and make sure the garment is comfortable and functional (see Chapter 16).

In this example, a number of developments occurred that required some revisions before the style could be confirmed for the XYZ Missy Career line. The garment was not achieving the target price in the line plan, so the team identified some areas in which the price could be reduced. These include changing from vertical darts (four front and four back) to two bust darts only, and changing the overall dimensions so that the garment could be slipped on over the head, eliminating the side zipper, center back neck closure, and button. In addition, the neck and armholes will be finished with bias binding, rather than a facing, reducing the fabric usage. These changes allow it to remain in the line. All these changes reduce the labor costs of sewing.

All the necessary changes are incorporated into the existing tech pack, and the revised version with written **sample evaluation comments** (simplified to "comments") on the first proto sample are sent to the factory to request a second proto sample (see Figure 2.8). Comments are all the notes, instructions, revisions, and updates on a sample, including fit history, that are added to the tech pack before the next sample is requested.

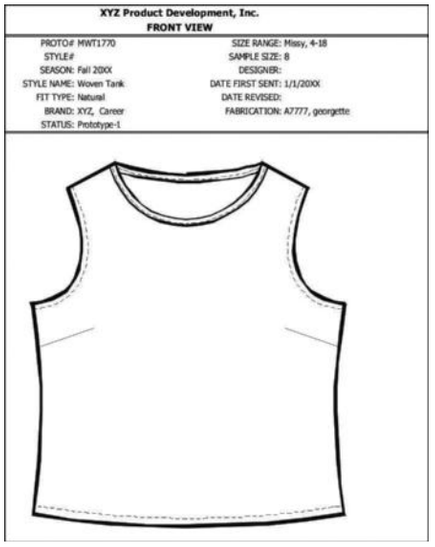

Figure 2.8 **Revised tech pack requesting second proto.**

Communicating clearly with the manufacturing partners requires a methodical approach, which will help them understand the issues and revisions needed. Companies have a **vendor manual**, which is sent to all agents. It is an agreement of standards for different departments, and covers shipping, fair labor practices, quality audits, and other issues. For the product development area, it includes sewing standards and terminology, abbreviations, samples of key documents, instructions on how to measure, and other important tools of communication (see Chapter 15 for how to measure guidelines). It is one of the important jobs of the agent to make sure all the factories understand and comply.

Second Prototype

The second proto will be made up in the (now available) correct fabric, the dot print, in the correct colorway, according to the revised tech pack. The garment measurements have also been revised, reflecting the fact that the garment fit type will be "relaxed" rather than "slim," and can be slipped on over the head. (See Chapter 15 for more information on fit types.)

The second proto (see Figure 2.9) arrives and goes through the same measuring and checking process as the first proto. Because it was executed with good planning, good proofing, good communication, and a good set of measurements, the resulting style is approved to sales samples (see Figure 2.10).

Sales Samples

Depending on how many salespeople represent the line, enough sales samples (see Figure 2.10) will be produced to give one to each, plus some extras for the house line. In this way, valuable information is gathered about the new line, the less successful styles are culled before production, and the orders for production are compiled based on actual sales projections rather than guesswork. And because the style has been in a mini-production (sales sample production in Figure 2.10), the manufacturer has an opportunity to test the construction methods.

Figure 2.9 **Second proto sample.**

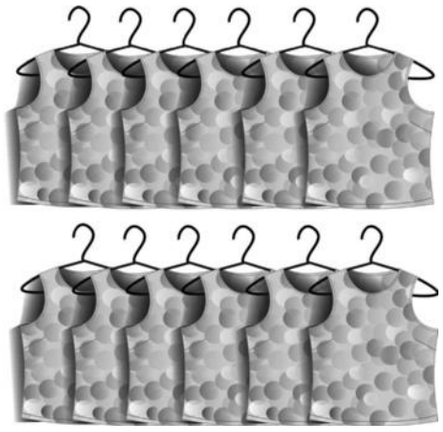

Figure 2.10 **Sales samples.**

Bought Style

When the style has been shown at trade shows or chosen by the buyers, and the sales can be projected, it moves into bought or adopted status, meaning it will be produced. If the technical design department is a separate entity, after a hand-off meeting with design, the responsibility for preparing the style for production will pass to technical design. If there is not a separate department, designers will review **construction details**, that is, specific information about how each area of garments is sewn and assembled. Designers will also review all other details (including trim, labels, and so on), check the sample specs, and do everything else needed to ensure the garment's smooth progress through production. Purchase orders will be placed by the production department. At this time size set samples are requested by the company (see Figure 2.11).

Size Set Samples

Up to now the samples have all been in the sample size, a size generally near the middle of the size range, which for women may be a size M or a 7 or 8, and for men an L chest for tops or 34 waist for bottoms. After the style is approved for selling and all the fit details are correct, **size set samples** (see Figure 2.11) are requested. The graded set of samples (4, 6, 8, 10, 12, 14, and 16 for women), or a representative set such as 4, 8, 12, 16 (see Figure 2.11), is produced, and is fit on models and reviewed to ensure that the sizing and all the details are in proportion for all sizes. The more slim-fitting the style is, the more important this step is. The grade rules govern the difference among sizes at various areas of a

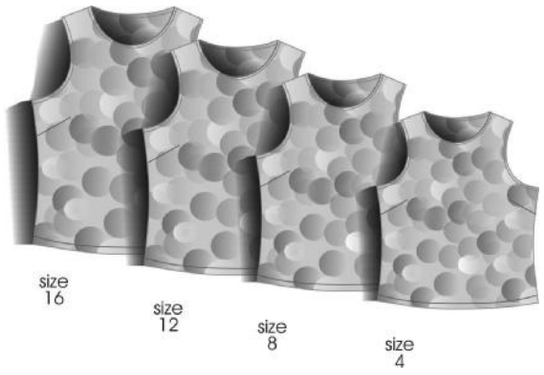

Figure 2.11 **Size set samples.**

pattern piece. Each company has its own standards, but there may often be exceptions to the rules for certain details. For example, patch pockets at the chest would generally be the same for all sizes, but patch pockets at the bottom of a jacket may need to increase in size for size 14 and 16 to remain in proportion. Because that is a visual decision, it is best reviewed on an actual sample. At that point, it can be determined whether that pocket should be larger for the larger sizes. If so, it would require a grade rule, the precise difference between sizes for pocket height and width.

Preproduction Sample (Red-Tag Sample)

The factory sends the sample, called the **preproduction sample**, to the apparel company. This sample (see Figure 2.12) should be sewn in the actual factory doing the production, and should be correct in all the fabric, trims, garment details, folding, packaging, hang-tags, and so on. (The term *preproduction* is sometimes used to mean everything that happens before production, but is used much more narrowly here to refer to the one sample just previous to production.) Only very small corrections can be made at this point. If approved, the sample can be red tagged, and the manufacturer will start production.

Top of Production or Shipment Sample

The red-tag sample will be used by the quality assurance (QA) department to compare to the next sample, the **TOP (top of production)** sample, which is a small sampling of the first garments coming off the production line. The QA department will measure and check the TOP sample, compare it to the preproduction (red-tag) sample, and decide whether the shipment is approved to ship. The two types of samples should be alike in every detail. Figure 2.13 shows the garment folded and packed

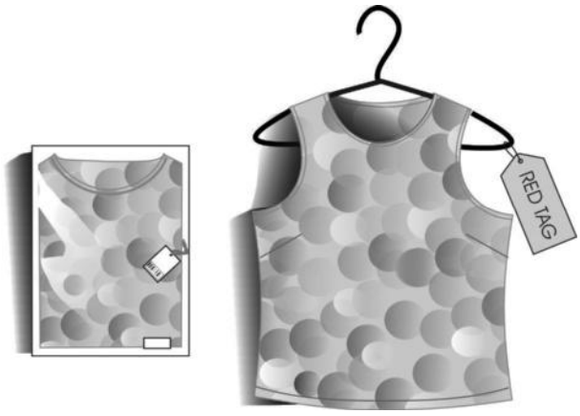

Figure 2.12 **Preproduction sample (red-tag sample).**

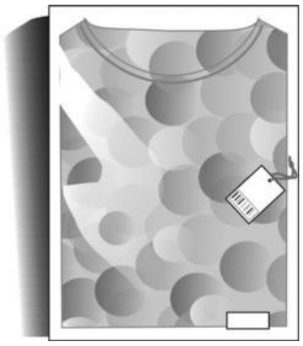

Figure 2.13 Shipment sample (TOP) packaged and approved to ship.

into a plastic bag as it will be for shipping, with the correct bar-code sticker at the lower left corner (wearer's perspective), and the hangtag visible for scanning. The QA department is guided by the fully corrected and updated tech pack, together with fabric- and color-approved swatches and approved trims for comparison. The QA department is also guided in its review by the **tolerances**, the amount that the garment can be off specification, larger or smaller, and still be accepted. The design department is no longer directly involved, unless a problem arises about which the QA department needs to be advised. At this stage, production is almost completed, so no changes for the style can be made.

Sample Lead Times

Companies have different sample lead times, also called turn times or turnaround times. These are the amount of time between stages of the product development process. Table 2.3 is an example for XYZ Product Development Company. The lead times represented are from the day the tech packs are sent to the day of exit from the company. Because this company sends and receives from both domestic and overseas sources, the lead times for both are differently given. You can also see from Table 2.3 that certain garment categories require more development time. These styles should be prioritized to make sure that all the styles can be ready by the meeting date. It is also important to determine and add on the transit time, because samples coming from overseas can sometimes be subject to delays in shipping and inspections by U.S. Customs.

When a bulk production shipment is imported into the United States, they are subject to certain regulations. Samples, on the other hand, have special rules that allow them to enter in a more streamlined way. There are two types of sample shipments: (1) marked and (2) mutilated.

A *marked* sample has the word "sample" stamped or written on the inside in indelible ink, in letters at least 1-inch high. A *mutilated sample* is one that has a 2-inch hole cut into it or the word "sample" written indelibly on the outside. Both of these methods seem like the waste of a perfectly good garment, but it is done to prevent the importation of garments as samples to then be re-sold in violation of customs regulations. If the samples need to be received with no marks or damage, for example to show to buyers, they can be imported as *quota samples*, subject to other rules regulated by U.S. Customs. This method of importing requires a longer lead time, and for that reason, samples for development are usually marked or mutilated. Samples made domestically need no such considerations.

Table 2.3 XYZ Product Development, Inc. Lead Times for Sample Development

Product category	Source	Weeks for first proto	Weeks for second proto
Knit tops	Overseas	4	2
	Domestic	3	2
Bottoms	Overseas	5	3
	Domestic	3	2
Jackets/ Outerwear	Overseas	7	5
	Domestic	4	3
Sweaters	Overseas	10	7
	Domestic	7	4

The Apparel Production Process

The development process for apparel depends on whether the apparel company sells its designs to outside companies through sales representatives or produces goods for its own internal buyers. Some differences occur between these two situations.

Companies Selling Through Sales Representatives

Figure 2.14 shows a timeline for companies that have reps who show their styles at a trade show, common for medium or smaller-sized companies. A sales meeting is held, usually at the company headquarters. The reps are introduced to the line, and have an opportunity to give their feedback, based upon what they know about their customers. Some items may drop out at this point. For example, if there are two knit tops—equally salable and priced the same—that will appeal to the same customer, they will compete with each other and split the sales. It would be better to drop one and consolidate the sales into the remaining one. The sales reps provide valuable input on this type of consideration.

If, at the sales meeting, too large a percentage of styles are dropped or considered "wrong," it would point to a weakness in the planning or merchandising. There is only so much time to develop styles, and it is important to get it right and accurately predict the needs of the buyer, and target customer.

The more conservative the customer base, the easier it is to predict the next season because the changes from season to season are smaller and more subtle. For markets that are more fashion- and novelty-driven, such as the juniors market, the risk of not having the hottest style in the right color, fabric, fit, and price is high. The financial rewards for timing every element perfectly are also high.

The season culminates in the national trade show, where each company shows its new apparel line from a booth. **Trade shows** are a place to showcase the newest products and enables companies to promote to prospective buyers under one roof. Trade shows are sponsored by apparel marts, promotional companies, and/or trade associations. The sales reps attend, meet with their customers to review their orders, show them the line again, and present other colors and whatever updates and revisions may have occurred.

An example of a major national trade show would be the Men's Apparel Guild in California (MAGIC) show. Another is the

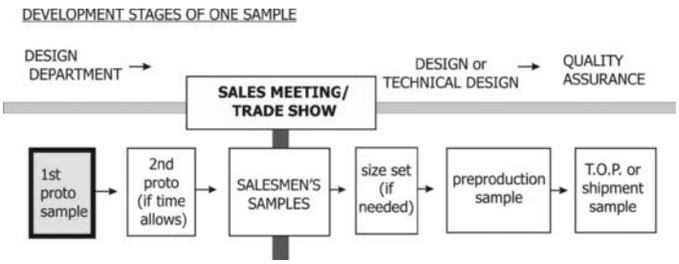

Figure 2.14 **Developmental stage for samples with sales representatives.**

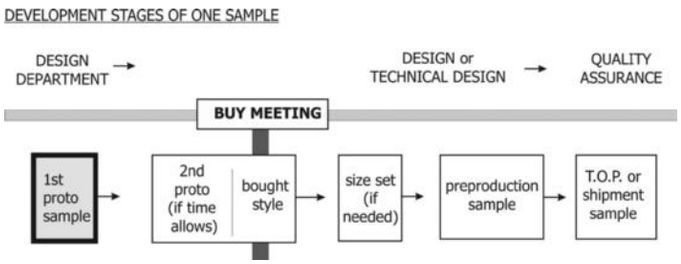

Figure 2.15 **Companies developing products for in-house labels.**

Outdoor Retailer (OR) show, held in Salt Lake City, for outdoor activities (such as hiking, climbing, and mountain biking) apparel and hardware companies. The trade shows are places where the buyers review orders, look for new lines, attend promotional events like fashion shows put on by the trade show association, and other events such as contests and celebrity appearances. These shows give companies the opportunity to promote their products to buyers in a more exciting way than just presenting the garments on a hanger. These shows are to the trade only, and are not open to the general public.

These companies typically employ sales representatives who cover local territories. One example of a territory may be Pennsylvania, New Jersey, Maryland, northern Virginia, and Washington, D.C. The sales rep is responsible for traveling in the territory, introducing the new lines to his or her retailers each season, explaining the features and benefits, dealing with problems with shipments, and keeping the retailers happy.

Reps may be paid by the company as employees, or they may be independent reps who earn a commission on everything sold in their territory. Each season, the reps are provided with their own line that they show to retailers prior to the trade show. So, each style is produced in a small production, one sample per rep, plus extras for the trade show and other promotional uses, or for editorial purposes to send to magazines for write ups. The benefits of attending trade shows are many, from meeting customers, to seeing what competitors are doing, to getting ideas about where the market is headed.

Companies Developing Products for House Labels

Figure 2.15 shows an example of an apparel company with in-house buyers who do the buying for each new season. They develop products for in-house labels such as specification buying. In this case, no sales samples are needed. In general, these are large-sized companies, such as Abercrombie & Fitch, Gap, and Polo, that have merchandisers who make their buying decisions, as do department store private label brands. When styles are bought by in-house company buyers, they are added to the production schedule and go through the same steps as any other company (size set, preproduction, and TOP). Larger company buyers who know their market and can afford the risk can skip the steps of sales samples and attending trade shows.

Summary

In this chapter, we presented an overview of the apparel product development process in the apparel industry based on the relationship between manufacturers and retailers. We also reviewed job responsibilities of professionals involved in the apparel production process and organizational structure in a company. Design development process starting from a line development for a season was discussed with practical examples used in the fashion industry. The importance of technical design and technical designers' role in the apparel design and product development processes were examined to provide a clear understanding of the apparel production process. Finally, developmental stages for samples in the apparel production processes based on the differences of retail companies were also reviewed and compared to provide an overview of the differences in apparel production processes.

Study Questions

1. What are the important factors to take into consideration for design development? Why is each important? What is a design? What went into the development of one of the garments you are wearing now?
2. Name the sample stages in sequential order for a company with sales reps (i.e., proto, sales sample, size set samples, preproduction, production). Name the stages for a company doing in-house labels.
3. Explain the process of a developing line plan for apparel products.
4. What are the influences from the forecast that were utilized for the Alfresco line Figure 2.3 (print, fabrics, and silhouette)?
5. What is a concept board and how it is used? What information is included on a concept board?
6. Refer to Appendix C: Thumbnail Clip Art, dress categories, found in the *Technical Sourcebook for Apparel Designers* STUDIO. Give an example of price tiering by selecting four related dress designs. What makes each design important to the seasonal outline? What would make appropriate price steps?

Check Your Understanding

1. Why is understanding target consumers important in developing lines?
2. Explain the various information used for samples in the apparel production process.
3. Design a Spencer jacket with passementerie trim and leg-o-mutton sleeves.

Reference

Burns, L. D., K. K. Mullet, and N. O. Bryant. 2011. *The Business of Fashion: Designing, Manufacturing, and Marketing* (4th ed.). New York: Fairchild Publications.

3

All About the Technical Package

Chapter Objectives

After studying this chapter, you will be able to:

- Prepare a detailed technical package for garment production
- Identify the information needed for product development

Key Terms

alpha sizing
bartack
colorway
dyed to match (DTM)
grade rules
handloom
numeric sizing
points of measure (POM)
sample evaluation comments
sample status
stitches per inch (SPI)
strikeoff
style number
style summary
vendor manual
wet-processing