

NEW PRODUCT DEVELOPMENT IN THE TURKISH FURNITURE
INDUSTRY: EXPERIENCES OF IN-HOUSE INDUSTRIAL DESIGNERS

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INDUSTRY: EXPERIENCES OF IN-HOUSE INDUSTRIAL DESIGNERS**

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ABSTRACT

NEW PRODUCT DEVELOPMENT IN THE TURKISH FURNITURE INDUSTRY: EXPERIENCES OF IN-HOUSE INDUSTRIAL DESIGNERS

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Although high-technology and its practical implications on products are usually at the center of innovation activities, innovation is also considered important for typical low-tech industries, such as textiles, footwear, and furniture. One main reason underlying this claim is the fact that these industries globally represent a significant part of world trade and employment. This research focuses on one of these industries, the furniture industry, which corresponds to approximately one percent of total world trade. Investing in design to create innovation is a matured strategy in the furniture industry. Despite its global significance, a review of the studies about the Turkish furniture industry reveals the absence of a systematical process in the NPD in the Turkish furniture industry. Yet these studies from the 1990s do not represent the current situation, and the current studies on the NPD are not sufficient for us to understand the unique dynamics of the Turkish furniture industry. To fill this gap, in-depth interviews are conducted with 17 industrial designers who have work experiences in large furniture enterprises as in-house employees. According to my findings, an 11-phase process model is defined to explain the role of design and other functions in the NPD. The findings of this research present the current situation of the NPD in the Turkish furniture industry and reflect the perspectives of designers.

Keywords: New product development process, Furniture industry, Furniture design,
Large furniture enterprises, Industrial designer

ÖZ

TÜRK MOBİLYA ENDÜSTRİSİNDE YENİ ÜRÜN GELİŞTİRME: FİRMALARDA İSTİHDAM EDİLEN ENDÜSTRİYEL TASARIMCILARIN DENEYİMLERİ

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Yüksek teknoloji endüstrileri ve yüksek teknoloji ile çalışan uygulamalar inovasyon çalışmalarının merkezinde olmasına rağmen, inovasyon; mobilya, ayakkabı ve tekstil gibi düşük teknoloji endüstrileri için de önemli bir konumdadır. Bunun altında yatan en önemli nedenlerden bir tanesi, bu endüstrilerin dünya ticaretinde ve istihdam verilerinde önemli bir yere sahip olmalarıdır. Bu araştırma, bu sektörlerden biri olan ve dünya ticaret hacminin yaklaşık yüzde birine sahip olan mobilya endüstrisine odaklanmaktadır. İnovasyon gerçekleştirme için tasarıma yatırım yapmak ise mobilya endüstrisinde olgunlaşmış bir davranıştır. Buna rağmen mevcut alan yazının incelemesi, Türk mobilya endüstrisinde sistematik bir yeni ürün geliştirme sürecinin yaşanmadığını ortaya çıkarmaktadır. Bunun sebebi 1990'lı yıllarda yapılan bu çalışmaların güncel durumu yansıtmaması ve günümüzde yapılan çalışmaların ise Türk mobilya endüstrisinin kendine has özelliklerini anlamamız için yeterli olmamasıdır. Bu boşluğu doldurmak üzere, büyük mobilya işletmelerinde firma içi çalışma deneyimine sahip 17 endüstriyel tasarımcı ile derinlemesine görüşmeler yapılmıştır. Bulgular doğrultusunda yeni ürün geliştirme sürecinde tasarımın ve organizasyonun diğer fonksiyonlarının rollerini açıklamak üzere 11 fazdan oluşan bir süreç modeli sunulmuştur. Bu çalışmanın bulguları tasarımcıların bakış açısını

yansıtmakta ve Türk mobilya endüstrisinde yaşanan yeni ürün geliştirme sürecinin mevcut durumunu sunmaktadır.

Anahtar Kelimeler: Yeni ürün geliştirme süreci, Mobilya endüstrisi, Mobilya tasarımı, Büyük mobilya işletmeleri, Endüstriyel tasarımcı

To love of my life Hatice

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LIST OF ABBREVIATIONS

ABBREVIATIONS

LEs: Large Enterprises

MTO: Made-to-Order

MTS: Made-to-Stock

R&D: Research and Development

SMEs: Small and Medium-Sized Enterprises

CHAPTER 1

INTRODUCTION

European economies eagerly develop research projects and pursue innovation activities as a result of the substantial importance of research and development (Terzic, 2017). Innovation activities are commonly linked with high technology; but they are also valuable for low technology industries which have a significant role in the income and employment of the economies (Lindman et al., 2008). Low tech industries cover a variety of sectors; and among them, the furniture industry had the highest global world trade in 2000, by surpassing apparel and footwear industry (Kaplinsky et al., 2003). This research focuses on new product development (NPD) processes in the Turkish furniture industry. There are various NPD process models presented in the literature, which usually remain generic without distinguishing between different industries (Story et al., 2001). Considering that different dynamics across industries and regions may affect the NPD activities, however, particular research is needed to analyze the Turkish furniture industry. As a result, this research aims to fill the gap in the literature by exploring the NPD process in the Turkish furniture industry.

1.1. Background of the Study

NPD activities are substantial efforts for firms that aim success in the market. Comparing with many other industries, the furniture industry has a lower cost of NPD expenditures and ease of production. As a result, ideas transform into products quickly, and this fast realization enables user demands to shape the market (Er, 1996). Besides, developing a new product for the furniture industry may be faster but becomes challenging by the fast-changing demand. Due to the fast-changing market, furniture companies develop new products regularly and showcase them in exhibitions

which are generally organized annually. Besides, furniture industry has a tradition of investing in design while developing new products (Gemser & Leenders, 2001).

In this market, there are also different types of enterprises producing furniture under the same conditions. Furniture industry mostly consists of small enterprises (SMEs) in number, and there may be significant differences in how they conduct their NPD processes comparing to large enterprises (LEs). Studies focus on SMEs in the literature may provide a basic understanding of how NPD activities are conducted in SMEs. SMEs have a lack of financial power and limited product ranges which make them vulnerable to changes in the economic environment (O'Regan & Ghobadian, 2005). This vulnerability is the main reason behind SMEs' not to plan for longer terms rather plan day by day according to environmental changes (Beaver, 2003). As a result, it is not common among SMEs to follow any formalized NPD process (Ekberg, 2005; Şengül, 2009), and NPD activities are not executed systematically in SMEs (Huang et al., 2002).

There are different NPD process models presented in the literature focusing on LEs and SMEs in the furniture industry. Ekberg (2005), for example, documents how furniture enterprises work with designers in product development projects, and suggests a model for outsourced design service. On the other hand, Bennington (2004) explains a nine step process model from planning to production. Unlike Ekberg's model, Bennington is more focused on the in-house abilities of the manufacturer. Similarly, Leslie & Reimer (2006) briefly explain the steps of new product development in the Canadian furniture industry, which cover both in-house and outsource processes. Similar representations of the NPD process exist in the literature, yet they are still unable to explain NPD in detail. Only the work of Bennington explains the NPD of the furniture industry in detail, but his work explains the dynamics of the American furniture industry, and the dynamics of the Turkish furniture industry should have some differences. In order to address this gap, this thesis aims to discover NPD processes in LEs in the Turkish furniture industry because more systematic approaches are expected from LEs than SMEs.

1.2. Research Questions

In large enterprises, NPD activities are expected to be supervised by professionals. As one of them, the role of designers has an increasing effect according to Perks et al. (2005) as they introduce designers as a product development process leader since the early 2000s. But, the high cost of hiring a professional to carry out NPD activities forces enterprises to task non-designer employees to design new products, which is called silent design (Gorb & Dumas, 1987). In the furniture industry, it is more likely for SMEs to utilize silent design (Şengül, 2009). On the other hand, LEs have higher financial support that they are more likely to hire a professional designer who will be responsible for NPD activities. Şengül's (2009) research on the furniture industry in Turkey shows that the profession of the hired designer may vary between architecture, interior design, and industrial design. However, this thesis is interested in only the industrial designers who work in LEs in the Turkish furniture industry, to discover the NPD activities they are involved in.

Research questions which this thesis is going to answer are:

- 1) What are the stages of the NPD process followed by the large enterprises in the Turkish furniture industry?
- 2) How and to what extent does the NPD process followed by the large enterprises in the Turkish furniture industry differ from the existing NPD processes identified in the design management literature?
- 3) What is the role of design function in the NPD process of the Turkish furniture industry, and how do the various functions of the organization take place in the process?
- 4) How do other stakeholders including retailers, suppliers, and customers participate in the NPD process of the Turkish furniture industry?

1.3. Structure of the Thesis

There are five chapters in this thesis. This chapter is an introduction that explains the background of the research, and the topic, the aim of the research and research questions are presented.

Chapter 2 presents a review of related literature within the subject of the thesis. It covers a variety of subjects that include specifications of the furniture industry, types of enterprises in the furniture industry, the special character of the Turkish furniture industry, the definition and process of the new product development, and the new product development in the furniture industry.

Chapter 3 explains the methodology of the study. It starts by presenting the epistemological stance of the research, which is interpretivist. Later, the data collection methods of semi-structured interviews and preparation of maps are introduced. The chapter also demonstrates the research process and data analysis methods.

Chapter 4 presents the findings of this study. It explains interpretations of the data under three sections; which are experiences of industrial designers, organization of design function, and the process of the NPD. Findings reflect the perspectives of participants and it also presents direct quotations from the interviews.

Chapter 5 discusses the overall conclusions of this research by answering the four research questions that are indicated in the first chapter. Also, limitations of the study and the suggestions for further research are mentioned in this final chapter.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

The study aims to explore NPD-related activities in the Turkish furniture industry. Accordingly, a variety of sources including journals, conference proceedings, theses, and dissertations are examined through the search of these keywords: new product development, furniture industry, innovation, industrial design, and designer.

In regard to the result of the examination, this chapter contains four sections. In the first section, general specifications of the furniture industry are explained, and enterprises in the furniture industry are reviewed according to size and annual income, ownership and management, and production and distribution. The second section clarifies the historical evaluation and current position of the Turkish furniture industry. The third section presents the definition and the generic process models of NPD. In the final section of this chapter, NPD activities and process models of furniture industry that are presented in the literature are explained. To sum up, the presented data aims to explore the furniture industry, local dynamics of the Turkish furniture industry and the process of NPD in the furniture industry.

2.1. Furniture Industry

The furniture industry is a typical low-tech industry concerning the long traditions of cabinetmaking, and it has a significant place in the world trade. Furniture was the largest low-tech sector in 2000 (Kaplinsky et al., 2003). According to CSIL [Centre for Industrial Studies] report in 2017, furniture trade is around US\$ 420 billion, and it globally represents one percent of the world trade (CSIL, 2017).

Throughout history, carpenters have developed furniture which has functions like sitting, lying down, working, dining, storing and many others (Smardzewski, 2015). In addition to the function-based category, Smardzewski (2015) presents many

different classifications based on different variables. One of them is grouping furniture according to their purpose which may give a better understanding of the variety of demand for furniture (Figure 2.1). This variety ranges from office furniture to aircraft furniture and is fast changing according to customer requests. There are annual exhibitions where manufacturers exhibit their newest products to their customers as a response to this fast-changing demand; consequently, NPD activities become a survival tool in the furniture industry.

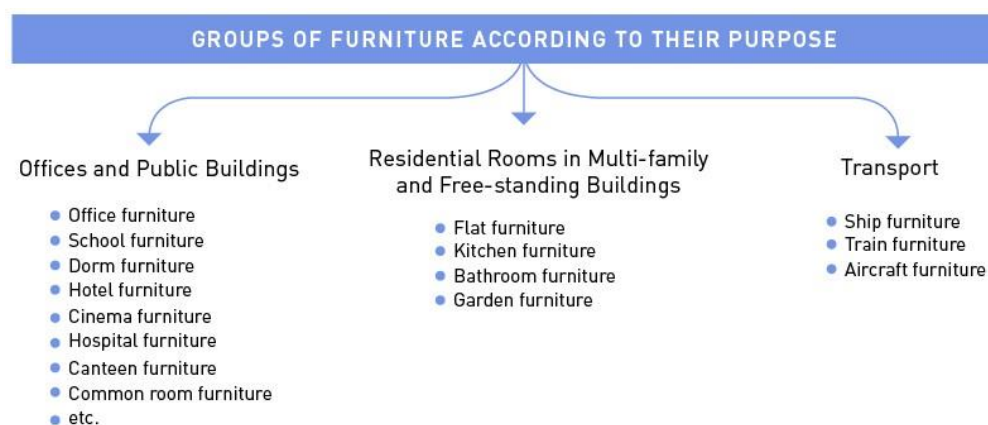


Figure 2.1. Groups of furniture according to their purpose. Adapted from Smardzewski (2015).

High technology industries need to generate scientific knowledge to develop new products (Hecker, 1999). On the other hand, low technology firms may not do this internally but still, use scientific and engineering knowledge. They combine this knowledge with practical knowledge and high-grade design skills, in this way they develop new products rapidly (Hirsch-Kreinsen et al., 2003). In other words, investing in the design in low technology firms is more common due to the lack of technological opportunities. Accordingly, they compete on product differentiation and marketing rather than technological developments (Walsh et al., 1992). Therefore, we may conclude that non-scientific activities like investing in design are substantial for low technology firms (Lindman et al., 2008).

Er (1996) states that the low cost of new product development and fast-changing customer demand specify furniture as design-intensive fashion industry. Moreover,

Scott (1996) claims that furniture is one of the cultural product industries in which success depends on the commercialization of products with social and cultural messages. To bring an assumption, design may have the ability to embed these social and cultural messages into products. According to this inference, defining furniture as a fashion or cultural product industry, and pointing out the intensity of design use may be the result of this unique ability of design. Therefore, design plays a major role in the NPD processes of the furniture industry.

To sum up, furniture is one of the oldest and traditional industries that has a low cost and low tech manufacturing abilities which make furniture products easy to manufacture. Also, due to the lack of technological opportunities, design grabs a substantial role in developing new products in the furniture industry. For these reasons, investing in design has become a matured strategy in the furniture industry.

2.1.1. Enterprises in the industry

Different kinds of enterprises produce furniture for the market and the classification of these enterprises is made according to different variables. Classification may be done in many different ways, but some features of enterprises may have a major effect on how NPD activities are conducted. These features are presented below under three sections: (1) size and annual income, (2) ownership and management and (3) furniture production and distribution.

2.1.1.1. Size and annual income

According to their sizes and annual income, enterprises are classified as SMEs (small and medium-sized enterprises) and LEs (large enterprises). Administration of Development and Support of Small and Medium-Sized Enterprises known as KOSGEB (2005), defines “micro-enterprises” with staff less than 10 and annual turnover less than 1 million, “small enterprises” with staff less than 50 and annual turnover less than 8 million, “medium enterprises” with staff less than 250 and annual turnover less than 40 million. In Europe, these numbers are slightly different in terms of annual turnover (European Commission, 2003) (Table 2.1). Naturally, enterprises

with staff above 250 or turnover higher than ₪40 million classified as LEs. The differences are finance and labor, hence LEs have the power to carry on long term investments easier than SMEs

Table 2.1. *Enterprises according to size and annual income. (European Commission, 2003; KOSGEB, 2005)*

| SOURCE | MICRO | | SMALL | | MEDIUM | |
|----------------|--------------|----------------------|--------------|-----------------------|---------------|-----------------------|
| | staff | annual turnover | staff | annual turnover | staff | annual turnover |
| KOSGEB | less than 10 | less than ₺1 million | less than 50 | less than ₺8 million | less than 250 | less than ₺40 million |
| European Union | less than 10 | less than €2 million | less than 50 | less than €10 million | less than 250 | less than €50 million |

SMEs may lack capital and labor but still, they hold some significant advantages. Due to not having complex management, typically they make faster decision making and it is easier for them to adopt environmental changes. Also, a lower number of employees resulted in a higher quality of communication where everyone knows what happens in the enterprise (Tidd & Bessant, 2009). However, SMEs face significant challenges in developing a new product. As Huang et al. (2002) claim, NPD activities insufficiently accomplished by SMEs.

The main difference between the SMEs and LEs is the inability of the former to reach key resources such as finance more prominently (Tidd & Bessant, 2009). Moreover, SMEs have a lack of labor and their organizational structure is much less complicated, so typically one manager makes all decisions (Carson, 1985). Small organizations may be advantageous in terms of being close to the customer and fast response to their demands (Voss et al., 1998), but they offer them a limited product variation in a limited market and their financial structure is brittle against slight changes in the economic environment (O'Regan & Ghobadian, 2005). This prevents SMEs to make long term plans; rather, they plan their activities according to these changes simultaneously (Tidd & Bessant, 2009).

To sum up, SMEs hold significant advantages, but also they have disadvantages. They are fast decision-makers and they are giving rapid responses to the customer demands,

but they act in the limited market with the short product range. SMEs cannot do long term planning activities due to lack of financial capital they have, and this also leads imperfectly carried out NPD activities. Still, size and financial power are not the only factors affecting the NPD; also, a type of ownership may be one other factor that has effects on the quality of the NPD activities.

2.1.1.2. Ownership and management

Daily & Dollinger (1992) present a classification about the relationship between ownership and management which is based on the agency theory. Jensen et al. (1976) define agency relationship as there are two separate functions of manager and owner, and the owner hires the manager to make some decisions for the sake of his interest in the company. However, the owner and the manager are separate functions, and they may act to utilize their own benefits. Therefore, this conflict may create an extra cost for the company. Daily & Dollinger (1992) build their classification based on this conflict and they define two separate classes: “family firms” and “professionally managed firms”. They made this classification to observe possible performance advantages of family firms and they claim performance advantages may be observed only if owner and manager functions are merged. According to their classification, family firms correspond only to the family-owned and managed firms and the rest is the professionally managed firms even though family members are involved in management or ownership.

Family firms have some performance advantages over professionally managed firms due to the alignment of management and ownership functions (Daily & Dollinger, 1992). James (1999) mentions, emotional bonds between family naturally force the members of the family to behave altruistically which supports individual considerations to be an efficient managerial decision. Moreover, loyal family members and a stable environment give trust to the managers who provide efficient investments to the family business (James, 1999).

Yet there are still disadvantages of family firms and the most prominent one is the lack of their ability to invest in the human source. They hire only family members, and this behavior limits the pool of experience (Westhead & Howorth, 2006). As a result, they are lack of experienced employees; and also, they neglect more talented staff (Chrisman, et al., 2004). Emotional bonds may be advantageous; but also, it may cause psychosocial conflicts (Daily & Dollinger, 1992), and close relations within the family members may lead to inertia and stagnation (Sydow & Staber, 2002). Moreover, family firms are typically small in size (Corbetta & Montemerlo, 1999; Daily & Thompson, 1994; Kirchhoff & Kirchhoff, 1987), and this may also result in short term planning and unsystematic approaches.

Family firms may have performance advantages over professionally managed firms and these advantages may seem reasonable in the circumstances of small enterprises. But in larger enterprises there are also some significant disadvantages; especially, the limited pool of talent they manage and possible relational conflicts. As a conclusion, these negative aspects may result in unsystematically conducted NPD activities at family firms.

2.1.1.3. Furniture production and distribution

The furniture industry is a low tech mature industry which has relatively fast production rates. Hence, it offers products for a variety of applications with a variety of sub-branches such as home, school, hospital and aircraft furniture. These branches may have different dynamics thus NPD activities may differ for each. There are also different ways of reaching customers which may also closely related to the NPD activities. To explore their effect on NPD, types of production and distribution channels are going to be examined in this section.

There are many categories of furniture diversified on different variables which may give clues about the types of production (Smardzewski, 2015) (Figure 2.2). There are five distinct classes which are (1) purpose, (2) functionality, (3) form and construction, (4) technology and (5) quality. Each type of furniture in these categories goes through

an NPD process, and for each of these products, the process may differ. For example, designing furniture for an aircraft and flat kitchen may differ in terms of regulations. Aircraft furniture should meet some standards which need to be approved by authorities, and therefore design input may be limited according to these standards. On the other hand, designing a flat kitchen should not follow the same procedure as aircraft furniture. Moreover, in the furniture market consisting of different products, competition should be different. In the school furniture market, high quality and hardwearing products may be reasonable, but for hotel furniture, fashionable products are more demanding. There is also the factor of the customer which may affect NPD activities. For example, marketing hospital furniture is more like a business deal and design specifications may be the part of the deal, but on the other hand, home furniture typically targets the end customer demand and the marketing activity is more likely to take place in the furniture stores. In other words, distribution channels of furniture may also affect NPD activities.

Furniture manufacturers use different channels of distribution to market their products. According to Bennington (2004), manufacturers use five types of channels to psychically showcase and sell their products. First, customers visit the *manufacturer's own store* where the manufacturer has full control. Second is the *franchised store* which is under independent ownership but the store sells only one manufacturers' products. This type requires an agreement between the manufacturer and the store owner. The third type is *in-store galleries* in which manufacturers use some part of the store to showcase their products. Fourth, there are *independent furniture stores* where various brands and products are showcasing and selling according to the product strategy developed by the store owner. It is not possible to separate a manufacturer's products from another unless the owner wants it. The fifth type is called *wholesaling*; and in this type, furniture distributors, who have a network of retailers and interior designers, resale manufacturers products. They serve as a link between manufacturers and retailers.



Figure 2.2. Classification of furniture. Adapted from Smardzewski (2015)

Among these five channels, only in the first two type, manufacturers directly contact with the customers; and in the independent stores, the selection and settlement of products are totally under the control of the store owner. To make an inference, customer demands which are valuable input for NPD activities should vary slightly or radically according to each of the types. But still, there are different channels than simply selling furniture in the store.

Manufacturers also sell their products without the need for showcasing them psychically to their customers which is called direct marketing. As a kind of direct

marketing channel, web-based sales are likely to grow in relatively specialized products, and this will increase the importance of niche markets where SMEs have a clear advantage over LEs (Bullard & West, 2002). The web presents a platform for customers where they make buying decisions with product images and brands rather than testing the actual products. This may end up with price competition or brand recognition to become advantageous. At this point, price engineering will be the most important activity of NPD. Still, selling in physical stores, and web-based sales target end customers. On the other hand, in contracting furniture channel, end customers are not visible, and manufacturers produce according to business contracts.

Contract furniture is a widely used term for furniture designed for use by businesses, institutions and public buildings; to exemplify, made-to-order furniture designs for construction of office, hotel, hospital, school or government buildings (Bennington, 2004). Hills (1995) mentions the design of made-to-order products conduct in the multi-domain environment with conflicting goals and requirements; moreover, the design of the furniture is done before the contract is signed (Bayer, 2006). In other words, drawings of furniture designs are included in the contract which the manufacturer has agreed to produce; therefore, manufacturers are not typically involved in the design phase.

To summarize, furniture products have a rich variation in terms of “purpose”, “functionality”, “form and construction” and “technology and quality”. There are also various distribution channels for furniture manufacturers like having their own store or working with independent stores. Different types of furniture and different types of distribution channels have a strong link with the specification of the designed product. There is a clear difference in designing a sofa or school desk, and it may be not obvious but using different distribution channels also affect the design of the product. For example, if a manufacturer has its own stores, there is a direct link between the manufacturer and the end-user, so the manufacturer may develop its own strategies to sell its products. But on the other hand, if the manufacturer has a deal with an independent furniture store, the design of the products should be in line with the store

owner's demands rather than directly with the end-user. In this condition, from the manufacturer's perspective, it is not possible to develop consistent NPD strategy, rather the manufacturer should obey the store owner's product strategy. To summarize, types of furniture and channels of distribution should have a determinant role in the NPD activities of manufacturers.

2.2. Turkish Furniture Industry

Furniture has always been part of human civilization. The oldest pieces of furniture remain today are produced in Ancient Egypt (Yılmaz, 2005). Throughout history, beyond its functional features like sitting and storing, furniture also satisfies social and cultural needs. For example, as a representation of royalty, specific styles and pieces are named with the name of the rulers of empires from the 17th to 18th centuries (Bennington, 2004). Moreover, furniture also represents the ways of living like sitting, sleeping, and eating. After the industrial revolution, traditional methods of making furniture, and traditional materials modified till the 20th century along with the ways of living. Newly introduced furniture represents a new way of living for the people; and as a result of the westernization policies of the Ottoman Empire, Turkish people meet with this new life.

Behind political reflections, westernization policies also have an effect on the social life of Turkish people. As a result of these policies, modern furniture products are becoming to enter the country at the end of the 1800s (Özkaraman, 2006). Özkaraman (2006) explains the era of change and transformation in her work. Accordingly, people of the Ottoman Empire was a part of the eastern culture for centuries; and, the Empire's furniture industry is only limited to the production of tea tables and small reading desks. As one of the reasons, furniture products have multiple functions in the house of eastern culture. For example, sitting units turned into beds at night time and spaces in the houses transform according to the needs of residents. So, with the lack of need, furniture industry may only expertise in some specific products. Later, Turkish society started to accept the products of western culture, and people meet with

the new furniture products which they are unaccustomed to. Also, they cannot be produced with the traditional methods of the Empire, and new machines of the industrial revolution are needed to produce them. As a result, in 1915, the import rate surpasses local production by %46.8 which means local production is not enough to cover the local demand for this new furniture (Ökçün, 1997). In that time, production is made in the small carpenter's shop of foreigners in the districts of İstanbul. After the foundation of the Turkish Republic, Turkish carpenters are trained and start to take over the furniture production (Yılmaz, 2005). But for a long time, the production and marketing activities of the furniture industry are not satisfying for the economy of the republic, and production continues in the small carpenter's shops.

Industrial production in modern Turkey starts by the 1970s (SGM, 2017). One of the oldest industrial establishments of the Turkish Republic is "Kelebek" which has produced plywood from 1935 to 1986 in İstanbul and opened a panel furniture factory in 1978 in Düzce (Yılmaz, 2005). In the 1980s, rapid housing and transformation of cities increase the demand for modern furniture (TOBB, 2017). At that time, due to the lack of legal protection, most of the firms imitate the products of foreign firms (Bayrakçı, 1996). By the 1990s, the furniture industry mostly comprises SMEs, but with the help of government, there are recently established LEs (Özkaraman, 2006). Although the government promotes these larger establishments, Er (1996) noted that LEs have a problem of selling what they produce in the 1990s. He refers to the furniture brand "Kelebek" which has overcome this problem by creating its own sales and distribution network; by the way, it discards marketing policies of independent stores. The 1990s are also the times of custom union agreement; thus, global brands introduce their products into the local market of Turkey and local industries meet with the global standards (Özkaraman, 2006). This union also pushes local actors to develop their own products with their own designs to survive in the market (Bayrakçı, 1996). According to Özkaraman (2006), from the beginning of the 2000s, Turkish industries have begun to manufacture their unique products with newly introduced standards.

In recent days, manufacturing facilities that produce according to world standards are established. The current analysis shows that the Turkish furniture industry still mostly comprises small atelier type enterprises along with the growing number of LEs (Sakarya & Doğan, 2016). Additionally, increasing numbers of foreign investments like IKEA, increase the competition in the Turkish market and according to the local authorities, this brings dynamism to the market (İGM, 2018). LEs are important actors of the industry because they are advantageous in the non-price competition (Arslan, Sönmez, & Gürleyen, 2009) which corresponds to series of activities beyond lowering the price such as product differentiation, post-sales customer services, commercials and promotions (Kip, 2003). On the other hand, LEs do not have a regular development policy, and SMEs are working inefficiently in the Turkish furniture industry (Kurtoğlu, 2001).

Giving a clearer outlook of the Turkish furniture industry, Özkaraman (2006) listed the types of production and sales network:

- 1- Carpenter ateliers which use traditional production methods
- 2- A limited number of large enterprises which produce in world standards
- 3- A limited number of foreign partnerships
- 4- Hypermarket chains which offer a variety of furniture from a variety of brands
- 5- Furniture exporters

According to the research of Demirci & Efe (2005), the total number of enterprises that are registered to the professional chambers is 63691 in 2005, and 65 enterprises are classified as LEs according to the 2015 database of the Ministry of Science, Industry, and Technology (SGM, 2017). Additionally, Nemli et al.'s (2007) research with 680 Turkish furniture manufacturers shows that most of the firms (%67.8) produce on-order, and only a small portion of manufacturers produce on mass production type (%8.2). Enterprises that are manufacturing on-order are generally SMEs, and this type of manufacturing may be positive for stock management, but it

decreases the efficiency of the production (TOBB, 2017). In the Turkish furniture industry, the accumulated percentage of the efficiency in the last five years is more than %71, and in LEs this percentage is believed to be around %80 (SGM, 2017). The most demanding group of furniture in the Turkish industry is sitting, dining room and office furniture (TOBB, 2017). The total rate of production is dominated by home, garden and office furniture with the production rate of %85. Furniture demand has a direct relation with the increase of the housing and office constructions, and purchasing power of the consumers (SGM, 2017).

According to the report of the Ministry of Trade (İGM, 2018), manufacturers in the Turkish furniture industry are gathered in clusters that are close to the customer or raw material production. These clusters are located in Istanbul, Ankara, Bursa (Inegol), Kayseri, Izmir, and Adana. Istanbul has the highest level of employment and followed by Ankara, Bursa, Kayseri, and Izmir. Istanbul has two important centers: Masko and Modoko, and the average number of employees per enterprise is 3,7 people in Istanbul. Ankara has always been an important center for the furniture industry, and there are more than 10.000 enterprises are located in Siteler. Ankara is mostly dependent on labor-intensive enterprises and has a small number of LEs. Employees per enterprise is 2,7 in Ankara that is below the average rate of Turkey. Bursa is in an advantageous position as it is close to the raw material production and has the third rank of export rate after Kayseri and İstanbul. In Kayseri, the rise of the furniture industry starts with the production of the convertible sofa-bed, sofa, and bed. Most of the LEs are located in Kayseri, and this cluster has the highest rate of employees per enterprise (11,5 employees) in Turkey. More than 3500 enterprises are manufacturing furniture in Kayseri and 400 of them produce for export with mass manufacturing facilities. According to the employment numbers, Izmir is the fifth cluster of Turkey. The rate of employees is 2,66 people per enterprise and most of them are very small workshops. Izmir has an important potential for export with the ease of sea transportation.

Due to its employment and trade volumes, the furniture industry is one of the leading manufacturing sectors in Turkey. It has ranked fourth place in numbers of registered

enterprises and ranked seventh in the number of employees working in the industry (Sakarya & Doğan, 2016). According to 2014 data, the Turkish furniture industry produces US\$ 19 billion valued products and local consumption is US\$ 14 billion. Furthermore, the world export rate is US\$ 177,5 billion in 2014 and Turkey is ranked 15 out of 228 countries with US\$ 1,9 billion export value and the import rate of Turkey is decreasing year by year. All the data presented points out the importance of the furniture industry for the Turkish economy. It has a lower import rate than export, and industry uses local raw materials; as a result, exporting furniture in Turkey is highly profitable (Sakarya & Doğan, 2016).

Since 1985, export in the Turkish furniture industry is supported by government policies (Özkaraman, 2006). As expressed in the eleventh development plan, the Turkish government still focuses on the export-oriented reconstruction in the furniture industry (SBB, 2019). According to the report of the Ministry of Trade (İGM, 2018), the furniture industry started to have a foreign trade surplus since 2001, and now exporting has become the most important power of development for the Turkish furniture industry. Export value raised from US\$ 192 million in 2001 to US\$ 2,360 billion in 2017 and it corresponds %1.50 of the total export of the Turkish economy. Moreover, 2023 aim of the government is to produce US\$ 25 billion and to export US\$ 10 billion valued furniture (KB, 2015). Turkish furniture industry export to a variety of foreign markets; Iraq is the top importer of Turkey since 2009 followed by Germany, Saudi Arabia, France, USA, England, UAE, Romania, Israel, and Azerbaijan. From 2005 to 2015, the rate of export to EU decreased from %55 to %26.4, and the rate of export to neighbor countries is increased which is also positive progress for the Turkish furniture industry (İGM, 2018).

Beyond the export potential of the industry, Sakarya & Doğan (2016) stated strengths, weaknesses, opportunities, and threats of the Turkish furniture industry in their report. Presence of the large enterprises, material and product variations and high potential of labor are specified as strong aspects; on contrary, density of family firms, lack of organizational behavior, financial sources, government incentives, qualified labor,

design input, and problem of protection of the intellectual property and lack of innovative approaches are identified as weak aspects. New market opportunities, consumption population in Europe, developments in production, increasing design use are indicated as opportunities; whereas, design imitation, low production in third world industries are some of the threats listed. Apparently, lack of innovation is the weakness, increasing design use is the opportunity and the imitation is the threat for the Turkish furniture industry according to the report.

In conclusion, the Turkish furniture industry is one of the rare industries of Turkey according to the low import rate of its raw materials which makes exporting furniture highly profitable. Therefore, government policies that support export and design involvement in the Turkish furniture industry are outstanding. According to the relative importance of design for the Turkish furniture industry, research which aims exploring the NPD processes in the industry should be beneficial for industrial development.

2.3. New Product Development

Enterprises sell what they produce to gain financial capital. New product development (NPD) is the set of activities that start from identifying a market opportunity to manufacturing, selling and delivering the product (Ulrich & Eppinger, 2012). These sets of activities are crucial for enterprises because they must develop new products to secure their market share and expand into new markets (Nicholas et al., 2011). To succeed in NPD, there are factors explained in the related literature.

Cooper & Press (1995) present factors in eight different titles that have a critical effect on the success or failure of the NPD activities. According to them, an *organizational strategy* should be clearly determined and translated into market, design and technology strategies to present a road map for employees of the organization; besides, the *NPD strategy* should also be present to success. *Structure of organization* is another factor in which contains mechanisms to support and to monitor key employees are vital for NPD success. *NPD process* defines stages and coordination between them

and it gathers much of attention from researchers due to its relative importance. *Key functions* which consist of marketing, design, and technology in organizations also have a critical role for success. Also, projects need to be funded, and *finance* is another factor of success. There are also *factors intrinsic to the industry*, and these factors change according to different cases in various industries, based on their different dynamics. Lastly, *external factors* represent the factors that are out of the control of an organization like the ability of the consumers buy, market size, competitors, changes in the market and environmental issues like legislation.

NPD brings organizational functions together to achieve its goal and these eight factors affect its success or failure. Key functions in the way of success are marketing, design, and technology; thus, management of these key functions is crucial. It can be suggested that since the process of NPD defines stages and a method, the design of this process should carefully consider the factors of success to achieve its goals.

2.3.1. Process models

There are many process models of NPD presented in the literature. These models represent the basic structure of the NPD process, so they are needed to be adapted across industries and according to the unique needs of enterprises. To explore these models, a historical review is going to be presented, which includes (1) Mcrory's (1966) design method, (2) Pugh's (1996) design activity model, (3) Ulrich & Eppinger's (2012) product development process and (4) Cooper's (2011) Stage-Gate model.

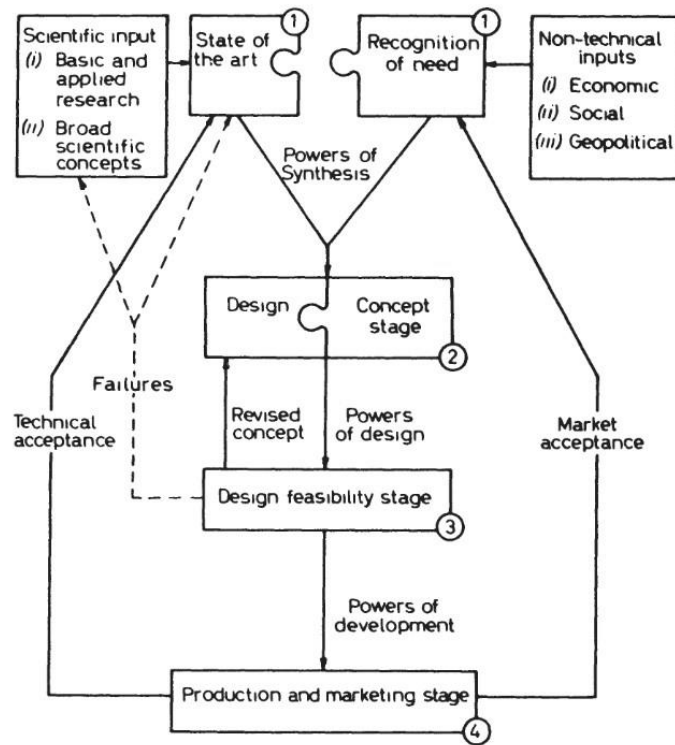


Figure 2.3. Mcrory's design method

Mcrory (1966) introduces the design method which consists of stages through market analysis to production and marketing (Figure 2.3). Understanding the state of art and recognition of the need is the first phase of the design method. Need is defined to develop satisfying products accordingly and state of art is based on previous design experience of designers, limits of materials, and research inputs. The second phase is called the design concept, in which the designer combines the defined need with the state of art to produce satisfying solutions. Later, the design concept is detailed and tested in the design feasibility phase; after the approval, the designed product can be produced and marketed successfully. This model runs on the cyclic principle, and after the production and marketing stage, feedbacks are used to redefine the need and the state of art. This model represents a basic structure of new product development although the name refers to the design process only.

Pugh (1996) presents the design activity model (Figure 2.4) which is adaptable across a variety of industries, disciplines, and products. This model also emphasizes design

as a key factor in new product development and defines a boundary between business and design. This boundary represents the constraints of design activity and there are six phases inside from market analysis to sell. After the market analysis, specifications of the product are determined, and product concepts are prepared. Later, decisions about the concept are made, the design is detailed and manufactured. The final phase is named sell, in which the manufactured product is presented to the market in this stage. Presenting the design and business boundary and the elements of design specifications (Figure 2.5) are the unique properties of this model.

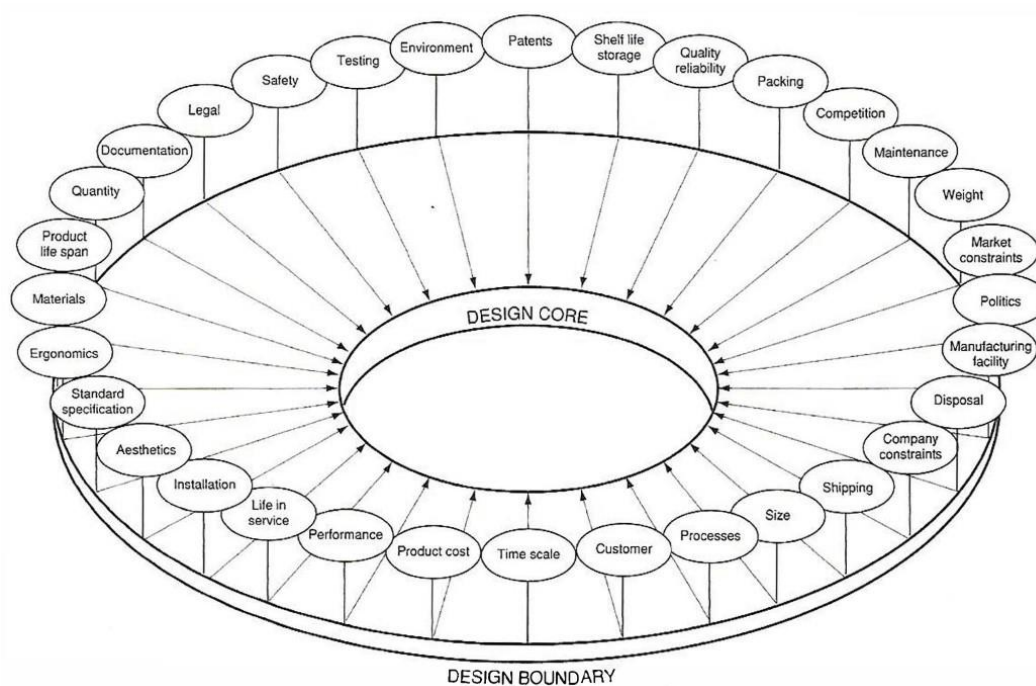


Figure 2.4. Elements of Product Design Specification (Pugh, 1996)

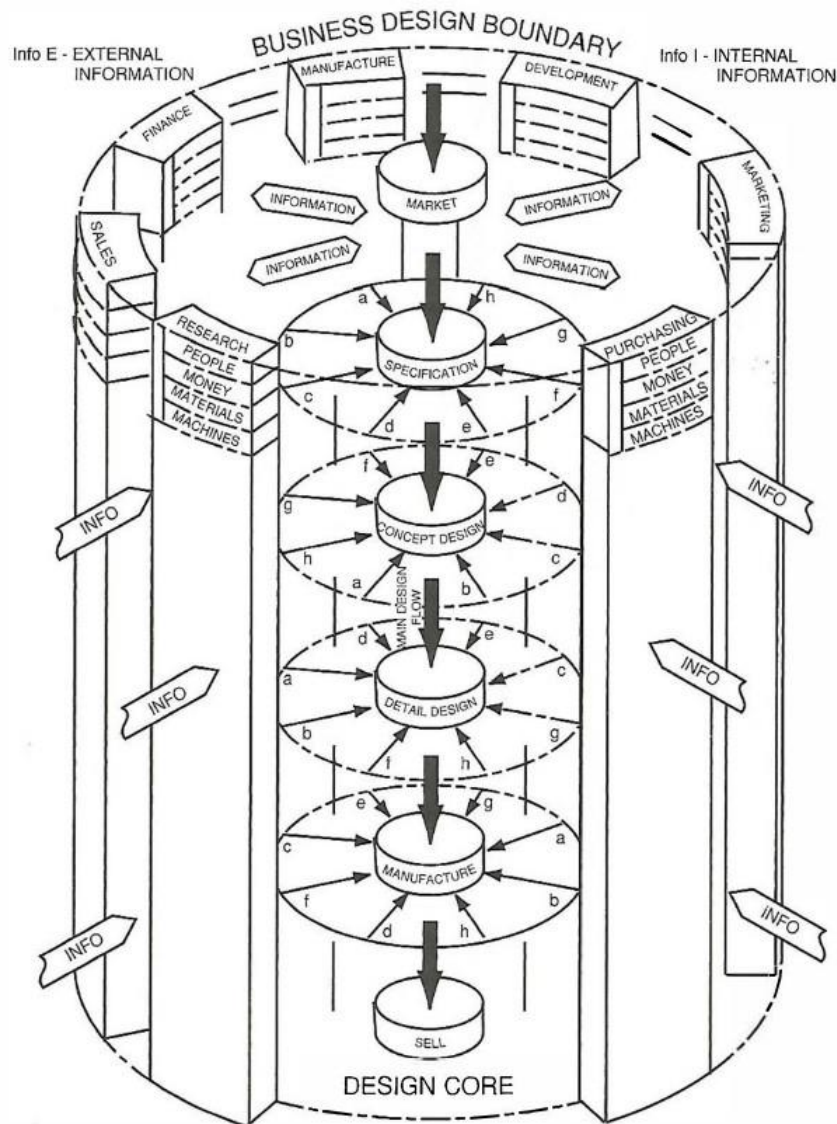


Figure 2.5. Business design activity model (Pugh, 1996)

A more recent generic product development process is structured by Ulrich & Eppinger (2012). The process model consists of six phases, which are planning, concept development, system-level design, detail design, testing and refinement, and production ramp-up. It also begins with similar phases as previously mentioned models. In the beginning, the market opportunity is detected and the product concept is prepared according to data gathered from the market. After that, the extended product family is developed and product design is detailed. Later, the designed product

is tested in the field and necessary product revisions are made. In the last phase, an evaluation is made from the feedbacks of early production and after the necessary revisions are made; the facility begins full production. Ulrich & Eppinger (2012) also present typical tasks of key functions that they should perform in each stage (Figure 2.6). Moreover, they offer process variations according to different kinds of environments with examples (Figure 2.7). They categorize furniture into market-pull products and state that the generic NPD model is applicable to furniture without any necessity to change.

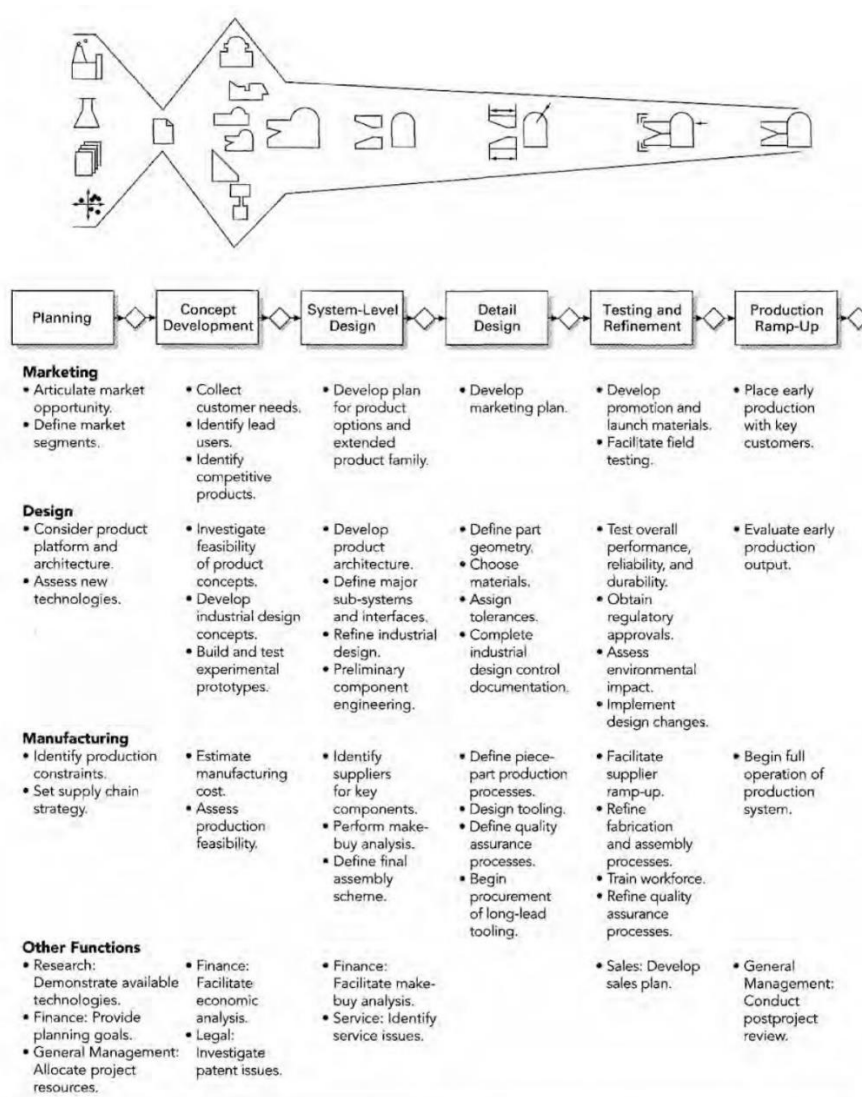


Figure 2.6. Generic product development process (Ulrich & Eppinger, 2012)

| Process Type | Description | Distinct Features | Examples |
|---------------------------------------|--|---|--|
| Generic (Market-Pull) Products | The team begins with a market opportunity and selects appropriate technologies to meet customer needs. | Process generally includes distinct planning, concept development, system-level design, detail design, testing and refinement, and production ramp-up phases. | Sporting goods, furniture, tools. |
| Technology-Push Products | The team begins with a new technology, then finds an appropriate market. | Planning phase involves matching technology and market. Concept development assumes a given technology. | Gore-Tex rainwear, Tyvek envelopes. |
| Platform Products | The team assumes that the new product will be built around an established technological subsystem. | Concept development assumes a proven technology platform. | Consumer electronics, computers, printers. |
| Process-Intensive Products | Characteristics of the product are highly constrained by the production process. | Either an existing production process must be specified from the start, or both product and process must be developed together from the start. | Snack foods, breakfast cereals, chemicals, semiconductors. |
| Customized Products | New products are slight variations of existing configurations. | Similarity of projects allows for a streamlined and highly structured development process. | Motors, switches, batteries, containers. |
| High-Risk Products | Technical or market uncertainties create high risks of failure. | Risks are identified early and tracked throughout the process. Analysis and testing activities take place as early as possible. | Pharmaceuticals, space systems. |
| Quick-Build Products | Rapid modeling and prototyping enables many design-build-test cycles. | Detail design and testing phases are repeated a number of times until the product is completed or time/budget runs out. | Software, cellular phones. |
| Complex Systems | System must be decomposed into several subsystems and many components. | Subsystems and components are developed by many teams working in parallel, followed by system integration and validation. | Airplanes, jet engines, automobiles. |

Figure 2.7. Variant of generic product development process (Ulrich & Eppinger, 2012)

Cooper's (2011) Stage-Gate model (Figure 2.8) is updated after the first edition published in 1986 in line with the feedback from the organizations that implemented the process. This model has gates where gatekeepers should make go or kill decisions. Gatekeepers are typically senior managers who have the power to provide resources for what the project needs for the next phase. Gates serve as quality control checkpoints and a project team must present visible variables to each gate. The model has six stages and it begins with the “discovery” stage where opportunities are realized and ideas are generated. Following with initial investigation at the “scoping” stage,

and later more detailed research is done at “build the business case” stage to prepare the definition, justification, and plan of the project. In the “development” stage new product and production process are developed, and they are tested at the “testing and validation” stage. The last stage is “launch” where the organization begins full production, marketing, and selling.

Cooper (1999) also conduct field research to understand possible reasons behind execution errors of Stage-Gate and listed seven blockers.

- 1- Ignorance of the employees
- 2- Lack of skills
- 3- Faulty or misapplied new product development process
- 4- Too confident organizations
- 5- Lack of discipline
- 6- Big hurry
- 7- Too many projects and not enough resources

Some of the reasons which lead these “blockers” are about the Stage-Gate process itself. Organizations note that the process has too many gates and stages, and it is time-consuming for the preparation of gate meetings. Also, it is inflexible, as it is hard to adapt according to the need, and the process becomes a monitoring system rather it should help to develop successful products in a short time. Cooper (1999) proposes organizations to revise their NPD process by evaluating the past processes they had to overcome these blockers. Similarly, Davidson et al. (1999) mention adjusting the process continually according to the needs of organizations is the key element behind success. From this perspective generic models are only building the basic structure of the process, therefore enterprises should adapt the generic models to their unique environment.

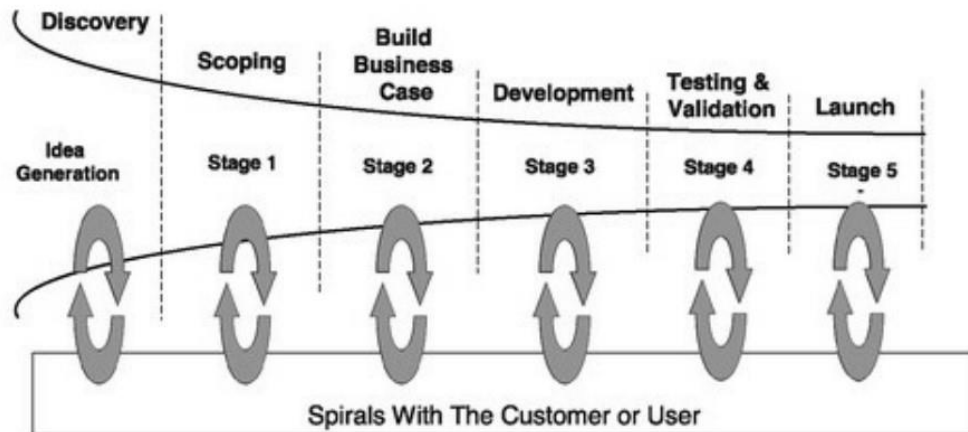


Figure 2.8. Typical idea to launch Stage-Gate system (Cooper, 2011)

In conclusion, presented models may have some distinct characters but in principle, they follow a basic flow. This basic structure is similar to Tidd & Bessant's (2009) innovation funnel (Figure 2.9) which consists of four phases from outlining concept, detailing design, testing the design and finally launching the product. Also, presented models have rules and stages but there is a need for adapting the process to the organizations' unique needs.

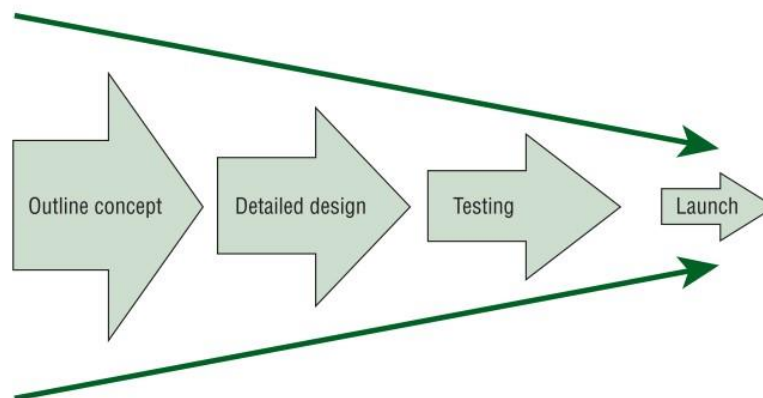


Figure 2.9. Innovation funnel (Tidd & Bessant, 2009)

2.3.2. Organizational functions in NPD process

As previously mentioned, Cooper & Press (1995) present the marketing, design, and technology as key functions of NPD. Similarly, Ulrich & Eppinger (2012) listed

marketing, design, and manufacturing as central performers of the NPD process. Other functions like finance and sales are typically involved in a part-time basis in the NPD process.

Ulrich & Eppinger (2012) explain the responsibilities of these functions. *Marketing* is the function that develops communication channels with customers, and typical tasks of marketing are identifying product opportunities, defining market segments, and identifying customer needs. *Design* function is responsible for the physical form and engineering of the product, and *manufacturing* function is responsible for the production system, and sometimes it covers activities like purchasing, distribution, and installation. Beyond these three key functions, finer divisions are also possible to be observed, like market research, market strategy, stress analysis, industrial design, human factors, engineering, process development, and operation management.

Also, the structure of the organization varies in two distinct types as functional organizations and project organizations in the NPD process. Project organizations compose a team from different functions to pursue NPD activities; on the other hand, in functional organizations each function work separately by focusing on its own task. To compare these two structures, functional organizations typically operate on products that need slight developments from standard designs that need deep knowledge and expertise. However, project organizations have quick decision-making processes and they are better alternatives for developing breakthrough products (Ulrich & Eppinger, 2012). In other words, according to the aims of the organization, type of NPD organization may vary.

Perks et al. (2005) present a study that is based on a review that defines design as an NPD process leader by the 2000s. They conducted their research with 18 manufacturing companies from the United Kingdom, and define three types of roles for design: (1) design as functional specialism, (2) design as part of a multifunctional team and (3) design as NPD process leader. In the first one, design function develops projects according to the design brief prepared by other functions, and mostly

incremental innovations are aimed. In the second one, the design has become a key member of the NPD activity and takes part in most of the operations. In the third one, design now becomes the leading function that drives and supports all the actions. The second and third roles mostly aim at radical developments and use design extensively to do so. This research is conducted across a variety of industries such as food, apparel, office equipment, and electrical equipment, and the presented result approves that different industries and organizations utilize design in different ways.

To sum up, marketing, design, and manufacturing are the key functions of the organization while developing new products, and according to Perks et al. (2005), the design has a leading role besides other functions since the 2000s. Yet, they explain three types of roles for design and if only radical developments are aimed to be achieved design leads the way. Either way, the design is still one of the dominant functions and plays a critical role in NPD.

2.4. NPD in the furniture industry

Industries have their own unique environments, thus NPD activities of each should differ accordingly. Process variations which Ulrich and Eppinger present classify furniture as market pull product which means process starts with market opportunity, and NPD process in the furniture industry fits to their generic model. But still, there may be some unique deviations in the NPD process of the furniture industry.

The furniture industry is a mature low tech industry, and there may be different approaches to the NPD between low and high-tech industries. According to O'Regan & Ghobadian (2005), high-tech industries strategically plan their activities for long terms; on the other hand, low-tech industries rely on short term performance. Therefore, low-tech industries are expected to have faster processes of NPD which are adaptable to unexpected situations. The size of the enterprise may also bring some advantages and disadvantages. Small firms have significant advantages like shorter decision making and the ability to change which creates a more innovation-friendly atmosphere; on the other hand, they have lack resources and typically one manager

makes all the decisions (Carson, 1985; Tidd & Bessant, 2009). Reviewing the NPD process models of the furniture industry in the literature should enlighten the effects of these variables.

There are three main types of design service: (1) in-house design function, (2) solely external expertise and (3) a mixture of two (Bruce & Morris, 1994). Ekberg (2005) carried out research with SMEs in the Swedish furniture industry and developed a model of the outsourced design process (Figure 2.11). In the model, activities of the company and external designers are also listed. As a starting point, the company identifies the problem and defined the project specifications. The hired external designer generates ideas based on information gathered about production, sales, and strategies of the company and the market. The designer presents ideas by sketches, and company evaluates alternatives and chooses from the concepts. Concepts are developed, and the final decision is made at the end of this stage. Later, the testing phase is started by building prototypes, and final adjustments are made by the designer. Finally, production is started and the product is launched to the market. This model explains the actions of each party in the outsourced process; on the other hand, some studies explain in-house processes.

In their research about the Canadian household furniture industry, Leslie & Reimer (2006) explains the NPD process briefly. First, furniture manufacturers make decisions about new products by a committee which includes the owner, designer, senior marketing, finance, and sales representative. Feedbacks from salespeople, retailers, consumers, and designers are taken into account in this committee's meetings. After the need is defined, the design process starts with initial sketching. Sketches are reviewed; and then, more detailed drawings are made which can be used to develop prototypes. The prototype is used to gather feedback from retailers and customers by showcasing the product at trade shows; according to reaction, production is planned. Leslie & Reimer also claim that the frequency of the NPD cycle is adjusted according to trade shows which company attends regularly. There are not any

fundamental changes compared with Ekberg's model but more detailed information is given about the initial committee meeting and frequency of the NPD process.

There is not much research focusing on LEs in the furniture industry, yet Bennington (2004) presents a model of the NPD process. This nine-step model starts with planning and ends with full production (Figure 2.10). The beginning of the process is similar to Leslie & Reimer's model until the preparation of the prototype. After building the prototype, the product planning committee which consists of a variety of management personnel reviews the products and selects products that feel salable and determine a price for them. Next, manufacturers which work with retailers and store chains invite their network to their factory to show the final product and collect their reviews. According to these reviews, final developments are made on the product and it is produced to be exhibited at the furniture market. At this stage, the reaction is observed, and in case of a lack of interest from customers, the product may not be manufactured at all. After a few weeks if there are sufficient orders are made the manufacturer begins full production.

Bennington (2004) also explains the type of personnel involved in the NPD process in the furniture industry. A *furniture designer* is a person who designs actual products from an intangible idea and designer hands in technical drawings to the *sample maker* for him to prepare mock-ups or samples accordingly. *Fabric coordinator* is the person who is responsible for the textile selection in upholstery manufacturers and *merchandise manager* is responsible for the entire product line typically manages the product planning committee. The product planning committee comprises of manager personnel within the company, and in some cases outside members may join the committee. Bennington (2005) listed four types of memberships for this committee. In the first one, the executive panel is composed of full-time personnel. In the second one, salespeople also attend and share their ideas about the new product introductions. In the third type, retailers are also invited to the committee meeting to share their ideas which are believed to be more objective than salespeople. In the fourth type, consumer feedback from the pre-build prototypes are utilized by the committee. To do that

manufacturer build many prototypes and exhibit them to record customer feedback; after, feedback is presented to the committee for the review.

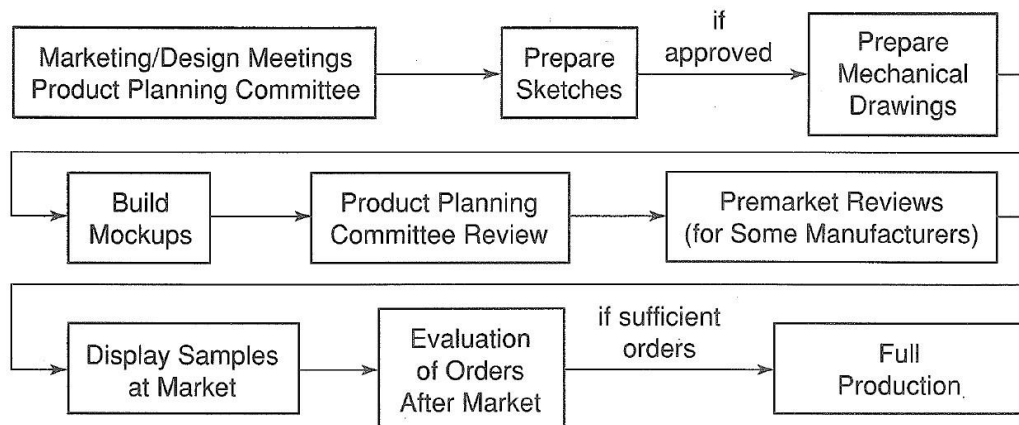


Figure 2.10. Bennington's product development cycle (2004)

To sum up, there are not any fundamental changes between process models presented in the literature. Also, the flow of the stages is similar to Ulrich & Eppinger's generic model, but the process in the furniture industry is explained in more detail in the presented models. In the furniture industry, there is a committee of product development which consists of managers who control the whole process. Also, pre-market exhibitions play an important role before full production. These exhibitions may be in store or like trade show attendance, and according to the orders from customers, manufacturers decide whether full production or not. However, except Bennington's model, these models that explain the process of NPD are still lack of details. On the other hand, Bennington's work focus on American manufacturers; as a result, his findings would be inadequate to understand the current situation in the Turkish furniture industry.

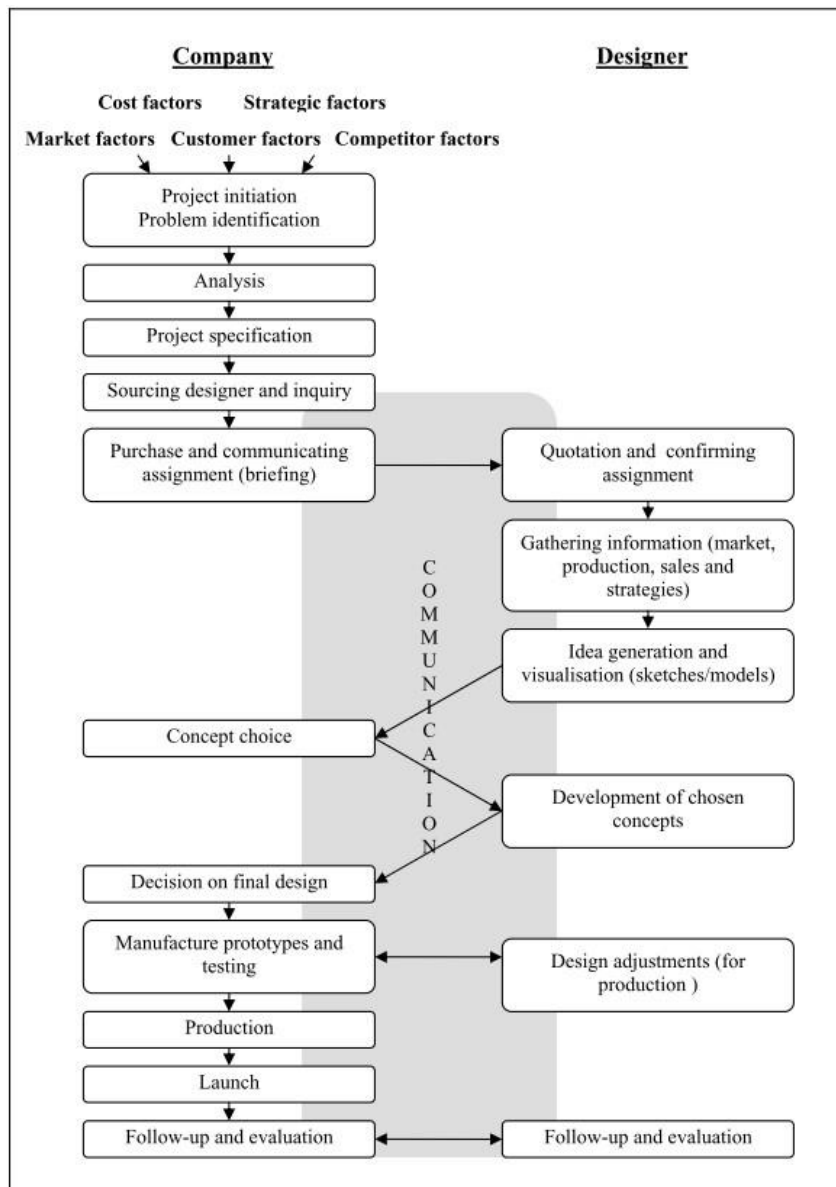


Figure 2.11. Ekberg's suggested model for the design project process (2005)

2.5. Summary

This thesis aims to fill the gap in the literature by exploring the new product development (NPD) process in the Turkish furniture industry. According to the aim of the research variety of sources including journals, conference proceedings, thesis and dissertations are examined and review of the literature is presented in four

sections: furniture industry, Turkish furniture industry, NPD and NPD in the furniture industry.

Furniture is a typical low-tech industry, and investing in design while developing new products is a matured strategy (Er, 1996; Hirsch-Kreinsen et al., 2003; Lindman et al., 2008), because low-tech industries are typically lack of technological opportunities, and they compete on product differentiation and marketing (Walsh et al, 1992). In the furniture industry, properties of enterprises may affect the character of NPD activities. Enterprises are classified as small and medium-sized enterprises (SMEs) and large enterprises (LEs) according to their size. Due to short term planning and the lack of finance (Tidd & Bessant, 2009); SMEs are expected to conduct NPD activities poorly. Moreover, family firms hold some significant performance advantages (Daily & Dollinger, 1992), but they are also typically small in size (Corbetta & Montemerlo, 1999; Daily & Thompson, 1994; Kirchhoff & Kirchhoff, 1987), and they neglect the pool of talent by hiring only family members (Westhead & Howorth, 2006) which may lead poorly performed NPD activities also. Furniture enterprises also vary according to production, such as kitchen furniture and aircraft furniture which they have clear differences in terms of NPD. There are also different channels of distribution: manufacturer's own store, franchised store, in-store galleries, independent furniture stores, web-based sales and contracting (Bennington, 2004). These types of channels are also important for the planning of NPD activities. If the manufacturer market its product in its own store or in a franchised store, this gives more freedom to the manufacturer. In another way, if the manufacturer work with independent furniture stores this restrict manufacturer and force them to obey the store owner's demands. To conclude, the size of the enterprise; ownership, and management; and the type of production and distribution may have a determinant role in how NPD activities are planned and conducted.

The furniture industry is one of the leading manufacturing sectors in Turkey. It is also one of the rare industries with a lower import rate than export, and intense use of local raw materials which makes the furniture industry highly profitable in export (Sakarya

& Doğan, 2016). Turkish industry is mostly comprised of SMEs and relatively new established LEs. These enterprises mostly manufacture on order (%67.8); and only, a small portion of these enterprises implement mass production (%8.2) (Nemli et al., 2007). This production takes place in the clusters like Kayseri, Bursa, Izmir, Ankara, Istanbul, Kocaeli and Antalya, and according to the SWOT analysis (Sakarya & Doğan, 2016) design, research, and development activities play an important role for realizing the potential of the industry.

NPD is a set of activities, which starts with identifying a market opportunity through manufacturing, selling and delivering the product (Ulrich & Eppinger, 2012). Cooper & Press (1995) present 8 factors of success for NPD. NPD Process is one of the factors; and it is assumed that, for a successful process, all factors of success should be considered while planning the process. After reviewing some processes (Cooper, 2011; Mcrory, 1966; Pugh, 1996; Ulrich & Eppinger, 2012); it is observed that all of them follow the basic principle of innovation funnel (Figure 2.9) (Tidd & Bessant, 2009). Also, presented models are generic and need adaptation across industries and different NPD programs; therefore, continuous adaptation is the key factor of success (Davidson et. al, 1999). Another dominant factor of success is the key functions: marketing, design, and manufacturing (Cooper & Press, 1995; Ulrich & Eppinger, 2012). According to the structure of these functions, Ulrich and Eppinger mention two types of organizations. Project organizations compose a team from each function to pursue NPD activities; on the other hand, in functional organizations, each function operates separately and focuses on its own tasks only. Project organizations typically aim radical developments and have faster decision making; on the contrary, functional organizations are more bureaucratic and they are typically used if there is a need for deep expertise. Moreover, Perks et al. (2005) focus on the leadership role of design function, and they explain three types of behavior: design as a functional specialism; as part of a multifunctional team and as an NPD process leader. These types are similar to what Ulrich and Eppinger (2012) identify, but they also added the leader role for the design function.

Design plays an important role and the tradition of investing in design is a matured strategy in the furniture industry. Furniture manufacturers utilize design service in three ways: in-house, outsourced and the mixture of these two. There are models explained in the literature for in-house and outsourced design services (Bennington, 2004; Ekberg, 2005; Leslie & Reimer, 2006). These models also follow Tidd and Bessant's innovation funnel in basic principles. In detail, examined models mention about the key personnel of the NPD, and explain the product planning committee. Except for the Bennington's work, these models are not detailed enough to guide us to explore the current situation in the Turkish furniture industry; however, Bennington's work focuses on the American industry.

To conclude, NPD activities hold great importance for the furniture industry, so investing in design becomes a matured strategy. Across industries, generic models of the NPD process need to be adapted according to the unique dynamics of each one. Unfortunately, existing literature about the process models of NPD cannot provide sufficient and up-to-date data to interpret NPD in the Turkish furniture industry. Considering the gap and the importance of design for the industry, this thesis focuses on the experiences of industrial designers to reveal the NPD process in the Turkish furniture industry.

CHAPTER 3

METHODOLOGY

This thesis is focusing on the NPD process in Turkish furniture industry. Research is designed to acquire data to answer research questions which are mentioned in the first chapter. This chapter aims to explain this research design under four sections that present (1) epistemological stance of the research, (2) applied research methods, (3) research process, and (4) the challenges and limitations of the methods applied.

3.1. Epistemological Stance

In social research, there are different perspectives for acquiring knowledge, developing theories, and bringing explanations; and these different perspectives bring different approaches for data collection and analysis. For that reason, before explaining the research methods, there is a need for explaining the epistemological and theoretical stance and the purpose of the research.

As one of the major epistemological paradigm in the mid-period of the 20th century, positivism tells that reality consist of what researcher senses in the physical world. Therefore, according to positivism, research should be based on scientific observations that would bring facts about the world that leads to generalizable laws (Gray, 2004). On the contrary, interpretivism says that that truth-seeking perspective cannot fit in social sciences like with natural sciences. Natural sciences look for the laws by observing consistencies in the data, however, in social sciences meaning is interpreted in the mind of individuals (Williams & May, 1996). Through the perception of each, the world becomes a unique understanding. This research is not aiming generic explanations; consequently, interpretivist epistemological stance is applied by the researcher to record experiences of participants.

Also, there are two fundamental approaches to develop an understanding of the subject of interest. The deductive approach develops hypothesis before data collection and tests the hypothesis with collected data; on the other hand, the inductive approach collects the data then analyzes it to explore the patterns that bring explanations (Gray, 2004). Considering its research questions, this research adopts the inductive approach, and aims to explore the NPD process in the Turkish furniture industry.

Moreover, research is categorized according to its purpose. These categories are exploration, description, and explanation (Robson & McCartan, 2016), and this research aims to explore meanings from the perspectives of its participants. Therefore, this research does not aim to generate generalizable conclusions; yet instead, it seeks to understand the experiences of the participants, by exploring them through their eyes to discover new meanings about the phenomena than prevailing understandings (Gray, 2004). In line with this explanation, this research relies on qualitative data that gives flexibility to the research; and flexibility points out that research methods may evolve during the research process (Gray, 2004; Robson & McCartan, 2016) which also utilized by the researcher.

In other words, this research is not aimed to present theories, rules, and comparison between different variables, but the aim is to explore the experiences of participant designers in the NPD process and to present them in a logical structure. The goal of this research is not to bring another generic explanation but to explore the unique experiences of participants. For this reason, the findings of this research represent the investigated sample within their context, and it is not concerned about the generalizability of the findings.

3.2. Applied Research Methods

Qualitative research methods are applied according to the epistemological stance of the research. In this research, interview is selected as the data collection method. In the interviews with experienced industrial designers, mind maps are also prepared, and both textual and visual data are analyzed. The main concern of this section is to

answer why these methods are chosen. Accordingly, nature of the interviews, and methods of mind map preparation are going to be described in this section.

3.2.1. Interviews

Patton (2014) states, the researcher is also an influential factor of the research and the researcher should present information about themselves. As a researcher, I am an industrial designer and worked as a furniture designer for a year; therefore, I had expectations and presumptions about what I would hear during the interviews. For this reason, I put much effort not to let my presumptions to dominate the interview process, and designed semi-structured in-depth interview questions in a way that could reveal different perspectives and experiences of the participants.

In-depth interviews are not used for testing the hypothesis or merely to get answers to structured questions, but instead to understand the lived experiences of people (Seidman, 2006). In line with this, the flexibility of semi-structured interviews give freedom to the researcher to change the order of questions, add extra questions, and allow probing to encourage the researcher to find new routes while interviewing (Gray, 2004). Therefore, a flexible structure of interviews supports the epistemological stance of this research by offering benefits while exploring designers' experiences.

In the interview, I prepared a guide (Appendix A) including three groups of questions. In the first group, questions were asked to understand the background of the participant and organization in which the participant worked in. The second group were about the NPD process, and in the third group, extra responsibilities of designers were asked to explore the full range of activities of designers in their organizations. At the end of the first group questions, a map is prepared with participants to visualize the relations of design with other functions. In the second section of the interview, a map is prepared from scratch to illustrate the process of NPD. In the map preparation activity, there is no pre-instructions that are used and every participant prepares his / her unique maps which is presented in detail in the next section. Only some probing

questions are asked with caring not to be so directive. These probing questions arise from my background, and by referencing previous responses of other participants; moreover, asked questions are developed through interviews.

There are also some methods used to increase the efficiency of the process of interviewing. One of them is online interviewing because participants are living in different cities, and generally, their schedule is too busy. Accordingly, they cannot predict their free time in most of the cases, and online interviewing makes it easier to arrange meetings. Generally, interviews are done just after they had free time during work, and in most of the cases in the weekend or after their shifts. Skype, a video call program, is used for online interviewing, and these interviews are recorded with a voice audio recorder. The audio recording has several benefits; first researchers may check any inaccuracy in the transcription; second, they may present data to demonstrate accountability of the research; and finally, researchers may develop their interviewing skills while listening conversation (Seidman, 2006).

In this section, the nature of the interviews and applied methods are explained. But one of the core activities of interviews did not mention in detail which is the process of map preparation. Benefits and the process of preparing maps are going to be presented in the next section.

3.2.2. Map preparation

Preparing maps enables participants to visualize their experiences and offer an alternative way of collecting data and improves the validity of data (Wheeldon & Faubert, 2017). In the process of interviewing, prepared maps illustrate the organizational relations of designers and the process of NPD. In principle, these maps consist of text boxes and arrows, and participants link these boxes with each other to show relations in organization maps or show the order of operation in NPD process maps (Appendix B).

In this research, maps were prepared with digital tools because interviews are conducted online. A software named Xmind is used to create these maps interactively

during the interviews. While interviewing, the screen of the researcher is shared with the participant as a feature of Skype; and maps were prepared by the researcher following the instructions of the participant, since the researcher is used to the program's features, and most of the participants saw the program interface for the first time in the interviews. As a result, preparing maps with the participant instructions saved a lot of time. In these maps, participants established connections between cells with textual descriptions. Xmind software is chosen for its features like moving cells without breaking the links and writing comments about the relation. During the interviews, interviewees could see their explanations visually on their screen, and in every case, they could go back and add on or modify their maps.

As Wheeldon & Faubert (2017) expressed, maps help to collect richer data from the interviewees. Alternatively, I could prepare these maps after collecting and analyzing the data, but preparing these maps during the interview made it possible for participants to develop these maps simultaneously, and it reduced the rate of neglected data by participants. For that reason, it is a very valuable part of the data collection method of this research.

3.3. Research Process

In the previous section my intention was to explain the research methods selected. This section is concerned with describing the research process and answering how these methods are applied. Three main steps in the process are going to be explained. First, selection of participants; second, the process of conducting interviews; third, transcribing the interviews.

3.3.1. Participant selection

In qualitative research, meaning is within personal views than objective reality, and it generally works with small samples of people; therefore, the sample is more purposive than random in qualitative research (Gray, 2004). In line with this, conducting in-depth interviews with a relatively small sample is typical for qualitative researchers (Patton, 2014), as this research also does.

For being working with a small sample, informant-rich participants should be reached to collect fruitful data. Industrial designers are assumed to be key performers in the NPD in the Turkish furniture industry; moreover, it is expected for LEs to use more systematic approaches to the NPD. Therefore, only industrial designers with a minimum of two years of experience in large furniture enterprises are aimed to be selected as participants of this research. Since the number of large furniture enterprises is limited and reaching the target population is though, snowballing served as an effective sampling strategy to find participants (Patton, 2014). I used my professional network to find participants, and asked interviewed participants if they could recommend other participants that meet the sampling criteria of the research. Consequently, I gained access to industrial designers who have work experiences in different areas of furniture industry and various types of organizations. These include kitchen; flat-pack; office; baby, child, and teen; contract; and home furniture manufacturing organizations. This created chances to come up with similar patterns in a variety of cases, and made it possible to present similar perspectives within (Patton, 2014).

The total number of 17 industrial designers have been interviewed which ten of them are female, and seven of them are male. All participants have a bachelor's degree from four different universities in Turkey. Seven of them from Anadolu University, six of them from METU, three from Mimar Sinan University, and one from Gazi University. They have work experience in the furniture industry from two to fifteen years as an in-house designer; however, some of the participants also stated they consult some organizations as an outsourced designer. These participants worked for various fields in the furniture industry; and in the interviews, it is asked them to explain one of their in-house experience in large enterprises. Accordingly, seven of them explained their experiences of home furniture industry; five of them, office; two of them, baby, child, and teen; one kitchen; one contract; and one flat-pack furniture. Only two of the participants have managerial roles in their organizations. One participant is design director and other one is the manager of the R&D department. 13 participants worked

as a furniture designer and two of them was a part of sales function who are responsible for designing according to customer demand. Some of the participants had work experiences in the same organizations; thus, overall NPD processes in 13 different organizations were discussed by the sample. These organizations are located in different regions of Turkey, and they all have manufacturing facilities. Since the perspectives of designers are intended to be explored; this research has no intention to reveal any valuable know-how of organizations. The names of interviewees and organizations kept confidential and this is declared to the participants in the consent form (Appendix C).

3.3.2. Conducting interviews

As previously mentioned snowball strategy is applied for sampling, and participants are reached while the interviewing period continues. First, I reach people I knew and asked them to participate; and later, I reached people whom my participants suggested. This process of interviewing is going to be explained in this section.

First of all, the designed interview procedure is tested by conducting a pilot. The first participant is reached by the reference in a personal network, and information about the research and intention is told with an e-mail. After the participant expressed his intention to involve, the interview date is arranged. I went to the meeting with a personal reference; therefore, the interview is conducted in a friendly atmosphere. Glesne (2011) point out some ethical dilemmas with this intimate atmosphere, and the point is the doubt if participant giving information because you are a friend or a researcher. Therefore, the privacy of the participants needed to be protected, which is declared to the participant in the consent form. After consent is signed, the pilot interview is conducted face-to-face, and maps are prepared by using A3 papers and post-it (Appendix D). It takes 72 minutes and it is audio recorded. After the interview, it is transcribed to evaluate the process and make necessary modifications in the procedure. As a minor modification, two questions are merged into one after the evaluation.

After the procedure is revised, I began to reach other participants from my network. For a difference, other interviews are decided to be conducted online with Skype to save time and money. Different channels are used to reach participants like e-mails, social media, and telephone. While interviews are conducting, I was still trying to reach other participants. The interviewing period took nine months and a total of 31 participants are reached, and 17 of them are interviewed. Although online methods are used to ease the process of interviewing, it was still hard to find participants. Because other than industrial designers there are also architects, interior designers, and other professionals who are employed by organizations to design furniture. Therefore, choosing the snowball strategy was highly beneficial to reach industrial designers. Some candidates were willing to participate, but they could not arrange their schedules. Two other interviews are also conducted face-to-face according to the demands of the participants because we were living in the same city and participants know me personally. Interview questions are also revised during the process and after the third interview merged questions are separated because participants were forgetting elements of the question while answering. Also, questions about personal background, and marketing and sales strategy are added. Maps are all prepared in digital software including face-to-face interviews except the pilot, and interviews took 45 to 90 minutes.

Mentioned in the previous section, maps are prepared by the researcher with the instruction of the participants, and two software are used while preparing these maps. During the interview, the monitor screen is shared with participants as a function of Skype, and the researcher prepare maps according to the instructions of participants by using the Xmind program. Before the interviews, the template of Xmind is prepared which consists of some elements needed in the process (Appendix E). Participants were seeing the maps during the interviews; and when they want to add some extra information to what they said, they kindly asked me to revise. Vice versa, I also add some information while they are speaking, and ask them to approve changes in the map. Map preparation helped participants to see their experiences visually, and this

method decreased the rate of participants to forget some details; therefore, the quality of the data is greatly increased.

I also want to reflect on my possible impact on the interview process. As Patton (2014) says, the interviewee and interviewer are both affecting each other; accordingly, the researcher naturally affects the research process. For being a researcher, I build a friendly relationship with participants because of two main reasons. First of all, I reached my participants through references from people who are friends of them; and this creates an intimate atmosphere during interviews. Second, since I worked as a furniture designer for a year, it was easier for me to get access to other designers I have met within the industry during that year. Accordingly, participants who know my experience may neglect some details by thinking that I already know. I tried to get over this situation with probing and asking questions that I already have some answers; in other words, I tried my preconceptions not to direct participants. For another, participants do not have enough knowledge about some phases of the NPD like production; but still, all the explanations they made are combined to bring refined explanations about each phase.

Moreover, I faced some technical challenges in the process. Even every participant could reach me through Skype, the quality of connection has become a problem in some interviews. The sound was freezing from my side, and participants did not realize the problem while talking, so when the connection is restored I interrupted and ask the participant to repeat. Therefore, this situation affects the flow of the interview badly; even, I ask one of the participants to close to the camera of himself to increase the quality of sound. For another, I naturally lost the face-to-face connection when I shared my screen with participants, and they were seeing only my monitor rather than my face.

3.3.3. Transcribing interviews

After finishing interviewing, the next step is to turn audio recordings into textual data which is needed to do analyze. This section explains the transcribing process which is

done specifically by the researcher to build an overall understanding of the data collected (Bazeley, 2013).

According to Seidman (2006), the thoughts of participants are embodied in words during the interview, and if the researcher paraphrases or makes a summary of the conversation, the consciousness of the participant substitutes with the researcher's. Similarly, selecting parts to be transcribed is also leading some premature judgments before analyzing the data (Seidman, 2006). Therefore, full transcription is done to reflect the participants' thoughts into the text as much as possible (Bazeley, 2013; Seidman, 2006).

It is also preferred to do all transcriptions together because listening and transcribing all of the interviews at the same time would help me to develop some pre-assumptions which I could make use of in the design of the theme template while analyzing. The approach to transcription was converting data into the text as same as talking, by noting down pauses, interruptions, and not correcting incomplete sentences, and adding interviewers' all comments and questions into text (Bazeley, 2013). While transcribing, I utilized Winamp player because of its global hotkeys feature. Audio recordings listened real-time and transcribed and it takes one hour to transcribe 15 minutes of an interview, and a total of 418 pages of transcriptions are prepared.

3.4. Analyzing the Data

Transcribed audio recordings and prepared maps are analyzed using similar methods of coding. For the main principle of the analysis, data is cut into pieces and similar pieces are brought together to interpret. In this section data analysis methods are going to be indicated.

After audio data converted into texts, the template analysis method is used to interpret the data which has its roots in coding (Miles & Huberman, 1994). Coding is a method of analysis which is applied by attaching codes into textual chunks and interpreting these groups of chunks together to observe some patterns. Similarly, in thematic analysis, textual chunks are also labeled but themes reflect richer meanings than codes

(Braun & Clarke, 2006). It is like the difference between coding one chunk with “DSG STR” for design strategy, and giving a more meaningful description to the code like “company works with renowned designers”. Therefore, thematic analysis encourages to organize a vast amount of themes with groups and sub-groups. Template analysis is a style of thematic analysis in which the researcher starts with a template of themes, and develops this template iteratively in the process of coding (King, 2012). Moreover, while labeling chunks with themes, a parallel coding strategy that enables attaching different themes to the same part of the text is applied (King, 2012).

Prepared maps are also analyzed by using similar methods. Previously mentioned, there are two types of maps prepared: organizational maps, and NPD process maps. Organizational maps are only used in the analysis as a source of verification; on the other hand, each NPD process map is analyzed by dividing it into phases like “developing alternatives”, “prototyping” or “research”. This method enables the researcher to observe all similar phases together and to interpret them similar to the coding approach.

To sum up, after the data is converted into texts, it is ready for the analyzing process. But along with textual data, there are also visual data which is collected in the form of mind maps. Therefore, two different kinds of data are analyzed and these two processes are going to be explained in the following sections.

3.4.1. Analyzing the textual data

Before starting to code the textual data, a template of themes is prepared by referencing interview questions and my pre-assumptions about the findings. After the template is ready, all the texts are hand-coded in the first reading (Appendix J), and the template is revised several times. The initial template consists of 214 themes and after the first reading, it raised to 518. These template revisions are made in the checkpoints while coding, for example, after three interviews are read and coded, the template is revised for the first time, and the coding process continued with the new template. After the first reading is finished and coded, all transcriptions are transferred

to the qualitative data analysis program MaxQDA (Appendix F). Also, the revised template is transferred to the software and all transcriptions are read again and coded. Software programs help the researcher to organize themes and to find coded chunks easily (Creswell & Creswell, 2018); therefore, during the second reading, with the ability of software themes are revised simultaneously until finalized (Appendix G). Coding is not only assigning labels into chunks but gathering these chunks together to review and to develop an understanding of the phenomena (Richards, 2015). While exploring patterns in the data, themes are finalized and the outline of the findings chapter took form. While refining themes, I always ask myself “How to explain these findings to the reader?”, and at the end of the process a total number of themes are 532, and 1660 chunks of data are coded with these themes. For the last thing to do, a total number of 62 quotations are translated into English to present them in the findings chapter, because according to the exploratory nature of this research, the experiences of the participants should be reflected without any interpretation.

While exploring the patterns, maps are evaluated along with textual data. Two different data with the same content is used to verify each other and increase the quality of interpretation. Type of data may be different but similar methods are used to analyze visuals.

3.4.2. Analyzing the maps

There are two types of maps created with the participants; as previously mentioned, one of these are the maps which show organizational relations of design function, and the other one is the presentation of the NPD process. The organizational map is only used for verification without processing, but the NPD map is analyzed with a similar method to coding.

After reviewing all the maps and the textual data, 12 preliminary phases of NPD are defined and all the NPD maps are divided into fragments of these phases. To do this fragmentation, first, all the maps are printed in A3 papers; later, by using different color pencils for each phase, every stage is circled in the maps (Appendix H). After

evaluating the textual data, the number of phases dropped down to 11 by merging two phases into one. Later, these fragments are transferred into digital software Illustrator. Fragments of each phase gathered digitally, to explore the similarities and differences of each case (Appendix I). However, this research is not aiming to highlight these similarities and differences but to express the limits of each phase by combining the experiences of industrial designers.

In this section, data analysis process is explained. According to epistemological stance, this research has a purpose to interpret the experiences of designers. This approach is utilized in both research methods and the way of presentation. According to Rossman & Rallis (2017), interpretation is like storytelling in qualitative research, and the meaning I captured from what I heard from the participants, and the maps they prepare turned into stories that are going to be presented in the fourth chapter.

3.5. Summary

Presenting the research methods and the theoretical stance of the research would increase the credibility of the research; therefore, this section explained the theoretical stance of the research; applied research methods; research process; and challenges and limitations of the research.

This research has adopted the inductive approach than deductive, and it aims to collect data without preconceptions and to develop an understanding of the subject by revealing the patterns in the collected data. The inductive approach is well suited because this research is not targeting to present generic explanations. Contrary, it aims to reflect the meaning of phenomena from the perspectives of participants. This approach is best suited to the aims of interpretivism as this research tries to explore the NPD process in the Turkish furniture industry by applying qualitative research methods.

For collecting data, semi-structured interviews are conducted with participants who are reached by applying snowball strategy. In the sample there are participants from various fields of the furniture industry like home and office furniture; moreover,

participants have at least two years of experience in large furniture enterprises. As the sample being small, snowball strategy was highly beneficial to reach key-informant people; moreover, to increase the quality of data, maps are also prepared with participants to visualize their experiences. These maps are explaining the organizational relations of the design function and the process of NPD. Interviews are fully transcribed and both maps and the textual data are used for interpretation.

To explain the research process, first a pilot interview is conducted and interview questions are revised after evaluation. Later, by applying snowball strategy, key-informants are reached within my network, and interviews are conducted with candidates who are willing to participate. The interviewing process takes 9 months and a total of 31 participants are reached and 17 of them are interviewed. Digital tools are applied for both conducting interviews and preparing maps. Skype is used for online interviewing; however, 3 participants are interviewed face-to-face. All the interviews are audio recorded and these recordings are transcribed after the interviewing period finished. Transcribed texts are analyzed by using a template analysis method which is a style of thematic analysis. In the process, the template of themes is revised while coding; and at the end of the process, all the transcriptions, themes, and coded data are transferred to the analyzing software MaxQDA. Similar to coding, NPD maps are also analyzed through a method by dividing maps into segments of phases. On the other hand, organizational maps are only used for verification of textual data. After, all the coded data is interpreted and presented in a logical outline in the next chapter.

Research also has some challenges and limitations that explaining them will increase the credibility of this research. To begin, I want to mention about my background as a researcher, because I am a part of this research who have effects on participants. I worked as a furniture designer in one of the LEs in my career, and I had preliminary knowledge about the researched phenomenon, but I tried to neglect my preconceptions in the research process. I also create a friendly atmosphere in the interviews; moreover, some of the participants were friends of mine. Because of this friendly atmosphere,

participants may give me information as I am their friends rather than being a researcher. Therefore, I had to protect their confidentiality as well as the organizations they mentioned. I did not mention any name or information which may reveal their names, and I inform my participants with the consent form they have signed. In the interviews, designers did not give much information about some of the phases of NPD, because they do not have responsibilities. Some challenges are also faced in the process; for example, because of the bad internet connection in some of the interviews, conversation is interrupted badly.

After mentioning the design and the process of the research, my interpretations are going to be reported in the next chapter. In line with the epistemological stance of the research, there are many quotations are presented to reflect experiences of designers to the readers; therefore, next chapter aims to explain these experiences without bringing any generalizations.

CHAPTER 4

FINDINGS

As explained in the previous chapter, interviews are conducted with industrial designers who have experienced working for LEs in the Turkish furniture industry for at least two years. Interviewed designers worked in various types of organizations and they had various responsibilities in these organizations. The findings of this research aim to explain their experiences which are unique to the designers and the organizations they worked for, and it is aimed to develop an overall understanding of their experiences in this chapter. There are three main sections in this chapter: (1) experiences of industrial designers, (2) organization of design function, and (3) process of NPD in the Turkish furniture industry.

4.1. Experiences of Industrial Designers in the Turkish Furniture Industry

Before interviewing with industrial designers who are currently working or experienced working for large furniture enterprises, as a professional industrial designer, my preconceptions about the phases of the NPD process and functions of the organizations involved are in line with the current literature. However, some unique approaches are explored after interpreting the data collected from industrial designers who are one of the key members of the NPD. Experiences of industrial designers about the NPD process in the Turkish furniture industry are going to be explained in this section under two topics: first, introduction of organizations experienced by the designers; and second, responsibilities of industrial designers in these organizations.

4.1.1. Introduction of organizations

In the interviews, participants were asked to tell their experiences in large furniture enterprises, and this section aims to explain these organizations. A total of 17 designers are interviewed and they talked about 14 different organizations, and

properties of these organizations are going to be explained under four categories: (1) field of operation, (2) type of distribution, (3) production strategies, and (4) design strategies.

First of all, experienced organizations operate in different fields in the furniture industry. One of the designers defined the operation field of his organization as *contract furniture*, since they are developing furniture only for construction projects, and they produce according to contracts they signed. One another was *kitchen furniture*, and they only manufacture kitchen cabinets. Another designer defines his organization's operational field as *flat-pack furniture*, for they are developing knocked down furniture which fits in a box and transferred to the customers for them to assemble easily on their own. Four of the organizations working in the *office furniture* field; one of them is in the *baby, child, and teen furniture* field; and the remaining six of them are producing and selling *home furniture*. Accordingly, these six fields of the furniture industry are included in the sample of this research.

These organizations also use various sales and distribution channels. One designer expressed the experienced organization mainly develop flat pack furniture for *e-commerce*. Another designer mentioned *wholesaling* in his experience in contract furniture organization, as they are selling furniture to the overseas partners for them to trade in local markets. Furthermore, one contract furniture, all four office furniture and one of the home furniture organizations are selling furniture on a *contract* basis according to the interviewed designers. On the other hand, all of them also have their *own stores* or working with *franchised stores* in their sales channels, and only one of them which is in the flat pack furniture field works with *independent furniture stores*.

There are two production strategies observed in the interviews, as *made-to-order* (MTO) and *made-to-stock* (MTS). Organizations that apply MTO strategy mainly manufacture furniture after the sale is done, in which design is customized by the customer order. Accordingly, these types of organizations offer various options for their customers like the color of the paint, fabric, and even customers may choose

between different materials. On the other hand, in MTS production organizations produce furniture before the sale, and according to the estimations on the number of sales; therefore, products cannot be customized after the sale. For example, most of the home furniture organizations develop collections for the dining room and bedroom, and customers cannot even buy one of the units in the collection since they should buy the whole collection, because managing the stock becomes harder with this kind of unit sales. However, they also offer some options to customers like limited color options for wooden boards and fabrics. To sum up, MTO organizations normally produce furniture after the sale, and MTS organizations start production with the launch of the new product.

In the interviews, designers are also requested to define the design strategy of their experienced organizations. Answers of the design strategies are grouped into three as market-related, function-related, and related to product style. In *market-related strategies*, most of the designers expressed the statement of “differentiating with design”, and some of the organizations were outsourcing renowned and foreign designers as a marketing strategy; on the other hand, only one participant designer defined the organization’s strategy as imitating. Other market-related strategies are linked with following user trends, and some designers mentioned cost prior approaches, as they design products with strict cost limitations related to the target customer segmentation. Only one designer expressed that the organization leads the market, yet many of them follow the market because they do not want to take a risk. *Function-related strategies* are ease of use, ergonomic design, safe design, modular, comfortable, and mostly related to the demands of the user. The high-quality term is mostly used in the interviews because organizations are trying to reduce the complaints from the user. *Style related strategies* are like the response to the customer taste of design. One of the participant designers tells that they are willing to sell a new design to the whole of Turkey; therefore, they are trying to design according to the average taste of their target customers. Modern, novel, avant-garde, classic, retro are the terms that designers used to define product styles.

To summarize, in the interviews, in total six fields of operations are mentioned: home; office; kitchen; baby, child, and teen; flat-pack; and contract furniture. Organizations also use various sales and distribution channels in which they sell products in their stores or franchised stores; and also, they use e-commerce, contracting, wholesaling. These organizations have two production strategies: MTO, and MTS. There are slight differences between the two, and the MTO strategy produces the products after the sale and they typically offer more material options to the customers. According to the designers, most of these large organizations are also follow the market and they are not willing to take a risk with more radical designs. Applied design strategies are related to the market, functions of the product, and style of the product according to designers' explanations. The next section is going to reveal the responsibilities of interviewed designers in these organizations.

4.1.2. Responsibilities of designers

In this research 17 designers are interviewed, and they talked about 14 different organizations and explained their unique experiences. They have different job titles, and 13 of them are responsible for solely designing furniture with titles like product expert, design supervisor, and model development expert. One of them is a design director, who is responsible for managing all fields of design in the organization. On the other hand, three participants have different responsibilities with the job titles as a sales expert, project supervisor, and R&D manager. Sales expert and project supervisor work as a part of sales function in the organizations which acquire made-to-order (MTO) type of production strategy, in which designers develop products with standard parts according to customer demands. Additionally, the R&D manager has more technical responsibilities in the organization than designers due to managing both the design and engineering function.

This section explains the duties of the 17 interviewed designers under seven sub-sections: design, research, launch, and production related responsibilities,

responsibilities about documentation, other responsibilities, and designers' response to their extra duties as they define some of their duties out of their responsibilities.

4.1.2.1. Design-related responsibilities

Interviewed designers explained their design-related responsibilities in their organizations. As previously mentioned, designers who are hired as a sales expert, project supervisor, and R&D manager have more technical and sales-oriented roles, yet they use their design skills in their duties. Even this section has more focus on participants who are responsible for designing new products, this section reflects the responsibilities of all participants. These kinds of responsibilities typically start with the design brief and go through a process that ends with prototyping.

In the NPD processes described by the participants, first, designers start to work according to the design brief, which serves as an instruction that leads designers in the process. The brief is typically prepared by the marketing function, but in some circumstances, designers may also start on new design assignments on their foresight.

Later in the process, designers generally work with other functions in the process of NPD, and they are responsible to make revisions according to the demands of other functions. This revision demands may come from a committee consisting of managers in the organization, from the top management or other functions. Designers alone may also make demands to revise the new furniture product. One of the designers briefly explained her duties as sketching, modeling, choosing materials, supplying materials, preparing technical files and rendering digital visuals of the product.

- [1] This included (their responsibilities) that kind of things like after we take our [design] brief, sketching designs, modeling, design works are what I do. Choosing materials, supplying them, and 3d modeling, and preparing technical documents of them (products), preparing renders (digital visuals) and transferring them to the R&D (engineering).

Participants stated that in addition to developing product concepts from scratch, they may also develop additional units to an existing collection, or may revise the current product range.

Four participants also mentioned that they design products for contract projects which can be defined as one-off designs according to customer demands. Moreover, two participants are responsible for the process management of the outsourced designers who are hired by the organizations. Under process management, in-house designers take care of the prototyping process, and make necessary revisions according to the manufacturing capability of the organization; moreover, in some organizations, designers prepare design briefs for the outsourced designers.

Participants also mentioned some other responsibilities than designing furniture. For example, one participant explained that it was his duty to introducing the new product to the sales function of the organization, in the product training meetings in which assembly workers, sales personnel, and store personnel attend. Rather than arranging meetings, some other designers also introduce the products they design to relevant people by filling forms and sending e-mails.

To summarize, these duties are expected to be related only with the design of the new product for mass production; however, some designers mentioned duties like designing for contract projects or managing outsourced designers. As implicated from the interviews design-related duties are one of the core responsibilities of designers.

4.1.2.2. Research-related responsibilities

Designers typically observe the market as part of their research-related responsibilities in organizations and use that data while developing new products. They visit trade exhibitions and stores, examine competing products, and also from time to time they may conduct some specific research tasks such as doing customer visits. Moreover, many interviewed designers reported that following trends in the furniture industry as one of their core responsibilities. One participant stated that this is not a complex type of research, which is mostly conducted via the internet. Participants indicated that they generally do this type of research for themselves and do not share it with anyone else. Only two participants are exception to this as they present and discuss their research outcomes with their committee of NPD.

4.1.2.3. Launch-related responsibilities

Designers also participate in launch activities, because according to interviewees they have greater knowledge about recently designed products than anybody else in the organizations they work. Interviewed designers suggest that they “own” the product, and they want all other processes of NPD to be successful; since, in the end their success as a designer is somehow related to the market success of the product. Therefore, even they are not obligated to get involved in other processes, they are willing to participate to be successful. Main activities related to launch include a photo and video shooting, catalog preparation, and exhibition-related activities.

Photo and video shooting activities are one of the main activities of the launch of the new product, which typically starts after the prototype is finalized. Alternatively, a new product may be manufactured only for photo and video shooting before mass production with various material options. In photo shooting, designers make a list of products and explain the details like frames to be taken, and control the photo shooting process. As one participant explained:

- [2] In normal conditions, you prepare a list [of products for which products to be shot] and give it to everybody. You explain that the three colors of this sofa will come [to the scene], cream, pink and blue. There will be this and that, pillows and numbers of these [pillows] and their visuals are noted. Although we prepare this document and give them; there are so many misunderstandings in the photo scene. They could not find which products belong to which [collection] or they cannot place them properly, and at that point, there will be faulty frames. As a result, we, I mean myself because I have more duties in visual fields in the team, in the organization... I mean I am also active in these fields; therefore, I support them in the studio [to check] is this product ok? They send me photos from the scene every time to ask “Is this ok?” “Are we going to hang this TV unit like this?” and [questions] like that. However, we prepared and give a document to the architects or people who take photos; they always want extra information and our control.

In some experiences designers may also design and follow the production of the photo scene as explained in the below quotation.

- [3] As for accessories, everything is included [to photo scene]. I mean in the venue, I mean they (photo agency) ask for windows, and we make windows. They ask for doors and we make doors. They ask for like room box units from us, and we make (manufacture) them completely. We make modeling and give it to the production after we take them and make coatings like paint or wallpaper and everything. We make everything [to be produced] and we take care [of them] one by one.

Moreover, some designers take care of all arrangements for photo shootings as another designer expressed.

- [4] In photo shooting, making deal with the photographer, arranging his hotel, I mean we ask for purchase function to book his hotel. We take him from his hotel in the morning. In the assembly of what you call, we take active duties in the assembly of the scene, even there were times I mopped the floor. We bring products, carry them, and place them. He took pictures, and when times there are no workers or if our work goes out of the shift, I may personally assembly products and do those things.

Another designer also mentioned taking photos himself, and one another said that as a designer he edits photos digitally. Additionally, one participant explained that they prepare mood boards for guiding all other functions about the styling and target user of the product. On the other hand, as explained previously, some of the designers only advise on the styling of the product like material choices, photo angles, and the accessories to be used.

After photos are taken, product catalogs are prepared. According to the participants, designers are also involved in this process. One designer said that they write texts and stories of the products; moreover, another participant explained that he also helps with graphic arrangements.

- [5] For another, we take care of the [product] catalogs. For example, about making (designing) catalogs we make a small catalog for ourselves and we arrange (arrange products in pages) it. For example, this product takes the first page, that product takes the second. We arrange [all pages] and give it to the people [outsourced graphic agency] to explain it will be like this. We even go to the agency and we sit next to them and make revisions...

Furthermore, designers participate in the exhibition process, with which the NPD process is mostly synchronized. Two of the participants mentioned that they design exhibition stands while some organizations outsource exhibition design and some organizations employ interior designers to take care of the exhibition and store design. Designers may also follow the production of the exhibition stand if it is manufactured in the organizations' production line. Also, some designers attend the exhibitions to supervise the installation of the exhibition stand, as one participant explained below:

- [6] I mean we follow the production of the exhibition stand in our manufacturing. We follow the products to be placed on the stand. After that, with these products, I even went abroad (abroad fair organizations). I mean we unloaded the products from the trailer on our back (carry them), and find the Indian guys and make (hire) them install the stand.

Another designer also stated that he manages all the communication with the organization agencies like renting the place and coordinating services like electricity. On the other hand, two different organizations are mentioned that they exhibit their new products in their stores to observe customer reactions rather than attending exhibitions, and the designer follows this store exhibition process.

Additionally, designers have some other responsibilities under launch activities. One interviewee explained that they prepare CAD modeling and 2d planar drawings of the product which are used in sales activities. These 3d and 2d data are presented to architects to encourage them to use their products in their construction projects. Four other participants indicated that they follow the process of registration of intellectual property (IP). Two of them only involve document preparation, yet the other two participants mentioned that they also follow the IP registration process itself. Furthermore, one participant stated that he once got involved in TV commercial filming by arranging and renting places to be used, organizing film crew; and even, writing scripts of the commercial.

To make an assumption, interviewed designers expressed that they “own” the products they design, and they are willing to involve all the NPD process to help their products

to be successful. Metaphorically, designers see their design as their child growing up in the NPD process, and they have the instinct to grow their products themselves. According to their accounts, organizations also seem to be open to give extra responsibilities to the designers as they are passionate members of the organizations who have abilities to keep things on track. As a result, some designers are willing to accept these responsibilities about photo shooting, catalog preparation, exhibition design and organization, IP registration or even TV commercials.

4.1.2.4. Sales-related responsibilities

Two of the participants stated that they were working in the sales function as project supervisors and project experts. Organizations that employ these participants operate in the field of the kitchen, and office furniture. These organizations employed these participants in the sales function because they need skills of designers, as organizations make them develop customized designs according to customer demands.

As described by the participants, process of sales starts with customer meetings to understand the demands; and then, designers arrange and adapt standard products of the organization according to these demands. Some designers may also create some nonstandard products, one-off designs, according to specific customer needs. While, 13 designers design furniture as the main role in my sampling, and these designers may also participate in the project-based sales, even one of the designers explained that he once delivered the products to the customers in the construction site. One another designer also mentioned that he took care of the foreign customers in their factory visit, just because he knows English. Additionally, two of them told that they personally make sales in the exhibition like any other sales personnel. As shown, designers who are hired to develop customized products seem to have more various types of responsibilities than any other participant; however, industrial designers who are responsible for solely designing new products are also taken care of some sales activities.

4.1.2.5. Production-related responsibilities

Organizations supply some kind of accessories and some ready-to-sell products from outsourced suppliers, and designers generally have responsibilities over controlling these outsourcing manufacturers. First, designers look for suppliers to find products that meet the needs of their new designs and later in the process, they also search for other suppliers for cheaper and higher quality equivalents of that product. Furthermore, one designer explained that they are visiting suppliers for approval of their manufacturing facilities with people from manufacturing and purchase functions. Designers may also follow the manufacturing process of these suppliers as one participant explained in the below quotation.

- [7] ... apart from the design of panel products (knocked down furniture developed from panel boards) fabric choices and all the fabrics of the upholstered products are my responsibility. As a design assignment, it is good and right for me to take these duties. Of course, design function manages this process, but due to the complexity and lack of time, even it is not my official responsibility, I follow the process to getting the right fabrics to the R&D (engineering function) or “If it is gone for the prototype or not?”, “Which company it is ordered?”, “How many meters it is ordered?” and like that. Even I told you there is raw material purchase function (normally they should follow). We should give them all related information and they are responsible to arrange orders by meeting them (suppliers), but we involve to make things faster and correctly. Me for example, call the fabric companies and tell them “We urgently need dust color, or any serial dust color fabrics of 30 meter very urgently. You please send it to our R&D department” and I follow if it is reached or not.

Designers may also take care of some of the production-related assignments in their organizations like planning the laser routes. Moreover, one participant explained that they are responsible for the batch production in case products are needed urgently, and mass manufacturing is not ready to operate. Therefore, designers may involve these manufacturing operations by controlling, because any other function may not know product details as its own designer does know.

4.1.2.6. Documentation

Some participants stated that they also take care of the preparation of various kinds of documents. One participant explained that he prepares all the legal documents needed for the contracting process, the documents that define technical product specifications. Some participants mentioned that they prepare some documents about government incentives like the Turquality program or papers required during the establishment of a design center within the organization they work. Two designers indicated that they wrote their job descriptions since they were the first generation designers of the organization, and their managers did not know how to define their jobs and responsibilities. Another participant explained that designers are responsible for note-taking in the committee meetings about the revision demands and suggestions. One other designer talked about the annual success reports that he prepares for management to evaluate the performance of the design function. These type of responsibilities is discovered from researcher while asking participants about their extra responsibilities; therefore, only six designers reported these documentation-related duties, and this does not mean rest of the participants do not have similar roles.

4.1.2.7. Other activities

Designers also explained some other duties in their organizations. These duties could not categorize as above, and it is observed that designers generally take these responsibilities voluntarily or because of the lack of qualified personnel. One designer, for example, stated that he developed a manufacturing tool for fixing elastic bands used in upholstered products; and designed an elevator used in the factory. Designers may use their 3d modeling abilities in various fields, such as modeling buildings. One participant said that he has modeled the organization's new factory building. The designer who works in the position of R&D manager also mentioned that she designed a coding system to organize stock of the factory. Another designer said that he follows the legal processes of IP violation cases. Designers may also do some duties like designing signals in the factory or designing the interior of meeting rooms or

showrooms. According to interviewed designers they are doing this kind of extra duties with different motivations, and these motivations are going to be explained in the next section.

4.1.2.8. Designers' response to extra responsibilities

All types of duties of designers are explained in the previous sections. According to these explanations, designers accomplish these various tasks, but for some of these tasks, it is difficult to see a link to design practice. In the interviews, designers were asked about these extra duties, and their response to these duties is going to be explained in this section.

Generally, participants' core responsibilities consist of designing products, but they also take care of different duties as explained in the previous sections. Some of these duties are marked as extra by designers in the interviews. First of all, designers claimed that they should not do some of the documentation-related responsibilities like preparing documents for the Turquality program or establishment of the design center. Moreover, designers create new product concepts and follow them until manufacturing, but they are also asked to follow the development process of outsourced designs, which is reported as extra by the designers. Also, designers are comfortable with planning the photo shooting, but managing the whole process is noted as extra. Moreover, some designers were making graphic arrangements while preparing product catalogs, and duties about the exhibition, such as designing stands, following production, and selling products in the exhibitions are also stated as extra responsibilities. Looking for suppliers, searching for the lowest prices and the highest quality products are also not considered to be related to design by some participants. Additionally, contract projects have different dynamics compared to made-to-stock (MTS) production, because they are one-off designs developed over customer demands. For this reason, one designer suggested that designing for contract projects should not normally be assigned to designers, while some organizations employ designers with "project supervisor" job title for this position. Designers get involved

in many different processes; however, they want to limit their duties related to out of design with only planning activities like working on styling and developing instructions, and they do not want to involve in operational duties.

In the interviews, designers are also asked how they feel about these extra duties, and their responses reveal their motivations. The analysis shows that designers voluntarily accept these duties because they find these responsibilities useful for their self-development.

[8] No, no what I learn in the field of design is for my profit. For example, even standing with the photographer taught me something, or I count everything as a plus for me. I learned the job in that way, for example, while [exhibition] stand is installing, I did not feel offended by staying with them, because the stand is in our field. If you say [product] catalog, it is also in our field. I mean whatever is visual is in our field. For example, the elevator they say. Do (design) elevator, the man (manager) said. We sit with the craftsman and we work together, this is also my duty. You say design, for example, if they ask you to design an elevator, I should know the working principle and everything, what pieces are used for what and like that. These are all plus for me, and I never looked like an extra. For example, I can now do (design) stand with my eyes closed. I told you that I design machines if you remember. These are not exaggerations we actually make it works. It means it is about knowledge background.

As previously mentioned, designers want to take place in all activities of NPD to support the journey of their design ideas while reaching target users. Designers imagine something at the beginning of the NPD process, and in the end, they want it to be finished as they imagined. Moreover, they are eager to learn new things for their professional development. This is the main motivation of designers to involve various other duties in their organizations; however, these comments are not representing the whole sampling. Because not every participant is eager to take part in these extra duties, and these outcomes of the analysis are presented to give a basic understanding of extra duties.

4.2. Organization of Design Function

In this section, the relation of the design with other functions of the organization is going to be explained. In the interviews, designers were asked to explain their relationships with their co-workers. The findings of this subject are going to be presented under three sections which answer (1) who manages design function, (2) which functions are managed by design, and (3) which functions are related to design function.

4.2.1. Management of design function

In my research, interviewed designers have work experiences in large-scale organizations. In some of these organizations, the design function is directly managed by the general manager; however, due to organizational complexity in large enterprises, other types of managers are also observed in my research. These types of managers include general manager, assistant general manager, marketing manager, product director, design director and manager of the engineering function.

According to the interview data, in many of the organizations, the *general manager* controls the activities of the design function or directly manages it. Even if the design is managed by the marketing manager; the general manager influences design function as explained by one of the participants below.

[9] **Participant:** Of course there are professional managers. They are not related [with the manager's family]. They do not make them customer [speech defect: meant manager]. Half boss company (degree of the manager dominancy). Employees are interacting with bosses barely.

Interviewer: In fact, you can call it boss company [or] family company.

Participant: Even ... [One of the big electronics manufacturers of Turkey] is a boss company, we should take it that way.

Interviewer: So it is a boss company because the manager interferes with all phases [question toning].

Participant: Yes, he is doing so. I told you, there are times when he watched my screen while I was working.

As another manager type, the *marketing manager* typically takes responsibility for preparing the design briefs and controls the outcomes of the NPD process to lead

designers to create what he/she defined in the design brief. In some of the organizations this responsibility is taken by the *product director*, who have similar responsibilities as the marketing manager in the NPD process. However, product directors only manage the product range and product-related activities, and the marketing manager and the product director are not involved in the design process; rather, this type of management is only for administrative purposes as one of the participants explains below.

[10] It is for administrative purposes; because how can I explain, marketing and design together is not making any sense at all but we had that kind of administrative necessity. But in the end, after the design center is opened, we get free from that kind of management.

One of the participants also mentioned the *design director* who is responsible for all the design activities include graphic design, interior design, and photography. The design director is also managed by the general manager, and some other managers work under the design director to control all of these various fields of design. This kind of management is mostly related to relatively larger organizations that work with many designers from various fields of design.

Moreover, one participant reported that he is managed by the *manager of the engineering function*. Engineering function typically consists of more employees with more technical abilities, and they generally prepare manufacturing drawings of the new products in the NPD process. In that case, designers and engineers are blended in one function which is managed by one manager. Functions like engineering are going to be explained more in detail later in this section.

To summarize, according to my findings, the design function in organizations are managed by different employees in management like the general manager, marketing manager, product director, design director or engineering manager. There is no relationship observed between the type of enterprises and the type of design managers; however, product directors and design directors are more common in relatively larger enterprises in my sampling. Still, larger sample is needed to identify this relation.

4.2.2. Design manages other functions

Design function is not only managed but also manages other functions in the organization. There are some functions managed by design according to interviewed designers. In my findings, these functions can also be both in-house and outsourced.

The design manages other functions in the organization which takes place in the NPD process. One participant said that they have a *design officer* who carries out documentation, cost analysis; and follow processes like quality tests, and intellectual property (IP) under the management of designers. Another participant said that he manages *advertisement* function as they are developing products mostly for e-commerce. Advertisement function designs graphics on packages, instruction manuals or design visuals like web site banners as the participant explained. In one of the cases where design function managed by design director; one participant mentioned *commercial purchase* function which is responsible for buying ready-to-sell products from other manufacturers. In that case, the designer is responsible for choosing the products to be purchased, and that function is managed by the design director. Besides, one of the participants explains the duties of the *technical team* works under the management of designers who work in a different city from the factory. This team basically manages the processes in the factory where the designer should have control over. Moreover, it is observed that the design function also manages the *prototype manufacturing* function in some of the organizations which consist of craftsmen responsible for developing prototypes.

Additionally, the design function also manages outsourced functions and their activities. Generally, if organizations cannot employ professionals to do some specific tasks they typically work with outsourced partners. According to my findings, these fields of work are mostly related to marketing such as advertisement, photography or exhibition organization in the Turkish furniture industry. One of the participants, who is responsible for following and managing activities like website updating, publishing

price lists, printing materials, and exhibition organization, explained how he manages *organization agencies* in the below quotation.

[11] **Participant:** In the organization of the exhibition I took place in all operations. Arrangement of products, setting up [the exhibition stand], logistic services, I took place in all of them.

Interviewer: Is it an outsourced service?

Participant: It is like, for example, if there is a communication operation with architonic and archiproduct [special care is needed for the exhibition], for example in the exhibition organization, I take care of electric or garbage service like purchases like many other things in exhibition organization. I control the communication with organizations responsible for the exhibition like the electrical project of the stand. Could I explain?

That participant designer is working for a relatively smaller, contract-based working organization; where these duties may be related to these features of the organization because these responsibilities are only observed in that participant's experience. As another outsourced agency, *photography* is the most common function that is managed and controlled by design according to my findings. The responsibilities of the designer start with deciding the products to be shot to managing the preparation of the product catalog. One of the participants explains his duties during photo shooting.

[12] ... for example photo shooting, [we are] making a deal with the photographer, [we are] booking his/her hotel, I mean we make the purchasing department to do. We take him [to the factory] from his hotel in the morning. Setting the ... how can I say, we took an active role in setting the scene, even I did mop the floor. We bring the products, carry them and set them in the scene, he [photographer] was taking the pictures, and sometimes when we ran out of people or if we were working overtime, I sometimes personally install tables and do things [like that].

Still some designers participate in the photo shooting activity only to control the photo scene and products. Another participant explains his controlling duties below.

[13] ... for an example, I will be at the studio consistently in specific days of the week, and I will assure if product positioned and shot correctly. I mean [I will check] "Is this the right leg?", "Is it its handle?". If that is the TV unit "What is the height it is going to be installed?". Like "How many pillows are there [on the couch]?". We will be present there [studio] officially.

According to these two quotations, design may have managerial roles in the process of photo shooting by taking care of all the processes, or design may only control the activity by checking if product photos are taken correctly.

To conclude, participants mentioned that designers were also managing some other functions which are in-house and outsourced that related to the NPD process according to my findings. These kinds of relations are depending on the unique properties of each organization and vary accordingly. Design officer, commercial purchase, prototype manufacturing, technical team, and advertisement are the in-house functions; advertisement, organization, and photo shooting agencies are the outsourced services that designers manage according to interviewees. Designers involve the management of these functions because the involvement of design profession in this processes should be important like specifying photo shooting angles, deciding the types of shots, designing an exhibition arrangement or analyzing the design quality of the products to be purchased, as designer is the most qualified employee to take these actions in the organization.

4.2.3. Relationship of design with other functions

In the previous sections questions of “who manages the design function?”, and “which functions are managed by design?” are answered. In this section, the question “which functions are related to design function?” is going to be explained. In my interviews, participants noted various finer divisions of the functions; but after grouping these finer divisions seven types of main functions are revealed. These functions are (1) design, (2) management, (3) marketing, (4) manufacturing, (5) sales, (6) finance, and (7) suppliers.

Design function interacts with some other divisions of design which are related to prototype manufacturing, upholstered design and manufacturing, or about interior design activities. Designers work together with these functions in the NPD process and control their activities or give consultation to them in the NPD process. One of this division is the *design officer* which is explained as an assistant who carries out

quality procedures, follows intellectual property (IP) processes, and helps designers with documentation like taking notes on meetings. Another division in design is *prototype manufacturing* which is separate from the mass manufacturing as a specialized function of making prototypes only. This manufacturing unit works with design function and designers follow and control their activities, and also in some of the organizations this division is managed directly by design. Designers in the home furniture industry also design upholstered furniture; and in general, prototype manufacturing function develops the prototype of the upholstered unit. But, one of the participants mentioned *upholstered design and manufacturing* unit consists of craftsmen as another finer division which is responsible for both designing and developing prototypes of upholstered furniture. Also there is an *interior design* unit that takes care of the exhibition design and store design. In some organizations, this unit is named as an architecture, store design or visual arrangement with having similar responsibilities.

Management of the organization also has an interest in design function's activities, and in some of the organizations, the design is directly managed by the top management. Most of the participants mentioned that managers attend meetings about new products, and many of them say that managers are the key decision-makers. In some relatively larger organizations, manager involvement may be decreased in which marketing function typically takes control of the process; as a result, one of the participants did not mention the manager involvement at all. However, managers make some key decisions like choosing alternatives to be prototyped or manufactured according to my findings.

Marketing is another main function of the NPD process in the organization, and there are many other finer divisions are observed related to marketing. The designer has three types of interactions with these functions. First, these functions consult the designer in their marketing activities because the designer has a broader knowledge of newly developed products. Second, designers get the design brief from these functions, and these functions control the outcomes of the NPD process. Last,

designers get feedback from marketing function as their understanding of the market dynamics is better than designers. Participants also reveal the names of finer divisions of marketing and their duties. *Marketing*, *online marketing*, and *product management* are the functions prepare the design brief. *Product management* takes care of the product range like determining manufacturing quantities, arranging the distribution of the products to the stores, and making decisions about canceling or adding new products. *Online marketing* is also mentioned by one of the participants as they are developing products mostly for e-commerce. Still, in most of the organizations *marketing* take these responsibilities without needing any finer divisions. Furthermore, while introducing the product to the market some other functions take the responsibilities. *Photography agencies* take photos of the new products, and *advertisement agencies* and *corporate communication* have the responsibility to manage all the media that interact with customers; moreover, *organization agencies* take care of the exhibitions. The designer gives consultation to photography, advertisement and organization agencies and corporate communication for them to develop a better understanding of the products which are recently developed. Agencies are the outsourced service that organizations purchase, yet in some of the organizations, there are in-house *photography*, *advertisement*, and *graphics* functions that are present with similar responsibilities to photography and advertisement agencies.

Manufacturing and its finer divisions are other key performers of the NPD process. In most of the cases, designers work with them and control their activities till production. The design also consults manufacturing and vice versa. As one of the finer divisions of manufacturing, *engineering* is responsible for detailing and preparing the new product for manufacturing. It has a variety of names in different organizations like research & development (R&D), product development, project, and product engineering, but they have all similar responsibilities according to the interviewees, and in this thesis, this function is called engineering. *Cost analysis* is responsible for making calculations and presenting the cost of the new product, but only one

participant mentioned this as a specific function. *Production planning* is another function which makes also cost analysis but the main responsibility of this function is to plan the manufacturing of the new product in the factory. Moreover, participants mention the *purchase* function that designers consult about outsourced materials and suppliers. Designers also consult *production* about the product details during the development process. Another function designers consult is *logistic* which designers ask about package and product details to ease transportation. Similarly, *central planning* is responsible for the coordination of activities related to logistic and stock management, besides this function plans all the journey of the product from manufacturing to the sales. *Quality* function conducts product tests for all kinds of durability issues before production. Also, one participant explains that they are working away from the factory, and *technical team* in the factory is responsible for following the design processes in the factory on behalf of the designers. Moreover, two participants experienced selling products MTO production basis organizations as a member of the sales function, and they mentioned *assembly team* and *construction workers* because they were responsible for coordinating the transport and making necessary construction revisions on site. These participants are also designing one-off products, and the *technical control* function is responsible for checking these one-off designs technically and gives manufacturability approval. All in all, even designers are not completely involving production processes, design works with many functions related to manufacturing during the NPD process.

Sales have also a relation with design function with various finer divisions, and there are three types of interactions. First, design gets feedback from sales for designers to understand the needs of the market and customers. Second, the design gives consultation about the ready-to-sell products; and lastly, the design is consulted about product arrangement or one-off product designs for contract-based sales. *Sales*, *export*, *import*, *sales planning*, and *stores* are giving feedback to the design because they are working on the field which has a better understanding of the competitors and customers. *Export* and *import* functions manage international sales, and *stores* are the

places where a company meets with their end-users, so store employees have a chance to connect with customers directly. *Sales planning* determines the manufacturing quantities and distribution of products to the stores which have similar responsibilities with *product management*. *Commercial purchase* is responsible for the outsourcing ready-to-sell products, and *project sales* take care of the corporate customers and sell products to construction projects. Designers also communicate with sales, as *post-sales service* is the function collects customer feedback and designers and other related functions with NPD like marketing gather this information from post-sales service. Typical relation of design with sales generally begins before the NPD process for getting insights, and designers give consultation to the sales in the phase of introducing the new product because the designer has much more knowledge about the new product than sales.

The design has a very limited relationship with *finance* which is like reporting expenditures and receiving money to pursue some activities like buying specimens or organizing a special trip which may bring some extra cost to the NPD activities. At this point, designers are interacting with finance to get financial support. Only two of the respondents mentioned this kind of relation, and this may be related to the uniqueness of their organizations.

Interviewees also mentioned suppliers which present materials and accessories to the designers that are needed in the new products. This relation normally controlled by the *purchase function* but in some cases, designers mention that they directly relate with suppliers in the form of visits from suppliers or vice versa. The designer also searches for new products and may introduce new suppliers to the organization with this type of engagement. But one way or another, suppliers involve in the NPD process with their products which all the furniture industry is in need.

To summarize this section, according to my findings, there are seven main functions are explained which are design, management, marketing, manufacturing, sales, finance, and suppliers; moreover, there also finer divisions of each function are

observed (Table 4.1). Finer divisions of *design* have responsibilities like a store or exhibition design and these divisions work together with design in the NPD process. *Management* control and make decisions about the product in the NPD process, and in some cases, *marketing* may take over the management of NPD and manage decision making meetings. There are also some other divisions of *marketing* working in the introduction of new products like corporate communication, photography, and graphics. Marketing also hires outsourced agencies to do these introduction activities and designers are generally involved in by controlling or consulting these agencies in the process. Moreover, designers get a consultation from *manufacturing* about product details for production, and in the later phases of NPD manufacturing take over the design, prepare manufacturing drawings and produce new products. As another division of marketing, designers get customer feedback from post-sales services, and use this feedback to generate insights about new product ideas; besides, another source of feedback is the *sales* function for designers. In some cases, designers design one-off products for project sales function and in one of the cases designer helps them to make product arrangements in the construction project. The design has a very limited relationship with *finance* and asks for the money needed in the NPD process. For example, designers may need some products needed to be purchased from suppliers, and the design function needs financial resources to buy some specimens. *Suppliers* have close relations with design and purchase, and suppliers periodically present their newest products which are needed for the development of new products. In short, all the other functions related to design also have responsibilities in the NPD process, and the responsibilities of all functions related to the NPD process is going to be explained in the next sections.

Table 4.1. *List of functions related with design*

| List of Functions | List of Finer Divisions |
|----------------------|--|
| Design | Design officer Prototype manufacturing Upholstered design and manufacturing Interior design |
| Management | General manager Assistant manager Factory manager |
| Marketing | Online marketing Product management Photography (can be outsourced) Advertisement (can be outsourced) Coorporate communication Organization agencies Graphics |
| Manufacturing | Engineering Cost analyse Production planning Purchase Logistic Central planning Quality Technical team Assembly team Contruction workers Technical control |
| Sales | Import Export Sales planning Stores Commercial purchase Project sales Post-sales service |
| Finance | No finer divisions are mentioned |
| Suppliers | No finer divisions are mentioned |

4.3. The NPD Process in the Turkish Furniture Industry

In previous sections, the roles of designers in the organizations and the relationship of the design function with other departments are clarified. In the interview, questions about the NPD process are also asked participants to get answers for the role of design as well as other functions in the process. In response, participants explained the activities of NPD as a key member of the process in their organizations. After

analyzing the data, these activities are grouped into 11 phases, which are explained briefly below.

- 1) **Preparation:** The NPD team evaluates feedbacks and develops strategies for the new products in the following year.
- 2) **Defining the need:** Developed strategies become a definition of the new product in the form of written or verbal instructions for the designers.
- 3) **Research:** Research is conducted by the designer to develop a deeper understanding of the market and the given new product instructions.
- 4) **Developing alternatives:** Alternative furniture designs are generated.
- 5) **Prototyping:** Alternative designs are shortlisted and chosen ones are prototyped.
- 6) **Developing collections:** Designers develop a collection of products which consist of units with different functions.
- 7) **Production preparation:** New products which are decided to be produced are detailed by preparing manufacturing drawings.
- 8) **Production:** New products are manufactured by processing raw materials in the factory or in the outsourced manufacturers.
- 9) **Launch:** New product is introduced to the market from different channels.
- 10) **Sales and installation:** Products are sold to the customers and installed by assembly teams.
- 11) **Feedback:** Feedback is collected about new products from different stakeholders in the organization like store personnel, marketing personnel, sales team, or from customers.

According to my findings, these phases follow each other in cyclic principle, and this changes slightly according to two strategies of production. This slight change occurs after the new product is decided to be produced. MTO production produces the new product according to orders of the customers after the sale; on the other hand, launch and production phases are executed simultaneously in MTS production. Moreover, if there is a need for collection developing, designers may develop the whole collection

before prototyping, or they can develop the whole collection after evaluating the prototype of one unit of the collection. The order of execution of NPD phases in MTO and MTS is presented in figures 4.1 and 4.2.

In MTS production, the designed product is produced at the same time it is launched, and organizations plan the production according to the estimation of the number of sales, and customers do not have many choices in material selection. Therefore, a new product is more carefully designed according to customer taste. 12 designers in the research sample experienced designing a product for this type of production.

According to the MTO production strategy, a designed product is launched, then after the sale, it is produced according to order. Designers are more flexible in designing products for MTO production, and organizations typically offer various material options to the customers, and sometimes special demands on design are also taken into account like size and accessory changes. Therefore, in this production, there are also special sales teams needed with design knowledge, because they customize, arrange and redesign catalog products according to customer demands. In the research sample, three participants were furniture designers, and two participants have been a member of the sales team in the MTO organizations.

According to my findings, there are three types of experiences observed in the interviews with participant designers (Figure 4.3). First type designs products in MTS production, second type designs product in MTO production and the third type sells and customizes products in MTO production. These two production strategy have similar phases of NPD, and these phases are going to be explained in the next section.

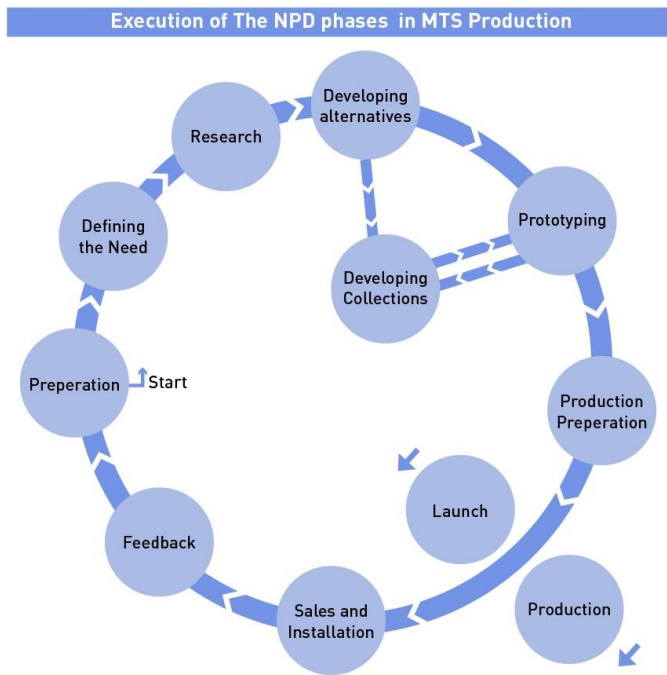


Figure 4.1. Execution of NPD phases in MTS production

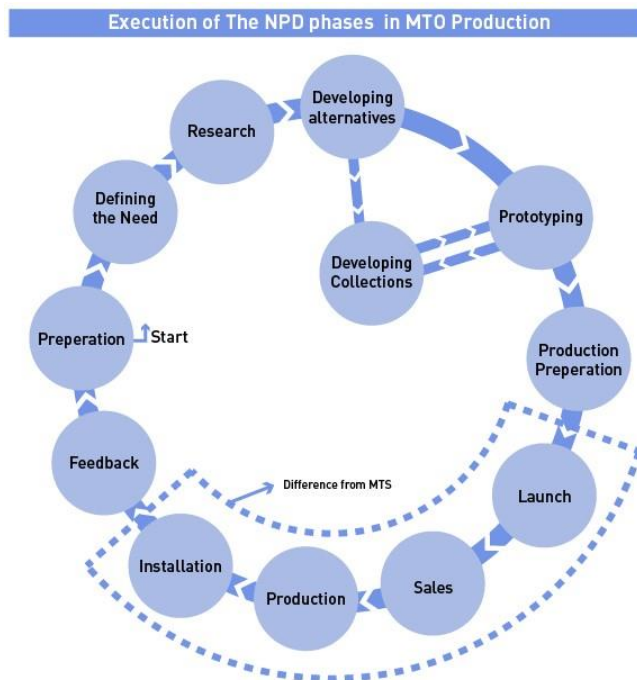


Figure 4.2. Execution of NPD phases in MTO production

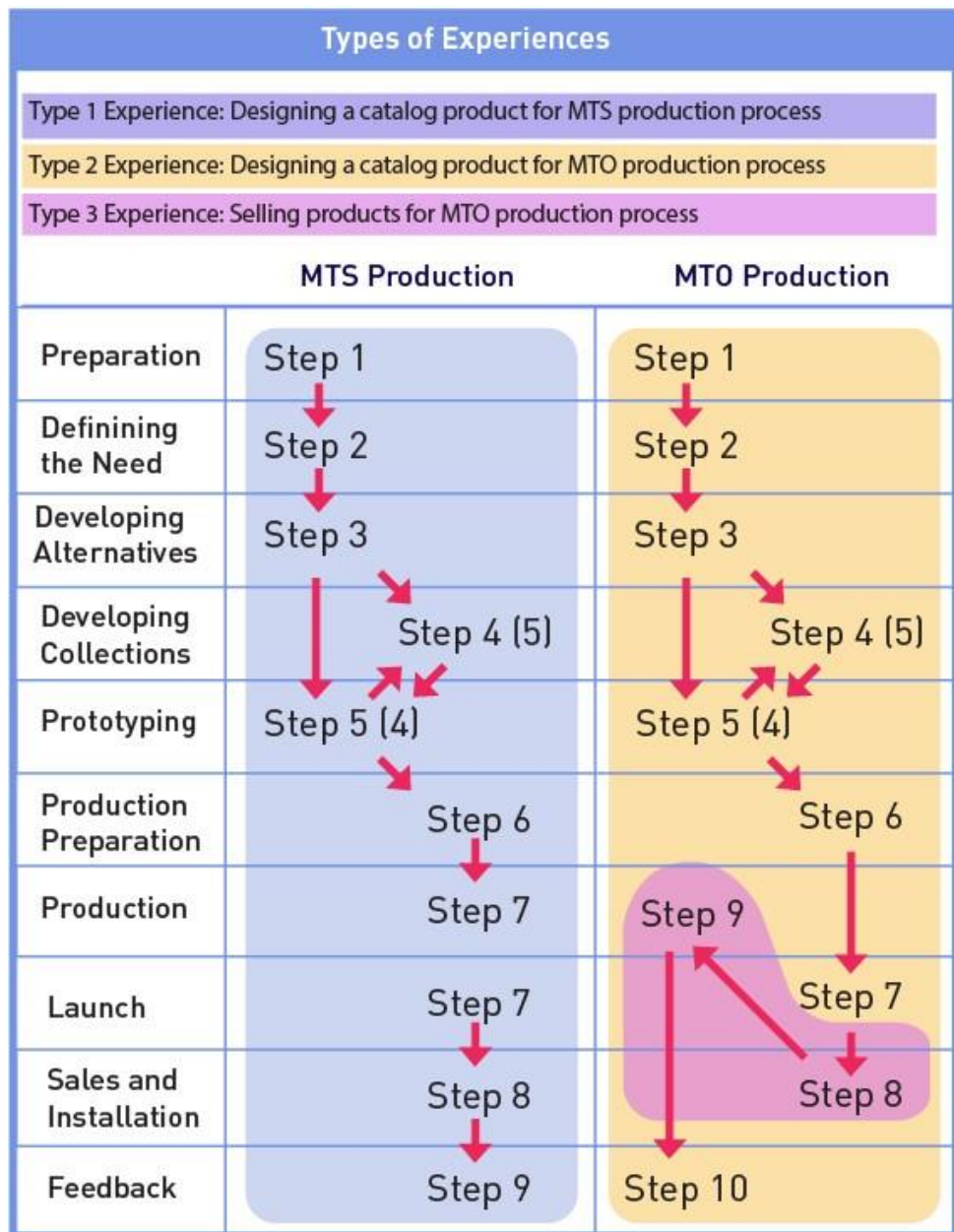


Figure 4.3. Types of experiences in the research sample

4.3.1. Phases of the process

Phases of the NPD process and the order of execution of these phases is explained in MTO and MTS production previously. Now, these 11 phases of the NPD process are described in detail by interpreting the data that reflects the perspectives of designers.

4.3.1.1. Preparation

Activities related to the preparation phase are the preliminary actions of the defining the need phase, and they are mostly composed of feedback evaluation and market research. In my findings, the preparation phase falls into four categories of activities: (1) feedback evaluation, (2) supplier and material research, (3) market research, and (4) process development (Figure 4.4).



Figure 4.4. Phase outline: Preparation

Feedback evaluation can be defined as the consideration of the responses given from customers to the recently developed products and current product range. In the data, the main evaluation subject appears as the exhibitions and trade fairs, where the first reaction to the new products are observed by the manufacturing company. These reactions are the comments of customers and store owners or the volume of sales which are made in the exhibition period. Evaluation of the exhibition is based on this feedback; but also, sales figures for the recent product range are also evaluated in this phase to decide which products to be canceled. Furniture companies evaluate this kind of feedback to review their product range and to generate strategies for their new products.

My findings show that organizations also conduct supplier and material research to understand the new trends in industries where they supply their raw materials like laminated MDF, hinge, runners and handles. Typically, designers meet with suppliers to evaluate their newest products. At this point, designers may search for and invite suppliers according to their needs, or suppliers may do visits regularly in the process.

In some cases, purchasing function has more control over suppliers and they direct approved suppliers to the designers according to designers' inquiries. One of the participants also mentioned a meeting event hosted by the supplier in a hotel. In these meetings, suppliers introduce their newest products and design trends to the company representatives, who, in my interview, is the designer. He also mentioned trends in raw material industries are important because these trends affect directly the trends in the furniture industry.

Market research is one of the core activities of this phase, and it consists of trend analysis, competitor and user research. As an example of user research, one of the participants mentioned the home visits to their customers' homes.

[14] For example, there was once a trip organized, which was weird [not usual] for me. They were doing store visits, but they were also organizing something for the R&D department to make. I went last time. They want all of us to go and these visits were before Ramadan. There was one colleague from sales and logistics, one from marketing and I were visiting customers' homes.

Under the market research, several activities are also mentioned like competitors' store visits, local and abroad exhibition visits, and internet searches conducted by marketing people, product managers, and designers. The data collected with these research methods are analyzed, and insights are generated about color trends, new product styles, and functions for the next phase of the NPD process: defining the need. Not all participants explain these methods in detail, but one of them lists these research methods and indicates that their findings are not presented in a systematic way.

[15] Of course, for the next year, we did make research to see the trends of color and styles; and also, we foresee newly married couples are going this direction and this types of furniture have more chance of selling. But we did not make so complex presentations over this research rather we keep them for ourselves. We presented the outcomes of this research, I mean our new products, and when they ask "Why you did that?", our explanation based on this research.

Another participant focused on the cyclic structure of the process and explained that in the company she works market research is carried out after the exhibition and before the planning meetings. She stated,

[16] About the previous activities we did this type of preparation, I mean while waiting for the design brief. If we think about this process as a cycle, we have three months between the exhibition and the planning meeting. What do we do at this time? We attend foreign exhibitions, do preparation for the new season, and we look for the trends. We researched what we can do this year. I mean, which colours are going to be trendy and which materials are going to be presented.

Also, another participant identified internet-based research as more widespread than before as presented in the following quote:

[17] Of course we did visit stores and exhibitions, especially foreign exhibitions. China, Italy, Germany. We used to gather new trends from these sources before the internet was not that much widespread. Later on, after these products started to appear on the internet, or I call it like e-commerce or companies started to become more visible in the internet, and broad usage of internet let this kind of exhibitions unpopular for us. Because we used to make such an effort collecting the [other companies' product] catalogues. Catalogues were so important for us, and by keeping them we tried to follow the trend. But after the internet or like pinterest style platforms came out, this kind of activities became meaningless.

Accordingly, internet platforms may be seen more popular; however, exhibitions are the places where many competitors gather in one commonplace, and these occasions are also utilized as they consist of fruitful sources of insights. As a result, these market research activities and generated insights about the trends play a critical role in defining the need.

Moreover, some of the participants also mentioned the process development activities carried out in the previous year as part of preparation. For example, a participant explained that they have a scheduling system that they use in their process to assign a pre-defined time to every action in the process. In that case, the participant mentioned that before starting the next year, they revise these timings according to the challenges they encountered the previous year. Also, another participant tells that they develop

some size standards for products to reduce the waste for panel furniture out of laminated chipboards. More radically, three participants indicated that they developed the NPD process themselves when they first started their job since these three participants were the first generation designers in their firms.

To sum up, activities in this phase are in between the end of the last NPD process and the beginning of the next. Designers, marketing people, and product managers try to generate some insights which may lead the company to develop commercially successful products. These activities consist of the feedback evaluations of the products, supplier and material research, market research and process development activities, which findings of these activities provide a basis for the discussion in the next phase, defining the need.

4.3.1.2. Defining the need

This phase stands between preparation and developing alternatives; in which, companies make decisions about the need of the new product, and coordinate all functions required to develop the new product. The need for a new product can be defined for various reasons. For example, when a competitor introduces new products to the market, the company evaluates this new product and may decide to compete with the competitor company by developing a counter product. The need for a new product can also appear due to sales feedback or lack of offerings in the current product range. There are two main steps observed in this phase; first, new product demand is shaped; second, the brief is delivered to the designer (Figure 4.5). Accordingly, this section is going to present three main subjects which are (1) how and which functions produce a demand, (2) character of the product planning meetings, and (3) the content of the design brief which is developed at the end of this phase.

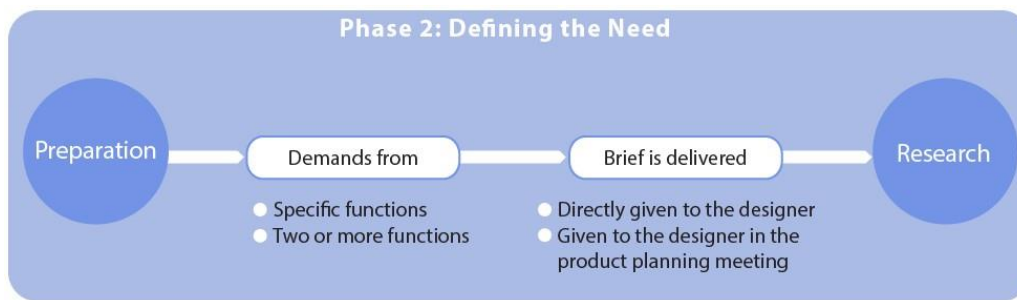


Figure 4.5. Phase outline: Defining the need

According to the interview data, some functions seem to play a more critical role in the defining the need phase, but many other functions also contribute to this phase. In this process, specific functions may explain their demands regarding new products directly to the designer, or functions collaboratively decide on the design brief. Key functions in this process include marketing, sales, product management, management, and design. In addition, there are other contributing functions, which are corporate customers, export, quality, engineering, visual arrangement, and stores. Generally, managers of these functions take part in the process. Apart from these, if a specific function demands a new product, it typically writes the design brief and delivers it to the design team without any meetings. One of the participants illustrated this situation as follows:

[18] The main duty of product management, their only duty is making competitiveness analysis, looking for opportunities in the market, evaluating our product range. They look to the sales figures of these products and they analyse what is sold or not and what do we need, what can we do better or cannot. They analyse it every year, I mean the beginning of the year in March or April they give a design brief about it.

If a product planning meeting is held, attended functions discuss and make an agreement on the definition of the need.

[19] ... our design director attends this meeting and proposes some suggestions. Similarly marketing, from the stores' perspective, they mention stores have these kinds of needs, or customers ask these kinds of products which we should do. They also have their suggestions. All of these suggestions are mentioned in the meeting and the management comes up with a decision.

In product planning meetings, products to be developed for the following year are defined, and the program is scheduled. There are some other decisions made in these meetings, as well. First of all, other product range decisions, such as product revisions and canceling current products, are discussed. Second, the schedule is planned by deciding which products to be produced first; by specifying the next meeting date where the design alternatives will be evaluated; and by distributing the design briefs to the designers. The planning committee may also appoint outsourced designers to the design brief, or come with a decision to buy some ready-to-sell products from outsourced manufacturers, but the most important outcome of this phase is the design brief.

The design brief includes various specifications of the new product, and their descriptions may vary according to the desired product. In design brief, the product may be defined in much detail, or it may only include some sample photos of the similar products in the market. The simplest brief which participants mentioned are the imitation cases as two quotes below exemplify.

[20] ... if they like something in one of the magazines or the one of the customers' thing (in some circumstances customer may bring some photos), they directly bring it to ask "Are we doing (producing) this [product]?". I heard that it was different before. They were buying this piece for their home (buying the product they want to imitate, saying that they buy it for their home), I really saw this, I mean they take the torn magazine paper to the manufacturing. There are no dimensions, only they say 70x100 (mention rough dimensions). After then the product is in the hands of the craftsman.

[21] ... We make (design) similar products which sell in the market, sometimes marketing wants us to make (design) the same product. These were locomotive products but when they need products as a label for company, I mean to differentiate the company, this usually comes from us (designers). In other words, we were controlling the design side.

Design briefs may consist of reference photos of product which is going to be imitated; however, design briefs generally include has some other details like segmentation, style, and functions. These segmentations include target user and price range of the products; but also, briefs may specify target sales channels such as online, store or

export to give a rough idea to the designer. The design brief also explains product style and functions, by describing a color, material, and style. Most of the time, competitors' similar products are attached to the design brief; and if the designer is going to develop a collection, the design brief also defines the units of the product family. Below one of the participants explains the content of the design brief.

[22] ... And one of these [design briefs] explains some details, but it can be otherwise (without such explanations). They look at the market and say, "Competitors sell great numbers of white products, white chipboard panel products, and economic products"; and add, "We are missing this type of product", and they told me to do segment one, I mean economic furniture from chipboard material, white-colored design product and they gave me the cost limits.

These planning meetings are the starter of the design process of the new product. Typically, their timing synchronizes with the exhibitions where companies present their newest products to the market for the first time.

As a conclusion, according to the interview data, it can be claimed that the defining the need appears to be the most critical phase of the process. This is because all the organizational functions involved in the NPD process put effort to develop products according to this definition, and faulty decision making in this phase is hard to be compensated later in the process. The data generated in the preparation phase is also utilized to develop a new product strategy. Participants mentioned in some cases that functions make new product demands alone, and directly declare these demands to the designer; on the other hand, in some other cases, different functions come together with a planning meeting to discuss and decide on the design brief. The major outcome of this phase is the design brief, but also it can be assumed that planning meetings play a key role in aligning all functions which take part in the NPD process in the same direction.

4.3.1.3. Research

Designers research to understand the context of the brief by analyzing the market and competing products. Similar research is done in the preparation phase; therefore, some

participants may skip this phase. But some of the participants make more focused research in this phase in which users, trends, materials, product standards are the subjects of the research, and designers use a variety of methods in this phase (Figure 4.6).

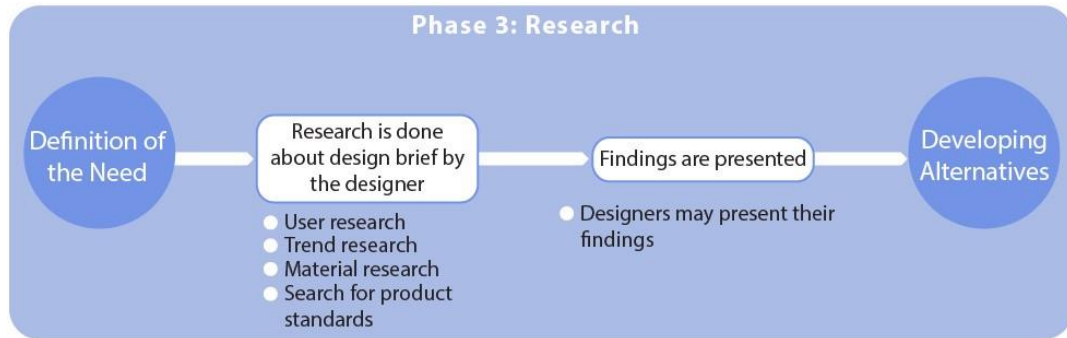


Figure 4.6. Phase outline: Research

Only three participants mentioned user research to define the target customers and try to understand the need of users. Designers briefly mentioned and did not explain in detail about their methods while making user research; however, two of them mentioned about house visits to customers.

In this phase, most of the designers mentioned trend research where they search for insights about trends by looking at different sources. Designers follow competitors from the internet, by visiting stores, and by visiting the exhibitions, and they collect images from the internet and take photos in this visit. Two of the participants talked about a visual library where they archive all these images.

[23] Or we look for fashion pages. We utilize fashion also. I look for fashion magazines I meant, after that, we make a collection of visuals which we see and impress us, that we could use. We interpret them with our management over those visuals, or I may call them ideas.

[24] We had a pool of visuals. In this pool, we fill it first with products which are liked in the exhibition, new products coming from suppliers, new veneers...

They may look for fashion magazines according to the quotation above, and they also look for movies and may visit special events related to their field of production, as one

of the participants works in the field of baby, child, and teen furniture mentioned about Disneyland trips.

Designers also search for materials and standards, and they use the most appropriate materials for their designs and they discover legal instructions of products. To discover materials, designers search for suppliers and meet with them. They may also conduct price based research to match their designs with the cost limitations stated in the design brief. One participant mentioned the search for product standards for the design of a special unit which is meant to be used in the hospital. That designer searched for books and met with hospital staff to discover their needs and standards. To sum up, designers should manage material selections and they should align with legal standards to be successful; therefore, they search for different sources and meet with suppliers for using their newest products.

As shown, designers make these research to understand the requirement of the design brief and to successfully develop the needed product. In two cases, designers organize meetings and present their findings in the research phase, but most of the cases designers do this inquiry for themselves, and it is not an official duty. However, it is assumed that this phase plays a supportive role in their concept development because they structure their ideas over these findings.

4.3.1.4. Developing alternatives

After designers receive the design brief, they make research about the defined product need; later, designers start to develop alternatives accordingly. Generally, they develop more concepts than the needed quantity in this phase, and at the end of the process developed concepts are shortlisted for the next phase prototyping. This phase is going to be presented in four steps (Figure 4.7). First, in concept development step designers develop alternatives that are not in physical form but ideas. After, designers form these ideas into physical shape in the second step. Later, 3d data is prepared and 3d visuals are rendered with the digital tools. In the last step, the decision is made about the developed alternatives and they are shortlisted.

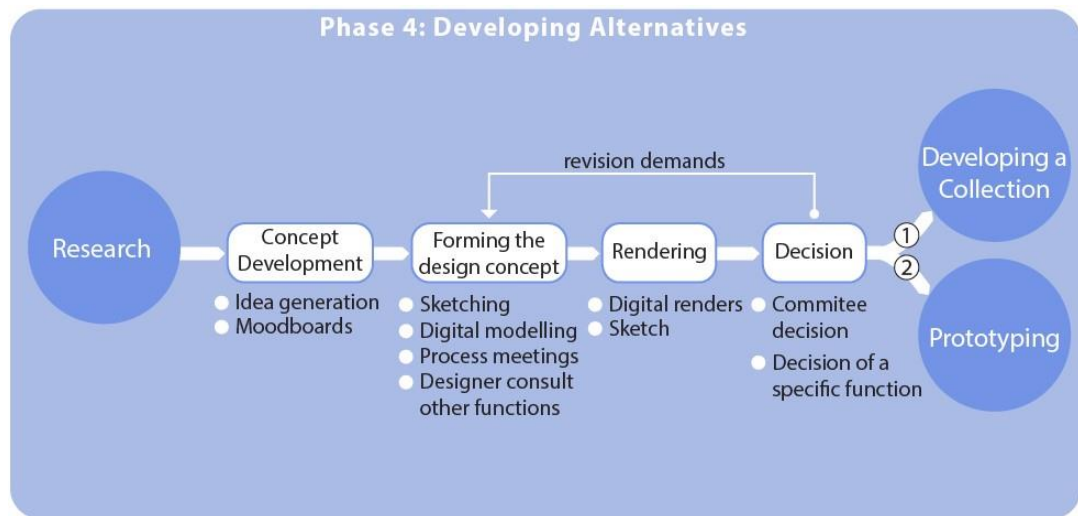


Figure 4.7. Phase outline: Developing alternatives

Concept development is the first step of this phase, in which designers generate concept ideas in forms of mood boards or verbal expressions. Only three participants talked about this step, and they mentioned about discussing ideas before shaping the ideas. Ideas are shared with the team leaders or managers, and they are developed according to suggestions.

Designers give three-dimensional forms to their ideas in the second step by using sketching and digital modeling tools. Designers typically start with sketching, but one designer expressed using digital modeling in the early stages of the development. Some of the designers do sketching for themselves and they do not use them in their presentations; while other designers discuss with other members and managers over sketches.

[25] Actually every designer sketch for themselves, for example, I did ten [product] sketch, I model five of them, and I talk with the product director or my director over these models. Most of the times I do not talk over sketches.

[26] We shared those ideas and we plan a route. In that route, we draw some styles and products; then we meet again to talk about these sketches again with our manager or with other designers

In the interviews, it is also discovered that if designers are expected to develop a collection of products, they generally prefer to start with one unit of the collection. As mentioned, this one unit is the console of the dining room in home furniture; working desk, wardrobe, and bedstead in baby, child, and teen furniture.

[27] Now, the fundamental [piece of] that panel [products] range is the console. We start with console first. If you ask why it is so specific piece. I mean with its dimensions and elements it consists, it is the spine of the dining room; it gives ideas about the rest of the collection. Why? It has four doors. You may try a maximum amount of material experiments with it.

Designers also work by considering the cost of the design, by optimizing the design for cutting operations to reduce waste, using standard parts, and searching for suppliers to find appropriate materials as one of the participants explained below.

[28] Because a designer has no exception to tell I pick this [material] there; like I said cost is more important than any other considerations. For that reason, to pick leg with right cost, the right cost chipboard, right cost fabric; we may talk with companies (suppliers) directly.

While making decisions about the form of the product, designers may need more technical consultation; therefore, more than discussing with managers and other team members, designers also consult other functions like manufacturing, quality for the details of the product.

In the next step of developing alternatives, designers render the 3d data with digital tools to present other functions. One participant explains that digital renderings raise the quality of discussion as the audience understands the product better.

[29] Of course we make revises, and actually, we model and render previously discussed things with rhino sketching (rough 3d models). Because like I said we must make presentations with renders to the other people (other functions) because they do not understand. On that point, we try to make one or two renders as clear as possible from front and side [of the product].

Only two participants said that they present their sketches to other managers, in which one of them is developing upholstered furniture, and the other one is developing baby, child, and teen furniture.

[30] In the computer, modeling the soft group (upholstered furniture) is very tough, and it cost a lot of time waste. My sketching gives ideas to us, and we could make [prototype] exactly the same [of the sketch].

In the last step, a meeting is held to decide between alternatives while three designers reported that designers or managers alone may decide on their own. This meeting is made to decide which products to go further to the next phase prototyping; moreover, materials, colors, and product details are also discussed and revision instructions may be given to the designer.

[31] And we prepare presentations to introduce to the committee after rendering and preparing visuals. In a specific space which seen as appropriate (room), we use projection and present our products in the meeting room by saying “According to X coded brief we developed these designs”, and [we] make render presentation. Product management and assistant general managers, general managers, and all of us have a voice in this meeting, and we all talk, discuss and eliminate some [products]. Rest stays and - I meant products we pick – we place them into tables in the meeting according to their segments. If revisions are needed, we all talk over them like this is beautiful but how can we make it more economical to raise our profit.

Later designers revise the design and finalize drawings for the next phase according to decisions made in the meetings. Some interviewees mentioned that the manager is the most dominant decision-maker in the meetings where many other managers are also present. Typically, top management and marketing functions are the core team in these meetings along with design function. Still, some other functions are also mentioned for attendance in these meetings like managers of export, production, sales; and representatives of the product management, engineering, and stores. Designers generate more alternatives than needed in this phase, and also shortlisted furniture designs are also higher in numbers than the needed quantity which are going to be shortlisted in the prototyping phase.

To sum up, this phase has four steps that start with concept creation where designers present their ideas verbally or with mood boards. Later those concept ideas are formed in the hand of designers into physical shapes. In this phase, designers meet with other designers and their managers and present their products in the form of sketches and

basic digital 3d models to discuss and revise the product. Later in the process, they develop higher quality 3d models and prepare photorealistic images with digital tools, and present them in decision meetings. Along with designers, top management, marketing, and some other functions attend this meeting and eliminate alternatives, and suggest some revises before carrying products to the next phase prototyping.

4.3.1.5. Prototyping

Designers have generated lots of product concepts in the previous phase and these concepts are shortlisted, and the next phase prototyping starts. At the end of the prototyping phase, all shortlisted alternatives are examined physically and the ultimate decision is made about manufacturing. This phase consists of five steps: detailing, prototype manufacturing, making pre-decision, exhibiting prototypes and making the final decisions (Figure 4.8).

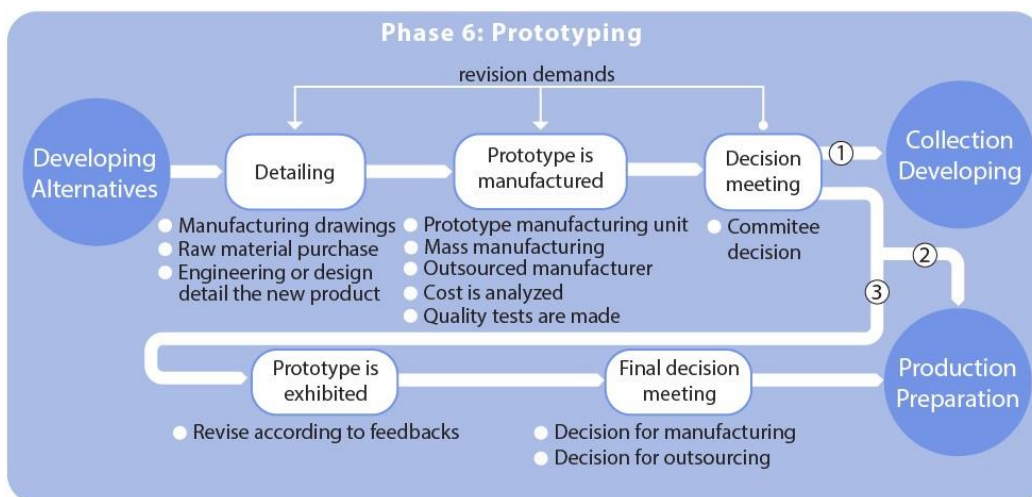


Figure 4.8. Phase outline: Prototyping

After the meeting committee decides on which concepts to be prototyped, chosen concepts are prepared for prototype manufacturing. According to interviews, in the first step of detailing two functions take responsibilities of the process which are design and engineering. If designers are detailing the products, they may consult manufacturing functions and suppliers for technical details as exemplified in the below quotations.

[32] For example, if we are going to do sliding door wardrobe, we call suppliers, how can I say “Which of your system better do (carry) this 30 kg door?”, “What is the cost of them?”, and like that. “Do you have something to offer us other companies do?”

[33] We work in close contact [with purchase], they have some offers like cheaper suggestions or like when I say I want this kind of leg, they say “13 cm leg you want is not available, 15 cm is convenient “What should we do?” they may say. We resolve this kind of discussion between us.

On the other hand, if engineering hands over the process and details the concept, they consult design if they should change the visual appearance or dimensions of the product. Independent from which function takes over the process of detailing, manufacturing drawings are prepared according to the machines, and for operators to understand the product. Designers also search for suppliers and raw materials with the help of purchase function, and samples of outsourced materials are ordered and tested in the prototype. In this step, some design decisions may change according to the capabilities of the manufacturing line or according to available supplied materials, and in some circumstances, designers are also asked to develop alternative designs if any problem occurs.

After manufacturing drawings are prepared, prototype manufactured by one of the three different functions which are prototype manufacturing unit, mass manufacturing units or outsourced manufacturer. If the prototype manufacturing unit develops the prototype designers follow the process; on the other hand, production planning function plans the machine operations if the prototype is manufactured in the mass production line. Sometimes prototype manufacturing is out of capabilities of an organization like end tables, lamps, upholstered products, or organization may do not want to slow mass production lines by producing prototypes. In that case, prototype making service is outsourced from different sources. Cost is also calculated in this step by engineering, production planning or finer divisions like cost analysis, and quality tests of the prototype is made. As mentioned previously, only one piece of the collection may be prototyped in this phase. In those circumstances, after the committee

approves the prototype of that unit, the whole collection is developed by the designer and then the collection is prototyped for committee inspection. Designers are one of the key performers in the prototype manufacturing phase and they revise their designs with feedback from the production team, engineering, production planning, and manufacturing.

After the prototype is ready to present, a committee consists of different functions meet up to make a decision. According to interviews, managers of all functions related to NPD process attend meetings, who are general manager, assistant managers, and managers of the design, marketing, product management, manufacturing, engineering, production planning, logistic, sales, project sales, and purchase functions. In some organizations, a smaller core team may meet up to make a decision like marketing, design, and top management. This meeting may be more crowded in some organizations like representatives of all functions may attend these committee meetings, because the final decision is made if it is going to be produced or not, and organizations want to get feedback from all functions to prevent further problems. Therefore, the committee may ask for revisions according to suggestions about the product, and designers are obligated to make revisions until the committee is satisfied with the result.

Organizations generally synchronize the end of the NPD process with the start of the exhibition. They sometimes exhibit the prototype, and according to the market reaction, they re-evaluate the new product and make their final decision. This procedure is observed in home furniture organizations in my sampling. Moreover, some home furniture organizations do not attend exhibitions, but they exhibit their products in their stores for a similar goal. One participant explained this process in the below quotation.

[34] ... You know in exhibitions dealers (franchised stores) and stores (representatives) come to the exhibition. Or new store candidates are coming, or retail customers are coming, potential customers are coming, and on that point, our fair personnel make a survey and test the water by prioritizing dealers. Even when we follow the committee process, the elimination

process, we ask them. We test our product which we exhibit in the fair, which we finalized, and dealers may say that “Yes it is a nice product, but we believe this cannot be sold”. Because they are the ones who actually meet with customers in person. Everyday 200, 300 people enter their doors, and maybe they ask something, and they ask “Is there a walnut product?”, or they look to a product and its oak. For example, oak does not sell in our country, but we [applied] there, for example, it is a design decision, it is the trend and the world goes that way. We can add oak products, and its design may be good, but sometimes dealers tell us “Look you add oak products last year and we could not sell this product much, and we did not believe this product will sell.” and they may give low points to that product. Then we, all the product management collect these results after the exhibition and compile (analyze) them. After you sort them, for example, we need 8 products, we exhibit 11 products. According to points we eliminate 3 products with lowest points and did not add them to mass [production]. Actually, it has been eliminated and we only take it to the exhibition and showcase it as a prestigious product.

Summing up, in the previous phase alternative designs are shortlisted, and the decision is made to prototype them for finer examination. In this phase prototyping, the first step is detailing in which designers or engineering prepare the design for manufacturing. Later in the manufacturing of the prototype step, specialized prototype manufacturing unit, mass manufacturing units or outsourced manufacturer produce the prototype. The designer typically controls the process and consult manufacturing units and suppliers if needed. After the prototype is ready, the committee meets up, they ask for revisions and make their final decision about the product. But in some organizations, prototypes are also showcased in the exhibitions before adding new products to the product range. These are all the home furniture organizations, and two of them exhibit their prototypes in their stores without attending exhibitions. On the other hand, If designers are asked to develop a collection of products, they may prototype one specific unit before developing and prototyping the whole collection. In that way, organizations had a chance to physically examine much more concepts in the process, and they save money and time by not prototyping the whole collection at the same time.

4.3.1.6. Developing collections

Some of the participants noted that they are responsible for developing collections of units, and in some fields of operation it is a market tradition, as all the competitors present the same collection of units to their customers. Home furniture organizations develop bedroom and dining room collections; and, baby, child, and teen furniture organizations design all the complementary products like lighting, carpets, and bedding along with all elements of bedroom like wardrobe, working desk, chair, and bedstead. In this section, these complementary products and development process is explained (Figure 4.9).

Two types of processes are observed according to my findings while developing collections. In the first type, organizations prototype specific units of the collection and evaluate them before prototyping the whole collection. Second, designers develop the whole collection and prototype all units at the same time. This specific unit changes across different fields, and home furniture typically starts with the console of the dining room; and, baby, child, and teen furniture starts with the wardrobe, working desk and bedstead. Rest of the participant did not mention any rule similar to the former. In the below quotation, one of the participants explains the first type of collection development.

[35] No, we show dining room collections first, because this can also be possible. See that console, and while prototype of that console is examined, and rest of the dining room collections is evaluated, it cannot be as expected (sometimes prototype may cause upset). Thereby, on that point, it is also possible for this product to be eliminated. For that reason, bedroom is not developed because there are much more pieces in bedroom. Making an extra effort for developing that (bedroom collection), we do not want it to be eliminated after we make such an effort. Later, after [they say] “It is ok, we definitely [sure about this product], we saw the prototype also”. Material approvals are given and R&D (engineering) calculate a reasonable cost, committee make decision like “Ok, bedroom collection of this product can developed” and we start to develop bedroom collection.

There are some specific pieces of products in the collection in different fields of furniture like in the home or office furniture. According to interviews, along with a

working desk, wardrobe, and bedstead; stickers, lighting fixtures, bedding, chairs, and carpets are the mentioned pieces of baby, child, and teen furniture collection. On the other hand, home furniture presents two types of collections. One of them is the bedroom collection consists of units like wardrobe, drawer, bedstead, nightstand, and mirrors. Another one is the dining room collection consists of units like console, table, display cabinet, and mirrors. Home furniture may also present upholstered furniture to their customers along with these collections. Some participants who have experienced other fields than baby, child, and teen; and home furniture organizations also mentioned the term “product family”. According to them, variations in material, color, and size constitute product family which they are obligated to create.

About the design of upholstered products in the home furniture, only one participant told that she designs both panel and upholstered products. On the other hand, one participant explained the duties of the prototype manufacturing unit which consists of craftsmen is responsible for designing and manufacturing upholstered products. Moreover, another participant told that they are outsourcing both design and the products of upholstered furniture.

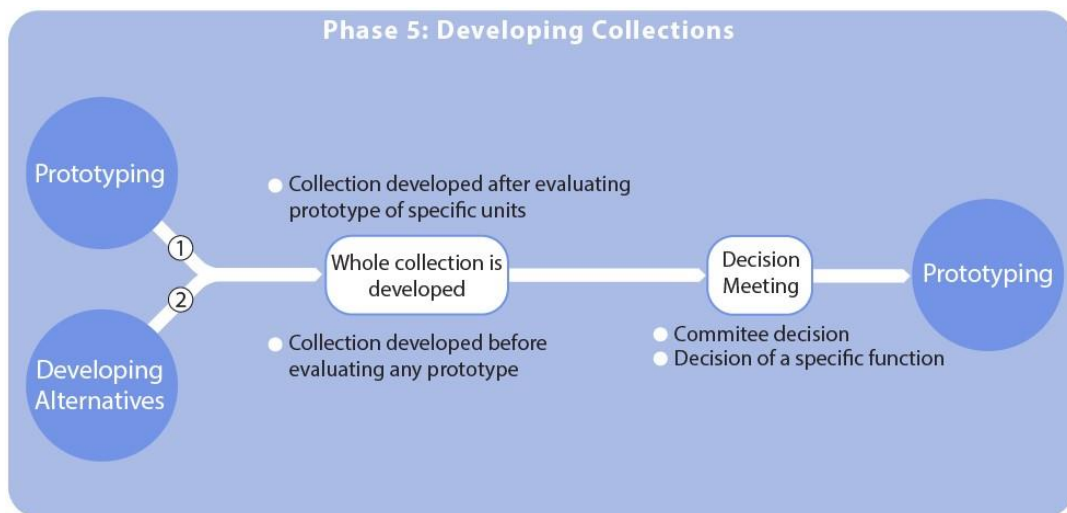


Figure 4.9. Phase outline: Developing collections

To sum up, organizations operate in the field of furniture develop product families and a collection of units. According to my findings, this behavior is more common in the home furniture industry; and there are two approaches observed in the NPD process while developing these collections. First, designers develop only the specific units of the collection; if the committee approves the prototype of this specific unit, designers develop the whole collection afterward. Alternatively, designers develop all of the collection for approval, then shortlisted collections are prototyped. The first approach enables early judgments on collections without spending lots of money and effort; on the other hand, the second one gives a chance to evaluate all of the collection before prototyping.

4.3.1.7. Production preparation

Once the new design is approved for manufacturing, the production preparation phase starts. In this phase, manufacturing and its finer divisions are more active. This phase is going to be explained in three main steps. First, manufacturing drawings are prepared; second, manufacturing is planned through production tools; last, all raw materials are purchased for manufacturing (Figure 4.10). At the end of this step, all decisions are finalized and needed data is created for the organization to produce and distribute recently developed new products.

Manufacturing drawings are prepared by engineering or design function; whereas only two participants stated that they make this preparation themselves. These two participants mentioned they were detailing upholstered and office furniture and the rest of the participants mentioned that this preparation is done from engineering function. Engineering draws technical drawings and prepares needed data for manufacturing as explained in below two different quotations.

[36] ... In the X [company] we never give manufacturing drawings. We only send the design to the engineering, engineering prepared manufacturing drawings. I never make technical drawings in X [company].

[37] Technicians (people in the engineering function) who make drawings start to draw technical data of the product. I meant by technical data which workers

and masters, chiefs [in production] take the documents and [to see] where to drill a hole, where and how ... production process is different. P&D (engineering) is the department that makes technical drawings that manage the production process.

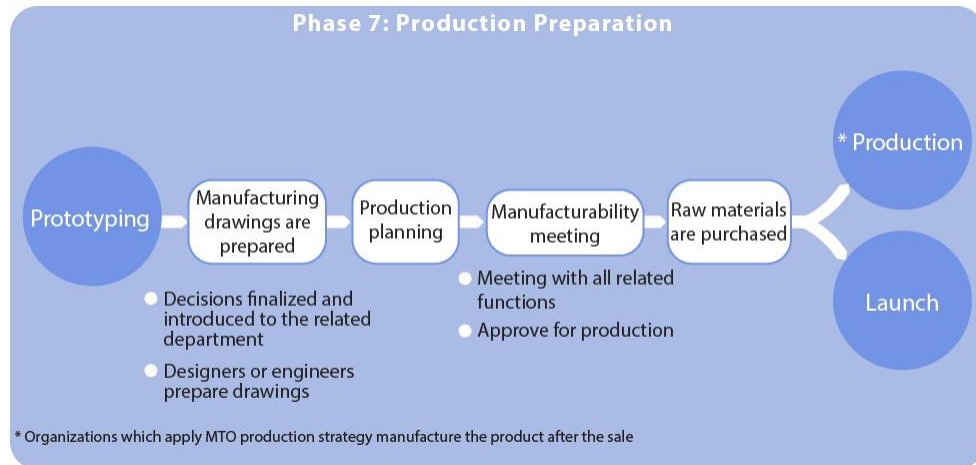


Figure 4.10. Phase outline: Production preparation

In this circumstance, there is a need for designers to introduce the product; therefore, designers publish all information to inform other related functions in this step. One participant also said that they are delivering all material samples and mock-ups to the engineering and designers now follow the quality procedure which starts with approved prototypes. Designers, in this step, finalize decisions about material options, along with decisions about accessories. At this point, management may involve this decision-making process because the price of the items becomes an important element in high volume production. One participant explained this process in the below quotation.

[38] We get approval, because [we] do not have the authority to give this purchase decision. I have the authority to say I want this handle but a decision about producing that handle or not, or making an investment decision for that handle [is not the responsibility of designers]. I have the right to ask for new colors; for example, again similarly for the chipboard, we have to meet with the managerial board for that chipboard to make a decision to buy or not. Because [our firm] is like a train. The system is fixed; normal production is so fast. While doing something new you should canalize it proper to that speed. While doing that and the quantities should be excessive. I, for example, ask for a new color, you can't say let's buy 50 [panel] chipboard

and produce 50 pieces. It should be one thousand, two thousand panel will be bought. Numbers are big and like it or not, there are times the business is not working with your decisions.

Once all the data is ready for production, different functions than design and engineering take place in the next step which is production planning. Rather than 2d and 3d data, material consumptions and operations are all planned in this step. Moreover, material and labor cost is calculated and finalized by engineering, production planning or any finer divisions like as one participant expressed cost analyze. In the interviews some participants told that cost is calculated also in the prototyping phase; as the cost of the product plays an important role in final decision making more delicate analysis is done in this phase to calculate the cost. After, the label price is determined with the meeting between finance and management as one designer explained. Later, production quantities are decided and production is scheduled in this step. In this process, some meetings are arranged to discuss and approve the product for production with attendance of functions like engineering, purchase, quality, and production planning. Designers are also invited to these meetings, and one participant named this meeting as “manufacturability meetings”.

[39] From that point design is now finished, R&D is finished and it will be delivered to the production. All departments in the factory which are going to produce this [product], the designer who supply materials, R&D, and every department meet up around the product and there is a form that they all sign and called as manufacturability. After the meeting, the product is ready with everything. According to the plan, it is transferred into production.

The last step of this phase is purchasing all the needed raw materials. In this step, purchase function makes deals with suppliers which may be the ones designers suggested. On the other hand, purchase function may find new suppliers to reduce cost or according to availability. If any problem occurs in this step, designers may revise the product by using different materials.

To summarize this phase, it is explained in three steps. First, preparation of the manufacturing drawings; second, planning the production process; and last,

purchasing the raw materials. Designers or engineers prepare all drawings needed for manufacturing; and after that, production is planned and all operational documents are prepared; moreover, raw material consumption and cost are calculated, and label price is determined. After the production quantities are decided and all necessary materials are purchased, production is now ready to start.

4.3.1.8. Production

After all of the data is prepared and adapted to the mass manufacturing line, production starts. According to my findings; designers typically have no responsibilities in this phase; still, some of them mentioned about the production. This phase has different orders in the cycle of the NPD process, as in MTS production strategy next phase is the sales; on the other hand, in MTO strategy, the sale has already done before the production phase (Figure 4.11).

First of all, four participants mentioned pre-production which aims to foresee possible problems and get feedback from the customers by distributing products to the stores. Pre-production is mentioned by participants experienced baby, child, and teen; office; and flat-pack furniture organizations. More than testing manufacturing or getting feedback, organizations also see some unpredicted costs. For example, the speed of the production can be longer than planned which naturally increases the labor cost. Two designers also talked about batch production which they are responsible in case any urgent order is made because production preparations are not finalized by engineers. In that case, designers take over the responsibilities of preparing the manufacturing drawings, planning the manufacturing, and managing the process.

[40] Yes, we have to rush for one [construction] project. The product is not delivered to the engineering, but we need 150 pieces of this chair for project “A”. We did not deliver the product to the engineering [function], and we (designers) had most of the knowledge. In that circumstance mass production, design may follow product in pre-mass production (participant corrected the term mass production).

As previously mentioned, organizations may outsource some products in case their manufacturing capabilities are not appropriate, and one participant mentioned that the quality function controls the outsourced production process. One of the interviewed designers explained the outsourcing process in the below quotation.

[41] Commercial purchase. This is what we called commonly as contract manufacturing. I do not say our firm is out of capability [to produce], but not everybody produces everything. For example, in industrial furniture firms, none of them produce a chair in their own facilities. Or in case it is not chipboard, [if it is] like metal, they do not produce labor-intense end tables with brass legs. At that point, products are contracted to the outsourced manufacturers.

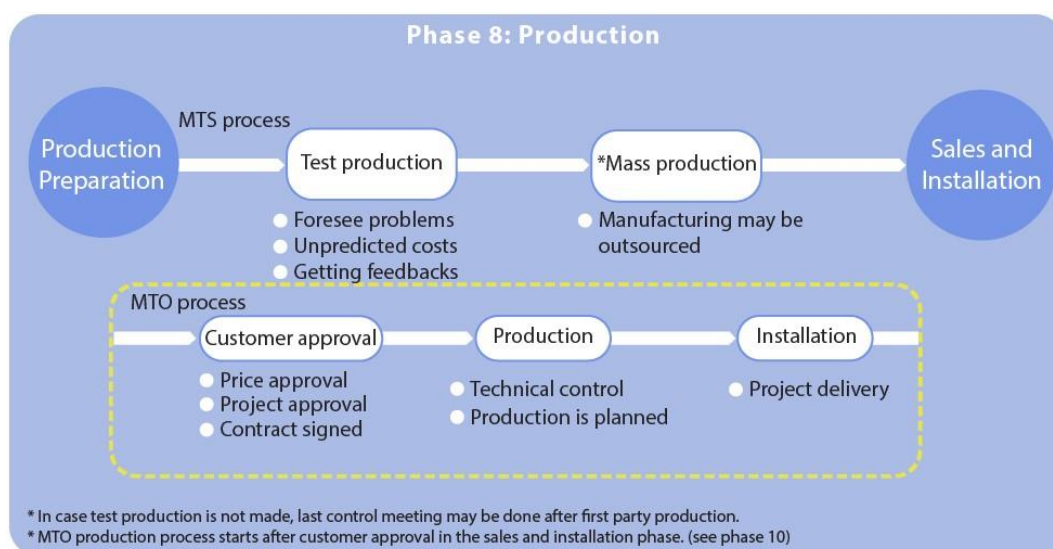


Figure 4.11. Phase outline: Production

Also one another participant talked about the final control meeting in this phase where all functions meet up around the product and examine for any faults. In below quotation, one of the interviewed designer who worked in a home furniture organization told about the problem which they realized in this meeting.

[42] If there have been any problems, they have already made 200, 300 parties, sorry, 200, 300 pieces. Last time they should make a radius around my table, but they did not. 60 piece of table, 60 or 200? Anyway, that kind of high volume panels of tables are wasted, I mean they made them again. They made their radiuses

In the interviews designers briefly mentioned about production and most of them told that they are not following the process in this phase. Other functions take the lead, and they concentrate on new tasks. According to my findings, designers in the furniture industry do not typically involve in the solution of technical problems, nor do they detail drawings for production.

4.3.1.9. Launch

In MTS production, while production is started, the new product is also launched. Unlike, in MTO production, the product is launched before production is started because organizations that apply MTO strategy manufacture the product after the sale. The launch phase consists of different activities to introduce the new product to different groups of people like customers, stores, logistics, and sales. In this section, four groups of activities are going to be explained: visual communication activities, introduction activities, exhibition, and IP registration (Figure 4.12).



Figure 4.12. Phase outline: Launch

The term visual communication activities are used to define photo and video shooting, publishing all kinds of commercials, and catalog printing which also discussed in the section “4.1.2.3”. All of the designers mentioned photo shooting activity except the ones who work in the sales function. Also, one designer explained that the marketing function organizes photo shooting activities.

[43] ... Marketing and other functions it works with taking care of all product introduction, concept presentations, what you call, photo catalog shooting.

Marketing works with the studio, we also had a studio. In factory... We have a studio connected to our group. In-house photo studio. They are doing it together.

Four participant designers expressed that they are responsible for photo shootings. Moreover, one other designer told that marketing gives brief to design function which explains how to do photo shooting.

[44] ... For example, photograph (photo shooting) directly is under the responsibility of the designer. I mean designer arranges things, arranges scenes, designer arranges photographer, time to come with photographer, I mean arranges timeline, arranges time to work together, make manufacturing produce the products, first samples, and angles of the photo shooting, how can I say according to its specifications, according to focus [its specifications] in photo shooting...

Three of the participants mentioned they get involved in photo shooting if the product is unique and novel, and the rest of the participants only give consultation to functions that realize the photo shooting activity. One of them mentioned about the mood board which designers prepare to guide other functions about the style of the product.

[45] (participant explaining the mood board) I mean place, "Is this product male or female?", "How its fabrics should be like?", "If we are going to take photos of the product, what kind of place should it be?", "Which accessories are used?". We put visuals side by side and prepare a board like these, I mean in digital. Later than we share it with programming before product launch.

One participant also mentioned video shooting activities that are created by the in-house team. They prepare these videos to be used in the introduction activities. Some designers are also responsible for creating 2d and 3d data which are meant to be used in sales operations where architects use them in their presentations prior to the sales. After visuals are ready, the product catalog is prepared and published, and designers are also consulted about the style and content of the catalog by the in-house or outsourced graphic design team. Also, one designer stated that corporate communication takes care of newspaper advertisements, and TV commercials; and, designers involve in the process as consultants as explained in the below quotation.

[46] There are campaigns from time to time, at that time they (product management), I mean we work with corporate communication in three months a year, product management works with them 12 months in a year because there are always campaigns in the field. Information tool or distribution is needed in the field. I mean something is needed and on that point. They are working closely with product management and corporate communication departments work more closely. But generally, we are [interested in] the product to be exhibited right, right launch activities. We are present in the catalog and commercial shooting and inform them because as I said, we are the real owners of the process, and nobody else knows the product better.

As a part of the launch activities, the new product is also introduced to the other functions. According to some of the interviewees, designers use different forms of communications like e-mails, official forms, reports, and they may prepare technical catalogs. Moreover, one participant mentioned about an introductory meeting; in which, the designer explains the properties of the product. Functions that are informed by the designers are sales, stores, marketing, post-sales service, and project sales.

[47] Even advertisements about these, “how advertisements should be done?”, “Which part of the product should be focused?”, “What are the pros of the product from its competitors?”. I mean we are documenting the things –How do you say? details- that marketing personnel will tell. I mean marketing or sales personnel know this stuff and act according to this.

Photos, videos, material options and specifications of the product are shared in these introduction activities, and some organizations use a digital information system that enables sharing this kind of information and introductory texts and price. More than introducing the product to the organization’s own functions, one designer also mentioned about introducing to the third party product libraries like “archiproducts” and “architonic”. These kinds of libraries are places where organizations interact with their corporate customers; similarly, new products also introduced to the website and social media accounts of the organization. Typically, in this step designers share new product information with the marketing and sales functions as the aim of the launch activities are increasing the number of sale and quality of service.

Moreover, exhibitions are an important period of time for furniture manufacturers, as they are generally synchronized with their NPD activities with these exhibitions to showcase their newest products. Designers are involved in activities related to the exhibition, and typically give consultation about styling and choose products to be exhibited. According to one interviewee, management and sales functions decide exhibition products by consulting design; and, one another designer explained styling consultation in the below quotation.

[48] We take care of the background choices. Our products, for example, we produce(design) it in the end, and we know its style better. We choose instead of them (marketing) the accessories used with them like vase, decorative objects, etc. I mean they may ask for help for us to choose decorations. Or they may ask for us to choose wall coverings.

There are some exceptions but generally, store interiors and exhibition stands are designed by interior designers which may be in-house or outsource. In some circumstances, industrial designers are also consulted about the design of stores and exhibition stand. As an important point, designers expressed themselves as the owner of the product in the interviews; and because of that fact, designers are consulted from functions in charge of the launch activities.

One another action included in the launch phase is the process of intellectual property registration which starts before the product catalog is published. Five participants mentioned this process, and designers generally prepare documentation and follow the registration process, yet in one case design officer, and in another case quality function follows the process. One interviewee also mentioned they only register value-added products that they want to protect against imitation.

To summarize, in the launch phase new product is introduced to customers and all related functions of the organization. Typically, designers share their knowledge about the new product with marketing and sales functions by using various methods like preparing reports, filling forms and organizing introductory meetings. In this process, photos and videos of the product are taken, and they play an important role in these

information-sharing activities. Technical and functional specifications and materials are also explained to other functions by designers. Taken photos are used in product catalogs; similarly, newspaper advertisements, TV commercials, and similar activities are also done in this phase. The new product is also introduced in digital platforms like social media accounts and the website of the organization or in some third party product libraries like “architonic” and “archiproducts”. Exhibitions are also important shows for furniture companies as they synchronize their new product launch with these exhibitions. Designers are consulted in the exhibition preparation, and they may also follow the IP registration process of the new product. All in all, launch activities are done to establish a strong bond between customers and the organization.

4.3.1.10. Sales and installation

Sales activities start after the launch phase that products are now produced and introduced. Similar to the production phase, designers also mentioned briefly about sales and installation phase, because they also do not have responsibilities in this phase. But two of the participant designers who experienced working in the sales function explained their processes in detail. Sales activities in MTS and MTO production organizations are going to be explained in this section.

Eight of the participants did not even mention the sales phase in the interviews, and some of the participants get the sales figures for feedback only. However, in the interviews, some designers explained some actions related to sales in MTS organizations. One participant talked about a meeting with sales and general managers where they decide the price of the product which is published twice a year. After the sales price is decided, another participant mentioned that the sales planning function plans the distribution of manufactured products to the stores. Moreover, one designer mentioned that she is checking stores if the product is exhibited correctly.

[49] I mean, you go and look for the product you design, and sometimes we may give feedback to them (product managers). For example, when we go and look at the sofa we designed this year. Dimensions of one of the pillows are different and I realized its fabric is inside out, and I immediately send an e-

mail about this to give feedback, and I said: “This product is exhibited faulty, there is a problem here”. For example, so to speak we turned back from the edge of disaster.

Designers who experienced the MTO production strategy also mentioned sales activities, and two of the participants solely explained their sales experience in MTO production organizations. The sales phase in MTO organizations is going to be presented in six steps: customer meeting, project drawing, customer presentation, customer approval, production, and assembly. In the first step, sales expert meets with the customer to understand their demands, and receive the construction project; in some circumstances, sales experts may take the dimensions of the construction site themselves. In the second step, sales experts arrange catalog products into interior space according to customer demands, but sometimes customers may also ask for some special designs which will be designed for only their interiors.

[50] Actually, the standard counter is not used in the [hospital] lobby. Actually, we use waiting lounges, standard waiting lounges we have. But they are specially designed if there is a counter, wall coverings, and other background things.

After, sales experts present the project to the customer for approval in the third step. From that point, presentations are continuously made until the customer approves the proposed design. In the fourth step, a price quotation is prepared, and it is also presented to the customer for approval. Later official contract is signed between two parties, and in the fifth step, production starts. The sales expert sends product drawings and one-off designs for technical control where they check the manufacturability of the project. Later production planning plans the manufacturing; and in the sixth step, after production is complete, it is transferred to the construction site and assembly is made. Sales experts may also arrange transport and in some circumstances, they manage the necessary modification in the construction site by arranging construction workers.



Figure 4.13. Phase outline: Sales and installation

In summary, in the sales and installation phase, two different production strategies MTO and MTS are explained (Figure 4.13). In these processes designers typically do not have responsibilities, and after the sales price is decided and products are distributed to the stores, designers follow the sales figures only. But, there are two designers in my sampling worked as a sales expert in MTO organizations, and they explained their process in detail. Designers are employed in those positions because adaptations and one-off designs are developed according to customer demands in MTO production which needs basic design skills. The sales and installation phase in MTO starts with customer meetings, and after customer approval ordered products with adaptations and one-off designs are produced and installed. Therefore, sales process is more complex in MTO organizations than MTS.

4.3.1.11. Feedback

After the sales and installation phase, designers start to get feedback from different channels (Figure 4.14). In this section, these channels and the designers' responses to this feedback are going to be explained.



Figure 4.14. Phase outline: Feedback

One of the most active functions which give feedback is the sales and its finer divisions. Post-sales service collects customer suggestions and complaints and delivers it to the designers and other related departments. Post-sales service also gets feedback from other functions like assembly, and logistics, and sometimes they may report some problems about the product like “Packages are too big to enter apartments.”, or “It is hard to assemble wardrobe in the field, because of a design fault.”. Manufacturing may also ask for revisions if they had a struggle in production. On the other hand, stores and other sales personnel have a direct connection with customers, and they establish a link between customers and designers. In the two quotations below, the type of feedback and designers’ reaction is explained.

[51] Here for example, when this drawer opens it rubs to this part, and when something like that (feedback) comes, we evaluate it. We look at the product [to find out] what part should be added or extracted. We do things like “Which action solves this problem?” ... Whatever.

[52] The development (NPD) process ends after it entered to the system (in the launch phase). But, there can be some things from stores, [like] comments. They say “You did that way, but we sell more if there is one bigger [option]”. Here, “Can you make it from more higher quality material?”, “While assembling [the product] its arm breaks all the time, how can we develop this?” like these [comments] we also follow (follow its development) after the product is launched.

One of the participants also told me about his experience in the exhibition in the below quotation.

[53] There were times we changed [after feedback], for example, legs will be weak and not tested. For example, armchair, in one of the armchairs there was a problem. How can I explain, the customer came and sat one of the armchairs in the exhibition and he fall when he leaned back I mean it was unbalanced, there were problems about legs. We missed that point, and that man tested it for us.

After getting this feedback some revisions should be done immediately, or they can be applied for the next NPD processes. According to the feedback, new units can be developed and size changes also can be made along with technical developments.

One NPD process cycle ends with the feedback phase, and this feedback is also utilized in the preparation phase. Organizations collect feedback from customers and other stakeholders and utilize them to develop more successful products. In each NPD cycle, an organization learns new things from feedbacks and improves its product strategies.

4.3.2. Adapting the process

In previous sections, I mentioned the 11 phases after interpreting the data collected from the interviews. These phases are (1) preparation, (2) defining the need, (3) research, (4) developing alternatives, (5) developing collections, (6) prototyping, (7) production preparation, (8) production, (9) launch, (10) sales and installation and (11) feedback. Moreover, I presented a cyclic order in the MTO and MTS production strategy; however, sometimes these phases do not follow each other as explained.

Explained order in previous sections are defining the ideal process; however, in some conditions organizations may flex the explained process according to their needs. According to the interviewees, the NPD process typically shortened to earn time in some circumstances. Sometimes size variations of current products are produced directly without prototyping; similarly, contract projects may also be produced without prototyping if they are already tested products in the market. From time to time, some steps may also be skipped; as one designer explained, they directly start with modeling by skipping the sketching step if they have limited time to develop

alternatives. Another designer said that, if a designer offers the product idea, he presents his idea to the committee directly from the prototype by skipping all the meetings before. Similarly, some other project demands may also follow unofficial processes and may be presented to the committee from the prototype. According to my findings, time pressure and the nature of the need are the core reasons for organizations to flex the NPD process.

4.3.3. Designers' evaluation of the process

In the interviews, designers are asked about their opinions about the process, and their comments are going to be presented in this section. After analyzing, their responses are grouped into four categories: (1) collaborative process, (2) workload, (3) organization, and (4) the process-related comments.

Designers made both positive and negative comments about the collaborative environment in the process. Some of the designers are positive about the involvement of other functions in decision making, and they are happy to get feedback from people who know the market better. They are also positive about sharing responsibilities with other functions.

[54] Because, at that point, the designer does not possess the field (market). They are not qualified, and they should not be to make decisions and tell "We are producing that product, that product should enter the product range". Actually, big firms like us, because we are doing serious business, and we do not have the option to say after three months "Let's remove this product, it is not selling" after producing it. Thereby, with these crowded committees with general manager approval, because our general manager is also a former product management director, and he mastered all the processes. He is also included and by choosing the right products with the meetings which we all make decisions, and by doing less prototype, and we directly reach our point.

However, two participants complain about the comments in these meetings from people who do not have necessary design knowledge, as one of the participants explained in the below quotation.

[55] In truth, as negative side everyone makes comments. I am so angry about it. I mean, people who know [design] and who do not know [design] are all

talking. You also know, it is the bad side of design. How can I say, I mean there were also very harsh critics, for example, if any bad things happen, negative comments are made immediately. Here “How [bad] product did you make?”, and like that.

Moreover, another participant complains about the decision-making process, as it is very hard to come up with a decision in crowded meetings. Therefore, that participant praises the dominancy of the general manager in the meetings. However, another designer mentioned that designers lose control of the product in these meetings; meaning that, designers are not the decision-makers in the meetings, but they are treated like technical staff who apply revisions. Designers working as sales experts are also positive about meeting directly with customers. Furthermore, two participants mentioned that they are positive about being close to the engineering function as they help designers with their technical knowledge in the process.

Participants also commented about the heavy workload, which creates time pressure on designers in their tasks. One of the designers said that given deadlines are not fair, and another designer complained about the high number of revisions that they are obligated to do.

[56] Yes, during the meeting. They like the product, but they stay hesitant. “Should we approve it or not?”, “Accept it, or not?”. They postponed one of my products six months without exaggeration. They approved it after six months, but I fed up with it. I mean they made me try every color [alternative] over and over again. Because they asked for too many revisions. Same product and I tried over and over again, this is so exhausting for me.

On that point, another designer expressed that designers are forced to accept revisions because of the time pressure, because there is no time to discuss these revisions. According to my findings, one of the reasons of this time pressure, designers are developing too many products simultaneously. As one designer said, in the meetings, there are too many products discussed, and people even forget the names of the products. For this reason, two of the participants complain that they do not have enough time for development, as they explain in the below quotations.

[57] Yes, because it is impossible to make designs in this cycle. Not with enthusiasm, and novel products are also cannot be developed. [We do] what is needed that day, I mean we buy that fabric if we can supply. From that point, you cannot think about the fabric. For this reason, it is exhausting, too exhausting because too many products [are developed].

[58] In truth, our problem is products need be launched too fast. I mean, we did not have a “Stop and evaluate” position. Every time, these things are left at the last minute. I mean, a product which normally takes two months before launch, [but it] lasts one week or two-week maximum. That causes a big problem for us. Because we launch a product before improving the product. That also causes problems in production

Designers are also responsible for other duties out of designing like following prototyping, quality processes, and outsource manufacturers. On that point, one designer expressed that she is annoyed to search for suppliers with higher quality product and lower the price because the designer believes that it is not her responsibility. One another designer also complains about introductory meetings which designers are responsible for. As explained in previous sections, designers are also following the prototyping process of outsourced designers, and one designer also expresses her distress about this duty. In other words, designers have various other responsibilities, and they do not believe they are spending enough time with designing.

Moreover, designers commented about their organizations. One interviewee mentioned that they do not have job definitions, and the manager may ask them any kind of duties out of designing. Two other designers link these extra duties with the organizations’ lack of qualified labor. One of them complains that engineering does not involve in R&D activities rather only developing prototypes. Similarly, one designer mentioned the lack of coordination between functions which they should work in harmony to develop successful products. Also, another designer defined their main challenge as organizations are forcing them to develop novel products with strict cost limitations. One designer explained this situation in the below quotation with organizations are not willing to take risks until successful examples are introduced in the market.

[59] And I upset sometimes. You create a design, it is liked too much, also a good thing happens in the exhibition, but production impede. Production could not handle the risk. Marketing also cannot handle the risk. Why? Because you put solid colors, choose colors from the RAL catalog, put that colors while wooden textures are favored [in the market]. Because it is not usual in furniture [market], and they do not take that risk. But after some other people do that, they can.

On the other hand, one designer was gratitude that their organizations' ambition to follow the trends and supporting designers to create innovative designs. However, designers generally mentioned negative comments about their organizations.

Some comments are also related to the process itself. In the interviews, four participants titled designers as the owners of the new product; and as a result, they are voluntarily involved in the whole NPD process. In the process after prototyping, designers are starting to share their responsibilities over the new product with other functions like engineering, manufacturing, and sales. For this reason, one designer mentioned they are waiting for other functions for longer periods after prototyping.

[60] There is no problem with time in the design [phase], but in the prototype phase and production phase, it is because other functions take the responsibility. For example, listing the material consumptions. Actually, [production] planning is going to do that, but if planning function is in a busy period, job we estimate to be one week may become one month.

To save time, one participant told that they are using standard parts in new designs, and they do not follow procedures because it is time-consuming. Similarly, one other designer said that they do not document the process as it should be. On the other hand, another designer complains about a lack of documentation in the process, as he mentioned it is hard to improve the quality of knowledge without documenting it.

[61] There is not too much documentation. I mean it is stored unprotected in the computer of the person who takes care of the design. I mean, if something happens to his/her computer or if he/she deleted and resigned, you cannot find any information about that product. Just in production with manufacturing drawings and like that.

Moreover, designers commented that they skip the research phase because they already know the necessary knowledge about the market and the product. On the other hand, according to one interviewee definitions should be more systematic, because other functions do not consider the time while demanding new products from designers, as a result, they are forced to speed up the NPD process.

To summarize this section, in the interviews, designers are asked to evaluate their NPD processes. In response, designers are positive about the collaborative environment and they are grateful for sharing their responsibilities, but they also complain about lots of comments and the high number of revisions in the committee meetings. They are also complaining about the responsibilities they have out of design because they do not believe they spend enough time on design, as it is their main duty. As a result of time pressure, in some circumstances, they are forced to accept revisions despite they do not want to. Designers also commented about their organizations, and they find it positive to be close to the engineering by getting their consultation about technical details. However, some of the designers criticize the lack of coordination between functions which have responsibilities in the NPD. Designers define themselves as the owner of the product they designed; for that reason, even they are not comfortable with extra duties, they all want to control other phases for them to be successful, and organizations let them do that.

4.4. Summary

In this chapter, findings of the research, which are the interpretations of the collected data through the interviews with industrial designers, were presented. It explained various subjects and accordingly, the chapter is divided into three sections. First, the experiences of the industrial designers in the Turkish furniture industry were described. Second, the organization of design functions in the organization was presented. Third, the NPD process in the Turkish furniture industry was reported. This section is going to summarize the content of this chapter.

The first section begins with an overview of the organizations in which the participants of this research have work experiences in. The participants have worked in 14 different organizations that operate in six different fields, namely contract; kitchen; flat-pack; office; baby, child, and teen; and home furniture. These organizations have also various types of sales and distribution channels. Most of them have their own stores or work with franchised stores; however, participants also mentioned some different channels such as e-commerce, contracting and wholesaling. These organizations have two production strategies which are made-to-stock (MTS) and made-to-order (MTO). MTS organizations produce and stock the product before sale; on the other hand, MTO organizations produce the product according to the orders of the customers. MTO organizations are more flexible about the design of the product, and they present choices of colors and dimensions to their customers. MTO organizations may even develop one-off designs to their customers like built-in furniture.

Designers in these two types of organizations have various job titles and roles. 13 of them design furniture under the title of a product expert, design supervisor, and model development expert. One of them is the design director, one other is the R&D manager, and two of them are sales experts. After analyzing the data, the responsibilities of designers in these organizations grouped into seven categories which are related to design, research, launch, sales, production, documentation; and some duties are presented in the other category. In the interviews, designers explained their main roles, on the other hand, they also reported some extra duties. More than designing furniture, designers generally involve in launch-related activities, such as managing the photo and video shooting and production-related activities like searching for suppliers. Their response to these extra duties is generally positive, because designers believe that these extra responsibilities are useful for their personal development. On the other hand, they are also not comfortable with the time pressure that these extra responsibilities create. In other words, even they are not comfortable with the high workload, designers are willing to participate in all the phases of the

NPD. They are feeling like the owner of the developing product, and they want to see their designs to come to life as they imagined.

In the second section, the organization of the design function is explained under three sub-sections: management of the design function, functions that are managed by the design, and the relation of design with other functions in the organization. Interviewed designers explained that the design function is managed by different employees like general managers, marketing managers, product directors, design directors, and engineering managers. On the other hand, the design itself manages some other functions like commercial purchase, prototype manufacturing, technical team, advertisement, and as an outsourced function photo shooting agencies. Moreover, the design also has a relation with many other functions while developing new products. There are seven functions that are listed in Table 4.1 in this chapter. These functions are design, management, marketing, manufacturing, sales, finance, and suppliers; and they work together with designers.

In the third section, the NPD process in the Turkish furniture industry is described. This section consists of three subjects: phases of the NPD, evaluation of the process by designers, and how organizations adapt the process according to their circumstances. The 11-phase process model is defined after the data interpreted by analyzing the similarities between NPD processes mentioned by each participant. These phases are preparation, the definition of the need, research, developing alternatives, prototyping, developing collections, production preparation, production, launch, sales and installation, and feedback. Each phase is introduced with a schematic explanation, and these figures are presented together in Appendix L. There is an order of execution while conducting the NPD process, and this order changes in MTO and MTS organizations. In the MTS strategy, production and launch phases start simultaneously; while in the MTO strategy, production phase starts after the sale is done. This order demonstrates a cyclic model which means after the feedbacks are collected, the preparation phase starts. These cyclic models in the MTO and MTS production strategies are presented in Figure 4.1 and 4.2 previously in this chapter. As

previously mentioned, designers have various duties in their organizations under various job titles. Accordingly, there are three types of experiences observed in the sample. In the first type, designers design catalog products MTS production; in the second type, designers design catalog products for MTO production; and in the third type, designers are selling products in MTO production (Figure 4.3). The standard procedure is explained by the designers; but sometimes, the NPD process is shortened due to lack of time. Under this time pressure, designers develop some strategies like skipping the sketching step or presenting their ideas directly from the prototype by skipping all the prior meetings. Designers also evaluate the process they explained, and they find it useful for other functions to participate in the process. They are comfortable about sharing responsibilities; while uncomfortable with the high number of revisions asked by these functions.

To present some of the key findings, first of all, the presented 11-phase process model is reflecting the unique dynamics of the Turkish furniture industry. Designers explained the journey of the product even though they do not have formal responsibilities in all of the phases mentioned. It is also observed that design function works with other functions, and they consult each other in the process, and design generally follows the operations of other functions. While doing so, designers may take over some extra responsibilities as they feel like the owner of the new product in the organization. Accordingly, they take over these extra responsibilities voluntarily even if they complain about the high workload. At this point, designers do not lead the process, but act as consultants to other participative functions.

CHAPTER 5

CONCLUSIONS

After presenting the findings, this chapter discusses the conclusions of the research. In the first section, a brief overview of the study is presented. Later, the main conclusions, which address the four research questions of this research, are explained. Finally, limitations of the research are reported, and some suggestions are made for further research.

5.1. Overview of the Study

Large enterprises (LEs) were recently founded by the end of the 1970s in Turkey, and by that time, the design was an emerging profession for the Turkish industries (Er, 1996). University-level education is started in 1979 by the foundation of the METU Industrial Design Department, and by the 1980s the number of industrial design students increased with the expansion of design education (Er, 1995). When these students started to graduate, some radical changes in the Turkish industry may be expected. However, studies that are conducted in the Turkish furniture industry by the 1990s show that companies are imitating foreign products rather than developing original design concepts (Er, 1995, 1996; Erzurumluoğlu, 1991), and NPD process was not being conducted systematically (Er, 1997). A more recent study of Şengül (2009) also research the position of design in the Turkish furniture industry; however, her sample consists of SMEs which generally do not have any systematical approach while developing new products. Since that time, there is not any in-depth investigation was done that explores the recent situation in the Turkish furniture industry, and this research aims to fill the gap by exploring the NPD process in the Turkish furniture industry.

Before designing the research, current literature is reviewed to develop an understanding of the subject (see Chapter 2). First, the unique properties of the furniture industry and the enterprises are examined. Later, the literature review is narrowed down to focus on the Turkish context, and the current situation of the Turkish furniture industry is evaluated. Also, new product development and some generic process models are assessed. Yet, these generic processes do not present information about specific industries, and they become insufficient for us to understand the uniqueness of the NPD process in the Turkish furniture industry. In light of this review, LEs are thought to be a source of knowledge since they are more likely to conduct the NPD process more systematically than SMEs.

Accordingly, field research is planned, and qualitative data collection methods are applied (see Chapter 3). For sampling, industrial designers who have worked in the LEs in the furniture industry for at least two years are reached. In the interviews, questions are asked about the organization of design function and the process of NPD in the Turkish furniture industry. Also, each participant prepares a visual map that illustrates the organization of design and the process of NPD. Later, collected data is analyzed by using thematic analysis methods, and answers are reached to the research questions of this research.

The findings of the research are presented in detail in the fourth chapter of this thesis. To understand and present the explored NPD process, it is divided into 11 phases. Moreover, roles of design and other functions in the process are also revealed.

This fifth chapter of this thesis is going to present the conclusions of this research. The following sections of this chapter report the individual characteristic of the NPD in the Turkish furniture industry and bring answers to the research questions.

5.2. Revisiting Research Questions

After the collected data is analyzed and interpreted, answers to the research questions of this thesis are revealed. This section is going to present these answers to these four questions.

- 1) What are the stages of the NPD process followed by the large enterprises in the Turkish furniture industry?

While designing the research it is aimed to interview industrial designers in large enterprises (LEs) because it is anticipated that LEs to follow more systematic approaches than SMEs. Research is not focusing on the best cases that utilize design in the NPD; therefore, only criteria is the size for the organizations involved in the sample. Moreover, the research focus is only on the industrial designers who are experiencing the NPD process in LEs. Therefore, it is not aimed to explore and explain the best cases but to bring explanations to the NPD process in the Turkish furniture industry through experiences of industrial designers. Interviews are done with 17 industrial designers who worked in six different fields of furniture industry. These fields are the home; office; flat-pack; contract; kitchen; and baby, child, and teen furniture. Although there are various types of organizations, similar patterns are observed in the data. In the interviews, participants prepared maps that illustrate the NPD process; and after analyzing these maps, some similar phases are observed in each map. Names of these phases are derived from the literature (Cooper, 2011; Nicholas et al., 2011; Ulrich & Eppinger, 2012) and the definitions of participants.

According to my findings, the process of the NPD in these organizations is fragmented into 11 phases that are executed in cyclic order. These phases are preparation, defining the need, research, developing alternatives, developing collections, prototyping, production preparation, production, launch, sales and installation, and feedback (Appendix L). These phases define the unique character of NPD in the Turkish furniture industry. To begin, in the preparation phase, functions of the organizations evaluate feedback from the last NPD and generate insight from activities like exhibition and supplier visits. Later, products to be developed are determined in defining the need phase. In research, developing alternatives, and developing collection phases, designers make a research about the design brief and develop product concepts. Then, product concepts are prototyped and chosen alternatives are prepared for the production. From now on, the order of execution differs between

made-to-stock (MTS) and made-to-order (MTO) strategy which is explored as two distinct types of production in my sampling. In MTS strategy, launch activities are done simultaneously with production; later, products are sold and installed. In MTO strategy, production is done after the sales. Because production is done according to orders of customers, and MTO strategy offers more freedom to their customers in their product choices. The last phase is feedback, in which organizations observe the reaction of the market.

- 2) How and to what extent does the NPD process followed by the large enterprises in the Turkish furniture industry differ from the existing NPD processes identified in the design management literature?

The presented process model has some similarities with the generic models in the literature (Cooper, 2011; Mcrory, 1966; Pugh, 1996; Ulrich & Eppinger, 2012). These models follow the structure of Tidd & Bessant's (2009) innovation funnel (Figure 10). According to this flow, lots of product concepts are created at the beginning of the process, they are evaluated through the process; and in the end, one final solution is reached and that product idea is launched. This basic flow is also observed in the 11-phase process model defined in this research along with other generic models. Furthermore, some researchers also define the NPD process in the furniture industry (Bennington, 2004; Er, 1997; Lesslie & Reimer, 2006). To summarize these models, first, the designer prepares product sketches according to the design brief. Later, a committee or the manager evaluates these sketches and chooses the best alternative, and the alternative is prototyped and exhibited in the trade fair. According to feedback, the committee makes the manufacturing decision of the exhibited prototypes. This flow of execution is also evident in the 11-phase process model defined in this research. These are some similarities of my findings with the current literature; however, my in-depth research reveals some unique details in the execution of the phases.

First of all, one of the prominent outcomes of this research is to explore two types of production strategies which are MTS and MTO. Both the MTO and MTS strategies rely on the mass production of units; however, MTO has a more flexible system. For another leading difference, designers in my sampling have three types of experiences in these organizations. In the first two types, designers develop catalog products for MTS and MTO. The difference between these two types is the designers in the MTO organizations do not develop collections, instead, they let customers develop a collection with the units they are selling. On the other hand, MTS organizations even may not let their customers buy the pieces of the collections separately, because MTS organizations manufacture these collections before the sales according to sales estimations. So, designers in MTS organizations have stricter instructions. They generally develop a collection of units that they cannot change because the products are going to be mass-manufactured before customer orders. Another, material option they offer is more limited and should be decided carefully because after the mass manufacturing of the product much of the actions are irreversible. In the third type of experience, designers work as a part of the sales function in MTO organizations and manage the orders of customers. Even, they sometimes develop one-off designs according to the customer's needs. As the main difference from the generic models in the literature two findings are highlighted. According to my findings, first, the difference in the execution of the phases between MTO and MTS organizations; and second, three types of experience are discovered (see Section 4.3).

There are also some strategies utilized by the designers and organizations during various phases of the NPD process. First of all, designers mentioned that they do sketches for themselves while generating concepts, and they prefer to present their ideas to other functions through CAD models or realistic renderings. Because this kind of presentation makes easier for non-designer functions of the organization to understand the product concepts. Furthermore, in the research phase, designers conduct research about the design brief. This research is usually conducted by visiting websites or stores of competitors, and designers usually keep their findings to

themselves as this research is not systematically conducted. Designers generally discuss their research findings over their product concepts. Furthermore, in the home; and baby, child and teen furniture, developing collections is observed as a market tradition. So, organizations in these two fields launch collections that consist of standardized units (see Section 4.3.1.6), and some tactics are used by the organizations while developing collections. If the organization is developing collections, designers start developing specific units. For example, this unit is the dining room console in the home furniture; and wardrobe, table, and bedstead in the baby, child, and teen furniture. Later in the process, that specific unit is prototyped, and during prototyping, designers develop the whole collection. In the evaluation meetings, designers present both the prototype and the realistic renderings of the rest of the collection. As an alternative way, the whole collection is developed and prototyped, and evaluation is done with the prototypes. Also, it is observed that organizations synchronize their NPD cycle with the exhibitions they attend. Even, they launch products before the exhibition. If the product is developed during the exhibition period, organizations showcase their newest prototypes in the exhibition to collect feedback.

Designers also mentioned how organizations flex the process of NPD. Generally, these adaptations are done because of the time limitations and some of the phases are skipped and some meetings are not done as anticipated. This means that explained 11-phase model reflects the formal flow of execution, but sometimes new products may be developed by taking informal actions with the supervision of the decision-makers.

- 3) What is the role of design function in the NPD process of the Turkish furniture industry, and how do the various functions of the organization take place in the process?

In line with what Ulrich & Eppinger (2012) suggest, some of the functions of the organization consisting of marketing, design, and manufacturing with their finer divisions (Table 4.1) have key roles in the NPD process. As being one of the key members of the NPD, design works with other functions in the process.

In large furniture companies, designers lead some of the phases of NPD such as developing alternatives, research, and developing collections. However, it is also observed that designers not only have functional roles but also give consultation to other functions in the process. Sometimes, more than being a consultant, designers also have some extra roles. In their research, Perks et al. (2005) defined three types of roles for design in the organization, *design as functional specialism*, *design as part of multifunctional team*, and *design as NPD process leader*. According to my findings designers in the Turkish furniture industry act as a part of a multifunctional team. It means that designers are encouraged by the organizations to be a key part of the NPD team, and integrate with other functions in order to develop the new product successfully. As a result, designers “own” the product that they dreamed and support its journey in the process of NPD. They voluntarily accept some other roles in the process, and they are also active in the launch phase. On the other hand, designers generally do not have responsibilities in the production phase. Still, if any problem occurs during production, manufacturing consults designers. In a similar way, designers do not draw technical details of the product. Organizations generally give this responsibility to the engineering function, which is one of the finer divisions of manufacturing. It is also observed that some MTO organizations employ designers as sales experts because they need the skills of designers to manage the demands of the customers.

Moreover, it is also found out that designers are not active in defining the need phase. Svengren, Ainamo, & Vildinge (2007) point out that design thinking should be incorporated into problem definition in order to create radical innovations. In furniture organizations, which do not seem to aim for radical innovations, design briefs are generally prepared by the marketing function. In defining the need phase, prepared design brief handed over to the designers as an instruction, and designers generally merely deal with the style of the product within the instruction given. However, my interpretations are reflecting only the perspectives of designers, and further research

is needed to investigate the brief process by conducting research with marketing people.

Other functions also have some key roles in the process of NPD. One of them is the prototype manufacturing unit which produces the prototypes in the process. Generally, the engineering function manages this manufacturing process because engineering has full control of the details of the product as they prepare the manufacturing drawings in the process. On the other hand, in some of the organizations, the prototype is manufactured in the mass manufacturing line. In that case, the production planning function takes over the responsibility of the prototype. Also, purchase function has close relations with suppliers and their core responsibility is to supply raw materials that are needed to produce the new product. Moreover, the cost is also calculated in the process by the engineering, or production planning function. According to these explanations, key functions in the NPD process are marketing, design, engineering, prototype manufacturing, production planning, and purchase. These key functions are mentioned as a furniture designer, merchandising manager, fabric coordinator, and sample maker in the Bennington's (2004) study. Thus, my findings of the key functions are not corresponding exactly with Bennington's.

Furthermore, decisions about the developing products are made with the committee meetings in the NPD process. As some of the researchers are also mentioned (Bennington, 2004; Er, 1997; Lesslie & Reimer, 2006), this committee generally consists of managers from related functions. According to my findings, marketing, management, and design are the core members of this committee, but sometimes other functions like manufacturing and sales also involve in these meetings.

In the light of these explanations, findings may reflect the perspective of only the industrial designers, but interviewing with only designers created a friendly atmosphere during interviews and they reflect their opinions in more freedom. In an alternative scenario, interviews may be conducted with a group of people from the same organization to make an in-depth investigation of an NPD. But in that way,

participants may hesitate to make negative comments rather they will be motivated to present a good picture. Therefore, in this research, the opinions of the designers are also noted. Designers are happy for other organizational functions to get involved in the process of NPD but they are sometimes not comfortable about the comments in the meetings. Because in the meetings, people without basic design knowledge may make comments about the design. Designers are also unhappy about the high number of revisions that are given in these meetings which they are obligated to make. Also, the decision-making process is another struggle for designers in these crowded meetings, in which the dominancy of the general manager in decision making may make this process easier for designers. Designers are also complaining about the time pressure and heavy workload. Even some of the designers admit that they accept the revisions even they are not happy about it just because of the deadlines they have. Designers also have some unofficial roles in the organizations. As previously mentioned, designers own the product and they voluntarily accept some extra responsibilities like managing photo shootings or finding suppliers. But sometimes these duties go beyond their anticipation and they are starting to do responsibilities of other functions. In this manner, designers may not be leading the process officially, but they are definitely controlling the whole process with these unofficial roles.

- 4) How do other stakeholders including retailers, suppliers, and customers participate in the NPD process of the Turkish furniture industry?

Outsourced stakeholders who take place in the process of the NPD are stores, customers, and suppliers. In my findings, stakeholders external to the organization have influences on the NPD process.

Large furniture enterprises generally sale their products in franchised stores or their own stores. According to my findings, these stores and customers give feedback to the organization about launched products. Generally, the marketing and sales functions arrange meetings with these stakeholders and get feedback over newly developed products. One of the participants explained a survey method they apply in the

exhibition where customers and stores give points to the new products of the organization. Scores of the products affect the decision of the committee after the exhibition. Also, some of the organizations produce the new product in a small number and sends them to some key stores to get their feedback. Moreover, one of the organization in sample organize home visits to their end-customers. Bennington (2004) also stated that some manufacturers invite key retailers in the committee meetings to ask their opinions about the new product. He also reported face-to-face meetings with customers in which customers are asked about their opinions about the prototypes; however, these kinds of methods are not explored in my research.

Following the newest products of suppliers is critical for organizations, because success in the market is also related to these decorative raw materials like chipboards, hinges, and handles. Therefore, furniture organizations have a strong relationship with suppliers. Purchase and design functions meet with suppliers to get information about their newest products. Even, suppliers may develop raw materials according to the demands of the organization. Relationship with suppliers and manufacturers is also explored in the research of Tatlısu (2016). He conducted research with large furniture enterprises in Turkey and noted that both parties have advantages in that relationship. From the supplier side, the furniture manufacturer pushes the boundaries of the supplier to increase the overall quality of products. On the other hand, the furniture company reduces product development costs and time significantly. As a reflection of this win-win relationship, in my findings, suppliers are explored as a key influencer of the design of the new products. Suppliers also follow the trends in the market, and they develop their products according to these trends. Therefore, their influence sometimes plays a key role in the NPD process, and designers may inspire from the style of the products that suppliers manufactured.

In this section, four research questions of this thesis are answered by discussing the findings of this research within the current literature. This research presents up-to-date knowledge on the current situation about the NPD process in the Turkish furniture industry. However, this research has also some limitations; and accordingly, some

suggestions for further research. These limitations and suggestions are explained in the next section.

5.3. Limitations of the Study and Recommendations for Further Research

Qualitative research methods are applied in this study; as a result, in-depth interviews are conducted with a small sample of designers. First of all, with a larger sample, new findings can be explored in the process of NPD in the large enterprises. Moreover, this research has a local focus on the Turkish furniture industry; therefore, findings of this research may not represent the situation in other countries. Additionally, findings represent the perspectives of designers. As explained in the process of NPD other functions also have some key roles. Therefore, interviewing with other key functions would help to explore some of the phases in which designers are not having full control.

Moreover, it was mentioned that there are also architects and interior designers are working as furniture designers in the organizations. To make an assumption, they should also have similar roles to the industrial designers, but there could be some differences with the unofficial roles they have. To clarify, research can be done to reveal the different roles of different professionals in the team of furniture designers in organizations.

As a recommendation for further research, the presented 11-phase model of the NPD can be used as a template for further research in the Turkish context as well as in other countries. Also, this template may help to design quantitative research that could help researchers to investigate with larger samples. Furthermore, there are six types of fields are included in the sample like home, office, and kitchen furniture. If further researchers focus on one of the fields, the unique character of these fields may be revealed.

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APPENDICES

A. INTERVIEW GUIDE

1. Bölüm: Organizasyon

- 1a) Eğitiminiz ve mobilya sektör tecrübeniz hakkında bilgi verebilir misiniz?
- 1b) Çalıştığınız şirketin çalışma alanı, üretim kapasitesi ve satış-pazarlama yöntemi hakkında bilgi verebilir misiniz? (Bu aşamada büyük mobilya firma tecrübesi hakkında bir karar verilmesi gerekiyor.)
- 1c) Çalıştığınız şirketin yabancı bir ortaklığı var mı?
- 1d) Çalıştığınız şirketin tasarım stratejisi hakkında bilgi verebilir misiniz?
- 1e) Çalıştığınız şirkette, görev aldığınız tasarım biriminin görev ve sorumlulukları nelerdir? Tasarım biriminin diğer birimler ile olan ilişkilerini açıklayabilir misiniz? (Katılımcı ile oluşturulacak tablo üzerinden tartışılacaktır)

2.Bölüm: Yeni Ürün Geliştirme

- 2a) Şirket içerisinde yaşadığınız bir yeni ürün geliştirme sürecini göz önüne alacak olursak, izlediğiniz aşamaları ve sürece dâhil olan diğer aktörleri, beraber hazırlayacağımız bir şema üzerinde anlatabilir misiniz? (Katılımcı ile oluşturulacak tablo üzerinden tartışılacaktır)
- 2b) Yaşanılan sürecin olumlu ve olumsuz yönlerini, kişisel tecrübeniz ve bakış açınızla değerlendirebilir misiniz?

3.Bölüm: Sorumluluk Dışı Faaliyetler

- 3) Organizasyon içerisinde kendi görev ve sorumluluk alanınız dışında olan ve gerçekleştirdiğiniz görevler nelerdir? Gerçekleştirdiğiniz bu görevler hakkında olumlu veya olumsuz görüşleriniz nelerdir?

B. PREPARED MAPS WITH PARTICIPANTS

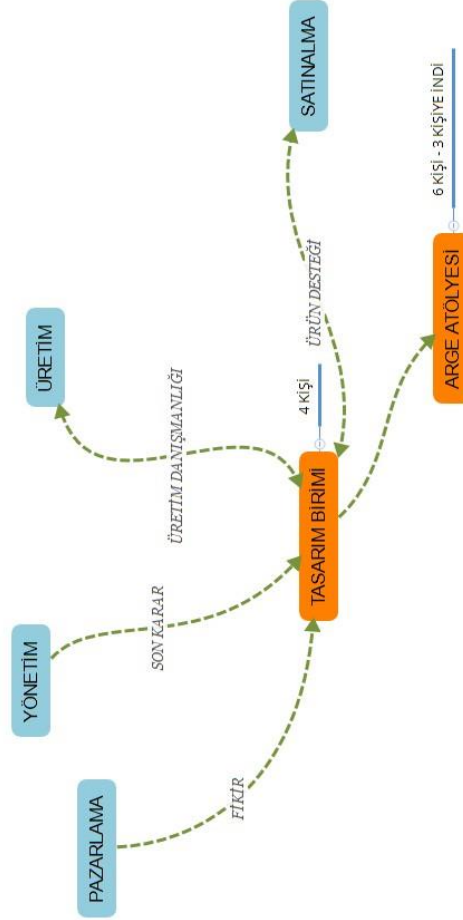


Figure B.1. Example of an organizational map

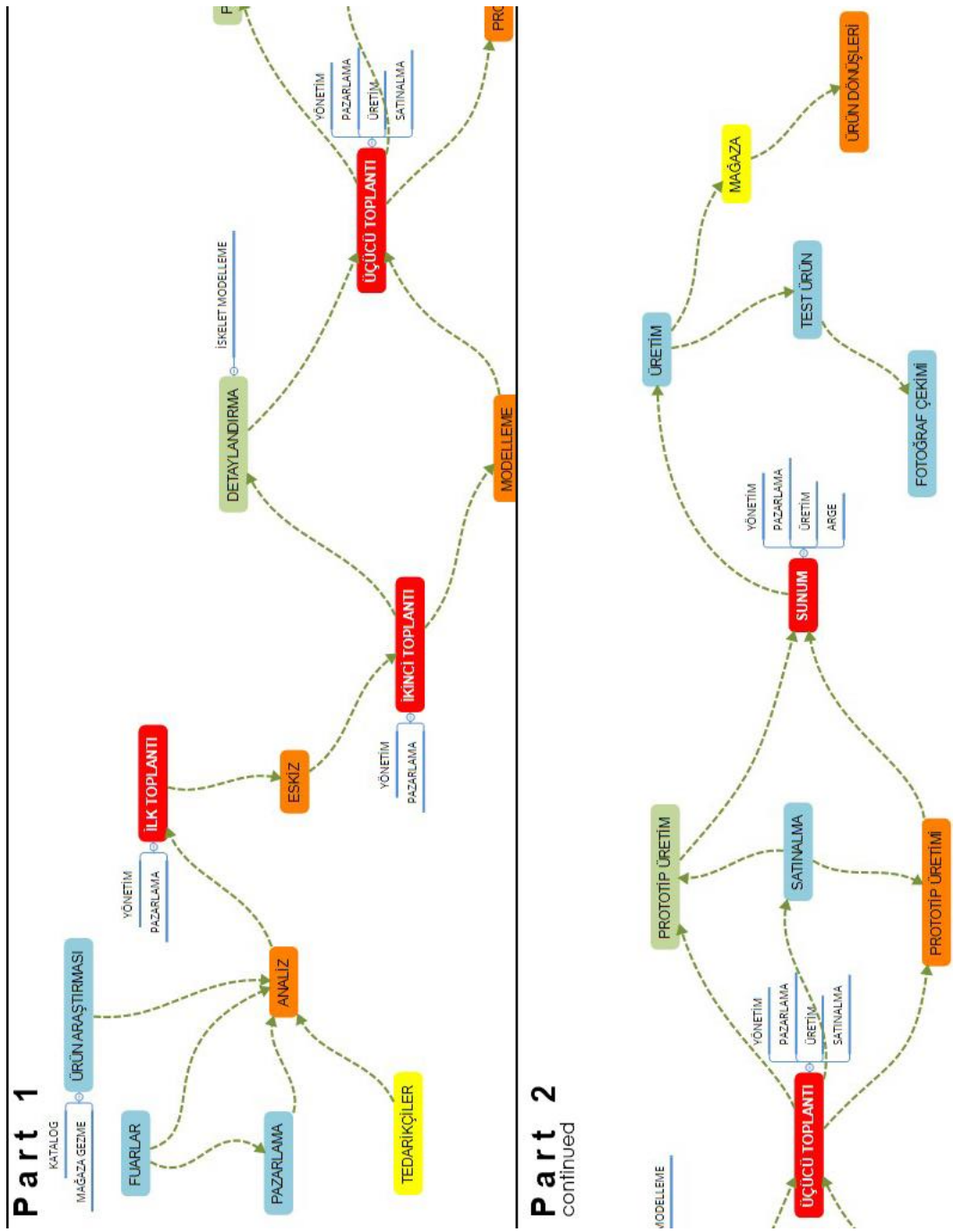


Figure B.2. Example of an NPD process map

C. CONSENT FORM

Bu araştırma, ODTÜ Endüstri Ürünleri Tasarımı Bölümü yüksek lisans öğrencilerinden Nimet Başar Kesdi tarafından öğrencinin yüksek lisans tezi kapsamında yürütülmektedir.

Çalışmanın Amacı Nedir?

Türk mobilya sektöründe faaliyet gösteren büyük ölçekli firmalarda çalışan veya çalışmış, sektörde en az iki yıl tecrübeye sahip endüstri ürünleri tasarımcıları ile görüşülerek, işletmelerde yürütülen yeni ürün geliştirme faaliyetleri ve tasarımcıların şirket içi sorumluluk alanları hakkında bilgi alınması ve toplanan verilerin derlenerek sunulması amaçlanmaktadır.

Bize Nasıl Yardımcı Olmanızı İsteyeceğiz?

Araştırma Türk mobilya sektöründe faaliyet gösteren, kendi üretim imkânları ve tasarım kabiliyeti olan büyük işletmelerde tasarım sürecini yöneten kişiler veya firmanın tasarımcıları ile yüz yüze veya çevrimiçi görüşme şeklinde yürütülecektir.

Katılımla ilgili bilmeniz gerekenler:

Öncelikle çalışma kapsamında açıklanan her türlü firma bilgisi tamamen gizli tutulacak ve markayı ifşa edici bir bilgi kesinlikle paylaşılmayacaktır. Çalışmanın tek amacı sektör içerisinde yürütülen yeni ürün geliştirme faaliyetlerini, bu süreç içerisinde yer alan tasarımcıların bakış açısından ortaya koymak ve tasarımcıların üstlendiği görevler ile tasarımcıların bu görevlere karşı tutumlarını araştırmaktır. Bu amaçla farklı tasarımcılar ile yapılan görüşmeler sonucunda toplanan veriler incelenerek genel bir harita oluşturulacak ve mevcut araştırmalar ve teoriler üzerinden bir tartışma yürütülecektir.

Cevaplarınız tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Katılımcılardan elde edilecek bilgiler toplu halde değerlendirilecek ve sadece bilimsel yayınlarda kullanılacaktır.

Çalışma genel olarak kişisel rahatsızlık verecek sorular veya uygulamalar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir

nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı yarıda bırakmakta serbestsiniz. Böyle bir durumda çalışmayı uygulayan kişiye çalışmadan çıkmak istediđinizi söylemeniz yeterli olacaktır.

Veri Analizi:

Toplanacak veriler firmaların organizasyonlarında tasarım birimi ve ilişkili birimlerin fonksiyonel ilişkisi ve örnek bir yeni ürün geliştirme süreci üzerinden ve tasarımcının görevleri hakkında sorular içermektedir. Yanıtlar, doğru değerlendirmelerin yapılmasını sağlamak amacıyla ses kayıt cihazı yardımı ile kaydedilecektir.

Araştırma ile ilgili daha fazla bilgi almak isterseniz:

Çalışma ile ilgili bilgi almak isterseniz Nimet Başar Kesdi (basar.kesdi@metu.edu.tr) ile iletişim kurabilirsiniz. Ayrıca verilere erişimi olan, tez danışmanı Yrd. Doç. Dr. Pınar Kaygan (pkaygan@metu.edu.tr) ile de iletişim kurabilirsiniz.

Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.
(Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad

Tarih

İmza

---/---/---

E. THE XMIND TEMPLATES PREPARED BEFORE THE INTERVIEWS

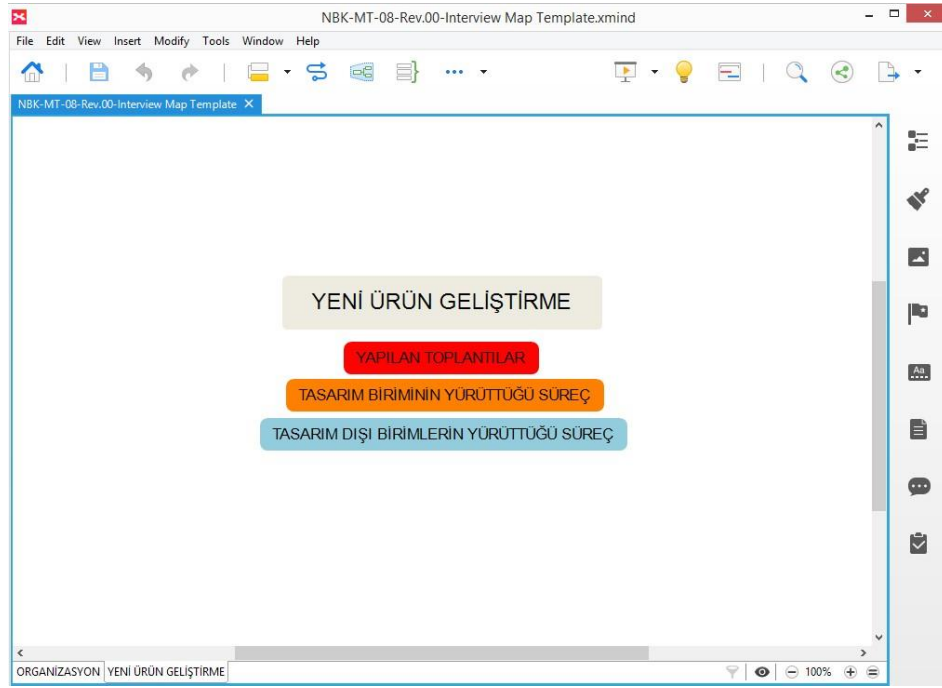


Figure E.5. Xmind template for the NPD map

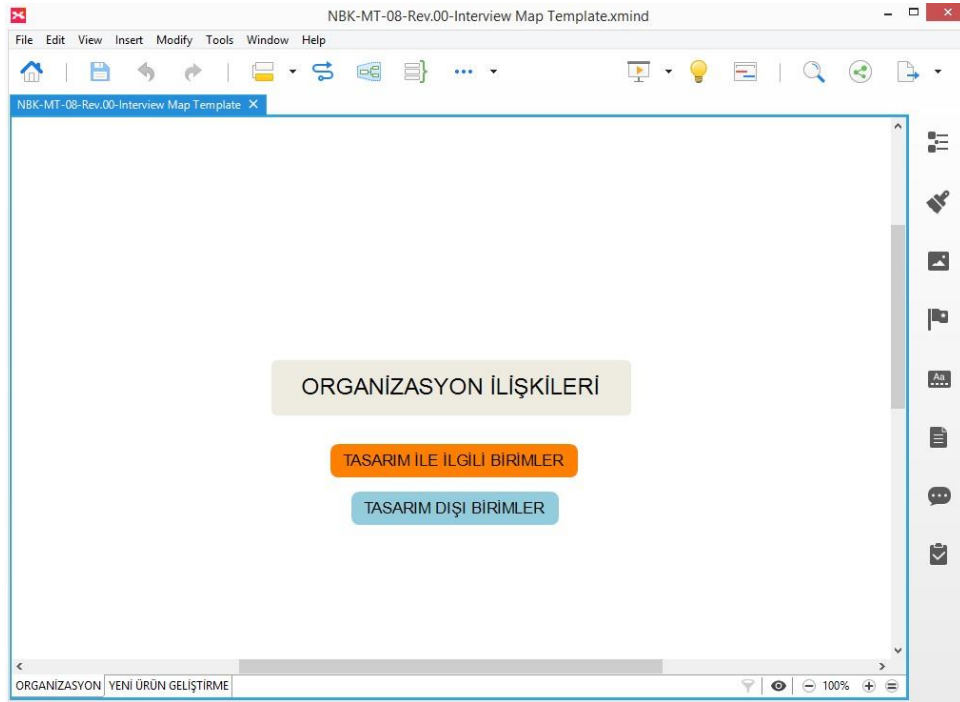


Figure E.6. Xmind template for the organization map

F. CODING THE TEXTUAL DATA

The screenshot displays the MaxQDA software interface. The top menu bar includes options like 'Giriş Sayfası', 'İçerikler', 'Kodlar', 'Değişkenler', 'Analiz', 'Karma Yöntemler', 'Görsel Araçlar', 'Raporlar', 'Projenin Birleştir', 'Değiş Tokus Dosyasını Aç', 'Harici Dosyalar', 'Proje Kaydet ve Anonimleştir', 'Değiş Tokus Dosyasını Dış Aktar', 'Etkinleştirilmiş Belgelerden Proje', 'Kullanıcı Yönetimi', and 'Günlük Yönetimi'. The main window is titled 'Belge Tarayıcısı: P17 Transcript' and shows a transcript with the following text:

bi, kendi bi slogan vardır, muftak uzmanı yani ben ekstra başka şey yapmıyorum diyo. Muftak olarak direkt söyleyebilirsin. Ofis mobilya... ofisin içerisinde bir muftak varsa, oda olabilir, küçük kichenette tarzı şeylerde olabilir. Sadece bir ada herhangi bir oturma odasının ortasına bir ada da isteyebilir, bunu direkt mobilyada... şeklinde çalışabiliriz. İlla muftak demiyoruz ama muftak uzmanı olarak geçiyor piyasada

7 R: Pekala üretim kapasitesi ne kadar büyük , yada çalışan sayısını söylersen, toplam çalışan sayısını, üretim

8 P17: Şöle söylüyüm yönetim kadrosunda yaklaşık 82 kişiye yakın kişi var. Çalışan olarak da 100 kişilik bir ayrıca işçi ekibi olarak işçi olarak 100 kişilik bir ekip var. Gerisi de zaten şey makineler vesaire. Yani fabrika da genel olarak sadece fabrika için 180 kişilik bir kadrosu var.

9 R: Ayrıca bayii ağı var, ya siz dahil değilsiniz sanırım siz bu çalışan sayısına?

10 P17: Yok bunlara dahil değiliz, bayiliklerimiz yaklaşık Türkiye de seksene yakın bayii var her bayide tabii çalışan sayısı farklı oluyor. Mesela bizde 3 kişi çalışıyor, ama bu iki beş arasında değişebiliyor. Ayrıca yurtdışında da beş bayisi var.

11 R: Peki satış pazarlama yönetimi nasıl bu bayilik sistemini biraz anlatır mısın?

12 P17: Bayilik sistemi şöyle, biz müşterimin... birebir diyalog içerisindeyiz. Sonrasında işte çözümler yapıyoruz, çözümler yapıldıktan sonra satış aslında direkt satış bizlere ait fabrikaya ait değil fabrikadaki satış pazarlama tarafı bize satış pazarlama gibi düşünebilirsin. Yani onlar bize detayları aktarıyorlar biz asıl görünen yüz bizleriz onlar hiç bir zaman görünmüyor bunu nasıl açıklar... Yani nasıl bir şey sormak istiyosun tam olarak satış pazarlama derken. Doğru anlıyım, doğru söylüym.

13 R: Yani bayiler yolundan özel tasarım mı yapıyo müşterilere özel.

14 P17: Yani tabii mekana uygun tasarım yapıyoruz biz tabii hazır mobilya şeklinde geçiyo ama bayi şey

The interface also shows a 'Belge Sistemi' (Document System) on the left with a list of documents: P01 Transcription (112), P02 - Transkript (144), P03 Transcript (118), P04 Transcript (150), and P05 Transkript (141). Below this is a 'Kod Sistemi' (Code System) with a list of codes: Quotations (79), Sahipsiz kodlar (19), Participant (0), Education (14), Total experience in furniture industry (21), Job Definition (0), Design director (1), Designer (4), Design & R&D manager (1), Project sales expert (1), Sales expert (0), Investigated company (0), Field of operation (0), Contract furniture (2), Company produce build-your-own ty... (1), Company produce baby, child and tee... (2), Company produce office furniture (4), Company produce kitchen furniture (1), Company produce home furniture (8), Type of distribution (0), Company sell products online (6), Company sell products to wholesalers (1), and Company sell products on contract ba... (1). The bottom right corner shows a 'Tek kodlama Sorgusu (NEVA kodların kombinasyonu)' (Single code search (NEVA code combination)) field.

Figure F.7. Coding the textual data with MaxQDA

G. FINAL LIST OF THEMES

| | | | |
|---|---|--|----|
| ▲ | ☐ | Investigated company | 0 |
| ▲ | ☐ | Field of operation | 0 |
| | ☐ | Contract furniture | 2 |
| | ☐ | Company produce build-your-own type furniture | 1 |
| | ☐ | Company produce baby, child and teen furniture | 2 |
| | ☐ | Company produce kitchen furniture | 1 |
| | ☐ | Company produce office furniture | 4 |
| | ☐ | Company produce home furniture | 8 |
| ▲ | ☐ | Type of distribution | 0 |
| | ☐ | Company sell products online | 6 |
| | ☐ | Company sell products to wholesalers | 1 |
| | ☐ | Company sell products on contract basis | 16 |
| | ☐ | Company sell product to independent furniture stores | 1 |
| | ☐ | Company sell product at in-store galleries | 0 |
| | ☐ | Company has franchised stores | 13 |
| | ☐ | Company has its own stores | 11 |
| ▲ | ☐ | Design strategy | 0 |
| | ▸ | ☐ Market related | 27 |
| | ▸ | ☐ Functional properties | 15 |
| | ▸ | ☐ Product style | 11 |
| ▲ | ☐ | Type of production | 0 |
| | ☐ | Company stock products | 1 |
| | ☐ | Company produce on order | 3 |
| | ☐ | Company produce one off products | 1 |
| ▲ | ☐ | Responsibilities of designer | 0 |
| ▲ | ☐ | Design related activities | 0 |
| | ☐ | Designing products | 18 |
| | ☐ | Revising products | 1 |
| | ☐ | Managing outsourced designers | 3 |
| | ☐ | Introducing new design to the organization | 1 |
| | ☐ | Designing products for contract projects | 5 |
| | ☐ | Following prototyping process | 7 |
| | ☐ | Defining material options | 2 |
| ▲ | ☐ | Research | 0 |
| | ☐ | Visiting exhibitions | 1 |
| | ☐ | Doing researches related with the product | 0 |
| | ☐ | Following furniture trends | 2 |
| | ☐ | Visiting stores | 0 |
| | ☐ | Doing market analysis | 1 |
| ▲ | ☐ | Launch activities | 0 |
| | ☐ | Preparing 3d data used in sale | 1 |
| | ☐ | Advice o presentation of the product | 1 |
| | ☐ | Product launch activities | 2 |
| | ☐ | Photoshooting activities | 18 |
| | ☐ | Catalogue related activities | 5 |
| | ☐ | TV commercial activities | 2 |
| | ☐ | IP rights processes | 3 |
| | ☐ | Exhibition related activities | 14 |
| | ☐ | Managing product range | 1 |

Figure G.8. Final list of themes (part 1)

| | |
|---|----|
| ▲ <input checked="" type="checkbox"/> Sales activities | 0 |
| ▲ <input checked="" type="checkbox"/> Project sale activities | 0 |
| <input type="checkbox"/> Following assembly process | 1 |
| <input type="checkbox"/> In construction site activities | 1 |
| <input type="checkbox"/> Selling process of designed project | 1 |
| <input type="checkbox"/> Designing with designed standart parts | 6 |
| <input type="checkbox"/> Taking dimensions | 2 |
| <input type="checkbox"/> Product arrangement is made for contract projects | 2 |
| <input type="checkbox"/> Taking care of foreign customers | 1 |
| <input checked="" type="checkbox"/> Pricing of the new product | 2 |
| <input checked="" type="checkbox"/> Selling product in exhibitions | 2 |
| <input checked="" type="checkbox"/> Delivering project to the customer in construction site | 1 |
| ▲ <input checked="" type="checkbox"/> Production related activities | 0 |
| <input checked="" type="checkbox"/> Following outsourced production process | 3 |
| <input checked="" type="checkbox"/> Controlling pre-production | 1 |
| <input checked="" type="checkbox"/> Production planning activities (laser route) | 1 |
| ▲ <input checked="" type="checkbox"/> Purchasement related activities | 0 |
| <input checked="" type="checkbox"/> Supplier related activities | 10 |
| <input checked="" type="checkbox"/> Purchase operations activities | 2 |
| <input type="checkbox"/> Consulting outsourced products | 1 |
| ▲ <input checked="" type="checkbox"/> Documentation | 0 |
| <input type="checkbox"/> Prepering product specification document | 1 |
| <input type="checkbox"/> Preperaing his/her own job description | 2 |
| <input type="checkbox"/> Keeping meeting notes | 1 |
| <input checked="" type="checkbox"/> Preparing office documents | 6 |
| <input checked="" type="checkbox"/> Designer prepare contract documents | 3 |
| ▲ <input checked="" type="checkbox"/> Other Activities | 0 |
| <input type="checkbox"/> Managing product range | 1 |
| <input checked="" type="checkbox"/> Developing manufacturing tools | 3 |
| <input checked="" type="checkbox"/> Using 3d modelling abilities in various duties | 3 |
| <input checked="" type="checkbox"/> Developing other processes in the organization | 2 |
| <input checked="" type="checkbox"/> Designing signals in factory building | 1 |
| <input checked="" type="checkbox"/> Take part in legal cases about IP violation | 1 |
| <input checked="" type="checkbox"/> Designing interiors | 2 |
| ▲ <input checked="" type="checkbox"/> Extra duties | 0 |
| <input checked="" type="checkbox"/> Designer opinion about extra duties | 1 |
| <input type="checkbox"/> This extra duties assigned for designers free time | 1 |
| <input type="checkbox"/> Link this duties with lack of personnel | 1 |
| <input checked="" type="checkbox"/> Finds this duties annoying | 3 |
| <input checked="" type="checkbox"/> Time consuming | 3 |
| <input checked="" type="checkbox"/> Extra duties naturally occur according to central role of desig | 4 |
| <input checked="" type="checkbox"/> Link this extra duties with trust from management | 1 |
| <input checked="" type="checkbox"/> Extra duties related with high qualification of designer | 4 |
| <input checked="" type="checkbox"/> Volunteer for this extra duties | 3 |
| <input checked="" type="checkbox"/> Designer likes controlling the product related processes | 2 |
| <input checked="" type="checkbox"/> Finds this duties useful for her/his personel development | 7 |

Figure G.9. Final list of themes (part 2)

| | | | |
|---|---|--|----|
| ▲ | ☐ | Organization of design function | 0 |
| ▲ | ☐ | Design function is managed by | 0 |
| | ☐ | General manager | 2 |
| | ☐ | Assistant general manager | 3 |
| | ☐ | Marketing manager | 5 |
| | ☐ | Product director | 2 |
| | ☐ | Design director | 2 |
| | ☐ | Engineering function manager | 1 |
| ▲ | ☐ | Design function manages other functions | 0 |
| | ☐ | Design officer | 1 |
| | ☐ | Commercial purchasement | 1 |
| | ☐ | Advertisement function | 3 |
| | ☐ | Prototype production team | 2 |
| | ☐ | Factory based technical team | 2 |
| ▲ | ☐ | Design function manage outsourced activities | 0 |
| | ☐ | Advertisement agencies | 1 |
| | ☐ | Photo shooting agencies | 7 |
| | ☐ | Organization agencies | 1 |
| ▲ | ☐ | Design functions has relations with | 0 |
| ▲ | ☐ | Finance | 0 |
| | ☐ | Accountant | 2 |
| ▲ | ☐ | Sales | 0 |
| | ☐ | Sales | 4 |
| | ☐ | Sales | 1 |
| | ☐ | Outsource supply function | 2 |
| | ☐ | Export | 4 |
| | ☐ | Import | 1 |
| | ☐ | Sales planning | 1 |
| | ☐ | Commercial purchasement | 4 |
| | ☐ | Stores | 2 |
| | ☐ | Stores | 1 |
| ▲ | ☐ | Project sales team | 3 |
| | ☐ | Visualization team | 1 |
| ▲ | ☐ | Design | 0 |
| | ☐ | Prototype production team | 4 |
| | ☐ | Upholstered design team | 1 |
| | ☐ | Design officer | 1 |
| | ☐ | Architecture | 1 |
| | ☐ | Store design | 3 |
| | ☐ | Visual arrangement team | 2 |
| ▲ | ☐ | Manufacturing | 0 |
| | ☐ | Quality | 9 |
| | ☐ | Purchasement | 19 |
| | ☐ | Purchasement | 1 |
| | ☐ | Production planning | 10 |
| | ☐ | Production Planning | 4 |
| | ☐ | Central Planning | 3 |
| | ☐ | Production | 16 |
| | ☐ | Production | 6 |
| | ☐ | Product development | 2 |
| | ☐ | Engineering | 20 |
| | ☐ | Engineering | 1 |

Figure G.10. Final list of themes (part 3)

| | |
|--|----|
| <input type="checkbox"/> Cost accounting | 2 |
| <input type="checkbox"/> Technical control | 1 |
| <input type="checkbox"/> Technical team | 1 |
| <input type="checkbox"/> Stock | 1 |
| <input type="checkbox"/> Logistic | 4 |
| <input type="checkbox"/> Assembly team | 3 |
| <input type="checkbox"/> Construction workers | 1 |
| ▶ <input type="checkbox"/> Marketing | 46 |
| <input type="checkbox"/> Management | 8 |
| <input type="checkbox"/> Management | 1 |
| <input type="checkbox"/> Factory manager | 2 |
| <input type="checkbox"/> Suppliers | 2 |
| ▲ <input type="checkbox"/> NPD process | 0 |
| ▲ <input type="checkbox"/> Preperation | 0 |
| ▲ <input type="checkbox"/> Supplier & material research | 0 |
| <input type="checkbox"/> Suppliers products are analyzed | 16 |
| <input type="checkbox"/> Suppliers are shortlisted | 1 |
| ▲ <input type="checkbox"/> Feedback evaluation | 0 |
| <input type="checkbox"/> Sales figure | 1 |
| <input type="checkbox"/> Exhibition outtcomes are evaluated | 1 |
| ▲ <input type="checkbox"/> Market research | 0 |
| <input type="checkbox"/> Store visit | 1 |
| <input type="checkbox"/> Competitors research | 4 |
| <input type="checkbox"/> Exhibition visit | 8 |
| <input type="checkbox"/> Customer visit | 1 |
| <input type="checkbox"/> New product ideas stored | 4 |
| <input type="checkbox"/> Trends research | 9 |
| <input type="checkbox"/> Special trips are organized for designers | 1 |
| ▲ <input type="checkbox"/> Process development | 0 |
| <input type="checkbox"/> Size templates are generated by engineering them to reduce wast | 2 |
| <input type="checkbox"/> Documenting the process | 1 |
| <input type="checkbox"/> Process is revised | 2 |
| <input type="checkbox"/> Designer develops the NPD process | 5 |
| ▲ <input type="checkbox"/> Definition of the need | 0 |
| ▲ <input type="checkbox"/> Stimulants | 0 |
| <input type="checkbox"/> Designer instinct | 1 |
| <input type="checkbox"/> Competitors products | 3 |
| <input type="checkbox"/> Sales feedbacks | 1 |
| <input type="checkbox"/> Store owners feedbacks | 1 |
| ▲ <input type="checkbox"/> Evaluation | 0 |
| ▲ <input type="checkbox"/> Specific function demand new product | 0 |
| <input type="checkbox"/> Marketing | 11 |
| <input type="checkbox"/> Management | 3 |
| <input type="checkbox"/> Product management | 5 |
| <input type="checkbox"/> Designer | 7 |
| <input type="checkbox"/> Export | 2 |
| <input type="checkbox"/> Store | 2 |
| <input type="checkbox"/> Cooperate customers | 5 |
| ▲ <input type="checkbox"/> Two or more function demand new product | 0 |
| <input type="checkbox"/> Broader participation | 8 |
| <input type="checkbox"/> Marketing management and design | 1 |
| <input type="checkbox"/> Sales, marketing and design | 1 |

Figure G.11. Final list of themes (part 4)

| | |
|---|----|
| <input type="checkbox"/> Sales and design | 1 |
| <input type="checkbox"/> Sales and management | 1 |
| <input type="checkbox"/> Marketing and management | 4 |
| <input checked="" type="checkbox"/> Product planning meetings | 16 |
| <input checked="" type="checkbox"/> Schedules are planned | 0 |
| <input type="checkbox"/> Design briefs are assigned to designers | 6 |
| <input type="checkbox"/> Process deadlines are determined | 13 |
| <input type="checkbox"/> Idea meetings are done to vote on stored ideas | 2 |
| <input checked="" type="checkbox"/> How design brief is explained | 0 |
| <input type="checkbox"/> Photos of product is shown (imitation) | 1 |
| <input type="checkbox"/> Target sales number | 1 |
| <input type="checkbox"/> Potential user | 1 |
| <input checked="" type="checkbox"/> New material options and accessories are decided to be added to | 1 |
| <input checked="" type="checkbox"/> Desired product is explained in detail | 3 |
| <input type="checkbox"/> Sale channel | 2 |
| <input checked="" type="checkbox"/> User segmentation is made | 5 |
| <input checked="" type="checkbox"/> Price range mentioned | 9 |
| <input checked="" type="checkbox"/> Product style & materials are explained | 6 |
| <input checked="" type="checkbox"/> Product type is defined | 3 |
| <input checked="" type="checkbox"/> Competing products are mentioned | 4 |
| <input checked="" type="checkbox"/> Photos of products are shown | 2 |
| <input checked="" type="checkbox"/> Same products in the market is asked to develop | 1 |
| <input checked="" type="checkbox"/> Pieces of collection is defined | 2 |
| <input type="checkbox"/> Outsourced designer is oppointed for a new design | 3 |
| <input checked="" type="checkbox"/> How often planning meetings are done | 0 |
| <input type="checkbox"/> Twice a year | 1 |
| <input type="checkbox"/> Every year | 3 |
| <input checked="" type="checkbox"/> Three times a year | 3 |
| <input checked="" type="checkbox"/> Sync with exhibitions | 6 |
| <input checked="" type="checkbox"/> Randomly | 0 |
| <input checked="" type="checkbox"/> Every three months | 1 |
| <input type="checkbox"/> Suppliers involvement in the definition process | 5 |
| <input checked="" type="checkbox"/> Research | 0 |
| <input type="checkbox"/> Research findings are presented | 5 |
| <input checked="" type="checkbox"/> User research | 0 |
| <input type="checkbox"/> User research is done | 4 |
| <input checked="" type="checkbox"/> Market & product research | 0 |
| <input type="checkbox"/> Price based research | 2 |
| <input checked="" type="checkbox"/> Trends are researched | 9 |
| <input checked="" type="checkbox"/> Competing products are analyzed | 10 |
| <input checked="" type="checkbox"/> Product standarts are investigated | 3 |
| <input checked="" type="checkbox"/> Supplier & Material search | 2 |
| <input checked="" type="checkbox"/> Developing alternatives | 0 |
| <input checked="" type="checkbox"/> Design consult other functions | 0 |
| <input checked="" type="checkbox"/> Designer consult about production details | 3 |
| <input checked="" type="checkbox"/> Designer consult for possible quality problems | 1 |
| <input checked="" type="checkbox"/> Evaluation | 0 |
| <input checked="" type="checkbox"/> Manager decide between product alternatives | 1 |
| <input checked="" type="checkbox"/> Designer decide between product alternatives | 2 |
| <input checked="" type="checkbox"/> Evaluation meetings are done | 0 |
| <input type="checkbox"/> Process meetings | 13 |
| <input checked="" type="checkbox"/> Ideas are presented prior to the product development | 4 |

Figure G.12. Final list of themes (part 5)

| | |
|---|----|
| ◻ Decision meetings | 28 |
| ▲ ◻ Methods | 0 |
| ◻ Idea generation methods | 1 |
| ◻ Sketching is used while developing alternatives | 15 |
| ◻ CGI techniques are used while developing alternatives | 17 |
| ◻ Physical models are generated in the process | 3 |
| ◻ Moodboards are created | 1 |
| ◻ Designer starts with specific units of collection | 10 |
| ◻ Designer works by considering the cost | 4 |
| ◻ Standart production parts and sizes are used | 2 |
| ◻ Pool of ideas is utilised which consist of product images | 2 |
| ◻ Designer revise dimensions according to optimization | 1 |
| ◻ Simultaneous processes conducted | 1 |
| ▲ ◻ Supplier involvement | 0 |
| ◻ Meeting with suppliers | 3 |
| ◻ Designer search for suppliers and their products | 5 |
| ▲ ◻ Prototyping / Collection Prototyping | 0 |
| ▲ ◻ Prototype production process | 0 |
| ▲ ◻ Detailing | 0 |
| ◻ Engineering team detail design for prototyping | 13 |
| ◻ Designers detail design for prototyping | 9 |
| ▲ ◻ Who builds the prototype | 0 |
| ◻ Specialized manufacturing team develop the prototypes | 8 |
| ◻ Mass manufacturing line manufacture prototypes | 5 |
| ◻ Outsourced supplier | 4 |
| ▲ ◻ Production of prototype | 0 |
| ◻ New material options of existing products are prototyped | 1 |
| ◻ Specific units of collection are prototyped to make pre-decisio | 3 |
| ◻ Material options are decided | 7 |
| ◻ Designer develop alternative designs | 1 |
| ▲ ◻ Who is controlling the prototyping process | 0 |
| ◻ Production manager | 1 |
| ◻ Technical team | 1 |
| ◻ Designer | 6 |
| ◻ Engineering team | 1 |
| ▲ ◻ Relation of designer with other functions | 0 |
| ◻ Designer consult other functions | 2 |
| ◻ Design team is consulted in prototyping process | 2 |
| ▲ ◻ Responsibilities of other functions | 0 |
| ◻ Production planning plan the prototype production | 1 |
| ◻ Needed accessories and raw materials are purchased | 5 |
| ◻ Cost is calculated | 10 |
| ◻ Quality tests are made | 6 |
| ▲ ◻ Supplier involvement in prototyping process | 0 |
| ◻ Suppliers are consulted | 4 |
| ◻ Supplier send samples | 2 |
| ◻ Designer search for suppliers and their products | 3 |
| ◻ Accessories are developed with suppliers | 5 |
| ▲ ◻ Evaluation | 0 |
| ▲ ◻ Exhibition feedbacks | 0 |
| ◻ Prototype exhibited to collect feedbacks | 16 |
| ◻ Prototype is revised according to feedbacks | 9 |

Figure G.13. Final list of themes (part 6)

| | |
|--|----|
| ▲ ● <input type="checkbox"/> Evaluation meetings are done | 35 |
| ● <input type="checkbox"/> Designer revise the prototype before meetings | 4 |
| ● <input type="checkbox"/> Process meetings | 2 |
| ● <input type="checkbox"/> Decision meetings | 11 |
| ● <input type="checkbox"/> Prototype revised according to meetings | 9 |
| ● <input type="checkbox"/> Some new products are decided to be outsourced | 1 |
| ▲ ● <input type="checkbox"/> Collection developing | 0 |
| ▲ ● <input type="checkbox"/> How to develop collection? | 0 |
| ● <input type="checkbox"/> Product family developed after the evaluation of unit-prototype | 7 |
| ● <input type="checkbox"/> Whole product family developed before prototyping | 5 |
| ● <input type="checkbox"/> CGI techniques are used while developing the family | 2 |
| ● <input type="checkbox"/> Complementary products are developed according to the collectio | 2 |
| ▲ ● <input type="checkbox"/> Upholstered products | 0 |
| ● <input type="checkbox"/> Upholstered products outsourced | 2 |
| ● <input type="checkbox"/> Designer design the upholstered product | 2 |
| ● <input type="checkbox"/> Special team design and prototype upholstered products | 2 |
| ● <input type="checkbox"/> New upholstered designs match with developed collections | 2 |
| ● <input type="checkbox"/> Upholstered products developed according to approved collection | 3 |
| ▲ ● <input type="checkbox"/> Evaluation | 0 |
| ● <input type="checkbox"/> Decision meetings | 3 |
| ● <input type="checkbox"/> Process meetings | 1 |
| ▲ ● <input type="checkbox"/> Production preparation | 0 |
| ▲ ● <input type="checkbox"/> Preperation of manufacturing drawings | 0 |
| ● <input type="checkbox"/> Engineering team prepeare manufacturing drawings | 15 |
| ● <input type="checkbox"/> Designers prepeare manufacturing drawings | 2 |
| ▲ ● <input type="checkbox"/> Responsibilites of designer | 0 |
| ● <input type="checkbox"/> Design of the package | 2 |
| ● <input type="checkbox"/> Designer control the preperation process | 5 |
| ● <input type="checkbox"/> Designer publish a folder includes all product data | 2 |
| ● <input type="checkbox"/> Designer define material and accessories options | 5 |
| ● <input type="checkbox"/> Design function follow quality procedures | 1 |
| ● <input type="checkbox"/> Designer hand over mock-ups and specimens | 2 |
| ▲ ● <input type="checkbox"/> Responsibilities of other functions | 0 |
| ● <input type="checkbox"/> Preperation of 3d and 2d data for marketing purposes | 1 |
| ● <input type="checkbox"/> Manufacturing and raw material consumption is planned | 4 |
| ● <input type="checkbox"/> Management involves accessories purchase regard to their cost | 3 |
| ● <input type="checkbox"/> Purchase function buy needed accessories and raw materials | 3 |
| ● <input type="checkbox"/> Cost is calculated | 8 |
| ● <input type="checkbox"/> Calculation of sales price | 2 |
| ● <input type="checkbox"/> Product manager decide new products quantities | 1 |
| ▲ ● <input type="checkbox"/> Evaluation | 0 |
| ▲ ● <input type="checkbox"/> Process meetings | 0 |
| ● <input type="checkbox"/> Design revisions are made | 1 |
| ● <input type="checkbox"/> Meeting is held to evaluate manufacturing details | 3 |
| ● <input type="checkbox"/> Production schedule is determined | 2 |
| ▲ ● <input type="checkbox"/> Production | 0 |
| ▲ ● <input type="checkbox"/> Pre-production | 0 |
| ▲ ● <input type="checkbox"/> Aims of pre-production | 0 |
| ● <input type="checkbox"/> Collect operational feedbacks | 1 |
| ● <input type="checkbox"/> Pre-production is made for photo shooting | 2 |
| ● <input type="checkbox"/> Cost is calculated | 1 |
| ● <input type="checkbox"/> Pre-production is made prior to mass manufacture | 4 |

Figure G.14. Final list of themes (part 7)

| | | | |
|---|---|---|----|
| ▲ | ☐ | Supplier involvement | 0 |
| | ☐ | Outsourced supplier make production | 3 |
| ▲ | ☑ | Responsibilities of other functions | 0 |
| | ☐ | Designer has no responsibilities | 1 |
| | ☑ | Manufacturing function consult designer about manufacturing | 1 |
| ▲ | ☐ | Evaluation | 0 |
| | ☐ | Last control meeting | 2 |
| ▲ | ☑ | Launch activities | 0 |
| | ☑ | Introduction to company | 0 |
| | ☑ | Product details are presented to the other functions | 21 |
| | ☑ | Product details are entered into the system | 4 |
| | ☑ | Introduction to the market | 0 |
| | ☐ | Preparing 3d data used in sales | 2 |
| | ☑ | Product is introduced to third parties | 2 |
| | ☑ | Product catalogs are published | 14 |
| | ☑ | Advertisement activities | 3 |
| | ☑ | Photo shooting | 23 |
| | ☐ | Video shooting | 1 |
| | ☑ | Exhibiting the product | 11 |
| | ☑ | IP process | 5 |
| ▲ | ☑ | Sales & Installation | 0 |
| | ☑ | Stock production procedure | 0 |
| | ☐ | Designer has no responsibilities | 2 |
| | ☑ | Product prices are finalized and published | 5 |
| | ☑ | Products are distributed to the stores | 2 |
| | ☑ | Products in the stores are checked by designers | 1 |
| | ☑ | On-order production procedure | 0 |
| | ☐ | Evaluation | 0 |
| | ☐ | Process meetings | 2 |
| | ☑ | Customer meetings | 1 |
| | ☑ | Meeting with customer to take project brief | 7 |
| | ☑ | Arrangement is presented to the customer | 8 |
| | ☑ | Revisions are made till the customer accept the layout | 2 |
| | ☑ | Customer approve the quotation | 1 |
| | ☑ | Responsibilities of project sales team | 0 |
| | ☐ | Dimensions are measured | 1 |
| | ☐ | Adaptations on products according to contract | 4 |
| | ☐ | Preparing the product for manufacturing | 4 |
| | ☑ | Making product arrangement | 4 |
| | ☐ | Construction project revised | 2 |
| | ☑ | Product arrangement is visualized | 4 |
| | ☐ | Preparing the presentation file | 1 |
| | ☑ | Quotation is prepared | 9 |
| | ☐ | Order is made to the manufacturing | 4 |
| | ☐ | Assembly process | 2 |
| | ☑ | Responsibilities of other functions | 1 |
| | ☑ | Production planning function plan the production | 6 |
| | ☐ | Technical approval | 2 |
| | ☑ | Project arrangement is prepared by the architect of the project | 2 |
| | ☑ | Produced products are installed | 1 |
| ▲ | ☑ | Feedbacks | 0 |
| | ☑ | Feedbacks are collected from | 0 |

Figure G.15. Final list of themes (part 8)

| | |
|---|----|
| <input type="radio"/> Post purchase service | 4 |
| <input type="radio"/> Exhibition | 1 |
| <input type="radio"/> Export | 1 |
| <input checked="" type="radio"/> Customers | 7 |
| <input checked="" type="radio"/> Manufacturing | 3 |
| <input checked="" type="radio"/> Marketing and sales | 10 |
| <input checked="" type="radio"/> Stores | 9 |
| <input checked="" type="radio"/> <input checked="" type="radio"/> Reaction to feedbacks | 0 |
| <input type="radio"/> New collection items added after production | 1 |
| <input checked="" type="radio"/> Feedbacks are used for next NPD process | 3 |
| <input checked="" type="radio"/> Product revisions are done immediately | 9 |
| <input checked="" type="radio"/> <input checked="" type="radio"/> Adopting processes | 0 |
| <input checked="" type="radio"/> Process is altered according to the manager decisions | 1 |
| <input checked="" type="radio"/> Some processes are faster | 14 |
| <input checked="" type="radio"/> Some products directly manufactured without prototyped | 1 |
| <input checked="" type="radio"/> <input checked="" type="radio"/> Designers opinion about the process | 0 |
| <input checked="" type="radio"/> <input checked="" type="radio"/> Collaborative atmosphere | 0 |
| <input type="radio"/> Positive working with customer | 1 |
| <input checked="" type="radio"/> Finds positive the dominancy of the manager in the meetings | 1 |
| <input checked="" type="radio"/> Positive about the involvement of other functions in the proces | 8 |
| <input checked="" type="radio"/> Being close with engineering team | 1 |
| <input checked="" type="radio"/> Positive about working close to the production | 1 |
| <input checked="" type="radio"/> Too many decision points | 0 |
| <input checked="" type="radio"/> Designer feels lack of support in her/his duties | 1 |
| <input checked="" type="radio"/> Complains about the losing control of the product | 1 |
| <input checked="" type="radio"/> Complains about the struggle to come up with an agreement | 1 |
| <input checked="" type="radio"/> Comments of people who has no design knowledge | 2 |
| <input checked="" type="radio"/> Long meetings | 1 |
| <input checked="" type="radio"/> <input checked="" type="radio"/> Workload | 0 |
| <input checked="" type="radio"/> Designer finds annoying to search for appropriate suppliers | 1 |
| <input checked="" type="radio"/> Designer complains about the high number of revisions | 3 |
| <input checked="" type="radio"/> Designer thinks doing other functons responsibilities | 2 |
| <input checked="" type="radio"/> Designer finds annoying to work on outsourced design works | 1 |
| <input checked="" type="radio"/> Complains about the high workload | 10 |
| <input checked="" type="radio"/> Too many product develop simultaneously | 1 |
| <input checked="" type="radio"/> Complain about schedules | 1 |
| <input checked="" type="radio"/> With time pressure designer is forced to accept revisions offer | 1 |
| <input checked="" type="radio"/> Lack of time spared for new product development | 3 |
| <input checked="" type="radio"/> <input checked="" type="radio"/> Organization related comments | 0 |
| <input type="radio"/> Easy to follow trends, innovatve company | 1 |
| <input type="radio"/> Positive working with manufacturing | 1 |
| <input type="radio"/> Complains about current organization scheme | 1 |
| <input type="radio"/> Positive to be close to the prototyping team | 1 |
| <input type="radio"/> Complains about lack of personnel | 1 |
| <input type="radio"/> Lack of coordination between functions | 1 |
| <input checked="" type="radio"/> Finds positive the small organization scheme | 2 |
| <input checked="" type="radio"/> Lack of relation with engineering team | 4 |
| <input type="radio"/> Not taking risk to develop radical products | 1 |
| <input checked="" type="radio"/> Designer complains about lack of job definition | 2 |
| <input checked="" type="radio"/> Designer need more qualified coworkers | 3 |
| <input checked="" type="radio"/> Designer complain about the company has no long term planning | 1 |
| <input checked="" type="radio"/> Complains about the long breaks before production | 1 |

Figure G.16. Final list of themes (part 9)

| | | |
|---------------------------------------|--|---|
| <input type="checkbox"/> | Complain about frequently changing organization scheme | 1 |
| <input type="checkbox"/> | Struggle to develop luxurious products | 1 |
| ▲ <input checked="" type="checkbox"/> | Process related | 0 |
| <input checked="" type="checkbox"/> | Designer define herself as owner of the product in process | 5 |
| <input checked="" type="checkbox"/> | Design awards motivate designer | 1 |
| <input checked="" type="checkbox"/> | Relate success with designers taking care of all details | 1 |
| <input type="checkbox"/> | Research is not done regularly | 1 |
| <input type="checkbox"/> | Positive using standart parts | 1 |
| <input type="checkbox"/> | Productive process | 2 |
| <input type="checkbox"/> | Long processes | 6 |
| <input type="checkbox"/> | Not approve the methods | 1 |
| <input type="checkbox"/> | Need more systematic planning process | 1 |
| <input checked="" type="checkbox"/> | Lack of documentation speed up the process | 1 |
| <input checked="" type="checkbox"/> | Lack of documentation leads to unsustainability | 2 |
| <input checked="" type="checkbox"/> | Process is fast because of clear definition of the steps | 1 |
| <input checked="" type="checkbox"/> | Procedures are not followed | 1 |
| <input checked="" type="checkbox"/> | Slow process | 1 |
| <input type="checkbox"/> | Designer mentions pricing step is too late | 1 |
| <input checked="" type="checkbox"/> | Designer thinks process suits to the company | 3 |

Figure G.17. Final list of themes (part 10)

H. HAND CODING OF THE MAPS

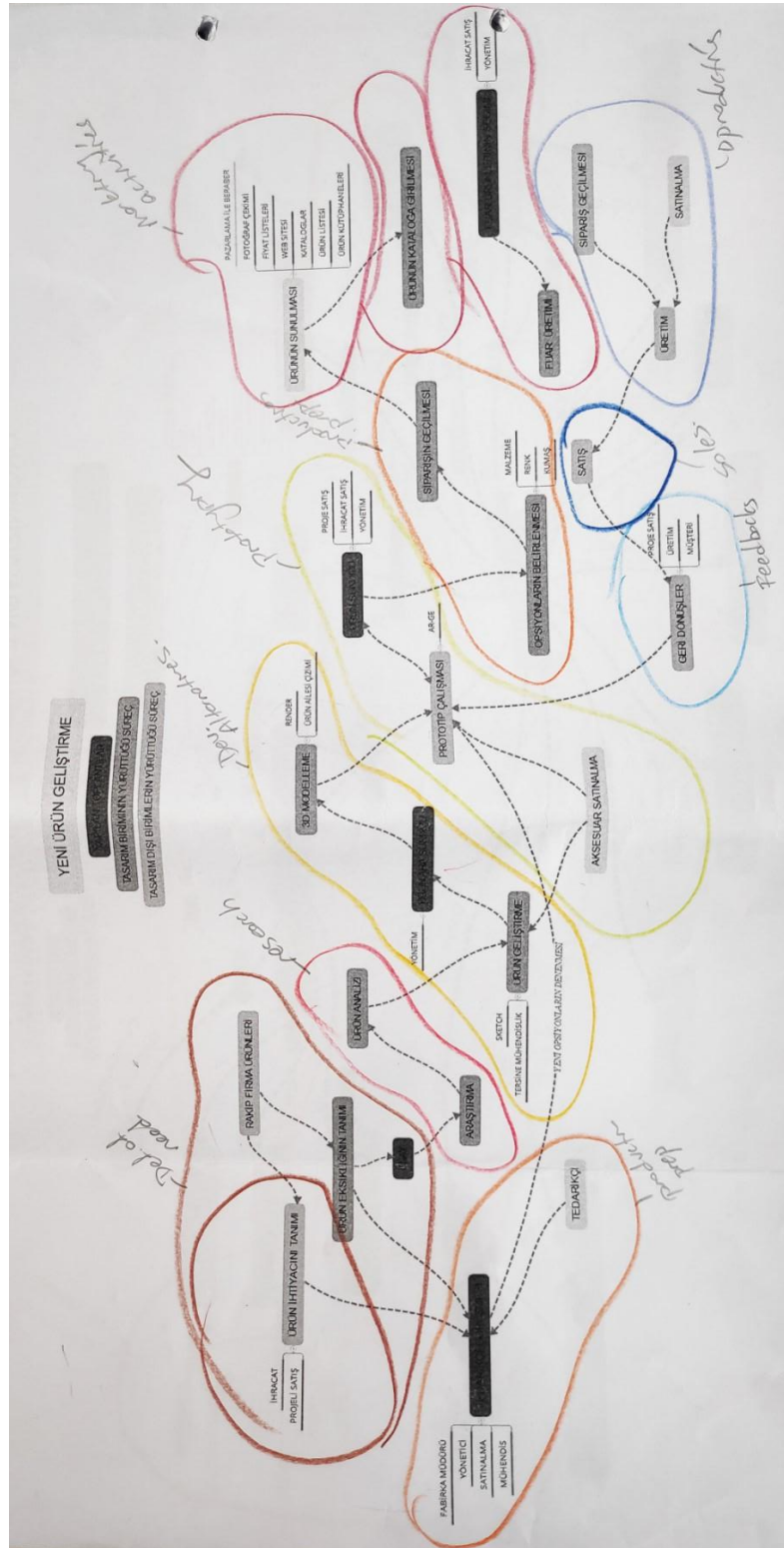


Figure H.18. Hand coded NPD map

I. GATHERING OF MAP FRAGMENTS

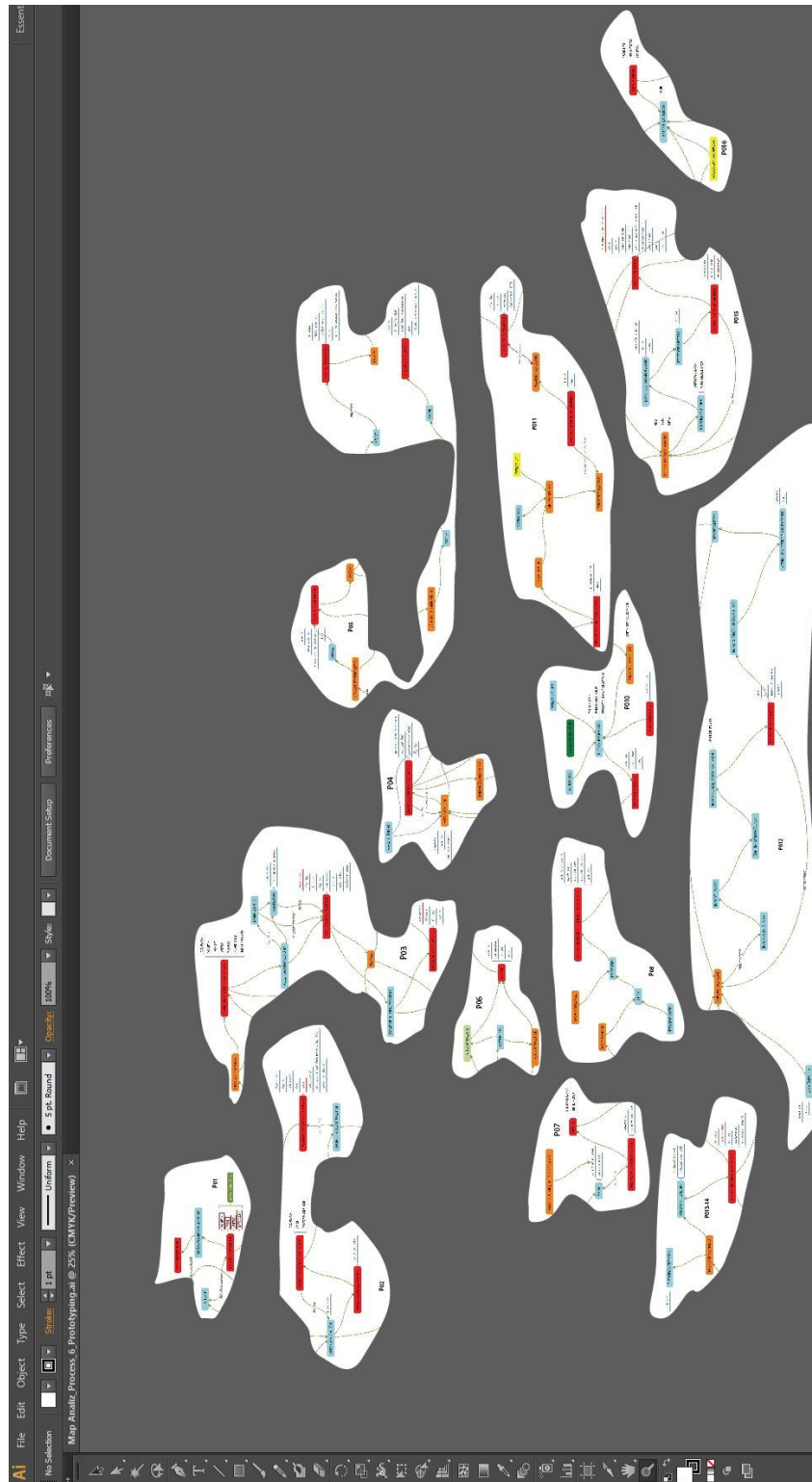


Figure I.19. Map fragments are gathered for interpretation by using Adobe Illustrator software

J. HAND CODING OF THE TEXTUAL DATA

2780 Yapmamak için ellerinden geleni yapıyorlar ama stres altındaykende böyle
2781 ufak tefek hatalarda böyle saldırebiliyolar başkalarına. Bu mesela rahatsız
2782 edici.
2783
2784 R: Peki bu fotoğraf çekimi, katalog onlarla hiç ilgilenmiyomusunuz siz?
2785
2786 P02: Kataloglarla biz ilgilenmiyoruz, onunla pazarlama departmanı ilgileniyo.
2787
2788 R: Peki fuar çalışmaları, fuara gitme, fuar standı, yani bu tarz şeyler genelde
2789 ek görev olarak olur da o yüzden sana soruyorum.
2790
2791 P02: Onunla biz ilgilenmiyoruz onunla ilgili ayrı departman var mimarlık
2792 bölümü var holdingin içerisinde. Mimarlık departmanı ilgileniyo bizim fuar
2793 standıyla bazen stand çalışmasını dış tasarımı da verir yani başka
2794 tasarımcılara da verirler dışardan. Bazen kendileri de yapabiliyo. Biz arkasal
2795 seçimle ilgileniyoruz. Ürünlerimizin mesela biz ürettik sonuçta biz ürünlerin
2796 tarzını daha iyi biliriz. Onlar için ürünlerin fuarda sergilenirken üzerlerinde
2797 kullanılan aksesuarlarını, işte biblodur vazodur vesaire hani onun gibi
2798 süslerini püslerini seçememiz için bizden yardım isteyebiliyolar. Yada duvar
2799 kapıtlarını seçememiz için bizden yardım isteyebiliyolar. Anlıyorum bu peki
2800 bununla ilgili ne düşünüyorsunuz. Ben yanlış bulmuyorum, ürün sonuçta bizim
2801 ürünümüz olduğu için hani ürünün hikayesini yaz desen yazarım, yazarız
2802 yani, biz tasarladık sonuçta. Hani bebekliğini bilirim dersinya hani onun gibi
2803 ona en uygun aksesuarı da biz seçeriz diye düşünüyorum. O yüzden
2804 yadırgamıyorum.
2805
2806 R: Peki katalogda yazılan metinlerde ilgili yada diğer pazarlama faaliyetleri
2807 ile ilgili herhangi bir iş yapıyomusunuz ekstra. Biz sadece tanıtımını
2808 yapıyoruz, ürünün özelliklerini anlatan bir yazı hazırlıyoruz, her bir ürün için.
2809 Onu da pazarlamayla paylaşıyoruz. Pazarlama o bilgileri alıp ürün
2810 tanıtımında kullanıyo demiştin ya hani kendi tanıtımında kullanıyo ama
2811 onun haricinde diğer bütün ürünün tanıtım konsept sunumları bilmem ne o
2812 işte fotoğraf katalog çekimleri, bunlar hep pazarlama ve pazarlamanın
2813 çalıştığı birimler ilgileniyo. Pazarlama bi stüdyoyla çalışıyo. Bizim bide bi
2814 stüdyomuz var. Fab.... şeyde Holdinge bağlı stüdyomuz var. Fotoğraf
2815 stüdyosu kendi içimizde. Onla beraber paslaşarak yapıyolar. Ama şöyle bişey
2816 var benim orda hoşnut olmadığım şeyler çekimler falan oluyo. Ben
2817 yakıştırmıyorum mesela bazen. Tarzını yakıştırmıyorum, bazı ürünlerin, o da
2818 şey az önce söylediğim gibi o ürünün ruhunu ben biliyorum yani tasarımcısı
2819 biliyo fotoğrafçı çok da hakim olmuyo gibi geliyo bana. Bu benim görüşüm
2820 tabi.
2821
2822 R: Anlıyorum. Peki bu ürün tanıtım formunu hangi aşamada hazırlıyorsunuz?
2823
2824 P02: Ben transfer formunu hazırlarken bizim ARGE de bir memur
2825 arkadaşımız daha var. Yazışmaları yürüten tescil alan falan böyle maliyet
2826 dosyalarını hazırlayan bi ARGE memurumuz var. O hazırlıyo onla beraber
2827 bizde Kontrollü bi şekilde onla beraber hazırlıyoruz o raporu.
2828
2829 R: Bu ürün tanıtım raporumu?

C.B
Consulted +
about exhibition
layout and styling.

C.B
neutral!

P02:

wants to
involve
photostudio?

D.B.
product details
are gathered
in a report

Figure J.20. Sample of hand coded textual data

K. QUOTATIONS (TURKISH)

- [1] Bunun içine neler dahil işte, brifi aldıktan sonra tasarım eskizleri modellemeler, tasarım çalışmaları yapmam. Malzemelerin seçimi, tedarigi, işte 3d modelleme, onların teknik dosyalarının hazırlanması, renderlarının (dijital görseller) hazırlanıp ARGE'ye iletilmesi işte
- [2] Şimdi normal şartlar altında sen bi liste hazırlarsın ve herkese verirsin. Dersin ki, bu koltuğun sana çekim sırasında üç rengi gelicek kremi, pembesi ve mavisi. Bu koltukların üzerinde de şu şu şu kırlentler olucak ve bunların sayıları belli olur, görselleri olur. Biz bu dökümanları hazırlayıp vermemize rağmen gene çekim alanında çok fazla karışıklık olabiliyor. Hangi ürünün neyin neye ait olduğu bulamayabiliyorlar veya doğru şekilde yerleştiremeyebiliyorlar ve bu noktada da hatalı fotoğraf kareleri olabiliyo. O yüzden bizim sürekli hatta benim diyim, çünkü ben biraz daha aslında görsel kısımlarda biraz daha görevliyim ekip içerisinde organizasyon içerisinde, tasarım kadar o kısımlarda da şeyim var aktif bi rolüm var. Dolayısıyla o noktada mesela “Bu ürün olmuş mu?” noktasında ben mesela gece gündüz orda stüdyoya bi destek veriyorum. Bana sürekli ordan mesela fotoğraf atıyorlar bu olmuş mu TV ünitesini böyle mi asıcaz şöyle yapıcaz gibi. Oysaki orda ki mimarların veya o kataloğu çeken insanların ellerine her türlü dokümanı biz hazırlayıp vermemize rağmen bizden sürekli o noktada ekstra bilgi ve kontrol isteniyo.
- [3] Aksesuarlarda her şey dahil. Yani mekanda, yani pencere istiyo pencere yaptırıyoduk. Kapı istiyo kapı yaptırıyoduk. Oda şeklinde yani planlanmış böyle köşe köşe şeyler istiyodu adam bizden onları yaptırıyoduk komple. Modellemesini yapıp üretime veriyoduk tekrar çıkartıyoduk. Sonra boyasını duvar kağıdını vesairesini her şeyini yer kaplamalarını her şeyini yaptırıyoduk. Tek tek uğraşıyoduk onlarla.
- [4] ... fotoğraf çekiminin fotoğrafçıyla anlaşmak efendime söyliyim. Onun otelini ayarlatmak, hani satınalamaya otelini ayarlatıyoduk. Sabah arabayla gidip otelinden alıp geliyoduk. Şeyin kurulumunda ne denir, setin kurulumunda aktif rol alıyoduk yani hani yerleri bile paspasladığım oluyodu. Ürünleri getiriyoduk, taşıyoduk koyuyoduk, fotoğrafını çekiyodu o işte. Bazen eleman olmadığı zaman veya mesai dışında çalışmamız devam ettiği zaman ben bizzat masa montaj edip şey yaptığım oluyodu.
- [5] Ondan sonra kataloglarla uğraşıyoduk. Mesela katalogun yapılmasıyla alakalı kendimize bi tane küçük bi katalog hazırlardık. Onun sıralamasını oluştururduk. Mesela ilk sayfaya şu ürün gelicek, ikinci sayfaya bu ürün gelicek bilmem. Kendimiz halledip adamlara verirdik bu şekilde olucak diye. Hatta şeye ajansa gider başında otururduk düzeltmeler yaptırırdık.
- [6] Yani kendi üretim tesisimizde fuar standının üretimini takip ederdik. Fuar

standına koyulacak ürünleri takip ederdik. Daha sonra bu ürünlerle birlikte yurt dışına gittiğim bile oldu hani. Gittik orda hani oraya gelmiş olan ürünleri tırdan sırtımızda indirdik. Gittik Hindistanlı elemanlar bulduk, fuar standını kurdurduk.

- [7] ... hani panel tasarımları haricinde bi de kumaş seçimleri bi de bütün döşemeli ürünlerin kumaşlarının tamamı bende görev olarak. Bu bi tasarım görevi olarak bende olması güzel ve doğru elbette tasarım departmanı bunu yürütecek ancak bu sürecin karmaşıklığına ve vakit azlığına istinaden ben mesela o kumaşların ARGE ye doğru bi şekilde gitmesi veya “Prototip için gitti gitmedi?”, “Hangi firmadan sipariş edildi?”, “Kaç metre?” vesaire gibi noktalarda aslında benim görevim olmamasına rağmen ben bunların da takibini yapıyorum. Hatta birde işte dedim ya aslında bi ham madde satınalma var. Bizim ona her türlü bilgiyi vermemiz gerekiyor. Ve onun firmayla görüşüp siparişleri ayarlaması gerekirken biz hani iş çabuk doğru ve hatasız hallolsun diye. Ben mesela kumaş firmalarını arayıp diyorum ki “Hani benim çok acil bilmem ne pudra renkli, bilmem ne renkli serinizin pudra kumaşından otuz metre çok acil ihtiyacım var. Bunu Kayseri ARGE birimimize gönderin lütfen diyorum” ve o kumaşın oraya gidip gitmediğini takip ediyorum.
- [8] Yok yok ben tasarım anlamında ne öğrensem bana kar. Mesela fotoğrafçının başında durmam bile bana bişeyler katıyordu. Ya ben her şeyi artı olarak görüyordum kendime. İşi öle öğrendim zaten, mesela stand yapılıırken benim başında durmam benim zoruma gitmedi çünkü neden stand işi de bizim işimiz ya. Katalog desen katalog işi de bizim, yani görsel olan her şey bize ait mesela asansör diyo adam. Asansör yap ... (isim) diyo. Ustayla oturup beraber çalışıyoruz şimdi bu da benim işim aslında. Tasarım diyosun benim mesela atıyorum sana asansör tasarla dedikleri zaman benim asansörün çalışma mantığını her şeyini bilmem lazım nerde ne kullanılıyo gibi. Bunlar benim için hep artıydı ya ben hiç şey olarak bakmadım bunlara, angarya iş olarak bakmadım yani. Mesela şu anda gözü kapalı stand da yapıcak pozisyona geldik atıyorum. Bu hani makina tasarlıyorum dedim ya bu hani üfürme şeylerde değil gerçekten çalışır hale getirdik biz onu demek ki bu bilgi birikimiyle alakalı bişey.
- [9] **Katılımcı:** Tabi profesyonel yöneticiler var. Onlar akraba değil. Onlar müşteri (konuşma hatası: müdür yerine müşteri) şey yapmıyo yani, yarı patron şirketi diyelim. Patronlarla çalışanlar çok az muhatap oluyodu.
Görüşmeci: Yani aslında şöyle, patron şirketi diyebilirsin, aile şirketi.
Katılımcı: ... (Büyük bir elektronik şirketi) bile patron şirketi yani öyle bakmak lazım.
Görüşmeci: Yani patron şirketi olmasının sebebi bütün aşamalara müdahale etmesi.
Katılımcı: Ediyo yani dedim ya bilgisayarımın arkasında benim çizimimi izlediği zamanlar var.

- [10] İdari olarak çünkü hani nasıl diyim pazarlamayla tasarımın bir arada olması bile çok mantıklı bişey değil. Ama ister istemez idari olarak öle bi zorunluluğumuz vardı. Zaten tasarım merkezi açıldıktan sonra da öle bi şeyimiz kalmadı yani.
- [11] **Katılımcı:** Fuar organizasyonunda bütün operasyonda yer alıyorum. Kurulum, stand kurulum, lojistik hizmetler onların hepsinin organizasyonunda yer alıyorum.
Görüşmeci: Dışardan temin olan hizmet mi bu?
Katılımcı: ... (Büyük bir elektronik şirketi) bile patron şirketi yani öyle bakmak lazım.
Görüşmeci: Şöyle mesela uyduruyorum architonic ve arciproduct la bi iletişim çalışması oluyosa (özel bir çalışma gerekliyse). Onlarla, fuar organizasyonunda mesela alan satınması, işte çöp tenekesi, elektrik hizmeti satınması falan gibi bir sürü işler var. O fuar organizasyonu içindeki yapılarla da iletişimi ben yürütüyorum. Hani elektrik projesi için anlatabildim mi?
- [12] ... mesela fotoğraf çekiminin fotoğrafçıyla anlaşmak efendime söylüyüm onun otelini ayarlatmak, hani satın almaya otelini ayarlatıyoduk. Sabah arabayla gidip otelinden alıp geliyoduk. Şeyin kurulumunda ne denir, setin kurulumunda aktif rol alıyoduk. Yani hani yerleri bile paspasladığım oluyodu. Ürünleri getiriyoduk, taşıyoduk, koyuyoduk, fotoğrafını çekiyodu o işte bazen eleman olmadığı zaman veya mesai dışında çalışmamız devam ettiği zaman ben bizzat masa montaj edip şey yaptığım oluyodu.
- [13] ... bende mesela görevli olarak sürekli haftanın belli günlerinde stüdyoda buluncam ve ürünlerin orda doğru bi şekilde konumlandırılıp doğru bi şekilde çekildiğinden emin olcam. Hangi, “Ayağı bu mu?”, “Kulpu bu mu?”. TV ünitesi işte “Hangi yüksekliğe asılacak?”. “Ürünün üstünde kaç kırlent var?” gibi bu noktada biz de orda resmi görevli olarak orda bulunuyo olucaz.
- [14] Ha şey bi seyahat olmuştu. O mesela bana tuhaf gelmişti. Bayi ziyareti yapıyorlar. Bayi ziyareti ama ARGE departmanının yapması için bi organizasyon düzenliyorlar. Ben gittim geçen sefer. Yani hepimizin gitmesini istiyorlar zatende. O seyahatler ramazandan önceydi, başlamıştı. Satış sevkiyat departmanından bi kaç kişi, pazarlamadan bir kişi ve ARGE den böyle her ARGE den böyle toplanıp, bayilerin müşterilerinin evlerini ziyarete gidiyoruz.
- [15] Tabi yani önümüzdeki sene bu renkler, ya da bu tarz mobilyalar. Yeni nesil mesela şimdi bu sene evlenecek olan kuşak buraya doğru gidiyo. Bu mobilyaların satılma ihtimali yüksek gibi araştırmalar yapıyoduk. Bunları ama çok kompleks sunumlar halinde yapmıyoduk. Bu araştırmaları biz kendimize yapıyoduk. Bu araştırmaların sonuçlarını sunuyoduk, yani ürünleri sunuyoduk. Ve bu ürünleri niye yaptınız dediklerinde neden bunu

yaptınız dediklerinde biz bunları açıklarken konuşuyoduk.

- [16] Öncesiyle alakalı bizim şöyle bi hazırlığımız oluyo. O brif kısmını beklerken yani zaten aslında bunu bi cycle olarak düşünürsek. Bu fuar diye bahsettiğim bu en son süreç ile brif diye bahsettiğim en baştaki sürecin arasında bi üç aylık süre var. Bu sürede biz ne yapıyoruz, biz yurt dışı fuarlarına gidiyoruz, yeni sezon hazırlıklarımızı yapıyoruz, trendlere bakıyoruz. Bu sene ne yapabiliriz araştırmasını yapıyoruz. Önümüzdeki sene işte hangi renkler trend olacak hangi malzemeler girecek.
- [17] Tabi tabi mağazaları biz de dolaşıyoduk. Aynı zamanda fuarları dolaşıyoduk. Yurt dışı fuarları, yıllık yurt dışı fuarlarına gidiyoduk. Çin olsun, İtalya olsun, Almanya olsun, ordan bu internet yaygın değilken ilk trendleri biz yakalıyoduk. Ondan sonra internette bu ürünler yaygınlaşmaya başlayınca, hani internet satışları diyim veyahut ta firmaların internette yaygınlaşması, çok yaygın kullanması biraz daha yani yurt dışı fuarlarını ayağa düşürdü diyebilirim, yani geri çekti. Çünkü çok ciddi emek harcıyoduk, şöyle emek harcıyoduk, katalogları topluyoduk. Kataloglar bizim için çok önemliydi, ve de bunları saklayıp hani yeni trendi kovalamaya çalışıyoduk yani yurt dışından ilk önce biz alıyoduk nerdeyse ama işte bu internetten sonra internet derken hani atıyorum pinterest tarzı uygulamalar çıktıktan sonra çok esprisi kalmadı o işlerin yani.
- [18] Ürün yönetimi zaten asli görevi, başlıca görevi olan rekabet analizlerini yapıyo, pazardaki açılara bakıyo, kendi markamız içindeki portföydeki ürünlere bakıyo. Bunların işte bir sene boyunca olan satış rakamlarına bakıyo. Neler satmış, neler satmamış neye ihtiyacımız var, neleri daha iyi yapabiliriz yapamayız ve bunların analizini yapıyo. Ve bize her sene, senenin başında diyelim şubat, mart aylarında bununla alakalı bir brif veriyö.
- [19] ... bu [konular] tasarım direktörümüzün elindeki verilerle o toplantıya katılıp önerdiği noktalar. Pazarlama da mağaza ayağında işte mağazanın şu eksikleri var veya şu ürünü çok soruyorlar bunu yapalım. O da kendi birimiyle ilgili ürünle ilgili önerileri vardır. Bunların hepsi toplantıda değerlendirilmeye alınır. En son kararı patron verir.
- [20] ... ya bi dergide, ya bi müşterinin bilmem neyinde gördüğü bişeyi (bazen müşteriler ürün önerileri getirebiliyorlar) beğeniyosa onu direkt şeye getiriyo, “Yapalım mı?” diye getiriyo. O da daha önceden farklı işliyomuş. Onlar alıyolarmış evine işte mesela, gerçekten onu gördüm yani şöyle yırtılmış dergiden imalata götürüyo veriyö. Üstünde ne bi ölçü var, sadece yetmişe yüz diyo onu artık ordaki usta ne kadar kabiliyetliyse ona göre çıkarıyo.
- [21] ... piyasada çok giden ürünleri mesela benzer yakın ürünleri yapıyoduk bazen. Birebir aynısını yaptırıyodu pazarlama. O lokomotif ürünlerdi ama

işte firmanın etiketi için hani işte farklı olalım diğerlerinden farklı ürünler çıkaralım mantığıyla güdülen ürünler genelde bizden çıkıyordu. Yani tasarım boyutu bize bağlıydı.

- [22] ... ve bunlardan bi tanesi diyo mesela hani bunu demeyebilir ama diyebilir. Sektöre bakıyo diyo ki “Rakiplerde beyaz ürün, beyaz sunta ürün ve ekonomik ürün işte son derece iyi satıyo”. “Bizim burda bi eksiğimiz var.” diyo. Diyoki “Bana segment bir’e ekonomik işte suntalam malzemededen, beyaz renkli bir ürün tasarımı yapın.” diyo. Ve bunun da sınai maliyetlerini veriyo.
- [23] Ya da böyle moda sayfalarına falan bakıyoruz. Modadan da yararlanıyoruz. Moda dergilerine de bakıyorum yani. Neyse ondan sonra orda gördüğümüz etkilendiğimiz ve işimize yarayacak olan görselleri koleksiyonunu yapıyoruz. Onu yönetimimizle beraber tekrar yorumluyoruz o görselleri, ya da işte fikirleri diyim buna.
- [24] Bilgi havuzumuz vardı. Bu bilgi havuzunda, fuarlardan alınan beğenilen ürünler onun dışında tedarikçilerden gelen yeni ürünler, yeni kaplamalar. Bunları fikir havuzlarına önce bi dolduruyoduk bunları ama tabiki tolpanı öncesi de sürekli aktif orası.
- [25] Aslında her tasarımcı kendi için eskiz yapıyo biraz. Atıyorum 10 tane eskiz yaptım, 5 tanesini modelliyorum. Ürün direktörüne, yani kendi direktörüne modelleme üzerinden konuşuyorum, eskiz üzerinden konuşmuyorum çoğu zaman.
- [26] O fikirleri paylaşıyoruz, sonra bir yol belirliyoruz. O yoldan da alternatifli bir kaç tarz, bir kaç çeşit ürün çizip, el eskizi çizim yapıp onun üzerine tekrar fikirlerle ilgili görüşme yapıyoruz. Yine yöneticimizle ya da kendi içimizde.
- [27] Şu anda, şu şimdi panel serisinin temeli aslında konsoldur. İlk önce konsoldan başlarız. Neden diyecek olursan konsol çok spesifik bir parçadır. Hem hani yemek odasının bel kemiğini oluşturur, hem de ölçüsü ve içerdiği elementler itibariyle bir serinin geneli hakkında bize fikir verir. Neden? Dört kapağı vardır. Üzerinde sen olabildiğince fazla malzeme denemelerini yapabilirsin.
- [28] Çünkü bi tasarımcı olarak ben buraya bunu koydum oldu deme gibi bi lüksümüz yok. Dediğim gibi maliyet bizim için her şeyden daha önemli. Dolayısıyla oraya doğru maliyetli doğru bi ayak, doğru bi sunta, doğru bi kumaş seçimi yapabilmek adına firmalarla (tedarikçiler) biz direkt olarak da görüşebiliyoruz.
- [29] Tabi revizelerimizi yapıyoruz, revizelerimizi yapıyoruz ve aslında ön, kendimizce rhino eskizleriyle görüştüğümüz şeylerin de son modellerini ve

renderlarını da yapmış oluyoruz. Çünkü dediğim gibi birim dışı kişilere sunum yaparken render lı sunum yapmak durumundayız, çünkü anlamıyorlar. O yüzden hani mutlaka olabildiğince anlaşılır bir iki render almaya işte, ürün önden ve yandan tercihen.

- [30] Tabi revizelerimizi yapıyoruz, revizelerimizi yapıyoruz ve aslında ön, kendimizce rhino eskizleriyle görüştüğümüz şeylerin de son modellerini ve renderlarını da yapmış oluyoruz. Çünkü dediğim gibi birim dışı kişilere sunum yaparken render lı sunum yapmak durumundayız, çünkü anlamıyorlar. O yüzden hani mutlaka olabildiğince anlaşılır bir iki render almaya işte, ürün önden ve yandan tercihen.
- [31] Ve biz yaptığımız tasarımları işte renderlarını alıp görselleştirmelerini yaptıktan sonra sunumlarımızı hazırlayıp komite sunumuna çıkartıyoruz. İşte belli bi yerde, uygun görülen işte toplantı salonunda projeksiyon üzerinden ürünlerini sunarak aldığımız brife göre, biz işte “x kodlu briefe şu şu şu tasarımlarımızı yaptık.” diyerek render sunumlarımızı yapıyoruz. Ve işte gerek ürün yönetimi gerekse genel müdür yardımcıları, genel müdürler ve hepimiz herkesin bu noktada söz hakkı oluyo. Hep beraber ürünler üzerinde konuşarak, tartışarak eleyeceklerimizi eliyoruz. Kalanlar kalıyo ve bunları da hani seçtiğimiz ürünleri hemen toplantı esnasında segmentlere göre tablolarına yerleştiriyoruz veya daha bi revizemiz varsa onları hep beraber konuşuyoruz. Hani bu güzel bi ürünlü fakat hani bunu nasıl daha ekonomik hale getirebiliriz ki karlılığımız artsın mesela.
- [32] Ya mesela ne biliyim işte kayar kapaklı bir dolap yapacaksak tedarikçi çağırırdık. İşte ne biliyim “Bu 30 kiloluk kapağı senin hangi şeyin ne denir sistemin daha iyi şey yapabilir ne denir taşıyabilir?”, “İşte bunların maliyetleri ne?” gibi... Bunun için başka firmaların yaptığı. “Bunun için önerebileceğiniz şeyler var mı?” diye.
- [33] Dirsek temasında çalışıyoruz (satın almayla), ama o evet çok ucuz gibi önerileri oluyo. Veya işte ben “Böle bi ayak istiyorum.” dediğim zaman ya işte senin istediğin 13cm yok, 15 cm var napalım diyebiliyorlar. Onlara 13cm’lik ayak yaptırmaya değer mi değmez mi, bunların tartışmasını birazcık kendi içimizde çözüyoruz.
- [34] ... biliyosun ki fuarlara bayiler mağazalar geliyo. Veya yeni mağaza adayları geliyor, işte perakende müşteriler geliyor, potansiyel müşteriler geliyor. Ve bu noktada fuar görevlilerimiz önceliğimi bayilerimiz olmak üzere belli anketler yapıyorlar, nabız yokluyorlar. Onlara da soruyoruz kendi içimizde ne kadar nasıl bi komite sürecinden nasıl bi elenme sürecinden geçiyosak, fuara çıkarttığımız bitmiş kabul ettiğimiz ürünü de aslında bayilerimize sorarak aslında bi nevi orda da bi teste tabi tutuyoruz ve bayi bize şunu söyleyebiliyo. Yani evet güzel ürün ama bizce bu satmaz çünkü onlar aslında birebir müşteri ile görüşen insanlar onlar. Her gün kapılarından içeriye 200 tane 300 tane

insan giriyo ve belki de bi şeyler soruyolar. Onlara diyolar ki ya hani “Ceviz ürün var mı?” mesela, ya da bi ürüne bakıyolar meşe, meşe mesela çok fazla satmıyo bizim ülkemizde, ama biz oraya mesela o bi tasarım karardır. Trenddir dünya oraya gidiyodur. Koyabiliriz oraya bi meşe ürün, tasarımı da çok iyi olabilir. Ama bazen bayii bize diyo ki fuar alanında “Ya siz geçen sene de meşe bi ürün çıkarttınız ama bakın biz bunu çok fazla satamıyoruz, biz de bu ürünün satacağına inanmıyoruz.” diyerek ona düşük puan verebilir. Ve biz bu bütün ürün yönetimi, fuardan sonra bütün bu anket sonuçlarını alıp derliyo ve dizdiğiniz zaman atıyorum benim ihtiyacım sekiz ürün ben oraya 11 tane ürün götürmüşüm. Puanlamaya göre en altta kalan üç ürünü biz seriye almıyoruz ve elemiş oluyoruz aslında. Oraya sadece bi prestij ürünü olarak götürüp fuar standımızda sergilemiş oluyoruz.

- [35] Hayır, yani ilk etapta yemek odalarını gösteriyoruz. Çünkü şu da olabilir o konsolu gör.. O konsolun prototipi görülürken ve yemek odasını serinin devamı görülürken [prototip] beklenildiği gibi çıkmıyo olabilir. Dolayısıyla o noktada elenme ihtimali de var bu ürünün. O yüzden yatak odasını da çalışarak, çünkü yatak odasında daha fazla parça var. Ona da ekstra bir çaba sarf edip, ekstra bir çalışma sonucunda hani elenmesini istemediğimiz için ilk etap konsolun prototipi görülene kadar yemek odasını çalışıyoruz. Ve daha sonrasında ha tamam buna kesinlikle prototipi de gördük, malzeme onayları falan da verildikten sonra ve ARGE de o noktada sağlıklı net bir maliyet çıkardıktan sonra, tamam bunun yatak odası da çalışılsın diye komite kararı çıkıyo ve daha sonrasında biz yatak odalarını çalışmaya başlıyoruz.
- [36] ... biz üretim çizimi hiç vermedik. X (firma) da üretim çizimi hiç bi zaman vermedik. Sadece tasarım yolladık mühendisliğe, mühendislik üretim çizimlerini hazırlattı. Teknik çizim hiç yapmadım X (firma) da.
- [37] Çizim yapan teknikerler ürünün teknik dosyalarını çizmeye başlıyorlar. Teknik dosyadan kastettiğim üretimdeyken üretimdeki işçilerin, ustabaşlarının, üretim şeflerinin ellerine alıp dosyayı, neresine delik deleceğini, neresine işte ne kadar... üretim süreci ayrı. Üretim sürecini yönlendiren o teknik çizimlerin yapıldığı departmandır ÜRGE (mühendislik) departmanı.
- [38] Bi onay alıyoruz çünkü o yatırım kararını verebilecek yetki yok. tasarımcı olarak ben bu kulpu istiyorum demeye yetkim var fakat o kulpun üretilip üretilmeme kararını, veya o kulp için yatırım yapılıp yapılmaması kararını... Yeni renk isteme hakkım var mesela gene aynı şekilde suntada, o suntanın alınıp alınmama kararıyla ilgili bazen yönetim kuruluyla görüşmek zorunda kalıyoruz. Çünkü X (firma) çok tren gibidir. Sistem çok oturmuştur, böyle hep normal üretim çok hızlı gider yani. Yeni bir şey yaparken mutlaka o hızı uygun bir şekilde oraya kanalize etmen gerekiyor. O zamanda adetler büyük, ben mesela işte yeni bi renk beğendiğim zaman, işte bi 50 tane sunta alın da işte şundan 50 tane yapalım diyemiyosun yani. O gene bin tane alınacak, iki

bin tane alınacak, rakamlar büyüyo yani şey büyüyo, orda da ister istemez sadece senin kararınla ilerleyemediği şeyler olabiliyor.

- [39] Ürünün üzerinde artık tasarımı bitmiş, ARGE si bitmiş he rşeyiyle artık üretime teslim edilecek. Bütün fabrikada ilgili departmanlar bunu üretecek olan departmanlar malzemeyi tedarik edecek tasarımcısı ARGE departmanı hepsi ürünün başına toplanıyo ve üzerinde imza attıkları bi form oluyo, üretilebilirlik deniliyo buna. Toplantı yapıldıktan sonra ürün her şeyiyle üretime hazır demektir. Plan dahilinde üretime dahil ediliyo.
- [40] Evet, bi projeye yetiştirilmesi gerekiyo, ürün henüz ürün mühendisliğine devredilmedi, ama a projesi için bu koltuktan 150 tane ihtiyacımız var. Ürünü de ürün mühendisliğine henüz devretmediğimize göre en çok bilgi bizde, tasarım biriminde. Bu durumda seri imalat, seri öncesi imalat da ürünü tasarım bölümü takip edebilir.
- [41] Ticari satınalma. Bu da nedir aslında bizim amiyane tabiriyle fason diye bi tabirimiz vardır biliyosun. Firmaların kendi üretim kapasitelerinin yetmediği demiyim ama yani herkesin her şeyi üretmesi mümkün olamıyo. Örneğin endüstriyel mobilya firmalarında hiçbiri kendi bünyelerinde sandalye üretimi yapmazlar. Veya suntalam olmadığı sürece metal işte işçiliği olan pirinç ayaklı dökme işte metal vesaire sehpa üretimlerini falan yapmazlar işte bu noktada fason dediğimiz dış tedarige devredilir ürünler.
- [42] Herhangi bir aksilik olduğu zaman işte 200 parti, 300. Pardon, 200 adet, 300 adet adamlar kesmiş oluyo, yapmış oluyo yani. Geçen benim ürünüm de oldu masanın üst tablasının kenarlarına radius koymaları gerekiyodu koymamışlar. 60 tane masa, 60 mıydı 200 müydü öle yüksek bi adette masa üst tablaları bozuldu yani. Onları tekrar yapmak zorunda kaldılar. Radiuslarını yapmak zorunda kaldılar.
- [43] ... diğer bütün ürünün tanıtım konsept sunumları bilmem ne, o işte fotoğraf katalog çekimleri, bunlar hep pazarlama ve pazarlamanın çalıştığı birimler ilgileniyo. Pazarlama bi stüdyoyla çalışıyo. Bizim bi de bi stüdyomuz var. Fab.... şeyde gruba bağlı stüdyomuz var. Fotoğraf stüdyosu kendi içimizde. Onla beraber paslaşarak yapıyolar.
- [44] ... mesela fotoğraf direkt şeyin sorumluluğunda, tasarımcının sorumluluğundadır. Yani tabi tasarımcı şeyi ayarlar, sahneleri ayarlar, tasarımcı fotoğrafçıyı ayarlar, fotoğrafçıyla geleceği yani timeline ı ayarlar, beraber çalışacakları zamanı ayarlar, ürünleri ürettirir, ilk numuneleri ve de ürünlerin hangi açıdan işte ne biliyim özellikleri neyse onları da şey yapacak şekilde, vurgulayacak şekilde fotoğraf çekimine de.
- [45] İşte mekan “Bu ürün dişimi erkek mi?”, “Kumaşları nasıl olur işte “Bi mekan içinde çekicek olsa nasıl bi mekan olmalı?”, “Hangi aksesuar kullanılır.”,

görselleri yanyana getirip böyle bi board hazırlıyoruz, yani şeyde dijitalde. Ondan sonra onları da programlamayla paylaşıyoruz, ürünün lansmanından önce.

- [46] Dönem dönem işte kampanyalar oluyo, o kısımda onlar (ürün yönetimi). Yani mesela biz yılın üç ayında kurumsal iletişimle böyleyken, ürün yönetimi yılın işte oniki ayında da kurumsalla böyle. Çünkü sürekli bi kampanya oluyo sürekli sahada, sahada bi bilgilendirme aracı gerekiyo bi dağıtım gerekiyor. İşte bi şey gerekiyo, o noktada onlar daha çok ürün yönetimi ve kurumsal iletişim departmanları daha iç içe çalışıyorlar. Ama biz daha çok bitmiş ürünün doğru sergilenmesi, doğru lansmanı katalog çekimleri ve reklam çekimlerinde orda bulunup onları bilgilendiriyoruz, çünkü dediğim gibi sürecin asıl sahibi biz olduğumuz için kimse ürünü bizim kadar iyi tanıyamıyo.
- [47] ... Hatta bunlarla alakalı reklam, “Nasıl şekilde reklam yapılabilir?”, “Ürünün neresine vurgu yapılması lazım?”, işte “Ürünün diğer rakiplerinden artıları neler?”. Hani aslında burda satış pazarlamacıların da anlatacağı şeyleri -ne denir? detayları- biz dosya halinde veriyoduk. Yani hani pazarlamacı veya satış elemanı bu ürünün güçlü yanları şudur bilsin, buna göre bir şey yapsın ne denir.
- [48] Biz arkasal seçimle ilgileniyoruz. Ürünlerimizin, mesela biz ürettik sonuçta biz ürünlerin tarzını daha iyi biliriz. Onlar için ürünlerin fuarda sergilenirken üzerlerinde kullanılan aksesuarlarını, işte biblodur vazodur vesaire. Hani onun gibi süslerini püslerini seçmemiz için bizden yardım isteyebiliyorlar. Ya da duvar kaplamalarını seçmemiz için bizden yardım isteyebiliyorlar.
- [49] ... Yani mağazaya gidip bakıyosun benim tasarladığım ürün ne durumda gibi. Biz de bazen onlara geri bildirim verebiliyoruz. Hani mesela şöyle bi örnek veriyim, bu sene yaptığımız koltuklardan bi tanesinde mağaza da gidip baktığımız zaman kırilent ölçülerinden bi tanesinin farklı olduğunu ve kumaşın ters yüzünün kullanıldığını fark ettim. Ve bununla alakalı hemen bi mail atıp bi geri dönüş yapıp, burda hani “Bu ürün hatalı bi şekilde sergilenmiş, burda bi sıkıntı var.” dedim. Mesela tabiri caizse bi facianın eşliğinden dönüldü.
- [50] Hani mevcut standart bi banko kullanılmaz mesela bir lobide. Hani bekleme koltuklarını kullanıyoduk standart bekleme koltuklarını elimizdeki. Ama o banko, lambrişi işte, arka planda yapılacak başka şeyler varsa o gibi şeyler tamamen özel tasarlanıyordu.
- [51] ... İşte mesela bu çekmece açıldığında işte bilmem nereye sürtüyo. Bizde öle bişey geldiğinde ki geliyordu onlar, değerlendiriyoduk. Ürün üzerinde bakıyoduk alternatifini ne olabilir neresine parça ekleriz neresinden çıkarabiliriz. “Hangi değişikliği yaparsak bu sorun gider?” falan gibi şeyler

yapıyoduk... Neyse.

- [52] Sisteme girildikten sonra aslında ürün geliştirme süreci bitiydi. Fakat bayilerden gelen şeyler olabiliyo ne denir yorumlar olabiliyo. Diyo ki işte “Bunu böyle yaptınız da, bi de bunun boyutunun bi büyüğü olsa çok daha iyi satarız”. İşte “Bunun malzemesini daha kaliteli yapabilir misiniz?”, “Montaj yaparken bunun kolu sürekli kırılıyo işte bunu nasıl geliştirelim?” gibi aslında ürün piyasaya çıktıktan sonra da revizyonlarını takip ediyoruz.
- [53] Değiştirdiğimiz oluyodu mesela atıyorum ayaklar zayıf oluyo, test edilmiyor. Mesela berjer, berjerin bi tanesinde bi sıkıntı olmuş. Nasıl diyim fuara çıkan ürünlerden bi tanesi müşteri gelmiş oturmuş biraz arkaya yaslanmış herif arkaya düşmüş. Yani dengesizlik varmış yani orda, ayaklarla ilgili bi sıkıntı varmış. Sonra gözümüzden kaçmış adam orda deneyimlemiş, bizim yerimize deneyimlemiş yani.
- [54] Çünkü bu noktada tasarımcı tek başına sahaya hakim değildir. Ve tek başına tasarımcı karar verip işte bu ürünü üretiyoruz bu ürün portföye girmelidir diyecek yeterliliğe sahip değildir, olmamalıdır da. Aslında bizim gibi büyük firmalarda, çünkü çok ciddi bi iş yapıyoruz hani şunu hadi üretime aldım üç ay sonra da bu satmıyomuş kaldıralım deme lüksümüz bizimki gibi bir firmada yok. Dolayısıyla bu tarz büyük komiteler üzerinden genel müdür onayıyla, çünkü dediğim gibi genel müdürümüzde eski ürün yönetimi direktörü olduğu için zaten tüm süreçlere hakim birisi. Ve o da bu süreçlere dahil ve hep beraber karar verdiğimiz toplantılar üzerinden doğru ürünleri seçerek daha az prototip yaptırarak ve daha nokta atışıyla hedefimiz ulaşıyoruz.
- [55] Vallaha olumsuz tarafı herkes yorum yapabiliyor. Ben ona çok sinirim. Yani böyle bilen de konuşuyo bilmeyende konuşuyo ürünler hakkında. Az çok biliyosun zaten bu tasarımın kötü tarafı bu. Ne biliyim ben hani çok acımasız eleştiriler de oluyodu mesela ürün hafif bişey görmesin hemen kötü dönüşler oluyodu. İşte nasıl ürün yapmışsınız tarzı şeyler.
- [56] Evet toplantı aşamasında. Ürünü beğeniyolar ancak kararsız kalıyolar. “Bunu kabul edelim mi etmeyelim mi?”, “Edelim mi etmeyelim mi?”. Benim bi tane ürünümü abartısız söylüyorum altı ay süründürdüler. Altı ay sonunda kabul ettiler ama ben artık böyle bezedim. Yani, her türlü rengini tekrar tekrar denettiler. Çünkü çok fazla revizyon yaptırıldılar bana. Aynı ürün üst üste debelenip duruyorum, bu benim içi çok yıpratıcı oluyo.
- [57] Evet, çünkü yani zaten bu kadar hızlı bi döngüde tasarım çıkması imkansız. Şevkle çıkmıyo yani, özgün işlerde çıkamıyo. O gün ne gerekiyorsa, yani bu kumaşı tedarik edebiliyosak onu almaya gidiyoruz. Artık hani kumaşın üzerinde düşünemiyosun çünkü. Dolayısıyla yorucu çünkü çok fazla ürün anlamında çok yorucu.

- [58] Vallaha bizdeki sıkıntı şuydu ürünlerin çok hızlı çıkıyor olması. Yani bi olmadı tekrardan bi gözden geçirelim durumumuz yoktu. Hep son dakkaya bırakılırdı böle şeyler. Yani normalde iki ayda çıkması gereken ürün 1 hafta, maksimum iki haftada çıkardı. O bize çok büyük bi sıkıntı yaratıyordu. Çünkü hani ürünü iyileştiremeden biz piyasaya girmiş oluyoduk. Bu aynı zamanda üretimi de sıkıntıya sokuyodu.
- [59] Yani üzülüyorum bazen işte. Tasarımı yapıyosun, çok fazla beğeniliyo, fuarda da çok güzel olumlu şey oluyo, ama üretim ket koyuyo. Üretim bu riske giremiyo. Pazarlama da giremiyo o riske. Niye çünkü normalde ahşap renkleri giderken içine böle renk koyuyosun, normal RAL kataloğundan renk seçiyosun, öle renkler koyuyosun. Ya bu mobilya da görülmediği için o dönemde giremiyorlar o riske. Bi kaç kişi yaptıktan sonra girebiliyorlar ama.
- [60] ... Tasarımda genelde zamanla ilgili bi sıkıntı olmuyo ama prototip aşamasına ve üretim aşamasına geçtikten sonra farklı birimlerin sorumluluğunda olduğu için. Mesela ürün reçetesinin oluşturulması. Hani bunu planlama birimi yapcak ama planlamanın dönemsel olarak yoğunluğu varsa bizim bi hafta olarak planladığımız iş bir aya kadar çıkabiliyo.
- [61] Çok fazla dökümantasyonu yok. Yani o sadece o tasarımla ilgilenen arkadaşın kendi şahsi bilgisayarında korunaklı olmadan duruyo. Yani onun bilgisayarına bişey olsa ya da silip istifa ettiyse, bi daha o ürünle alakalı geriye dönük çok bi bilgi bulamazsın. Sadace üretimde işte üretim çizimleriyle falan yani hani.

L. 11-PHASE PROCESS MODEL

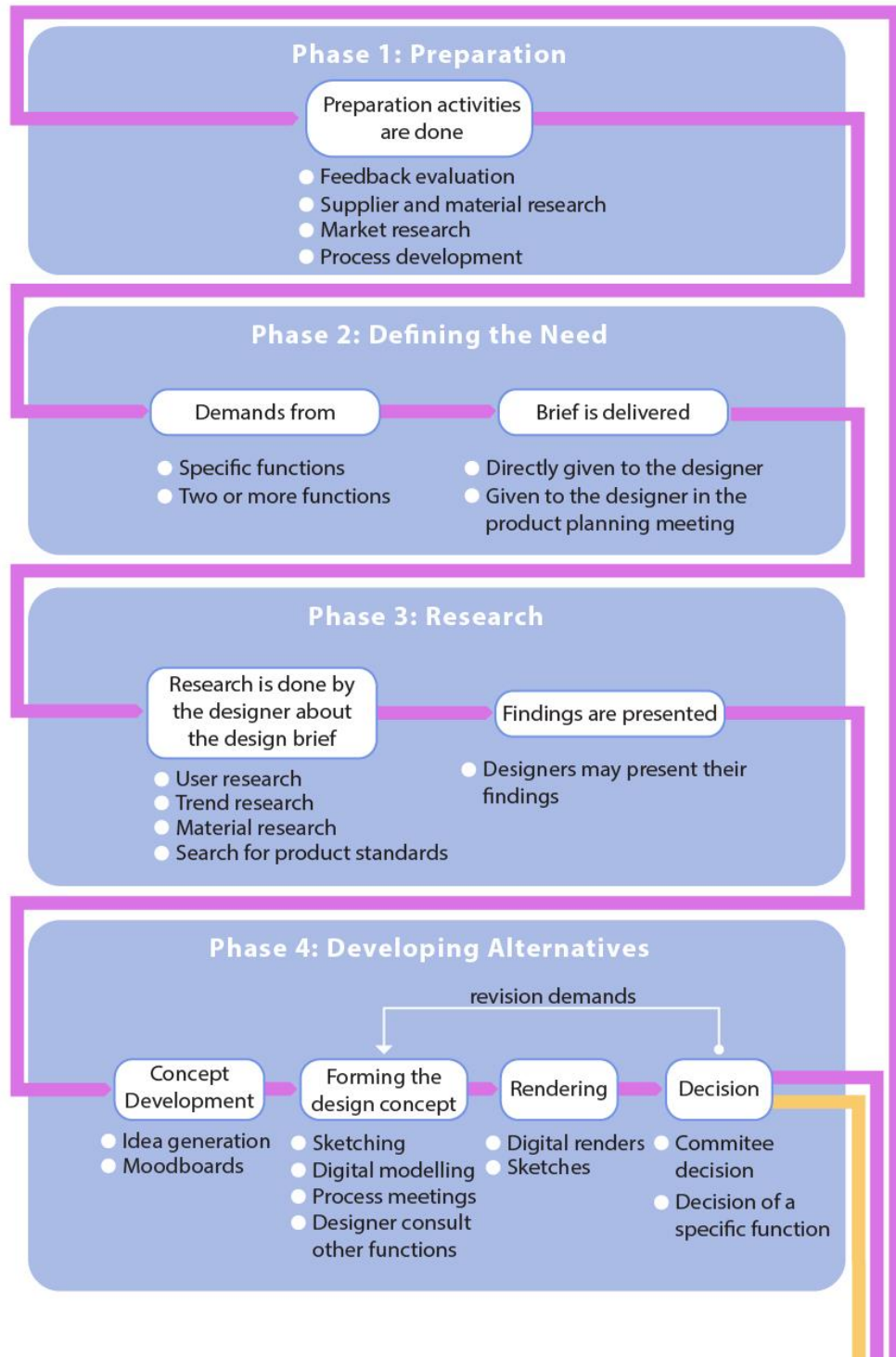


Figure L.21. 11-phase process model (part 1)

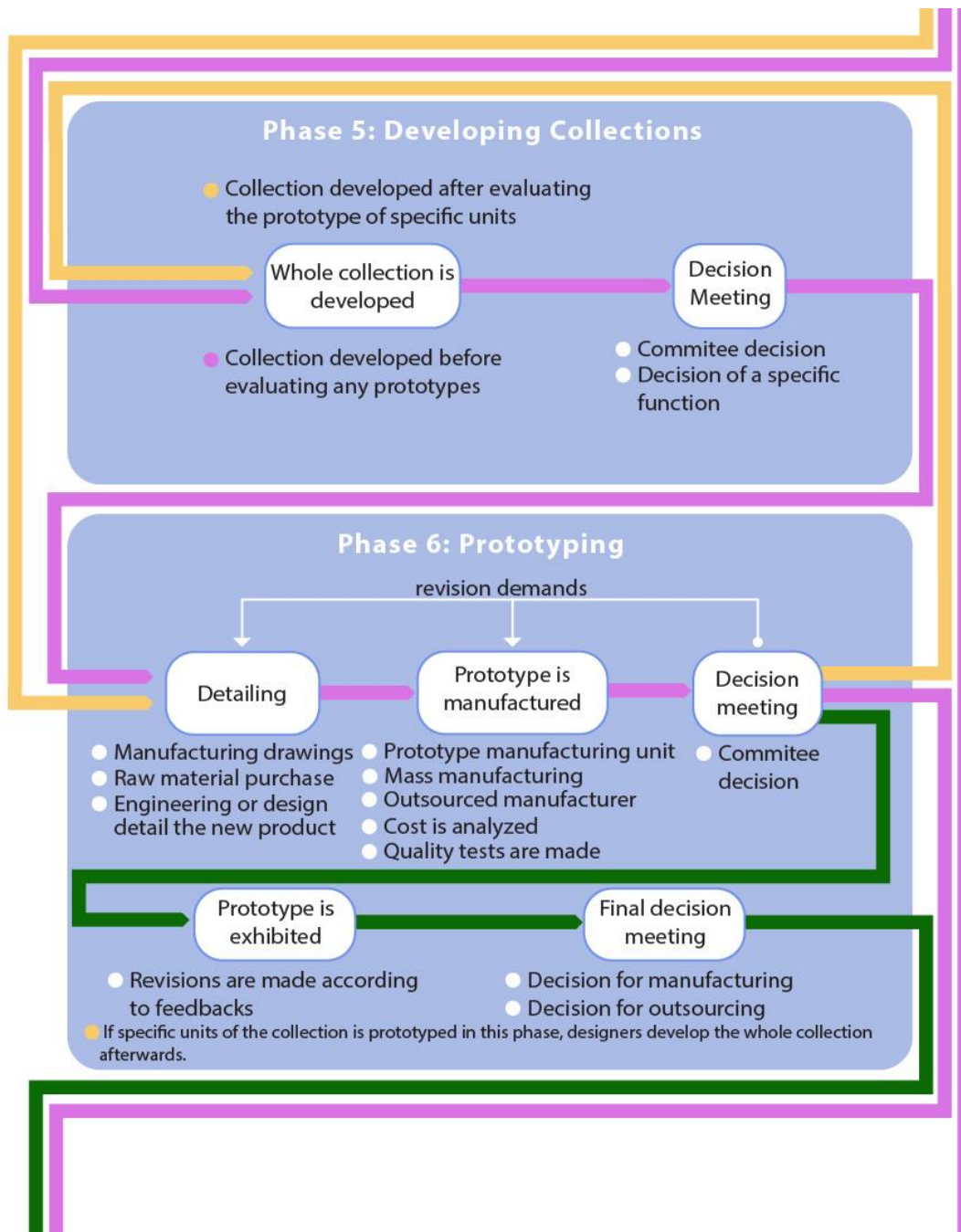


Figure L.22. 11-phase process model (part 2)

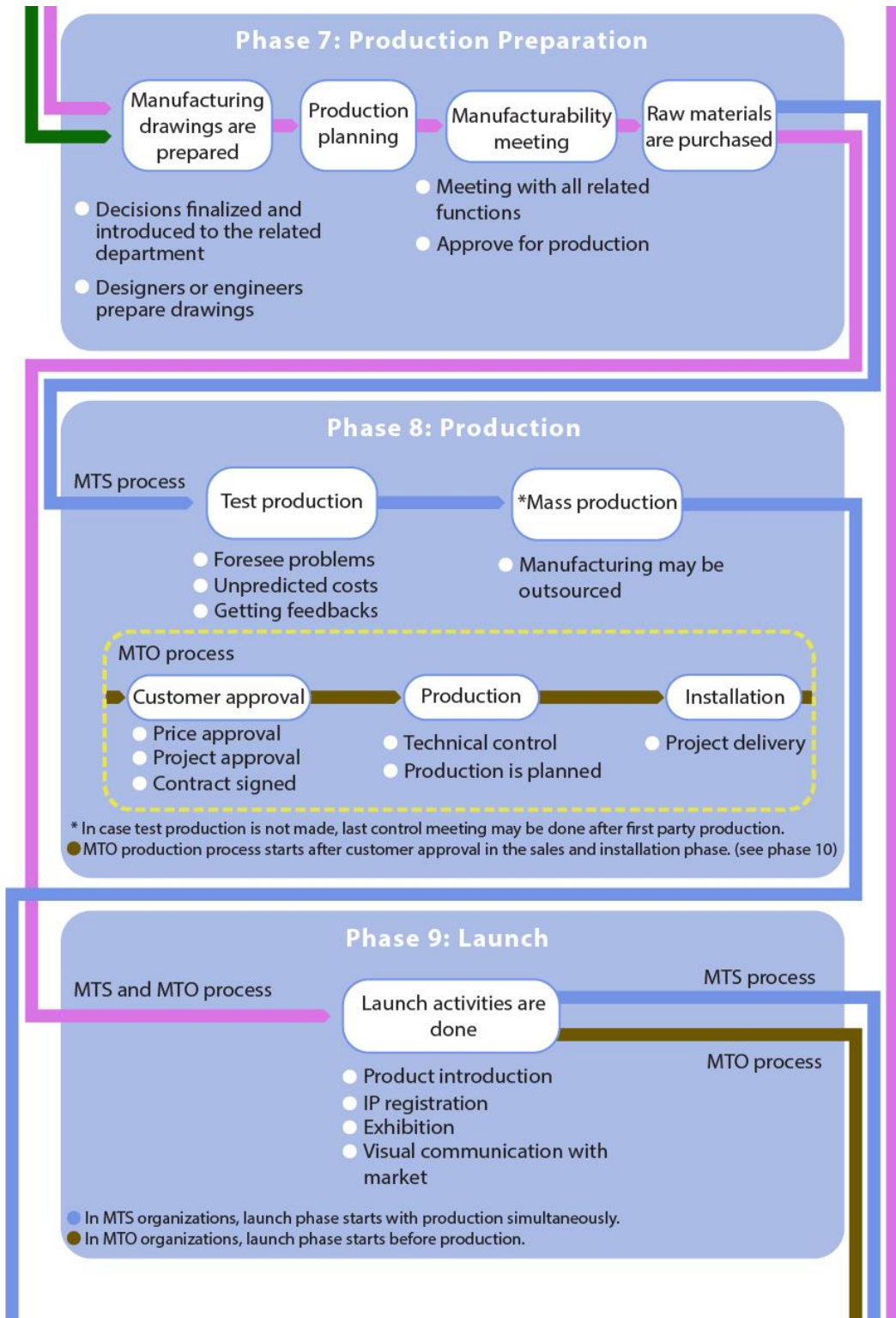


Figure L.23. 11-phase process model (part 3)

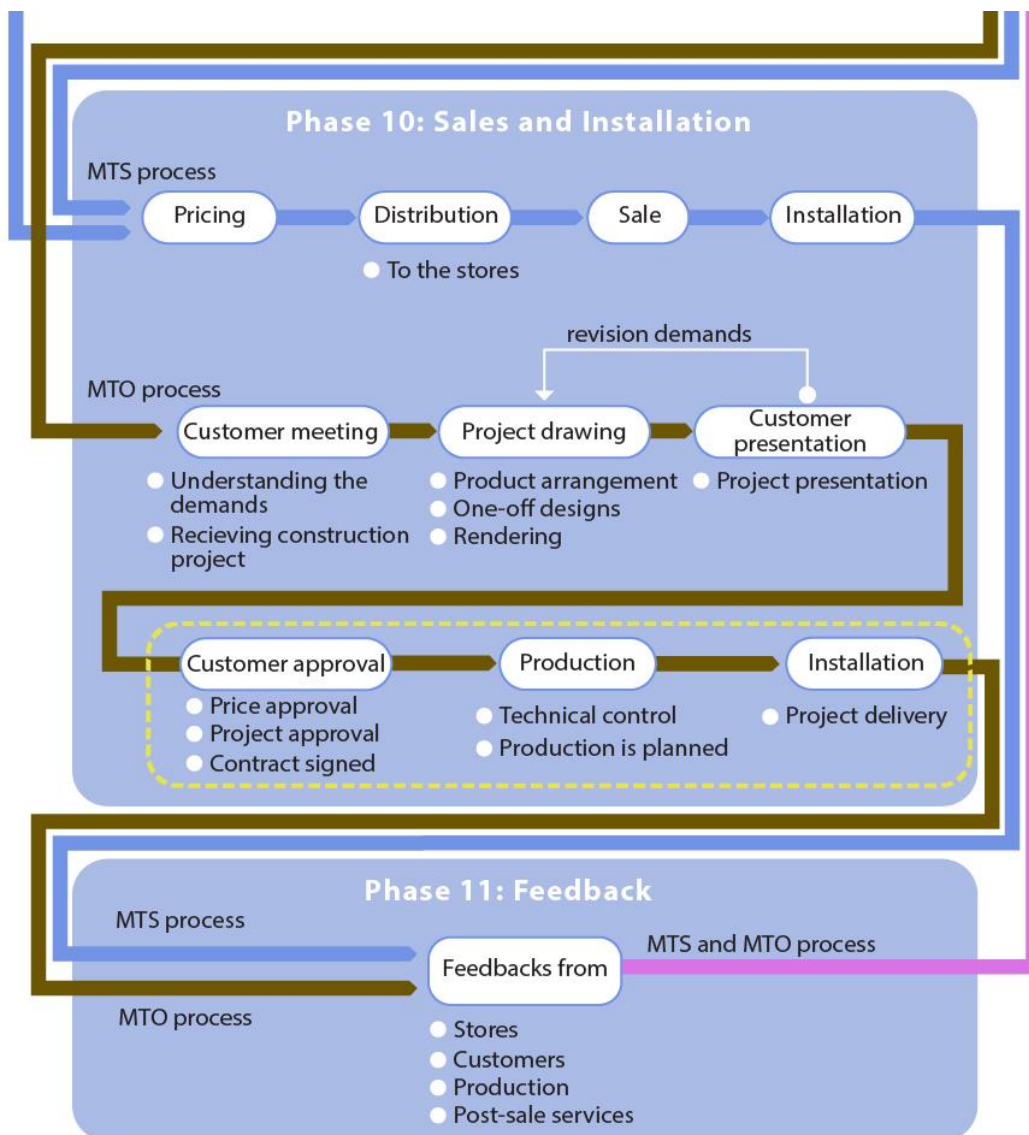


Figure L.24. 11-phase process model (part 4)