GENERATING DESIGN BRIEFS WITHIN MULTIDISCIPLINARY MULTINATIONAL ORGANIZATIONS: A CASE IN THE TURKISH AUTOMOBILE INDUSTRY

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ABSTRACT

GENERATING DESIGN BRIEFS WITHIN MULTIDISCIPLINARY MULTINATIONAL ORGANIZATIONS: A CASE IN THE TURKISH AUTOMOBILE INDUSTRY

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In multidisciplinary organizations in the new product development process, each department has its own duty. The requirements of a project should be met and the problems should be overcome by those departments. It is difficult for them to pass these duties to another department since the requirements of the final product is in question. At the beginning of the new product development process, the design brief should be formed and mapped out well. The purpose of this study is to present the importance of generating a well-conceived design brief efficiently. The study investigates the ways of creating an effective design brief to have a productive design solution, based on studies using methods of analysis following up the process of brief formulation, and in-depth interviews with the company's main functional group members. The interviews address the brief generation and product development processes in the Turkey branch of a multinational automotive company. The interviews are carried out with representatives from different disciplines, to reveal the strengths and weaknesses of these processes, and the brief generation process in particular. The findings indicate that passing on of knowledge between departments and the global headquarter, effective multidisciplinary collaboration, the role of the

brief in NPD process, and communication between departments and between the global headquarter are important in the formulation of the design brief.

Keywords: New Product Development, Design Brief, Multidisciplinary, Design Thinking, Automotive Industry

ÖZ

ÇOK DİSİPLİNLİ ÇOK ULUSLU ORGANİZASYONLARDA ÜRÜN İÇERİĞİNİN OLUŞTURULMASI: TÜRK OTOMOBİL ENDÜSTRİSİNDE BİR VAKA ÇALIŞMASI

Özdemir, Özge
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Ürün geliştirme faaliyetleri yürüten çok disiplinli kuruluşlarda, her departmanın görevleri ve tasarımları çoğunlukla kendi sorumluluğundadır. Son ürünün gereksinimlerini karşılamak söz konusu olduğunda, bunları her bir departmana aktarmak kolay değildir. Yeni ürün geliştirme sürecinin başlangıcında, ürün içeriği oluşturulmalı ve iyi haritalandırılmalıdır. Bu çalışmanın amacı, iyi tasarlanmış bir ürün içeriği üretmenin önemini ortaya koymaktır. Ayrıca, çalışmanın amacı, firmada ürün içeriğinin oluşturulmasında ana işlevselliği olan kişilerle yapılan derinlemesine görüşmelerin analizini kullanarak verimli bir ürün oluşturmak için etkili bir ürün içeriği oluşturma yollarını araştırmaktır. Görüşmeler, çok uluslu bir otomotiv şirketinin Türkiye üretim merkezinde ürün içeriği oluşturma ve ürün geliştirme süreçlerini ele almaktadır. Mülakatlar, farklı disiplinlerden temsilcilerle, ürün geliştirme süreçlerinin özellikle ürün içeriği geliştirme sürecinin güçlü ve zayıf yanlarını ortaya çıkarmak için yapılmıştır. Bulgular ürün içeriğinin oluşturulmasında departmanlar arasında ve Türkiye üretim merkezi ile çok uluslu organizasyon merkezi arasında bilgi aktarımının, etkin çok disiplinli işbirliğinin, yeni ürün geliştirme sürecinde ürün içeriği rolünün, ve departmanlarla çok uluslu organizasyon merkezi arasındaki iletişimin önem taşıdığını göstermektedir.

Anahtar Kelimeler: Yeni Ürün Geliştirme, Ürün İçeriği, Çok Disiplinli Çalışma, Tasarım Odaklı Düşünce, Otomotiv

To my beloved family

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"I put my heart and my soul into my work, and have lost my mind in the process"
Vincent van Gogh

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ABBREVIATIONS

CCP: Customer Care Profile

CX: Customer Experience

KPI: Key Performance Indicator

MDO: Multidisciplinary Design Optimization

NPD: New Product Development

PDP: Product Development Processes

QFD: Quality Function Deployment

QT: Quality Tracking

R&D: Research and Development

VoC: Voice of Customer

CHAPTER 1

INTRODUCTION

1.1. Background of the Study

At the beginning of a new product development process, the design brief should be prepared in order to be foreseen how and for whom it will be designed. The company I work in attaches great importance to generating a good design brief. Many information must be used for generating creative solutions, which a global organization cannot carry and use in multidisciplinary collaboration easily. The more information is provided to a design brief, the more creative solutions it provides. As a result, it is crucial to utilize all the data gathered for the design brief. However, transmitting all data to the brief cannot be easy. As a result, the brief cannot be established well so that a common language can be accessed or all departments utilizes it completely.

Sosa, Vasconcelos and Cardoso (2018) investigate how design briefs are submitted by reviewing over seventy-five design papers, and demonstrate that there is no clear agreement on the definition of the design brief. Although a design brief is not defined clearly, it should not be seen as an insignificant issue. It is noted in the research by Kleinsman (2006) that many academics lay emphasis on the design brief's importance. Kleinsman (2006) states that well-performed integrated product design can lead to early product launch for the market needs, and products with better characteristics that meet the requirements and the opportunity to develop products with various functions. As a result, although the definition is insufficient and deficient, the researchers are in unison about the significance of the brief. Carlopio (2010) and Phillips (2004), for instance, regard the design brief as a part of management techniques and strategic

planning. In short, the design brief can be described as a tool for firms to achieve competitive market advantage.

Carlopio (2010) argues that strategic conceptualization relies mostly on external environmental conditions. Contrary to this viewpoint, Carlopio (2010) proposes from the beginning, to quest for the design process for strategic analysis and internal tools, i.e. thinking company strategies on the goods with the concept. Differentiating the product and improving the firm's competitiveness and solving issues make the design essential for firms**.** He explains as follows (2010, p. 9) "Design is not a linear process wherein we start with an idea, follow the five steps, and wind up with a successful product/service or solution. Unanimously, design is conceived as a dynamic process involving many iterations of increasingly interlinked feedback and feed-forward loops, with multiple inputs generating an emerging end result. In other words, design is not a linear task; it is a dynamic iterative process." For Carlopio (2010), design is initiated when a problem is discussed, not with the designer’s fancy.

A related view of how to handle design for strategic advantage is found in Phillip's (2004) study "Creating the Perfect Design Brief: How to Manage the Design for Strategic Advantage". Not only does Phillip consider the design brief for the firm’s strategic objectives, he also distinguishes the design brief from the imagination. Phillips (2004) expresses that a design brief does not have an approved outline and adds that design briefs are largely a function of firms and products. Phillips (2004) therefore describes the design brief, as Carlopio does, as a customer-based approach. Also, Phillips (2004) distinguishes design from art, because while the artist's self-explanation, practice and feelings in the work of art are expressed, the design brief is not a partnership between them. In addition, Philips (2004, p.29-46) defines the main features of a design brief as: project overviews and context in the design briefs (1), category review (2), target audience review (3), company portfolio (4), business objectives and design strategy (5), and finally, project scope, time line and budget. Such studies are significant to indicate that the design brief is essential to companies. The design brief also rests on the product. Therefore, the briefs may demonstrate a

variation based on the product field. Although the design briefs can differ by the field of the product, it is clear that they are crucial for each organization within the process of the development of new products. For instance, a design brief for environmental purposes in hotels, houses or bureaus is shown by Hyde, Watson, Cheshire, and Thomson (2007) in their research. The research is significant to illustrate that there is a need for new products because of new requirements and issues worldwide, including climate change. In this way, the design brief turns into an element of fresh areas of product development**.** Yang's research (2015) provides another instance of these types of new requirements**.** Yang focuses on how design briefs are significant for enhancing home health services. In addition to that, the design briefs can be used not only in simple manufacturing such as can industry, which will be in this study but also in recently advanced areas of manufacturing.

The sophistication of the new product development process is also another significant feature of the design brief. To put it another way, the design brief today is the result of a teamwork not of a significant group. For instance, Kleinsmann (2006) notes that the design brief is regarded by researchers and managers as a cooperative work involving several various parts of the firm, rather than one party.

This analysis of the literature is significant to present two potential results for this research. The first, the design brief has an important role in the development of new products for business to be able to reach business objectives in the market although there is not an approved outline of the design brief in any way. The second result can be interpreted as the design brief being a teamwork between the various groups and the experts rather than a product of a particular knowledge area.

1.2. Motivation of the Study

The Product Development Process (PDP) is a process, which involves taking a product, or service that meets the needs of customers from product design to market. This process is also recognized as new product management. Working with experts from various disciplines is important. Meeting the requirements of the customers is

the goal of the product development process. Therefore, it extends the firm's market. A business has two obligations to meet so as to succeed in new product development (NPD). It must meet the requirements of the customer as much as possible and launching the final product to the market as soon as possible (Schilling, 1998). If a company does not take these necessary steps, it will lose a lot of time and money. The product development cycle must also be carefully managed by a company. Therefore, potential risks can be anticipated beforehand, the product will have business requirement. In some cases, product quality may not be enough for its success. Not only quality of a product, but also other features such as aesthetics are evaluated by the customers. In other words, a product should also appeal to the eye well. When it comes to the process of product development, one concept plays an essential role. It is industrial design. It should involve all critical requirements of the product. The start of the process is becoming increasingly significant at this phase. The design brief is where hints for innovation are first seen, and the literature remarks that some organizations do not pay necessary attention to it.

Innovation is one of the best-known terms in today's business, and it has importance in the business. Innovation alone does not give the companies luxury of launching the product late into the market. Real innovation is a difficult challenge in competitive sectors. It is also a hard challenge to comprehend, as creativity comes from human minds. There are different definitions of innovation since it is not palpable. Shortly, innovation can be interpreted in such a way as to succeed in creating an original product to meet consumer and marketable demands.

Investigating the definition and comprehension of the well-conceived design briefs in the development of a new product is imperative to see how the issues are linked with the products. The new enhancements made by the organization, and new customer requests are received by the organization member and are critical to make innovation. Nonetheless, there are not many researches about the briefs as to how engineers and designers work together all along the process of brief generation. The design brief constitutes one of the most important phases of the new product development process

to generate creative designs for a business and to use the same vocabulary even if different individuals contribute to the project. It can be difficult to collect all the core data in a compact file in multidisciplinary companies. Thus, my goal is to illustrate the value of the design brief and of communication in order to reach a cohesive understanding in the multinational company. My motive is to ensure that both the designing team and business managers can use this study for creating an effective design brief.

1.3. The Aim and the Scope of the Study

The aim of this research is to investigate how companies achieve efficient and well-prepared design briefs to develop a data-based design solution. These information/data are crucial for creative designs since using them may provide inspiration to the designing team. Besides the value of data for an innovative solution, it is also crucial to understand the design brief and have a common understanding about the product. Accordingly, concentrating on generating the brief with various fields of study and teams is the primary concern of the research. Also, which type of methods and tools are going to be used for the new product development process and innovation will be searched. NPDP (new product development process), the generating of the brief and the co-operative team are significant for the study. In addition, in this research, several approaches are required as a result of the multi-level aspects of the study. Observing is used to provide data on new products in general, rather than mainly concentrating on a certain aspect of the product process. Furthermore, comprehensive interviews are significant for getting information on the formulation of the design brief. In the automobile industry the NPDP (New Product Development Process) is not always the case. Three to four years are required for product development. Consequently, examination allows identifying relevant roles with the product development process and understanding it.

1.4. Research Questions

This study will concentrate on the following to discuss formulation of the design brief:

- How do different departments work together to generate a design brief within multidisciplinary multinational organizations?

This study examines the types of instruments and approaches that these departments use. In addition, the following questions, also linked to my key problem, will be answered:

- What does the design brief mean for different departments in the organization?
- What is the importance of effective communication in the formulation of a design brief for all parties involved?

1.5. Structure of the Thesis

In Chapter 1, background of the subject in the literature, motivation behind and aim of the study are introduced. Additionally, the research questions are presented, and the scope of the thesis is explained.

In Chapter 2, the NPD process is examined with the process steps in detail and the potentials of innovation and design thinking approach in the process are looked into. In addition, multidisciplinary collaboration is clarified considering the necessity of efficient teamwork due to the complexity of the product, which is automobile. The design brief, which is the beginning of the NPD process, is explained in terms of what it is, how it is prepared, and its importance.

In Chapter 3, the field research's scope, methodology, analysis and findings, as well as insights from the in-depth interviews are presented.

In Chapter 4, the overall study is summarized, its limitations are discussed, and suggestions and recommendations for further studies are made.

CHAPTER 2

LITERATURE

2.1. The Product Development Process

The product development process (PDP) typically consists of several activities that firms employ in the complex process of delivering new products to the market. It starts from planning and task-setting (Safavi, 2016). This is then followed by design activities, prototyping manufacturing, testing and modification. Design activities can be divided into three phases (Safavi, 2016).

1. Conceptual design: Different ideas are developed and tested on the basis of the problem described. Then the best ideas are selected for further study.
2. Preliminary design: Chosen concepts are assessed further and formed.
3. Detail design: Elaboration, examination and optimization of the initial concept with regard to different necessities. It is ready for prototyping.

Product development plays a primary role in achieving a sustainable competitive advantage in the global markets (Cooper, 2019). Generally, in most product development processes (PDP), the more knowledge gained the less freedom is left to practically apply in the concept development, as shown in Figure 2.1. This is mainly as a result of increasing fidelity of the design models and increasing complexity of the design process.

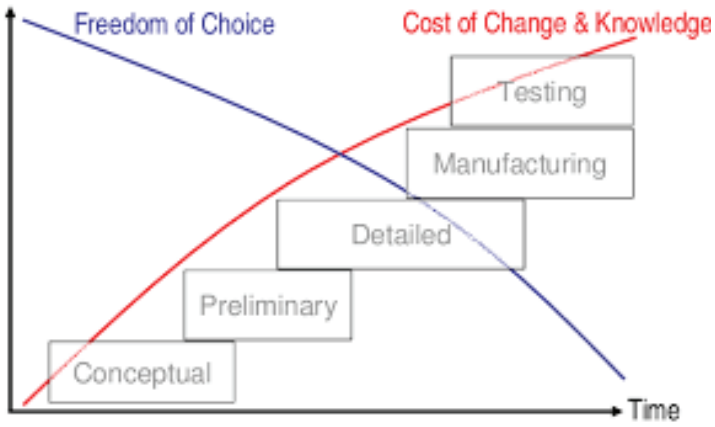

Figure 2.1: *Information and freedom paradox in a Design and Manufacturing Process (adapted from The Drivers of Success in New Product Development, Cooper, 2019)*

Kerzner (2019, p.117) broke down the PDP in many different ways, which include:

1. Fuzzy Front End: Includes a range of activities before specifications are formally and well-defined. The necessities express what the product ought to do or have, to satisfy the expected business and market needs with differing degree of accuracy.
2. Product Design: This is creation of high-profile design details. In other words, what the prerequisites of the product are turns into how this particular product fulfill the requirements.
3. Product Implementation: It relates to afterward stages of detailed design as well as test methods used to ensure that the concept really satisfies all the design requirements.
4. Fuzzy Back End: It applies to the commercialization process. Product and business launch take place in this process.

2.1.1. Definition of New Product Development

The US Based Product Development and Management Association defines New Product Development (2013, p.458) as “A disciplined and defined set of tasks and steps that describe the normal means by which a company repetitively converts embryonic ideas into saleable practices or services”. In simpler words, NPD is

generally described as the transformation of a market opportunity into a product available for sale. The product can be tangible, something that can be touched, or intangible like a service, experience or belief. This requires understanding the customers' needs, the competitive environment and the nature of the market. Customers' needs are driven by cost, time and quality. Innovative companies aiming at these three variables, develop continuous practices and strategies to satisfy customer requirements better and to increase their own market share by regular development of new products.

New Product Development (NPD) is the management of disciplines involved in the development of new products (Trott, 2005). It is a multi-stage process (Murthy, Rausand and Østerås, 2008). Product development must be run as a multi-disciplinary, cross- functional effort. It can also be simply described as the development of new and improved products and services (Cooper, 2019).

NPD is important for introducing new products in the market for continued business success. The contribution of NPD to the growth of companies, influence on profit performance and the role as a key factor in business planning have been well documented. New products contribute to providing employment, economic growth, progress in technology and high standards of living. Thus the importance of studying thoroughly NPD and the processes are involved (Bhuiyan, 2011).

Long term objectives are achieved when businesses use strategic management to achieve them, Product development strategy is one of the long term objectives (Murthy, et al., 2008) (Liu, Brown & Elliott, 1997) as shown in Figure 2.2.

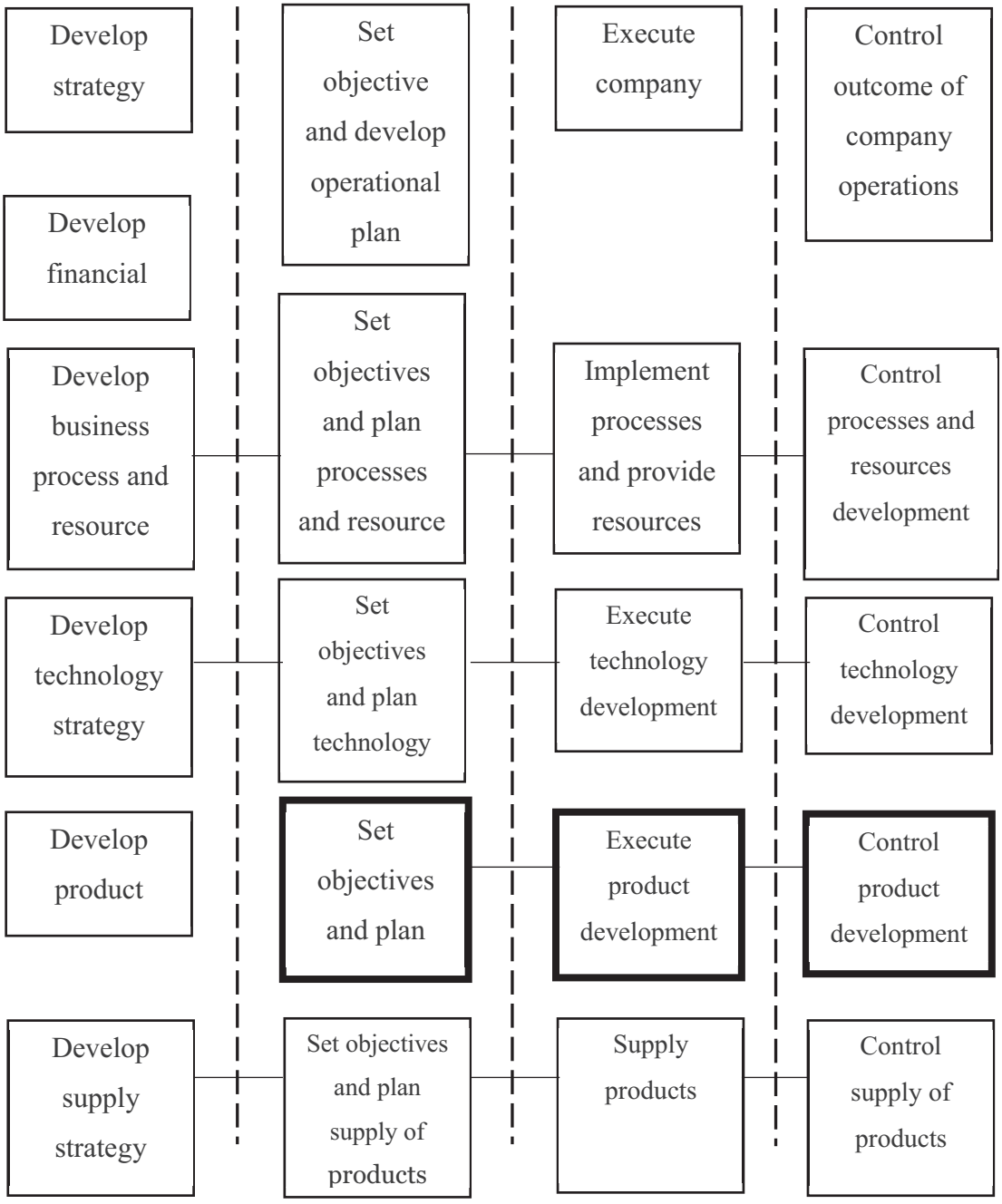

Figure 2.2: *New Product Development as part of Business Processes (Murthy, 2008, p.23)*

The "newness" of a new product varies and depends on the following (Murthy, et al., 2008):

1. Viewed in terms of different perspectives
    a. New to the world, e.g. first computer, car

b. New to the industry
c. New to the manufacturing firm
d. New to the market
e. New to the customer

2. Viewed in terms of what is new
    a. New technology, e.g. analogue computers being replaced by digital computers
    b. New process; that reduces production cost, improve quality, increase compliance
    c. New features; usual for electronics e.g. mobile phones, TV's
    d. New uses, e.g. computer chips in domestic appliances
    e. New design that reduces production cost
3. The level of newness is a measure of the disharmony between the new and the existing product. The shift from negligible or gradual to big or extreme will vary, depending on the point of view. According to Murthy and et al. (2008) "The newness from the customer perspective deals with improvements in the product attributes (e.g., increase in the fuel efficiency of a car) or new features that meet new requirements or result in greater benefits."

2.1.2. Stages of the New Product Development Process

The NPD process consists of activities necessary for the development and launching of new products. A new product evolves over a sequence of stages while being introduced to the market, beginning with an initial product concept that is evaluated, developed, tested and launched on the market (Bhuiyan, 2011). This series of actions are seen as a set of data collection and assessment phase. With the new product emerging, administration becomes more and more aware of the product and can evaluate and re-evaluate the initial choice to begin development or introduce the product into the market (Bhuiyan, 2011).

The process of information gathering and evaluation leads to improved new product decisions by minimizing the level of risk and optimizing the resources for developing new products. The NPD process varies from industry to industry, from company to company in order to meet specific needs particular to that company or industry.

The best model that tries to capture the relevant stages of the NPD process is the Booz, Allen and Hamilton model, also known as the BAH model (Figure 2.3). This model encompasses all the basic stages of models found in literature. It is based on extensive surveys, in-depth interviews and case studies and thus appears to be a fairly good representation of prevailing practices in the industry.

The stages of the model are as follows (Bhuiyan, 2011, pp.751-766):

1) New Product Strategy: This ties the NPD method to business priorities and focuses on the development of ideas and recommendations on screening criteria. Innovators thus clearly can define their new product priorities and aims.
2) Idea Generation: Explores for ideas that fulfill the company goals. This is carried out by brainstorming ideas from outside and inside sources.
3) Screening: Initial research to find out which concepts are important and should be explored more thoroughly. In other terms, there is a limited number of concepts.
4) Concept Testing: The idea is organized into a comprehensive picture.
5) Business Analysis: The ideas are assessed on the basis of quantitative variables such as income, investment returns and volume of sales. The cost and benefit of the new product must be known and it is important to check that they fulfill business goals.
6) Product Development: Transforms concepts into a producible product.
7) Market Testing: Commercial studies needed to validate previous commercial decisions through market testing on the product.

8) Commercialization: The product is put on the market, i.e., the product is made available to the public.

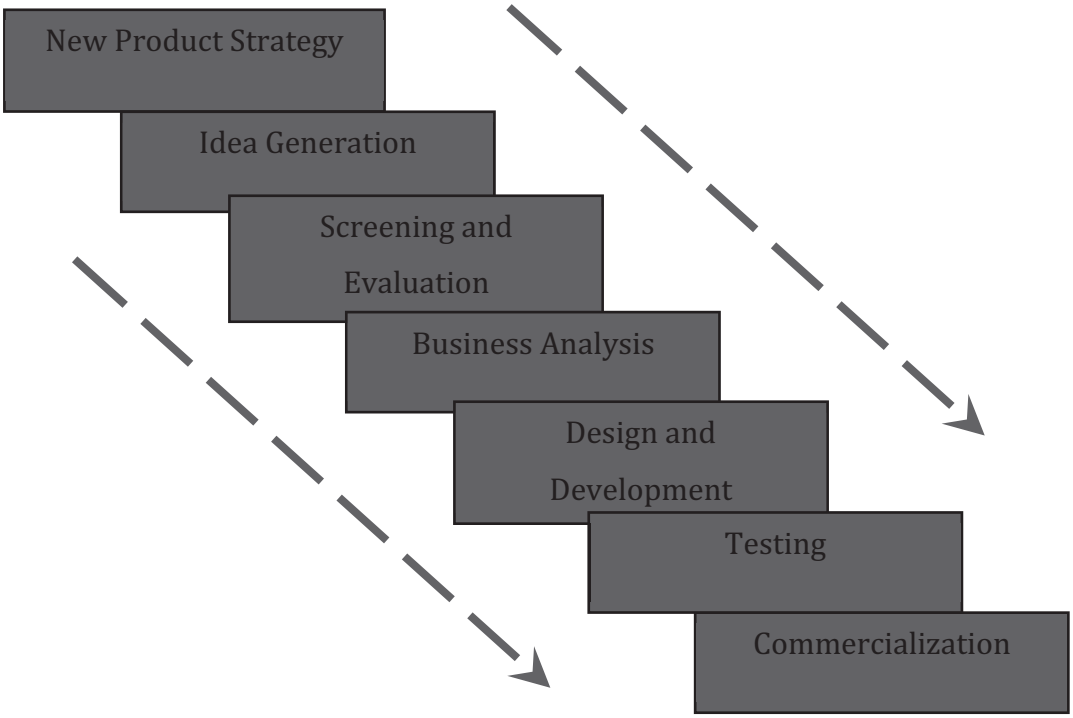

Figure 2.3: *Stages of New Product Development (BAH model 1982)*

(Booz, Allen, Hamilton, 1982, p.749)

Booz, Allen, Hamilton (1982) found that companies that successfully launch new products have a formal NPD process and pass through all the stages represented in Figure 3.

Another conceptual model worth mentioning is the one developed by IDEO which is a famous design and consulting firm in California. The IDEO approach has a five step procedure which is among the most researched processes with regard to NPD (Figure 2.4). These steps include (Moen, 2001, pp.2-4):

1. Watch and learn the market, the customer, the technology, and the seen limitations of the issue. Examine scenarios in real life and detect what motivate

2. Synthesize all the data gathered in the first phase and present them in the project room. This is the essential instrument to turn knowledge into design opportunities. Images, illustrations and graphs all are displayed on the wall to explain key ideas and to address them easily. The ideas are sorted and the important ones are recorded and advanced.
3. Being visual is the primary rule of IDEO brainstorming. Visualize new customers using the new product. Creating visible and tangible experiences is enhanced with prototypes, physical models and computer-based rendering.
4. Prototype, evaluate and improve the concept. Prototyping is the shorthand of innovation because it gives shape to ideas
5. Implementation of design changes which are associated with more technologically advanced procedures. This is the longest phase and most technologically challenging.

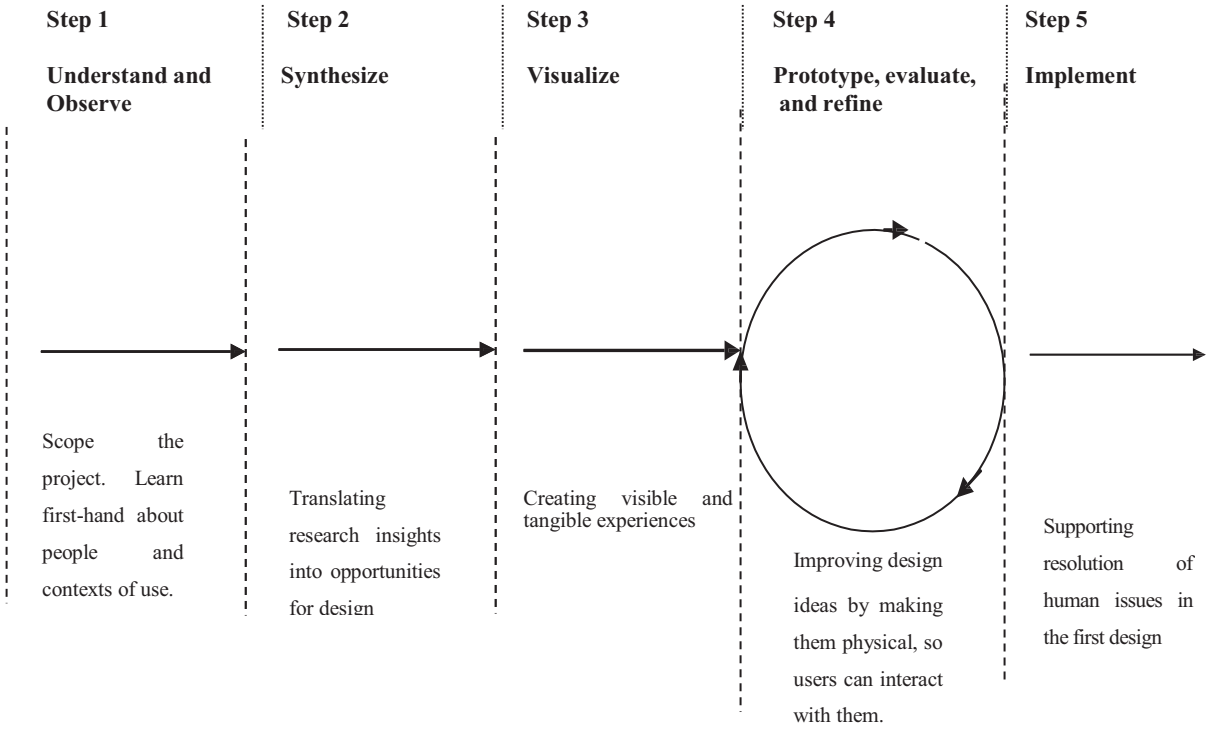

Figure 2.4: *IDEO Process Consists of Five Steps (Moen, 2001, p.2)*

2.1.3. Stage Gate Model

The pioneer of NPD research is Cooper (2019) has conducted significant work in the consumer goods sector over the last two decades

Stage gate systems are roadmaps or play books for driving new products from idea to launch successfully and efficiently. Many companies have adopted this solution in order to overcome the deficiencies that plague their new product efforts (Cooper, 2019). The stage gate model proposed by Cooper (2019) as shown in Figure 2.5 consists of multiple stages and gates to decide on whether a project should be killed or continued with. The gates placed between stages play a crucial role in deciding whether a project proceeds to the next stage or not. Therefore, various metrics to calculate the importance of projects in each gate should be appraised for each project. Notably, a number of firms have adopted altered versions of the model for the advancement of technology where the completed project is not a new product (Shin, Lee, & Yoon, 2018).

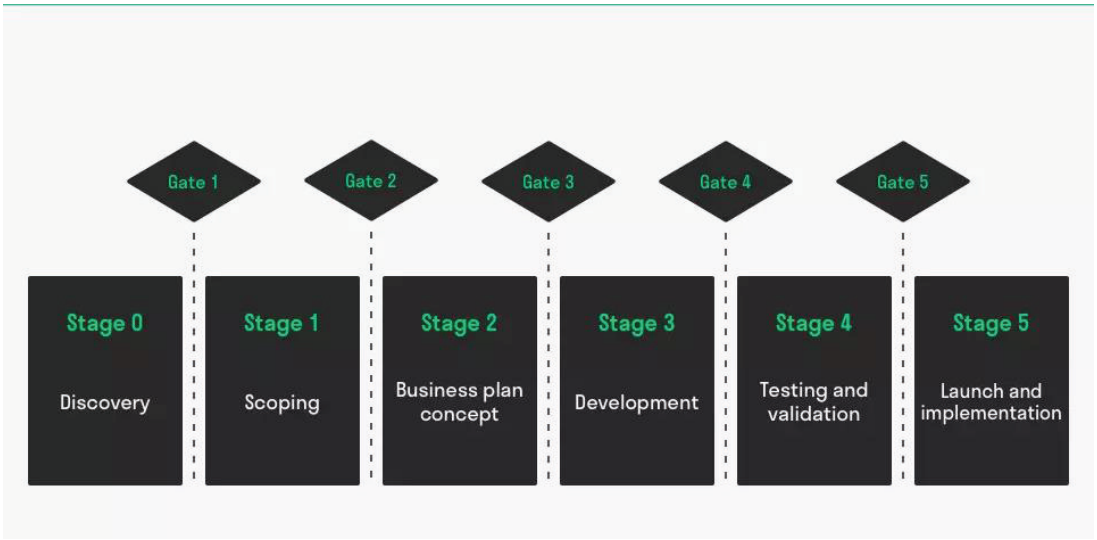

Figure 2.5: *Stage Gate Model Proposed by Cooper (Mulder, 2018. Retrieved from www.toolshero.com)*

The project should be going through all the stages. Each stage collects specific information to facilitate in moving the project to the next decision point

(Edgett, 2018). Each stage has activities that are parallel and cross functional. These activities gather information and progressively reduce uncertainty and risk. The outputs of this analysis provide inputs to decision meetings (gates). The stages are:

- Stage 0 – Discovery

The initiatives are designed to determine product, service and technical new business prospects. At this point, ideas are typically generated behaviors, such as brainstorming. It is helpful for the company to interact with clients, and in particular leading users can provide designers with more reviews because they are more enthusiastic. Developers may also be helpful in communicating with providers. Through knowing all the kinds of businesses used for their products, developers can use previously unused opportunities.

- Stage 1 – Scope

Early studies to better describe concepts, evaluate the technical feasibility, and gain knowledge on business prospects. In this stage, the rivalry must be assessed. The attributes, limitations, and future solutions of the product for customers should be identified by analysts. They ought to distinguish potential ranges for development for what is as of now within the market. The managing team will be able to determine whether or not the development of the product will proceed by assessing the relative level of threat from rivals.

- Stage 2 – Business Case

Comprehensive experimental and research studies for both business and technical side. At this point, a business case provides concept, reason and the proposed development model of a product/service. This is the last stage in design development in which companies need to carry out a strong analysis before starting product development, because this stage is generally difficult, complicated and expensive in energy. The effectiveness and development of the new product is closely linked to

solid attempts during this phase of development: This phase consists of four major phases:

1. Product definition and analysis: Information is provided for description substantiation for the development of a new product. To begin with, to meet their goals and requirements, surveys and interviews are conducted first with current and potential clients. Second, evaluating the scale and distribution of the market, growth rate, consumer dynamics and comportments, business networks, etc. Lastly, market forecasting, risk analysis and financial analysis of the product are performed.
2. Building the business case: This is a document, which specifies and explains the creation of the product. The main factors of the documents are; product description and review outcomes of activities; requisites in law and regulation; security, well-being, and environmental factors; hypotheses required to reach conclusions, and why they are assumed to be true and logical; and out of boundary parameters suggesting such changes / events that include a business case emergency analysis. The document may be updated when is required during the entire development process.
3. The project strategy consists of a planned list of activities and events and deadlines for accomplishments during the development process; the project's completion requires employees, time and resources; and an upcoming release date for the new product.
4. Analysis of Feasibility: At this stage, the management discusses the reasoning for the product along with other divisions within the organization. The data provided by the previous steps is evaluated to decide if the project will go forward. When it is decided to go ahead, it passes through gate two and goes to the development phase of the product.

- Stage 3 – Develop

Development of new product / service in detail. Operations and development processes and marketing strategies for ultimate full-scale production are also

specified. Plans are actually executed from previous steps. The team develops an actual time period of clear targets described as SMART: specific, measurable, actionable, realistic and time bound. The timetable is often checked and revised, helping the team to remain on track with updates on the development of the project. The traction is growing as the company invests more money in the project and utilizes cross-functional collaboration from all divisions; marketing, engineering, manufacturing, sales are all together to give their expert opinions. Team members contribute to the development of certain tasks and leadership positions by applying their best qualities if a diverse team is involved. Once functions are clearly defined, tasks are efficiently performed.

- Stage 4 – Testing and Validation

The testing and evaluation of the new product / brand in laboratories, plants, and markets. This stage consists of three types of testing:

1. Near testing; to look for any bugs or problems with the product. At the start, internal employees, customers, and partners close to the company do this. The development team should make sure that how a product must function is tested so that it can be evaluate the results properly. In addition, the team should monitor the participants and write reports during testing.
2. Field testing; It is done by those who are able to give useful feedback. At this point, the product is identical in all respects to its launch iteration; the engagement rate of the participants is, therefore, greater as they know all the characteristics and advantages. The information gathered here can enable the sales and marketing team to present their sales.
3. Market testing: is optional. It is carried out if there is a concern in the marketing or launch plans. Two choices must be taken into account; first, there could be a virtual market test where consumers in an advertisement and buying situation will be subject to new products. The aim is to obtain early sales estimates and make the necessary marketing changes. Trial

sales through defined channels regions or customer demographics are part of the second test.

- Stage 5 – Launch and Implementation

Beginning of operations in full scale, development, marketing, and sales. Launching the product is the result of the product that went through all gates. The producer also must predict the new product's demand and decide the starting production volume level. The determination of a product price is important in the launch of a product; attention should be taken not to sell over or under the potential market price of the product. Thanks to a timely launch, early acceptance by customers will lead to a quicker profit period.

Before each stage, a project moves through a gate before determining whether to proceed with the project or not. (Go/Kill decision). The gates are consistency checkpoints for three objectives:

1. Assure the quality of results
2. Assess the logic of industry
3. Approval of the plan and capital

A gate will result in one of five possible outcomes

- Go; means the project is sufficiently good to move to the next stage.
- Kill; the project is not strong enough to continue developing and is shut down immediately.
- Hold; the project is inadequate to be improved at this point, but not so terrible that it needs to be stopped immediately. It is suspended for a later resumption.
- Recycle; the project needs some changes for the improvement further.
- Conditional Go; the project may be improved once certain conditions have been met.

There is a different function for each gate, but the gates have similar structures and the three main features in common:

1. Inputs: Outputs generated at the decision point of the previous gate
2. Criteria: Project metrics for the evaluation of the outcome
3. Outputs: Decision in accordance with the agreed plan for the further gate.

2.1.4. Innovation in the Product Development Process

New products regularly and exponentially replace existing products (Murthy et al.,2008). For the existence and growth of modern companies, product innovation is important. It plays a key role in the business (Cooper, 2019). Comprehension of the market success of new products is crucial for successful new product management. Superior products with unique advantages and customer satisfaction distinguish winners from losers than any other element (Kenneth, 2013). Kenneth mentioned the following winning elements (2013, p.6):

- Showing good value for money and reduces the overall expense of customers with outstanding price / performance features.
- Granting superior products compared to the products of the rivals
- Solving customer issues with competing products or providing uniqueness.
- Offering advantages or product characteristics that the customer quickly understands and desires because of benefits.

There are at least two elements of product advantage (Cooper, 2019):

- Product meaningfulness: involves benefits that users receive from buying and using a new product.
- Product superiority: captures the extent to which a new product outperforms competing products.

It should be remembered that what is innovative and outstanding needs to be based on a thorough from knowledge of the desires, preferences, problems, likes, and dislikes of the costumers. The customer determines superiority rather than the departments of design. Unique features that make the product superior are those things that cost the

developer money, while in contrast, those are the benefits the customers pay money for (Cooper, 2019).

Product innovation is mainly a team effort. The way a project team is organized, and functions influence strongly the project outcomes. The organization of new product project teams of the best performers is as follows (Cooper, 2019):

1. Every major new product project has a precisely defined project team. The team is cross functional, with members of technological, finance, communications, etc. Team members are not only organizational delegates but also actual project team members working collectively to a common objective. The team stays the same until the end.
2. The specified project manager is in charge of moving the project from concept to execution. S/he is present during the whole process.
3. The shared information system enables project information to be shared so that team members can work on the same paper together for the coherence.
4. Teams are responsible for the final results of their projects, such as ensuring that the projects hit profit / income goals and time limits.

Table 2.1: *Advantages of Using Stage-Gate Model (adapted from Stage-Gate International, 2000-2019)*

Innovation Culture with a Stage-Gate	**Without Stage-Gate**
Innovation as a strategic business activity that creates real value	Serendipitous, ad hoc, unplanned innovation
Dynamic selection of projects from a robust portfolio of choices	Annual, calendared, static project list (i.e., Waterfall Method)
Retention of organizational learning in a purpose-built innovation process	Starting each project from scratch each time

Table 2.1 continued

Right-sizing process rigor to project risk	Bureaucratic, one-size-fits-all, rigid procedural requirements
Speed and Productivity	Re-work, trial and error
A steady flow of continuous innovation	Random innovation
All functional capabilities are respected and integrated	One functional approach dominates
Fact-based project and portfolio decision-making (Decision Factory)	Emotional, unstructured decision-making

Stage gate is the industry standard for new product innovation (https://www.stage-gate.com/discovery-to-launch-process/). Companies that use the stage gate model have a much better culture in place for fostering innovation.

2.1.5. Design Thinking in the Process

Design thinking is an organized way of solving complicated problems with a human perspective. The method focuses on the needs and requirements of customers and user-oriented innovations. This approach requires continuous communication between the product developer and target customers. Design thinkers interact with the users, not just by asking but also by overseeing their actions carefully. (Hasso-Plattner-Institut, 2019).

Solutions and ideas are concretized and communicated in the form of prototypes as early as possible so that potential users can test them and provide feedback – long before the completion or launch. In this way, design thinking generates practical results (Hasso-Plattner-Institut, 2019).

Effective problem solving and innovation combine three essential components as shown in Figure 2.6.

- Technical feasibility
- Economic viability
- Human desirability

Design thinking approaches problems to design innovative and desirable products, services, or experiences that reflect all three aspects (Hasso-Plattner-Institut, 2019).

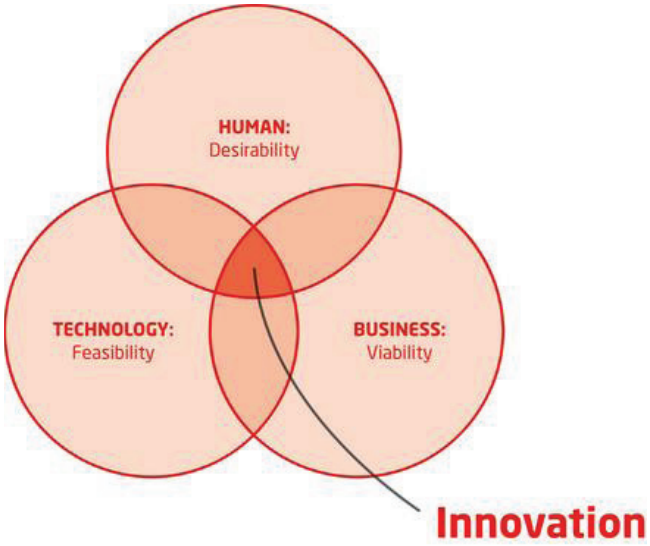

Figure 2.6: *Essential Components for Innovation (Hasso-Plattner-Institut, 2019. Retrieved [October 29, 2019] from HPI Academy: https://hpi-academy.de/en/design-thinking/what-is-design-thinking.html)*

There are three important factors that make design thinking successful (Hasso-Plattner-Institut, 2019) that are represented in Figure 2.7:

1. The collaborative interaction of multi-disciplinary and decision capable teams
2. Flexible/ variable workspace for collaborative work
3. A workflow that follows the design thinking process.

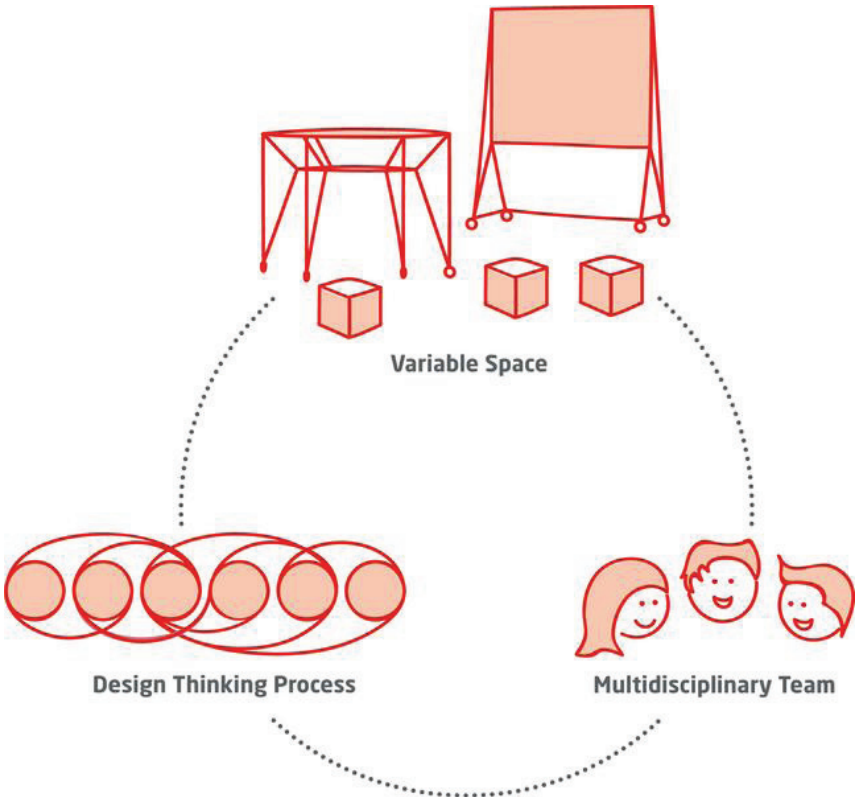

Figure 2.7: *Success Factors for Design Thinking (Hasso-Plattner-Institut, 2019. Retrieved [October 29, 2019] from HPI Academy: https://hpi-academy.de/en/design-thinking/what-is-design-thinking.html)*

The method of design thinking relies on the intuitional works of a designer. The team is guided by iterative cycles that drive the participants throughout six phases (Hasso-Plattner-Institut, 2019):

1. Understand: The team sets the issue and interpretation process
2. Observation: This is where members get an objective perspective and feel for the customers and stakeholders.
3. Define the point of view: The gained information is collected and summed up, and the task is reframed.
4. Ideation: The team then produces a variety of solutions and chooses a priority during this process.

5. Prototyping: The method of prototyping helps to create concrete solutions. Then the correct target group will test such solutions.
6. Test: This is checking whether the solution works with the determined target group and identified problem.

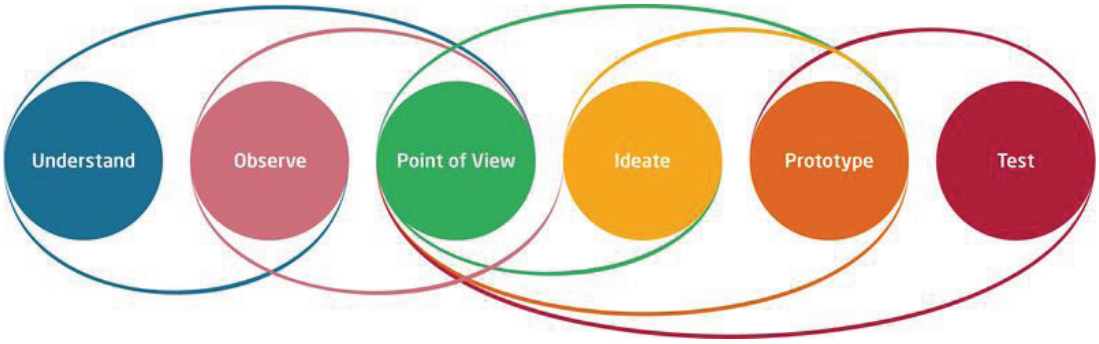

Figure 2.8: *Phases of the Design Thinking Process (Hasso-Plattner-Institut, 2019. Retrieved from https://hpi-academy.de/)*

Another supports for the design thinking is that the team needs variable space so that it can develop its creative process easily. Design team usually work standing up in spaces designed for up to six people. This facilitates easy interaction with other teams working in parallel. This collaborative working becomes a dynamic experience for all the team members and it feeds creativity.

2.2. Multidisciplinary Organizations

According to Alves, Marques, Saur and Marques (2007), multidisciplinary and multi-sectoral is a collaborative environment that brings together organizations from different sectors such as entrepreneurship, science, and technology institutions formally or informally for common goals. Rycroft and Kash (2004 cited in Alves, J., Marques, M.J., Saur I. & Marques, P., 2007, p.30) said that "The linked organizations combine multidisciplinary competencies and localized complementary productive activities, integrating the diverse knowledge sets and skills needed to create and bring to the market complex technologies and products. They benefit from the physical proximity of their members, facilitating the exchange of knowledge rooted in individuals".

Among businesses and companies, multidisciplinary and multisector settings play significant roles. They provide leaders with the chance to react actively to various problems such as creating knowledge and developing skills, encouraging actors involved in collaborative working, development, and reinforcement of common support structures for innovation, improving attitudes for companies' culture in the direction of utilization to perform research that is more challenging and development projects for new products. (Marques, Alves & Saur, 2005 cited in Alves et al., 2007). Such collaborative arrangements for innovation stimulate the fluency of knowledge processes and the creation of unique competences relevant for research and joint product developments (Alves et al., 2007).

2.2.1. Definition of Multidisciplinary

According to the Cambridge dictionary, multidisciplinary means, "involving different subjects of study in one activity /relating to or involving people from different types of work who have different knowledge". Since the beginning, each discipline creates new (sub) disciplines through the single-direction fragmentation process. This has given an incredible buildup of knowledge (Erdem, 2005).

Answers and innovations to complex questions are best generated in various teams (Hasso-Plattner-Institut, 2019). A variety of professional backgrounds and functions, in addition to curiosity and openness, are the foundation of the creative, collaborative design.

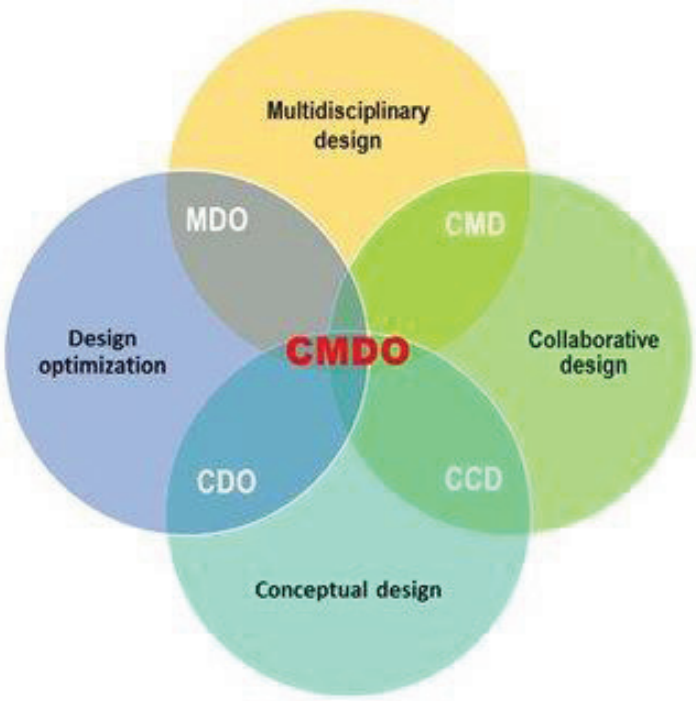

Figure 2.9: *Collaborative Multidisciplinary Design Optimization (Safavi, 2016, p.14)*

Multidisciplinary design optimization (MDO) is a strategy for handling intricate designs effectively with several disciplines that interact (Safavi, 2016):

- Includes high fidelity models,
- Enables implementation of MDO, and
- Is executed in a collaborative process.

There are different approaches to design based on different beliefs and different background experiences. Despite the differences, most design activities exhibit a common element known as collaboration. Kock (2009; cited in Vannella, 2017, p. 2) defines collaborative design as "a design task performed in a dispersed group of workers with a joint collaborative objective." Design processes require to be divided into tasks that are performed by different design teams due to the process complexity.

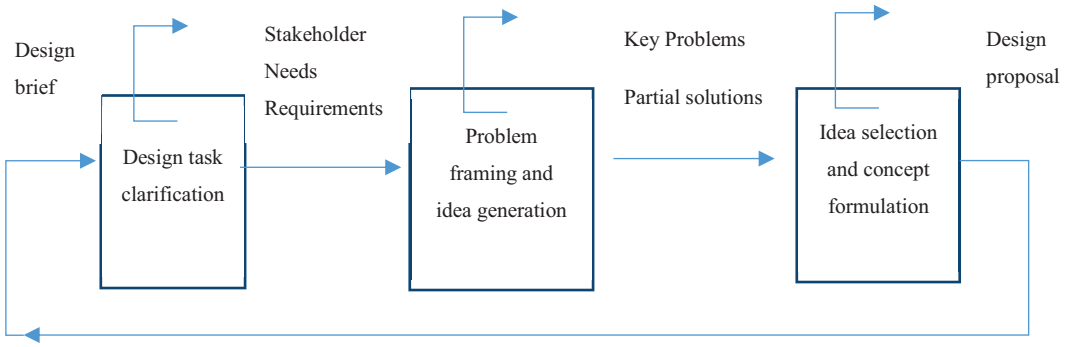

Figure 2.10: *Model of Design Process (Vannella, 2017, p.2)*

2.2.2. Multidisciplinary Cooperation in Global companies

When organizations seek new business models for the competition on the world market, they frequently know that multi-disciplinary teams are required to develop innovative products and services that meet customers interested widely. Multidisciplinary teams support to bring people with the different technical backgrounds required for these tasks together. To achieve these new goals requires coordination between employees with different technical backgrounds and perspectives, so many organizations, as a basic form of management, have multidisciplinary teams (Jackson, 1996).

A design concept is often difficult for the multidisciplinary team, mainly when the team is physically distributed due to capture, display, or interact electronically (Wang, Shen, Xie, Neelamkavil, & Pardasani, 2002). Furthermore, the specialized demands of customers can also have a powerful impact on manufacturing productivity and product quality.

2.2.3. Communication in Multidisciplinary Companies

Communications are, in the widest sense, the way a team handles information. Communication includes explicitly, implicitly, passively, and proactively creating, transmitting, and interpreting symbolizing (Roloff, 1987, cited in Jackson, 1996) both verbally and nonverbally. Work-related interactions contain knowledge about

explanations and improvements of activities shared mainly for instrumental purposes. According to studies in working organization's communication networks, team members predict who speaks to whom, how much people talk to each other overall and communication networks are typically distinguished by demographic homogeneity (Brass, 1984; Hoffman, 1985; Lincoln & Miller,1979, cited in Jackson, 1996).

The features of these cooperation structures can be interpreted into three aspects: variety (of actors and competencies), agreement (complementary tasks integration), and interaction (intensive relations of cooperation) (Alves et al., 2007). Such features enrich the advantages of collaboration, learning effects, and creativity due to the power of diversity cultural, technological, and expertise of participants (Alves et al., 2007).

Businesses have many difficulties and complexities in the whole of the new product development process. For this reason, decreasing difficulties in communication and do the best is the main purpose to manage the NPD process. The concern at the conceptual topics is extremely interdisciplinary, which means customers, designers, and engineers working together (Wang et al., 2002). The level of utilizing from this power is dependent on effective communication between those disciplines. Efficient and effective communication contributes to positive collaborative experiences. (Erdem, 2005).

Collaborative design is a series of initiatives by a team of designers and other experts. Each designer works different aspects of the design for specific functional requirements needed for different expertise. Each member of the team should evaluate the impact of his/her decisions on others and inform those affected immediately (Wang et al., 2002).

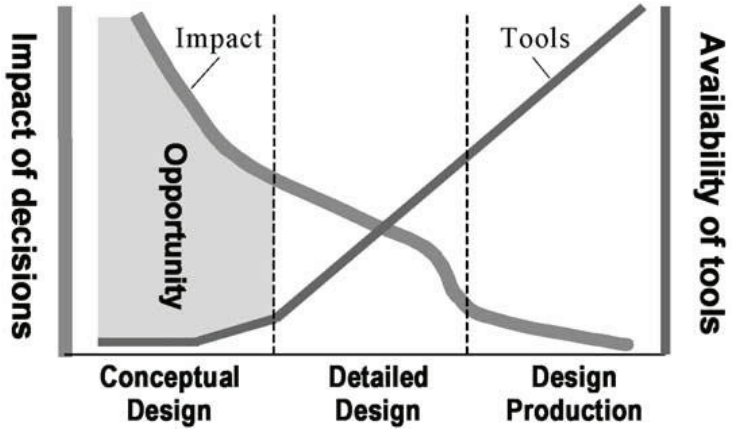

***Figure 2.11**: Opportunity in the Early Design Phase (Wang et al., 2002, p.982)*

As Figure 2.11 shows, the influence of design choices at first is powerful and declines significantly as the product becomes mature. These indicates that only the main design process offers the great opportunity (Wang et al., 2002). In the following phases of detailed design, effective communication is very critical because fixing defined, but the undeveloped design is almost impossible. The conceptual phase of the design is generally described as generating ideas that are assessed according to the specifications for the requirements. Additional features are included in order to make a decision between opposing alternatives.

Conceptual design is essential, especially to design new innovative products or to add new things to an existing product. In this step, information is unclear and undetermined, which makes the design process difficult. The major conflicts in the design process are mostly about task coordination and breaking certain design tasks that have relations with other elements (Wang et al., 2002). This can be achieved by adjusting the design of one task in order to absorb a certain proportion of any variance in the output of the other. Efficient task management is needed to improve the design team's efficiency (Wang et al., 2002).

The properties, responsibilities, and variety of multidisciplinary teams can be handled efficiently. Managing diversity presupposes an appreciation of the forms of diversity that may be present in multidimensional teams and the impact of different types of

diversity on team members' behavior. It has been shown that the structure of multi-disciplinary teams has implications for the resolution of challenges as well as decision-making methods, the formation of status hierarchies, participatory and communication practices, collaborative growth, team performance, team cohesion, and ultimately, the ability to learn and develop over time (Jackson, 1996).

This takes much of the time for the project manager to coordinate the end purpose with each researcher and to de-conflict their different demands during the process. (Cuevas, Bolstad, Oberbreckling., LaVoie, Mitchell, Fielder, & Foltz, 2012).

Team members must be equipped with information-sharing mechanisms, mission planning, and conflict resolution to provide safe environments for collaboration. Conflicts can occur during collaborative design in the process. Not only efficiency can be impacted by unmanaged conflict, but the design objective can also be affected. Problem-solving involves at least five phases (Krause, 2007, p.319):

1. Detection of dispute,
2. Identification of dispute,
3. Team of negotiation,
4. Producing solutions, and
5. Assessment of the solution.

2.2.4. Research & Development during the New Product Development Process

Multidisciplinary R&D teams collect professionals with various fields of knowledge in order to create innovative ideas for new products. The teams can include members from marketing or even potential consumers to ensure that the new products and services reach the customers(Jackson, 1996). When it is time to produce, the teams can include vendors in order to ensure that the elements for production satisfy the expectations and are accessible when required. For the provision of service, multidisciplinary teams are mostly designed to assure that a single team can meet all potential client needs (Jackson, 1996).

The multidisciplinary study offers significant benefits, especially data collection, for a simplified study focused on a particular research topic. The project team can also benefit from a wider range of expertise from different disciplines. The team will rely on the specific and complementary areas of expertise of each member to overcome the many challenges faced during product development and implementation to get great success in ROI (return on investment) (Cuevas et al., 2012). A single organization would have to spend considerable time and costs in creating and implementing the critical technologies and initiatives independently (Cuevas et al., 2012).

R&D projects are important for the production of innovative products and processes in companies to achieve high performance. The uncertainty in market management and technology decreases the chances to achieve success for R&D projects. Most research reveals that the NPD success rate is still poor. Since innovation demands a new method of the product development process, uncertainty in R&D programs is unavoidable. “Thus, risk management is important in the whole business cycle to cope with various risk factors that might cause serious damage to current and future businesses” (Shin et al., 2018, p. 2).

Risk management can be defined as a systematic approach that defines, evaluates and prioritizes threats, and as then plans for strategies that decrease, observe, and control the risk and effect of unexpected events. (Škec, Štorga, Rohde, & Marjanović, 2014). A major challenge for R&D projects is to recognize and prioritize R&D threats, as most research and development plans are blurred, lack of administration also leads to waste of time and money. “The stage-gate model that is often applied in R&D project management is considered to reflect the characteristics of the R&D process in R&D risk management. The model enables risk factors to be derived in all important activities without a bias to market and businesses, including earlier stages, such as idea generation and technology development” (Shin et al., 2018, p.2).

Failure Mode and Effect Analysis is considered an effective approach for quality engineering in the early stages of the product development process to recognize and

fix the hitches (Shin et al., 2018). It allows study of potential problems throughout the project's life cycle and helps managers to fix detected problems and reduce potential failures. Failure modes and causes of failure are shown in Table 2.2 by taking into account their connections at each stage; according to specific situations of organizations, this list can be edited.

There are six key internal factors that affect the performance of the company through the creativity and development of the new products (Alves et al., 2007, pp. 27-30).

a. Organization strategy and resource availability. The inclusion of innovation in the aims and purposes of a company is the first step to create behaviors adequate to creativity and to developing new products continuingly. Creativity and innovation derive from common visions and future-oriented goals. The creation of long-term innovation aspects is shaped by an innovation-based organizational approach so as to short-term plans for innovation. The availability of assets such as time, resources and people for ideas and creative projects helps to execute the plan effectively.

b. New technologies. Companies that can develop new technology may achieve competitive advantages by producing innovative products. This needs the ability and willingness to invest in high risk businesses for research and development (R&D). Preferably, businesses may incorporate joint projects with other companies and institutions of science and technology. Engineering utilization is proportionate to the company's engagement in the development process. Through collaboration, businesses may have access to otherwise inaccessible resources and expertise, gain an innovative approach, gain support for creative problem solving and idea creation, and share costs and risks. This is one reason for the importance of multidisciplinary and multi-sectoral collaboration settings.

Table 2.2: *Failure Mode and Effect Analysis of the R&D Process (Shin et al., 2018, p. 8).*

No.	Stage	Gate	Failure Mode	Causes of Failure
1	Stage 0: Idea	Gate 1: Initial screen	FM1: Unclear ideas FM2: Wrong ideas	CF1: Discrepancy with corporate strategy CF2: Low competence CF3: Insufficient R&D resources
2	Stage 1: Primary assessment	Gate 2: Second screen	FM3: Wrong assessment	CF4: Market assessment error CF5: Technology assessment error CF6: Financial assessment error
3	Stage 2: Detailed investigation	Gate 3: Decision on business cases	FM4: Inaccurate investigation	CF7: Customer analysis error CF8: Competitor analysis error CF9: Value proposition definition error CF10: Technological feasibility test error CF11: Operation definition error
4	Stage 3: Development	Gate 4: Post development review	FM5: Failure of development	CF12: Rapid prototyping error CF13: Customer feedback error CF14: Prototype development error CF15: In-house testing error CF16: Operation process development error
5	Stage 4: Testing & Validation	Gate 5: Pre-commercialization decision	FM6: Wrong testing FM7: Wrong validation	CF17: Customer field trials error CF18: Production equipment acquisition error CF19: Production trials error CF20: Market testing error CF21: Operations and launch plan error
6	Stage 5: Full production & Market launch	Post-implementation review	FM8: Failure of production FM9: Failure of marketing	CF22: Production error CF23: Selling error CF24: Market launch error CF25: Results monitoring error

c. R&D intensity. The more the dedication of a company to spend for a concept and product development, the more intensive R&D will be. It is also useful to collaborate with other institutions. Gaining knowledge is vital in the process, so communication is needed in a creative business strategy. Nevertheless, as mentioned before,

companies barely gain an advantage from corporate structure enough to overcome these problems.

d. Organization culture and communication. Behaviors and typical values are the cultural aspects of an organization. They affect the level of creative developments for innovation. Cultural aspects influence the knowledge and performance of employees, their communication skills, and their adjustment to changes. The open and fluid interaction between members, teams, and departments makes new viewpoints appropriate and represents a particular feature of organization-based cultures capable of stimulating innovation and creativity.

e. Organization structure. Innovation literature extensively covers organizational characteristics that affect innovation and the development of new products. Flexibility and freedom are highly important principles and standards of organizations. Working groups and collaborating groups affect organizations ' ability to promote creativity, innovation, and the development of new products. They produce a complex mix of concepts and working techniques and provide complementary skills and disciplines that promote innovation and creativity.

f. Employee motivation and involvement. The amount and quality of human resources earmarked for innovation projects are essential for creative ideas to succeed. Idea generation incentives help employees concentrate attention on product development and growth goals. This is affected by controlling risk-taking, assessing ideas, handling errors, coping with changes, promoting communication; defining ideas, setting up incentive programs, etc.

Encouraging the changes in structural behavior, which enhances creativity and innovation, shows the importance of advanced strategic and organizational management skills, respecting these factors. The benefits of multidisciplinary research in many situations surpass its fundamental obstacles and expenses. Finally, with the assistance of multidisciplinary environments, companies can come through their strategic and organizational weaknesses in the line with innovation goals.

2.3. The Design Brief

The design describes a range of organized and integrated activities intended to develop new products using the appropriate processes and methods. While design brief is used as a way to guide on a work or task to an individual.

2.3.1. Definition of the Design Brief

According to Phillips (2004, p. 16), "The design brief is an early definition of the design problem and the possible descriptions of the strategy to solve it."

A design brief can be describable as a paper where it is enabled to define the extent, scale, and leading features of the next design project. The design brief should include with the information required. The design brief is one of the most powerful tools for the designers. It can be guidance for design decisions as well as whole process of a project; from beginning to end (Heaton, 2016).

A brief design is a brief description of some of the following (Nuffield Primary Design & Technology, 2006):

- the product and its intent;
- is it going to be used by whom?
- where is it going to be used?
- where might it be sold?

The OpenCourseWare (2014) documents mention, "An open brief provides general guidelines and offers the opportunity for a wide range of possible outcomes while a closed brief is more specific and detailed in its requirements."

A design brief is a draft that describes the business goals and concept plans for a project. It begins a process and allows the designer to evaluate design solutions systematically. It also allows the customer to evaluate and explain what the project needs, who is going to use it, and who are the most relevant stakeholders. The competitiveness, recent trends, time, budget, and performance assessment should also be addressed by the design brief (Eberly, 2019).

A design brief is an agreement among the project team. Furthermore, an agenda points out the various steps throughout the project. Design briefs can also be viewed as a business plan because they must contain substantial quantities of organizational and product strategies. The design brief is a way of monitoring the project for the team. In conclusion, A good design brief is a perfect way to present a design strategy (Phillips, 2004).

Basically, the results and the business strategies should be addressed by a design brief. It should not concern appear of design or details of it, which is the designer's self-concern. The brief should not influence or tell the designer what s/he will design, the firm hire designers with their original ideas that came from the designer's mind (Eberly, 2019). It should explain what is the aim of the project that the designer can generate ideas in order to be successful (Eberly, 2019).

2.3.2. Importance of the Design Brief

The brief is essential because it is a guide and evidence for the requirements and wishes for the project. In addition, it helps for overall the process because it assigns milestones. Therefore, brief makes the process quicker and it results to cost reduction.

Design strategies help the design because it is beginning creation of innovative ideas for the project. Before a project starts, well-prepared strategies prevent loss of time at the beginning of the design.

A quality test and a control point are presented by a design strategy for assessing early concepts and further developments. The important thing is that business objectives should be achieved by this concept (Phillips, 2004).

Benefits of using design briefs in the projects (Heaton, 2016 retrieved from www.shopify.com):

- Gives designers the requisite perspectives, backgrounds, and bases to build visual design efficiently.

- Provides a more comprehensive view of the customers' preferences.
- Helps to monitor the members who assist the project while maintaining the project on schedule and the budget.
- Gives the customer a feeling of inclusion in the process and shows the customer that the project is on the right track.
- Gives the team all design details in advance.
- Helps the team to get the customer's likes and dislikes.

2.3.3. Generating the Design Brief

Design briefs differ between organizations according to business norms, procedures, and cultures. A design brief does not have a predetermined/preferred scheme (Phillips, 2004).

Some core elements should be included in the process of generating the design brief. However, some of them may not be include subject to the character of the project. Moreover, some elements that are not mentioned before may be included depending on business objectives and cultures. It should be known that modifications and changes could be made in the design brief during the project. Collectively agreement on the basis of the design brief before the design process begins can reduce the changes in the design brief (Phillips, 2004).

The core six sections of an effective design brief are below by using the example of website design (Heaton, 2016):

a. Company profile

An overview of the customer's business. All team members should be familiar with the customer and their business and any other aspects that affect the design. Here are the main components to be included:

- Business details, like brand, market, product range
- Brand differentiation or exclusive sales offer

- The mission of brand, vision, principles, and message
- Principal beneficiaries, contributors, and touchpoint within the organization
- List of opponents

It may be useful to understand who has final consent to the project within the organization when dealing with larger customers, mainly when several stakeholders are related to the project.

b. Project overview

The summary of the project is where a comprehensive project explanation is provided with the maximum possible context and background. When it is, time to meet the customer, asking what s/he is doing or why s/he is doing help to draft this section. Therefore, this section meets requirements of customer in whole and identify the design problems.

c. Goals and objectives

Measurable results should be provided for how this project meet the expectations for the customer, and the outcomes should be stated explicitly. Aims represent the project's overall objective. Goals show the detailed methods in order to achieve this aim.

Setting a goal helps the designer make conscious choices with the design. It also makes the designer better equipped to overcome aesthetic concerns of the customer and most importantly, it helps the designer to show his or her value to the customer.

d. Target audience

The customer may have been already prepared the required information for the designer. However, the customer may not have the research. In such a case, there are two options. This chance can be used to provide customer research services as a value added to the project such as asking the customer about the subject categories such as age, sex and location should be included in the audience persona as well as psychographics like media consumption habits. Such research can provide important

information on what affects customer. Finally, thanks to the audience persona, it will be easier for the designer to make conscious decisions.

e. Design requirements

Indicating certain design requirements in the brief shows that the design team is received the necessary information for the project which will satisfy the needs of the customer. These details complete the design brief and they will assure that the team will not have to redesign the brief once all the information is received. Although the specifications for each project can differ, any of the following criteria can be taken into consideration:

- Asset size
- Type of file
- Required color palette
- Image properties for inclusion
- Copy papers connected with it

Any reference content in this stage is also worth considering. These can be brand guides, models, mood boards, and other materials that could contribute to the project. The supporting materials should be as much as possible in order to reduce the possibility of meeting with an obstacle during the project.

f. Budget and schedule

The budget; with a clear knowledge of the customer's budget, their demands can be covered efficiently and also tracking the time used by the team. When it is time to meet with the customer to check on his/her business, it is important to divide the budget among all disciplines such as research, production, strategic planning, monitoring and analysis. Thus, scope creed can be avoided. Without a certain budget on each discipline, it would be hard to control the time spent of the team and the project could not be completed at the expected time.

The schedule; Projects have to remain profitable on schedule. Therefore, a timetable is mandatory for the design briefs. It must be realistic and take into account possible changes or unforeseen problems. It is not only should a successful timetable emphasize the final date, but also define any moves toward progress between project start and deadline. Correlatively predicting the deadline of the concepts, final plans, development studies and evaluation dates is important for the designing team.

Preparation of schedule is essential to keep the team on board, it can also be helpful for the customers. While creating a design brief, it is crucial to determine what is practical and feasible for the customers. It leads to a point that the designing team and the customer have agreed on the design brief and the time from the beginning.

2.3.4. Understanding the Design Brief

Design briefs can have different formats. A few features that design has in common (Eberly, 2019 retrieved from www.eberly.it):

- Brief: in size: The document should not exceed two to three pages.
- Easy to read: Information should be divided into different parts with straightforward titles.
- Should be printed easily.
- Easy to share: It should be considered so that other members of the team can be communicated electronically.
- Clear and organized

There are plenty of relevant viewpoints on what should do with the brief and what should be avoided for the brief. A few elements that may be essential (Eberly, 2019):

- Name of the firm
- Name of the project
- Outline of the project
- The portrayal of the business
- The aims and objectives of the project

- Intended population
- Things that the designer is provided with (images, screenshots, graphs.)
- Description of the project and format (these can be modified during the project)
- Key messages and goals
- Where to find inspiration
- The estimates for the design
- Production budget
- Timesheet and time limit

Some specific projects may involve a design brief format with somewhat different aspects.

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design brief checklist

- [ ] Title
- [ ] Company profile
  - > Who/what/where
  - > Corporate identity/image/personality (conservative? adventurous?)
  - > Market share/perceptions
  - > Company vision
- [ ] Project Objectives
  - > Your project goals
  - > Proposed medium
  - > Who is your target audience
  - > Hot buttons/key messages
  - > Branding issues
- [ ] Project Management
  - > Identify Project manager
  - > Identify sign off authority
  - > Schedule and budget
  - > Additional information about the project: context, marketing material
  - > Identify key performance indicators and evaluation process
- [ ] Procedures and Issues
  - > Contractual arrangements
  - > Approvals process
  - > Technical limitations
  - > Computer system
  - > Environmental requirements
- [ ] Additional support material
  - > Examples of company work or marketing materials etc

NOTES _____

design brief checklist

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Figure 2.12: *An Example of a Design Brief Checklist Template (IDAO Design Communication, 2009. Retrieved [October 29, 2019] from https://idahodesign.com/NewSite/wp-content/uploads/2015/08/CreatingABrief.pdf)*

CHAPTER 3

FIELD RESEARCH

3.1. Introduction to Field Research

A field research is carried out in order to investigate the main concern of the thesis, which is, design brief generation for creative design solutions through multidisciplinary cooperation at the multinational organization where I work (in Company X in the automotive industry). Observation of the new product development process in the company has been conducted in order to have general information and general terminology about the process. Moreover, it helped to find the target group for the interview because it is important to find key roles for the brief generation in the company. In-depth interview is a main part of this research. Interviews with key names have been conducted in order to get their experiences and opinions about the process and brief.

3.1.1. Research Questions

To get information about design brief formulation, field research is focused on the following main research question:

- How do different departments work together to generate a design brief within multidisciplinary multinational organizations?

Furthermore, in this study, the following questions listed below, which are also related as sub-questions are explored:

- What do collaborating parties understand from the design brief?
- What are the methods and approaches adopted by the departments to convey customer and market needs for the brief?

- What is the importance of effective communication in the formulation of a design brief for all parties involved?

3.1.2. Selection of Methodology for the Research

Qualitative research is similar to design thinking process such as selection, data collection, data analysis, and theory building (Charmaz, 2014). Different types of data sourcing are critical as evidence such as pictures, notes, interviews that support the internal validity of qualitative research (Yin, 2014). There are two sides in the field research. Firstly, observation was conducted from January 2018 until December 2019. Secondly, in-depth interviews were conducted with employees from Company X and an automotive designer from outside the company between October and December 2019. Having the chance for observation of the process of forming the design brief in the firm, and taking notes from observation about it during the study from January to December 2019, has helped the research because the NPD process or formulation of the design brief takes long. Furthermore, observation notes were supported with the interviews with the members of the Company X that is in the automotive industry and with a professional automobile designer out of company X because only observation is not enough to define the brief formulation process and get information in detail with experienced people.

The interviews are important for the study in order to understand what the members of the departments, i.e. engineers and designers, understand from the brief, and how they communicate within the departments and between the departments during forming a design brief. Moreover, these interviews give the chance to formulate the expectations from the design brief. In-depth interview is chosen because talking with directly interviewees makes them create intimacy, and then they embolden to describe their stories and experiences. ‘The Field Guide to Human-Centered Design’ toolkit book also mentioned that the best way to understand people's hopes, desires and aspirations is to talk to them directly (IDEO, 2015). Furthermore, in-depth interview method gives the interviewer the chance to dig in the interested subject instantly.

Therefore, in-depth interview was chosen in addition to observation in order to get deeper information about the subject.

3.1.3. The Observation

Gathering different sources is important for qualitative researches (Yin, 2014). Observation includes notes, photography that strengthen the study, and reliability, as Voss (2002) mentioned. It helps in understanding the process deeply because the theory and practice of the process may be different even if people theoretically know very well. Before starting the study, internal education about NPD at the company was taken in order to understand the spoken language, which means its terminology among employees and learn a formal process of the new product development. Additionally, the observation notes consist of employee's behaviors, working environment, workshops and operation of the process practically when its theory is compared.

3.1.4. The Interview Questions

The in-depth interview is a way of exposing the participant's opinion, feeling, and experience about the study. Hence, like Milena, Dainora, and Alin (2008) mentioned, qualitative research tries to find out 'why' and 'how' rather than 'how many'. Therefore, the questions' structure and ways of asking are some of the main concerns of the interviews. The interview questions were created according to the main purpose, which is gathering information about the NPD process practically, especially the generation of the brief. However, it is important for the participant to feel comfortable in order to express his/her thoughts on the subject without hesitation (Milena, Dainora & Alin, 2008). Therefore, the questions are structured with introducing himself/herself and telling his/her story about the profession and the company. IDEO (2015) also suggested to start with broad questions like a person's life, habits, etc., in the book, which is the Field Guide to Human-Centered Design. These questions also help to gather information about participant roles in the organization and organization culture. After that, the questions are structured with considering the analysis process and the information obtained from the observation and literature because, according to Strauss

and Corbin (2015), interview questions could be based on literature or experience. Especially observation helped while forming the interview questions because as Thomas and Bevan (1996) said, it may be hard to express participant preferences, and know-how without any information about the subject with the general questions. Considering all these, the questions formed around three main questions that help in the analysis.

- How is the NPD process, in theory and in practice?
- How do the interviewees get involved in the brief formulation process?
- What are the difficulties in the brief formulation process? Why?

By internal education in the company about the NPD process, the process was known theoretically. However, the first question was asked because the participant's knowledge was not known about the NPD process, and to gain information on the application of the process from the eyes of the employees. The second question was asked to learn more detailed information about the brief formulation process because there was lack of clear definition, time planning and lack of opinions of employees, according to the results of observations and internal education. The reason for the last question is to learn the pain points of the process from the perspective of employees. According to Interaction Design Foundation (2002), the topics generally discussed in user interview contain:

- Background
- The use of technology, product
- The user's main objectives and motivations
- The user's pain points

Based on these topics, warming or personal questions in the interview cover the background topics. The second main concern of the process in the interview questions mentioned above refers the second topic, which is the use of technology, product. The third one, which is related to difficulties in the interview questions, matches the topics about the user's pain points and motivations because the process can be considered as

a product because it is the same as seeking for the actual operation of the process and seeking for the actual behavior of the user.

3.1.5. Selection of Interviewees

The study is conducted with employees of the automotive Company X where the researcher worked in because it has been selected for the chance to observe the whole process easily. Otherwise, due to confidentiality, other companies might not be prone to support the study, and then problems might arise due to the position of the researcher who is working in a rival company. Therefore, it was decided to maintain the study with employees of the Company X but there is a restriction about some information due to confidentiality. Hence, the study conducted with key people in the brief process in the company and with a person who is experienced in automotive design in lots of automotive companies. Finding an automotive designer in Turkey and not working at the company was another limitation. The researcher contacted him via her own personal contact. The observation especially helped in this part because deciding on internal interviewers was difficult, because the company organization is big, and many departments take part in it. Based on the observation, the key departments for the brief generation was identified, that is R&D, Quality Directorate, two departments from Marketing Directorate and Customer Experience Department. Then, it was decided to interview two people from each department. For the external part, one of the famous automotive designers was decided. It would help to understand and compare the outside process as well as to learn about the process in style design because the company is advancing the style process on the global headquarter organization of the company. Because both internal and external interviewees hesitated about confidentiality, interviewees are firstly informed that the data obtained from the interviews will be handled within the specified framework of the interviewee, without mentioning the brand name in any way.

After deciding on the interviewees, some of the names that were identified could not be interviewed due to their global travels abroad since the company is currently in the

process of new product development. These difficulties were solved by alternative names within the same department.

3.2. The Field Research

3.2.1. Observation

The observation has started since January 2018. Main purpose of observation was comprehension of the product development process in the company and learning information about key roles in the brief process in the company.

3.2.1.1. Data Collection

Observation is one of the methods in qualitative research, thus, the data collection technique can be qualitative as well (Iacono, Brown & Holtham, 2009). Therefore, the observation for the study includes note takings (Figure 3.1) and photographs from workshops, internal trainings or the meetings.

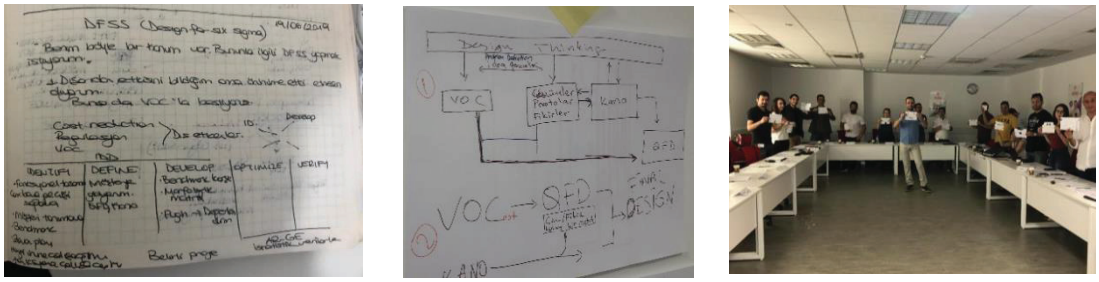

Figure 3.1: *Note takings from the meeting*

The observation was conducted at the head office and at the factory where is in different city of the company in Turkey. All data form the observation belongs to there. It was lasted from January 2018 to December 2019. It comprises note takings from observation and the meetings that were related to confidential project, company's internal product development process training notes, and photos of workshop about the brief process. Permission was asked verbally to whoever is related to topic or lead of workshop, training before the note taking or taking photos for collecting data about the observation. The permission was taken with the condition of not mentioning names and confidential matters. Therefore, data collection is consisting of:

- Documentations of the company: Company files, business plans, published documents, presentations, and e-mails. However, most of them is confidential.
- Personal networks: Colleagues, personal networks from the event, which is Service Design Networks.
- The not takings or photo: Workshops, training, and the project that was taken part in.

3.2.1.2. Conducting the Observation

There are some different stages during the observation. The starting point was the included project in January 2018. Since the project was at the beginning of the new product process, the researcher asked the manager to get involved in the project due to its relevance to the thesis study. After that, the observation process started. To meet some people who are the key names in the brief formulation process helped to involve in the process deeply. During this time, some notes are taken from the meetings that were on April 25, June 19 and July 4, 2019. A workshop about the brief formulation process was organized by lead of R&D department during the brief formulation process of this project in May 2018. The main concern of the workshop was to integrate the voice of customer (VoC), which means customer requirements, expectations or tendencies, into the brief in the best way and to discuss which departments should be involved in this process. There were participants from each department. It took one day.

After that, it was necessary to take a training about understanding the whole process deeply because the terminology that participants used in the workshop was not apprehensible, and each step of the process are relevant to each other. Therefore, the internal training about the new product development process was taken on 13-14th of June 2019. Although the training describes the entire new product development process theoretically, there were some missing points, for example details of the brief formulation process were not mentioned explicitly. Therefore, it was decided to go to the city where the factory is, once a week starting from September 2019, in order to

understand the brief formulation process deeply and expand the network contacts with key names involved in the brief. Thus, the observation process of the study was dynamic according to necessity, as Lampel (2004, cited in Iacono, Brown & Holtham, 2009, p. 44) said "Good research design is an iterative, not a linear process." Therefore, the observation was conducted with some roles of the researcher:

Employee: Attainment of some sources and widen of communication with key names.

Colleague: To obtain different experiences and perspectives of fellow employees from the collaborative projects that the researcher is involved in.

Ethnographer: To catch real behavior or to catch difference theoretically and practically in the new product process.

In conclusion, the observation can be thought of as initial research before starting to in-depth interviews. By observing, the positions and names of the interviewees and the questions of the interview were decided upon.

3.2.1.3. Data Analysis

Since the observation resembles an anthropological study, the data collection and analysis of the research can depend on the qualification of the researcher. In this aspect, it can be perceived to be subjective because the researcher evaluates the data such as real-life situations, discourses, and choosing the photos in order to show the real case (Iacono, Brown & Holtham, 2009). However, although qualitative research does not have numerical data like quantitative research, some methods are used to analyze it. These methods are case analysis with pattern matching, comparison with other cases or the literature, and using affinity mapping. This is called also "thematic analysis" that Braun and Clark (2006) used, which is some level of patterned responses or discourses captured within the data set that are important for forming a theme. Moreover, comparison is necessary for defining, establishing and associating concepts or findings among the results (Glaser & Strauss, 1965, cited in Strauss & Corbin, 2015). According to these methods, the notes during the project and the observations

in the workshop were compared with each other. Some names and pain points were similar on both of them. After the internal training, the same findings were found. With this third pattern, it was assured that the names in the project are necessary for the brief formulation process and that the pain points for digging during the interview were identified. According to Madrigal and McClain (2012), the third pattern shows a tendency clearly. According to them, for data collection and analysis, researchers try to find out trends in the data instead of analyzing statistically or numerically. Researchers try to find out statements that are identical across different participants in the research during identifying trends. As a result, the main rule is that catching something from only one person is an anecdote, from two is a coincidence, and catching it from three makes it a trend (Madrigal & McClain, 2012). Therefore, pattern match tool or thematic analysis is mostly used. Moreover, data about the new product development process is analyzed comparatively with some literatures such as Stage-Gate and Design Thinking. In addition to data that helps the in-depth interview, the other data is analyzed with the interview data whether the pattern would be repeated or not.

Determination of the analysis' unit is essential for identifying the concept of the research and data collection techniques (Khan, 2014). Therefore, the observation research is mostly analyzed in order to shape and help the interview flow. In fact, it can be thought as an initial research for the in-depth interview. In addition, engagement with the data is crucial to extend and dig the content in a first step. Therefore, Braun and Clark (2006, p. 16) offered as the first step, "familiarizing with the data", in their suggested thematic analysis guide which consists of six steps. They are (Braun & Clark, 2006, pp. 16-23):

1. Familiarizing with data
2. Forming initial codes
3. Identifying themes
4. Iterating themes
5. Defining themes

6. Description or presentation

Based on this guide, collected data is clustered according to gathered areas which are from the meetings, internal training and the workshop. Then, some patterns were caught, and they are marked for classification with different shapes or colors (Appendix A).

3.2.1.4. Initial Finding of the Observation

The observation was made to become familiar with the subject. Therefore, to contribute as much as possible to the interviews, a quick analysis was made. As a result of the quick observation analysis, eight themes can be mentioned that are *brief formulation process, brief contents, importance of an apprehensible brief, method for customer needs, key roles of departments for the brief process, terminology used in process, ideation process,* and *new product development process*. These quick findings would help to shape the interview for digging. After the interview research, the findings or collected data of the observation would be analyzed again with the data of interview.

Brief Formulation Process: According to the notes, it was discovered that the main responsible team from the brief was the Product Planning department. The finding is that while the Product Planning department generates the brief, they gather the necessary data from the Marketing, Quality, and Customer Experience departments. After gathering the constraints of productivity or factory from R&D departments, the first draft brief is generated with negotiations with the global company as a pillar (Figure 3.2).

There are also different descriptions of the brief formulation process mentioned by different departments, which is shown in Appendix A, marked with blue framed circle. One described the brief formulation process with *identify* and *define* steps, which are two steps of the *design for six sigma* method. Design for six-sigma is one of the process methods that consists of *identify*, *define*, *measure*, *analyze*, *design* and *verify* steps. Another one described the brief formulation process with seven steps, which are

development of organization, *investigation needs*, *customer information*, *product strategy*, *visual design*, *ideas,* and *plan*.

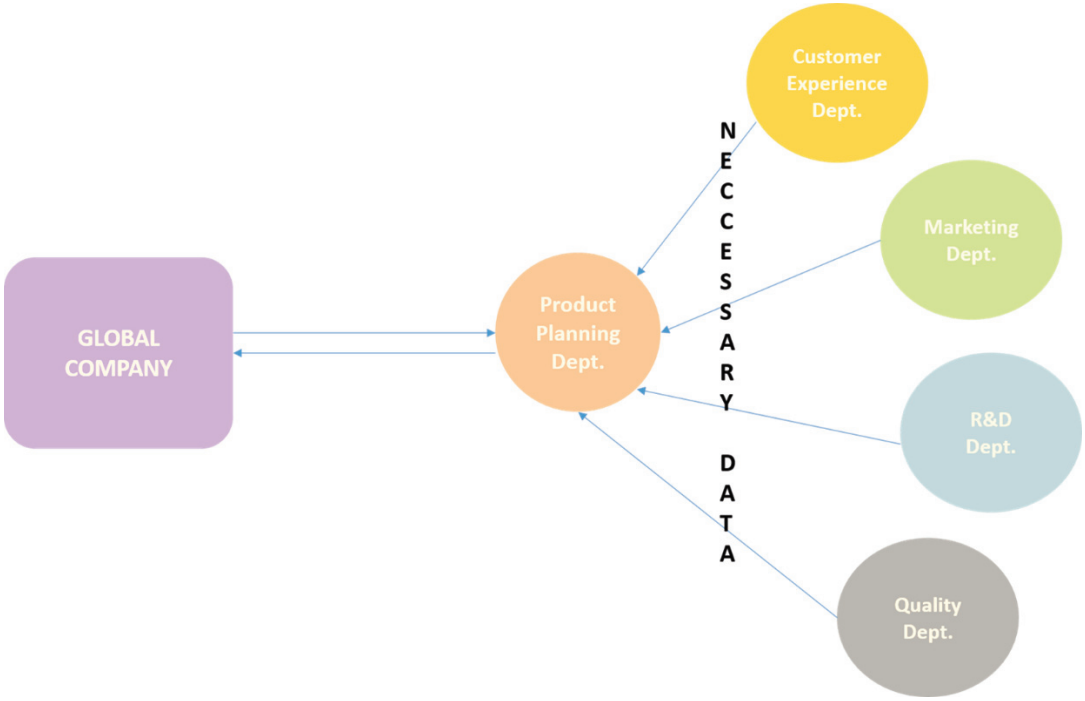

***Figure 3.2**: Ecosystem of the brief process*

Brief Content: The findings (in Appendix A, marked with red framed circle) show that the brief consists of product size, aim of the product, usage scenarios of the product, benchmarks, information about competitors of the product, estimated price and sales, some main features of the products, customer needs, market drivers, and styling limitations.

Importance of An Apprehensible Brief: In addition to mentioning the brief importance in literature research, it is mentioned in the meeting as well. Even, the workshop was organized by R&D departments in order to discuss and regenerate the brief formulation process in the best way, as they know its importance. There are many departments and their sub-teams, with experts involved in the brief process because of the multidisciplinary working. Thus, it was discussed that there is the lack of communication or some information missing with those experts based on their

previous experiences in the workshop. These problems are seen on the product end of the day and customers are affected. Therefore, the importance of generating the brief in an understandable way was emphasized in the workshop due to collaborative working. The other finding is from the training. It was an exercise. However, the exercise obviously showed intelligibility of the brief by all. The exercise started with description of actions to be made on the piece of paper that everyone had. The instructor's brief was to fold paper in half, then cut the piece of paper in 1 cm width, 4cm height, on 2 cm inward from left and right side, and to go on. At the end, the results were surprising because no one's paper was similar, as shown on Appendix A with green framed circle.

Methods for Customer Needs: In the findings, there are some methods mentioned in order to understand customer needs by different departments. For instance, Customer Experience department is directly interested in the needs, and they are using both quantitative and qualitative researches, mostly qualitative, in order to understand the customer needs and expectations. For Quality, R&D and Marketing departments, they mostly use quantitative research in their interest area (in Appendix A marked with pink bullet).

Key Roles of Departments for the Brief Process: Some departments and their working in collaboration were always mentioned in the workshops, training, and the meetings. It is shown in Appendix A with green bullet. They are Product Planning, Marketing, Quality, Customer Experience, and R&D departments. These departments have many disciplines and sub disciplines surely, but main responsible departments are these five departments according to the observation findings.

Terminology Used in Process: Different terminology was used during the NPD process such as name of the steps, type of surveys or brief. While the researcher was working on the project, it was difficult to understand which step on the process is referred to, or what the names of the brief are, because one is called product brief, one is griglia or one is product letter. All this terminology is defined in the document of

the internal training but it could not be shown due to confidentially. Yellow bullets in Appendix A are just some of them. For instance, something called CCP is usually mentioned as being importance for the brief. However, it is not common terminology in the literature. After the workshops and the training, it was learned that it is one of the quantitative research methods that helps understand which aspects of the product are strong and which are weak compared to the rivals. For that reason, some of this terminology are crucial for generating the brief.

Ideation Process: An ideation step is mentioned in some brief formulation processes, yet without detail. One is in the design for six sigma process, the other one is seven steps process of the brief formulation process. It seems that ideation is mostly addressed at the end of the brief formulation process after analyzing data. It is shown with orange bullet in Appendix A.

NPD Process: The NPD process is excessively complicated due to the complexity of the automobile. Its simplest version is described in different steps, which are five, six and seven steps (showed with yellow framed rectangular in Appendix A). Five steps are described for the NPD process respectively as concept, definition, execution, industrialization, and markets. Six steps are described respectively as identify, definition, develop, design, optimize, and verify. Seven steps are described respectively as scenarios/concepts, defining strategy, defining technically, productivity preparation, verify production process, product verification, and ramp up production.

There is another document shown in the findings (Appendix A). It is a detailed description of the NPD process of the company X. It shows more sub-steps for each department, but those cannot be mentioned due to confidentially. However, one remarkable finding in this document is that, the styling process is always conducted at the global part, Turkey branch is not allowed, Turkey can only give some inputs to them. The reason why the document is included is that it has been used to show that there are many steps visually in the NPD process.

3.2.2. The In-Depth Interview

The interviews started on October 7, 2019 and ended on December 19, 2019. The main framework of the interviews is formed by some results of the observation research. The results help in choosing the interviewees because organization of the company is enormous, many experts work together to build an automobile. Additionally, the results help with the main framework of interview questions. This method is more appropriate for the study because it has the chance to get more information about experiences compared to numerical data in quantitative research. It also gives the interviewer the opportunity to explore the issue that is not in the frame of interview questions by follow-up questions depending on the interviewer's subjective interpretation (Mortensen, 2020).

3.2.2.1. Sample Group

The interviews were carried out with eleven participants. Ten participants were from the company, one participant was in an external company. There are two reason why that one was chosen. The first reason is that it would allow to compare the company process with outside firm because the participant has work experience with many rival companies. In addition, it was learned that the company, which is Turkey branch of the global company, is not qualified with styling part based on the observation research. Thus, another reason is that he has experience in the styling process in the automotive industry as well. The remaining ten participants were selected from the Company X. There are some selection criteria of these ten interviewees. First criterion is their crucial role in the brief process. These roles were identified during the observation, there were five departments that take role in the brief formulation process. These discovered departments are Product Planning, Marketing, Quality, R&D and Customer Experience departments. The participants' expertise, their seniority or experience at the company, gender, and location are shown in Table 3.1. For the interviews, it was decided to select two participants from each department. It would be sufficient to interview two people from each department since there were

already data from the observation, and all these would help to catch the 3rd pattern for the analysis. Two names from these five departments were decided according to the researcher network during the observation. Some key names who take part in the brief formulation process and replacement names were determined. Since the company is in the brief formulation process, some these key names may be busy with travels between Turkey branch and global part. Therefore, some replacement names were involved. The participant who is in an external company is selected through the researcher's own network.

Table 3.1: *Sample Group*

Participant no	**Gender**	**Experience time at the company X**	**Duty/Department**	**Responsible Directorate**
P1	Male	6 years	Product Development Supervisor	Marketing Directorate
P2	Female	2,5 years	Product Planning Supervisor	Marketing Directorate
P3	Male	19 years	Change Management Specialist	R&D Directorate
P4	Male	7 years	Ergonomics, Perceived Quality & Craftsmanship Design Department Responsible	R&D Directorate
P5	Male	4 years	Product Evaluation Administrator	Quality Directorate
P6	Female	13 years	Product Quality Engineering Manager	Quality Directorate
P7	Male	13 years	Marketing Manager	Marketing Directorate
P8	Female	14 years	Market Analyst & Sales Planner	Marketing Directorate
P9	Female	14 years	Customer Experience Manager	CEO
P10	Female	3 years	Customer Experience Specialist	CEO
P11	Male	-	Automotive Designer	External Design Consultancy Firm

3.2.2.2. Data Collection

Each interview has lasted approximately an hour; some are longer, some are shorter. The time of each interview, date and location is presented in Table 3.2. Total time of the interviews is 11 hours 40 minutes. The interviews were conducted in place of the interviewees' office in Bursa or Istanbul (Table 3.2). The interviews were recorded by voice recorder of the researcher's mobile phone. All participants were informed about the voice recording. The informing paper was signed for consent to record (Appendix B) before starting the interview. Moreover, interviewees were informed that confidential information that was recorded would not be used. In addition to the interview, the brief document was asked from the interviewees, to review. However, the document is protected on a software program. Therefore, no brief could be examined due to the researcher's lack of access authority.

Table 3.2: *The Interview Date, Location and Timing*

Participant	Duty/Department	Responsible Directorate	Location	Date	Time
P1	Product Development Supervisor	Marketing Directorate	Bursa	7.10.2019	1hour 14minutes
P2	Product Planning Supervisor	Marketing Directorate	Bursa	7.10.2019	1hour 2minutes
P3	Change Management Specialist	R&D Directorate	Bursa	16.10.2019	1hour 11minutes
P4	Ergonomics, Perceived Quality & Craftsmanship Design Department Responsible	R&D Directorate	Bursa	16.10.2019	1hour 4minutes
P5	Product Evaluation Administrator	Quality Directorate	Bursa	6.11.2019	1hour 18minutes

Table 3.2 continued

P6	Product Quality Engineering Manager	Quality Directorate	Bursa	11.12.2019	51minutes
P7	Marketing Manager	Marketing Directorate	Istanbul	13.12.2019	45minutes
P8	Market Analyst & Sales Planner	Marketing Directorate	Istanbul	12.12.2019	1hour 20minutes
P9	Customer Experience Manager	CEO	Istanbul	9.12.2019	35minutes
P10	Customer Experience Specialist	CEO	Istanbul	19.12.2019	55 minutes
P11	Automotive Designer	External Design Consultancy Firm	Istanbul	7.11.2019	1hour 30minutes

3.2.2.3. Conducting the In-Depth Interview

The interviews were conducted gradually. The first step was to ask the interviewees whether they wanted to take part in this study via e-mail or mobile phone. After their acceptance, the appointment date was decided. Another determination is that the interviews started with the participant from Product Planning department because this is the department mainly responsible from the briefs and they dominate the whole process. After that, interviewing with participants from R&D department, Quality department, external designer, and İstanbul part, which includes Marketing and Customer Experience, were followed respectively. The interviews took place in participants' offices in Bursa or in İstanbul and lasted approximately an hour. Some interviews were significantly shorter than the others because there were some irrelevant questions that the interviewee have no idea to answer. The interviews were initiated with short self-introduction and study introduction through the consent form. The copy of the consent form was given to the participant in order for them to contact

if necessary (Appendix B). After acceptance, the in-depth interview started with personal questions for the interviewee to warm up. However, most of the interviewees started with telling their experiences about the brief formulation process as soon as they noticed the study topic in the consent form. These starting conservations were not disrupted because taking their experience purely was more valuable. Therefore, the interviews occasionally were not conducted following the order of questions but it was checked whether the answers of these questions were given. Hence, the interview questions were not asked to all participants by order and with exact sentences; it was used as a guide. However, the important thing in this guide is that questions started with warming up, then continued with process questions in general and detailed deductively, and then closing with questions to understand expectations and difficulties. The interview questions are given in Appendix C.

3.2.2.4. Data Analysis

Thematic analysis that Braun and Clarke explain (2006), is used for the analysis as like the observation analysis. This method includes identifying, analyzing and reporting the patterns based on data (Braun & Clarke 2006). Although there are some concerns about the reliability of qualitative analysis, coding mechanisms or to catch patterns resolve these concerns (Taylor, Bogdan & DeVault, 2016). Coding or writing these patterns can be thought of as subjective, but filling the analysis documents with patterns make them concepts (Taylor, Bogdan & DeVault, 2016) or themes (Braun & Clarke, 2006). According to Katz (1983, cited in Taylor, Bogdan & DeVault, 2016) the reliability of codes would be understood after they are presented. Therefore, the guide of Braun and Clarke (2006) is applicable for eliminating and evaluating gathered data and creating themes. This guide consists of the six steps that are mentioned in the observation analysis. These are; familiarizing with the data, forming initial codes, identifying themes, iterating them, defining them, and presentation. These steps resemble with early stages of design thinking that is to research for understanding, discover, ideate, iterate, and build. Another reason to use this guide is that thematic analysis also provides interpretation of the researcher with various approaches

(Boyatzis, 1998, cited in Braun & Clarke, 2006) to create different concepts. It helps the researcher with this flexibility since analyzing many data gathered from the eleven interviews would be difficult.

The starting point was transcribing the voice records of each interview in the same words. According to the guide, transcribing can be thought of as initial discovery for data (familiarizing the data). As Riessman also (1993, cited in Braun & Clarke, 2006) pointed out, transcribing verbal data into written form can be seen to be time consuming and boring, but it can be a great way for an initial starting point to analyze. Supporting this argument, part of some discourses was taken as a note to form theme codes meanwhile listening to records (Appendix D). These discourses, initial ideas for coding and observation findings were used in the mind map that helps with association of the topics or discourses (Appendix D). After that, the initial codes were formed through helping with these notes and mind map. According to codes, each interview data from the transcript and observation findings were filled in the separate excel document (Appendix E). Like in the observation analysis, related codes were highlighted with color and brought together, then, themes were identified (Appendix F). After reading transcripts and detailing the themes (Appendix G), some iterations were needed. Finally, themes and sub-themes were conceptualized in a meaningful way in order to demonstrate the findings of the study.

3.3. The Findings of the Field Research

As a result of the analysis, there are several main themes found according to what the interviewees mentioned when considering the generation of a brief within the global company of large size. These topics are developed by the interviewees' discourses and observations within five themes. These are*; starting point of the brief process, development process of the brief, brief as a document, constraints in the process,* and *communication*. Appendix G presents the themes and their sub-themes. The findings of the study are described in the following sections.

3.3.1. The Starting Point of the Brief Formulation Process

In this section, the insights of the interviewees from the Marketing and Product Planning department is crucial due to the reason that this directorate is the main responsible in the Turkey pillar in this process. The insight of the interviewee, who is outside from the company and is experienced with different companies about styling process, is also important. Therefore, findings from interviewees P1, P2, P7, P8 and P11, and findings in the observations are evaluated. According to the findings, ecosystem flow in the process and touch points is discussed in this section. These are coming into view of the first idea or starting point as a Turkey pillar, the first preparation of Turkey, negotiation with the Global headquarter after the preparations and iteration. The Global headquarters' idea of which automobile comes out first is not known completely in this research, although it is asked to the interviewees. However, as follows:

First finding: Designing to renew an automobile is predictable because the life of a vehicle is already 4-5 years. After these years, it needs to be renewed or it is a risk to be left behind compared to competitors and cannot hold on the market, according to all interviewees. Therefore, according to the interviewees P1, P2, P7, P8 and P11, face-lift is usually done in the automotive industry every 2-3 years; new models are released every 4-5 years. According to this finding, Turkey pillar is able to estimate the vehicle times to be renewed, but it is not known whether this model will continue. Therefore, it was reported that the researches had begun beforehand in order to be prepared as soon as the demand came.

Second finding: How the idea comes out for a vehicle in a completely new segment, for example the birth of the SUV, is unknown by the interviewees.

3.3.1.1. The Role of Turkey Pillar

Participants (P1, P2, P7, P8) mentioned that Turkey's progress is much like the first findings that mentioned above. According to that, it takes part in mostly renewed the automobile in 4-5 years. In addition to Turkey pillar, the Global Centre has production

factories in any regions. For instance, there is a plant in NAFTA region where Brazil is in, EMEA represents the European region and has plants in Turkey, Germany and Poland, etc. Turkey is one of the production plants located in the EMEA region. According to the participants, the Global Centre firstly starts collecting demands like what you would like if we built the new model of the X model. At this point, Turkey has some demands to think about sales and satisfaction in their region customer. However, creating a common request is attempted in this process because other customers in other regions may not have the same demands. In general, volume and engine structures of the vehicle become clear and which customer scenario is going to be used, shows up. In this process, according to the participants (P1, P2, P4, P7, P8), it is necessary to feed this process with as much data as possible in terms of Turkish customer satisfaction so that the central investment decision can be taken for this common request. If not, Turkey may make own investment in order to satisfy its strong customer needs. By deciding on these main points in the concepts, the first start is given by Global Centre.

3.3.1.2. Preparation of Turkey

In the process called Global request collection for the formation of the first idea, the participants P1, P2 and P7 specifically told that the Turkey side should feed the Global Centre as much as possible as mentioned before. Therefore, according to P1, P2 and P7 the studies and researches carried out at this point are mentioned as follows:

- How many of the current vehicles are sold and how much of its competitors are sold in the market,
- Future market potential due to change in sales chart over time,

are the main questions of market analysis research (according to P7).

- How customers use the car for what purpose, for instance, business, family, vacation, off-road, etc.
- Customers' expectations from the vehicle in this segment,

- Current satisfied points, non-satisfied points,

are the main questions of customer analysis research (according to P1,P2 and P7).

- Future regulations in Turkey
- Trends

are the main questions of future analysis research (according to P1,P2 and P7).

In addition to these researches, it is mentioned by P7 that a workshop with outputs such as features to be kept in the current vehicle, features to be removed and features expected by the customer were organized in previous projects in this process as a Turkey pillar in order to feed Global Centre as much as possible.

3.3.1.3. Preparation of Master Plan

According to the information that P11 participant mentioned about his experience in other companies; The Global Centre optimizes all data gathering from different regions by filtering. In doing so, the main areas that need to be identified are as follows:

- Vehicle volume: the capacity, dimensions
- Considered Market: the segment.
- Target audience: budget range, purpose of use, age range
- Production factors, and limitations
- Which plants can be thought for manufacturing
- Roughly the cost of how to export from the production plant to other regions
- Cost of the vehicle
- Cost of the project

With this rough decision, potential factories will be working on the brief. Although there are many plants in different regions, there is only one styling centre in the Global Centre. For this process, Styling Team in the Global Centre starts to work with this rough concept in parallel, according to P1, P3, P4 and P11.

3.3.1.4. Ecosystem of the Process

When we look at the ecosystem, in Tukey pillar, the main responsibility is seen in Marketing and Product Planning departments. However, many departments are involved with the study about sharing all data from Turkey before the meeting with the Global Centre. For instance, Customer Experience team (P9, P10) mentioned that they have conducted some qualitative research and workshops to understand customer needs, expectations and usage scenarios. Quality departments (P5, P6) mentioned also working on their quality analysis that comes from the customers. Moreover, the researches of the Quality department, where all the vehicle features are asked in the first 6 months after the customer has bought the vehicle, are examined. In addition, it works with the Market Research and Prediction departments from quantitative surveys that address areas of customer satisfaction and dissatisfaction compared to annual competitors. Other small quantitative studies like this are being carried out. Therefore, customer expectations, needs and satisfaction areas may emerge from these researches and workshops.

Finally, as a result of the work done in conjunction with other departments involved for market and customer analysis, and benchmark, it is expressed that Marketing and Product Planning teams analyze all and try to represent Turkey pillar in Global Centre. This entire ecosystem is represented in Figure 3.3 similar with 3.2 in the observation findings.

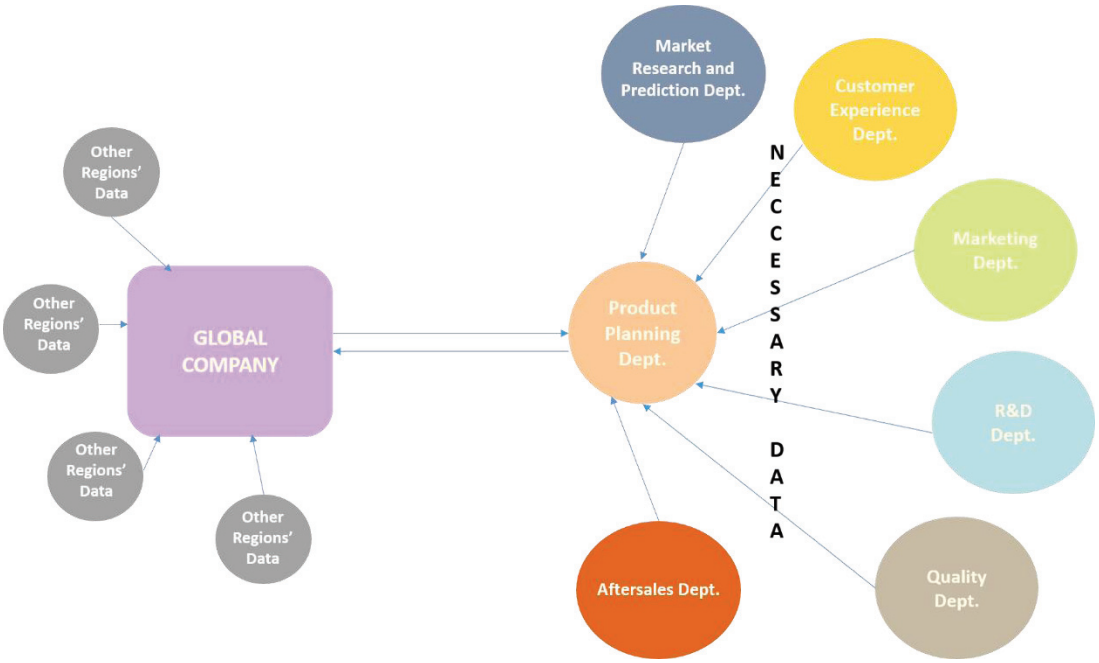

Figure 3.3: *Detailed Ecosystem of the Brief Process*

3.3.2. Development Process of the Brief

In this development process, the draft or concept brief is more clarified by all related departments. While the R&D and Quality departments seem in the foreground, the Product Planning team is always the main responsible and the Customer Experience team supports this process as well according to observations and to insights from P1 and P2. Therefore, the findings in this section are discussed in the discourse of all interviewees.

3.3.2.1. Roles of the Departments in the Brief Process

Research and Development Department (R&D): Working on the alternative solutions and alternative costs according to solutions considering with concept brief, key performance indicator (KPI) of Turkey's production limitations, usage materials and at least cost. Then, they carry on working according to feedbacks that come from Global Centre and Product Planning department (P1, P2, P3, P4).

Quality Department: Identifying the KPI's of the vehicle to be designed based on quality norms that come from Global Centre, feedbacks of current car. In addition to them, identifying goals that come from research called CCP (Customer Car Profile) which is conducted with customers or potential customers and experts by rating each car component with rival car comparatively by lead of Quality department (P5, P6).

Marketing Department: Transferring knowledge of long-term products and market analyses and benchmarks to R&D and Product Planning, ensuring that existing products are retained in the market (P1, P2, P7, P8).

Customer Experience Department: Understanding customer needs, usage scenarios and definition of target audience from the customer's experience with the vehicle and future trend, supporting alternative scenarios (P1, P2, P7, P9, P10).

Product Planning: Ensuring that all data is consolidated and collated in a single pool and the product brief is formed (P1, P2, P4, P7, P8, P9).

3.3.2.2. Goal Settings

Especially the Quality Product Planning team is involved and their (P5, P6) insight is used. Although some draft points are evident in the first concept work, it is not clear at the concept stage what kind of function each component will provide and what the target of the function is in this complex product like automobile. Therefore, the called Car Customer Profile (CCP) research is a particularly effective goal setting process. In this study, there is a set of questions for each component created by Global Centre. These questions for each subject are asked to customers, potential customers and experts from the company, and they are asked to rank between 1-10 points by comparison with rival cars. Then, the goal is set (P1, P2, P3, P4, P5, P6, P10). For instance, the A part of the X model, which is rival, was ranked 7 points, and the same part of the model Y, which is the same segment vehicle of the company, was ranked 6 points. Then, Product Planning department decides to target point whether would be stay in 6 or catch 7 or be more than 7. All these scores are analyzed. By doing so, component and feature-based scores of vehicles of the company and its competitors

are obtained. Afterwards, the targets of the future vehicle are determined by means of the research conducted on the current vehicle in comparison with the opponent. This process was described by all interviewees as the same.

3.3.2.3. Working on Alternative Solutions

In line with the set goals, R&D starts to work on different scenarios or alternatives, but there is a need for studies on which one is of more priority or on how to do it. For this reason, P4, P5, P10 have mentioned Kano methods that help them in studying or deciding for solutions, in priority. According to P4, P5 and P10, Kano is one of the methods mostly used in the company to understand what the customer needs, discover which makes customers happy or surprised and to prioritize all them. It was also mentioned that they decide on how the solution is designed using the Quality Function Deployment (QFD) method which is used after a certain or final decision is made for the solution. These alternatives are offered together with cost and time to Product Planning department, and Product Planning department presents to Global Centre. The decisions are made according to more criteria but it would be slowly according to all interviewees, except P11. Therefore, it has been mentioned that iteration mostly occurs and there is a negotiation process.

3.3.2.4. Iteration Process

Iterations can be handled with different branches: Departmental in Turkey Pillar and Global Centre.

It is mentioned (P1, P2, P3, P4) that many alternatives are forwarded to experts within the department or among departments. It was mentioned that these alternatives are eliminated by the department chief/manager and then, shared with Product Planning department or shared with their Global Centre, according to P1 and P4.

In Turkey Pillar: It is mentioned that there is a dynamic iteration as a result of the negotiations (P1, P2, P3, P4, P5). It is also mentioned by same interviewees that customer satisfaction, needs and expectations during iterations should be mainly

considered. However, it is mentioned that the customer is not dominant because of time and cost concerns.

In Global Centre: The alternatives are evaluated in the core team with representative experts from all regions (P1, P2, P4, P5). As a result of evaluation, the iteration is inevitable. At this point, it is said that it is aimed to create a common cluster in this process from different countries' customer differences and regulation differences (P1, P2). It is also said that whichever region the product is sold most in the market has great advantage in the decision-making process (P1, P2). For instance, if one of the model sales are the large in Turkish market, Turkey's offers come into forefront more. However, it is complained that in this process, the decision process is long but the alternative working process is short (P3, P5, P6, P7, P9, P10).

3.3.3. Brief as a Document

In this section, brief expectations of different disciplines and departments, brief inputs and constraints are presented. In a complex product such as automobile, brief should be apprehensible for each discipline. The insights revealed that different departments and disciplines have expectations about their subjects in the brief during the initial research process and observation process. In this section, inputs from all participants are provided in a different and sequential manner. For example, if department A provides an entry to the brief, and the department B provides B entry to the brief, then the formation of total brief is in question.

3.3.3.1. According to Different Disciplines

During the interviews, many interviewees gave different names about the brief and tried to find out which one was meant. Some of them spoke of product brief, some spoke of concept letter and some used terminology, called *griglia* about the brief. Thanks to the internal training during observation stage of the research, it is possible to describe that the concept letter is written in a slightly more commercial language and the product brief is written in a more product-based form. In fact, according to P1 and P3, product letter feeds the product brief and griglia can be considered as a brief

where the product brief is translated into engineering language. However, the interviewees from different departments mentioned the brief as follows:

- According to P4 (R&D Department), brief is the document that clearly defines the expectations of the markets, customers and expectations from R&D and how it works. It should not be open to interpretation; anyone should understand what another person understands. This is for the R&D department.
- According to P1 (Product Planning department), brief is the document that starts with a wish list and then identifies the product that is shaped in detail. In addition, according to P2, brief is a document which is independent from style and of which the frame is clear as in a vehicle such as 4-wheel 4-seat. This is for the Product Planning department.
- According to P11 (external stylist), brief is a document created with visual support in addition to technical feasibility of competitor research. In addition to its technical feasibility, the brief is a document in which competitor research is created with visual support. This is for Styling Team.
- According to P5 and P6 (Quality department), brief is the document in which they write and convey the objectives of their departments and units and say that “we will make a vehicle like this”. This is for the Quality department.
- P9 and P10 (Customer Experience department) could not comment because they had not seen any briefs, but as an estimate, brief is a document where there are many inputs (such as customer complaints and competitor characteristics). This is for the Customer Experience department.

In conclusion, for P3 (R&D Department), the brief is a document in which everyone translates into their own language and uses different naming and content in different units at the end of the day.

3.3.3.2. Brief Inputs

Although each department has a priority input expectation, they are almost all in agreement with the content that the brief should have. These are:

- Market analysis: In which market will it be and in which customer segment? Who will be its competitors?
- Financial input: How much will it be sold for, and how much volume will it be produced in? What is the project investment cost?
- Customer: Who is the target audience? For what purpose will the customer drive this vehicle, and what are the use cases? What are the customers' expectations and the features that they consider to be precise?
- Benchmark, trends.
- Constraints: cost, time, producibility.

In addition, some interviewees have mentioned that moodboards and personas should be in the brief. Especially P4, P5, and P11 indicated that it is effective to have moodboards and personas that Styling Team has developed, in the brief. Furthermore, P4 stated that the concept brief is formed after carrying out moodboard and persona studies.

3.3.3.3. Studies of Departments for the Brief Inputs

Quality Department (P5, P6): First of all, they lead the Car Customer Profile study called CCP which is the most important research in the brief. Accordingly, the target of the vehicle is determined in consequence of the mutual score given to the competing vehicles. According to this, for example, exterior appearance score is marked 7 in a competing vehicle and 6 is the current vehicle of the company. At this point, the Product Planning team can set the score to be 7 for the vehicle which will be the same as the opponent's vehicle, or the product team also can set the score to be 8 to distinguish from competitors. Apart from the main input, such as CCP, the quality unit also uses other data. Some of these data are the study in which the customer is asked questions in detail for components of the vehicle after 6 months of purchase of the vehicle, and the scores are given by the customer. They call this research QT (quality tracking). Moreover, quality complaint files of existing customers, and quality problems in service are analyzed.

Marketing Department (P1, P2, P7, P8): The data that predicts how many vehicles can be sold and how much it can be sold for is based on the research that is conducted by understanding the tendency of the market and the customer, benchmark and trends. They mentioned utilizing frequently quantitative data, but wished for the utilizing of qualitative data more.

Customer Experience Department (P9, P10): They often conduct qualitative research to understand customer needs and expectations. In addition, they organize ideation and co-creation workshops to provide creative and innovative concepts to the brief.

R&D Department (P3, P4): They discover new technologies, identify production limits, and feed alternative solutions.

In addition, P2 suggested that there will be needed an Industrial Design department in the Company X organization in order to analyze all trends, drives, market expectations and customer needs from the point of view of the designer. P2 mentioned that this would contribute a different approach to the brief.

3.3.3.4. The Importance of the Brief

Participants define the brief process as "design" process, especially P5 mentioned the importance of the brief with time necessary for the designing by saying "the designing project time should be more because the whole product is decided and designed on that process". According to the observation, the product is actually designed in the brief process and then, the alternatives are worked for applying production. In addition, P3 and P4 emphasized the importance of the brief for a holistic language because the brief is seen as the document that everybody understands the same and the interpretation is almost off. According to P2, it has opportunity for the new ideas to be discussed and developed in that process. P7 also mentioned the same, saying that the innovative ideas can be worked on and many data can provide input for the brief formulation process. Therefore, almost all participants agreed that creative solutions can be discussed and worked on in the brief formulation process, because, especially

P2 and P7 mentioned that, if not discussed in that process, the new idea can only be adapted after 4 years.

3.3.4. Constraints in the Process

This section covers some difficulties and constraints in the brief process. Participants mentioned some limitations or difficult areas such as cost and time in the process. In addition, these two constraints make difficulties for creativity in the process.

3.3.4.1. Cost

Cost is seen as the main constraint. Almost all participants mentioned that cost is the main criteria and constraint in the brief. During creating a brief, it is mentioned that it is always cost-oriented. For example, P4 says, "in the brief process, R&D tries not to increase cost, even looks at where it can save. A cost has already been set for the car at the beginning and we cannot go beyond it." In addition to this, in the observation stage of the research, it is observed that it is always cost-oriented, even when it comes to features that will create a new value; it is observed that cost is a determining factor. In the observation, it is also noticed that there is a department, the duty of which is managing the cost reduction. Although the purpose of the department is to create value for the customer with optimum cost, in fact, the understanding of *what can we remove from the vehicle so that the customer does not notice* was observed.

3.3.4.2. Time

Another challenge is time. It is mentioned that sometimes the approval process of the Global Centre takes a long time after the approval of the top management of Turkey pillar because Turkey is a pillar of the Global company, but it is also mentioned that the deadline of the product launching never changes even though decision-making time gets longer. For example, P3 said "we are now losing so much time in creating and approving the brief that there will be accumulation in production towards the end. We cannot change the launch date because then all trend research and regulations need to be looked at again." Other than that, interviewees from Marketing (P7, P8) and

Customer Experience (P9, P10) mentioned the difficulty of not having the brief formulation process defined as a full process and the deadlines not being clear. In addition, P5 complained that he did not understand what phase it was in by saying "It was saying that the last inputs can be adapted because Step 5 phase is finishing in the meetings but it was not clear whether all things are freezing or not."

In addition to the findings of the interview, findings related to the subject are also found in the observation. For example, 10 weeks were given to develop one of the subject X (due to confidentially), but customer research was needed for starting this process. In a regular case, a customer research normally takes about four weeks. However, it was observed that a period of one week was mentioned in this project. Despite this time restriction, it was conducted but the employees' motivation was down at the end. P8 even said "Department A requests market analysis and input for one the brief. I need some time to do this, but usually these occur at the last-minute, so an unsatisfactory report can be presented."

3.3.4.3. Creativity

According to P11, creativity comes from collectivity, but sometimes people do not like collective work in Turkey. He said, "people in Turkey always said that I've done this like this, and it works." So, while P11 complains a little more about creativity, P2 criticized about not being fast and that its applicability is difficult about the same subject. She said "The feature you said 'Let's innovate in the automotive world' can last for at least one year for adapting. The process of new vehicle lasts for 3-4 years, the innovation at that time may remain old or difficult to implement. Therefore, it forces you to make similar products over and over again."

P1 approached the same issue in terms of time. Even by giving an example from the rival company, P1 mentioned that the Future Development department of the rival company has worked with its customers while developing the product, but in company X, it was waived because of time, and that it was considered with the approach "I've finished on time, it was important." P5 mentioned that such a situation like innovative

ideas conflicts with the cost. P9 and P10 regarded creativity as contributing with visionary inputs such as trends, drivers, customer expectations, hunting grounds during the birth of the brief. P7 also supported this, saying “It is necessary to be able to describe the product and the innovative ideas while it is in the vitamin stage”. P7 also mentioned that in addition to the available data, there may be possibilities that provide creative input through workshops or studies with customers.

3.3.4.4. The Authority

The Company X is not free about the product as it is in a joint venture position. First of all, it is a process that emerges and leads from the Global Centre. This is why Turkey, as a pillar, cannot add whatever it wants to the brief. This also reveals a persuasion and negotiation process. For example, P1 compared his previous work to the new work he is now in. In this comparison, previously, he used to give feedback about only costs in Turkey and the feasibility of manufacturability by studying the brief that came from only the Global Centre. However, thanks to the customer research and brainstorming in the latest work, Turkey pillar could provide input to the brief globally. According to P1, P2, P6 and P7, there can be a feature that creates satisfaction that is unique for the customers in Turkey, or it seems at high level when it is done. For this case, there may be situations where Turkey pillar tries to convince the Global Centre to put that feature into the brief and invest to the feature by Global Centre, because Turkey pillar is not so free about the input of such issues into the briefs (P1, P2, P7, P10). This may create difficulty in catching the whole language (P10). According to P10, absence of and industrial design department in Turkey pillar causes adherence to the Global Centre, and this in turn causes authority restrictions on the provision of the whole language.

3.3.5. Communication

This section covers the communications in the brief process and the effects of this communication result. Many disciplines, departments, people and factories work in the brief process. Briefly, this communication can be summarized as follows: Global

Centre first sends news to all its pillars to collect data, then many disciplines and departments from these different countries transfer the information to the Global Centre, and at the end of the day, long communication process begins with the decided pillar. Therefore, communication is the most important element in this collective study.

3.3.5.1. Company Culture

Company X functions as a Turkey pillar of Global X. Thanks to the %51 (Global) and %49 (Turkey) business partnership, it has the right to comment largely on the vehicles produced in Turkey. If it is defined in general, as P7 says, it is a facility that produces contract manufacturing to the global brand and its partners, but Company X is also a proactive company in the domestic market.

Participants find the Company X culture agile, dynamic but also traditional (P1, P8, P9). According to P4, the development of engineering in Turkey gives Company X a great advantage and supports good communication. P4 also mentioned that thanks to the fast communication, the company's return to the requests coming from the Global Centre in an agile way provides advantage in getting a project for manufacturing in Turkey. However, according to P8 and P3, both the company's subsidiaries and traditional culture slow down the communication process and this reflects on the brief formulation process. According to P5 and P6, especially in the brief formulation process, the company sometimes shows a tendency not to take risks due to global commitment and worries about the deterioration of the mutual relationship.

3.3.5.2. Communication within Turkey

The Company is located in two places: one is headquarters in İstanbul, the other one is the factory in Bursa. In the brief formulation process, some data comes from the departments in İstanbul, while others come from Bursa. P1 and P2 participants stated that they tried to synchronize the data that came from these two locations. About this issue, P1 stated as follows: “Bursa sees us as Istanbul, while Istanbul sees us as Bursa. Sometimes in the meetings, when you explain to the top management why the feature

is not in the brief due to the manufacturing, they say ‘you are talking like an R&D employee.’ When there is a similar issue in Bursa, they say ‘you take the Istanbul side’ ”. According to P1, the Bursa-Istanbul communication conflict can be mentioned firstly. P4 sees the Product Planning team as a communication tool between customer and R&D. P3, P4, P5 and P6 see the communication among departments in the process weak. For example, why the target given for the brief is given, and what the reasons of it are may not be known. It was mentioned that understanding these were a waste of time according to P3 and P4. P9 and P10 mentioned that they did not know where they were involved in, and when they would be involved in the process as the Customer Experience department. They also mentioned that this weakness in communication left the department in a difficult situation when there was a sudden request or demand. Likewise, P8 said “some analysis or inputs were demanded snappily, but three days are necessary to analyze it. Their lack of knowledge about my job and the lack of communication makes everything hard”.

P2, P3, P4, P5 and P6 said that regular inter-departmental meetings, such as once a week and once a month, were held and some decisions were made to discuss the brief and form it. However, P4 states that nevertheless there is a disconnection among departments, when “point A need to be changed” is told, it can be noticed by the other department three weeks later. In addition, P2 mentioned that she noticed by chance the change in the product on which R&D started to work as a result of the data that came from the Global Style team although she is in charge of the brief. P1, P2 and P8 stated that sometimes data was not transmitted within the department and the reason was not known whether it was because of the administrators or not. They mentioned that they encountered reactions such as “will this thing be in the new product?” or, “is it in the brief?” but the brief was already shared. Likewise, it was noticed in the observation stage that each department worked with different methods for the same thing. For example, while a department in R&D conducts an ethnographic research to empathize with customers, another department applies a method such as Kano, but the

needs and the resulting ideas are expected to form a concept at the end of the day. It was observed that this common language would be difficult to catch in this way.

3.3.5.3. Communication with Global Headquarter

It was mentioned that a monthly meeting is held with the whole global units in order to achieve integrity by all participants as a core team (P2, P3, P4, P5 and P6). As a result of these meetings, the Global Centre publishes the final brief in terms of complexity on their custom online platform. However, despite these meetings, it is mentioned that communication was weak and the flow of the data was absent (P3, P10). P8 stated that she has not noticed a significant change in this published document, although she was the product specialist. Participants from R&D and Quality stated that they had difficulties in persuading the Global Centre or making it accept new ideas in this process. P7 said that the communication in this process is not only with the Global Centre but with all countries. For example, in the brief debate, P7 said that a feature requested by Turkey pillar stumbled the regulations in the US, or Germany had different request because of the regulations in Germany. Therefore, a brief determined as a result of meetings with participants from not only Turkey pillar and the Global Centre, but also all over the world, and a communication model in which the brief is forwarded to relevant departments can be mentioned. Another weak communication issue here is with Style team. Although P1 and P2 indicated that they were in contact with the Style team, they had a disconnection with the information there. It was stated by P1, P2, P3, P4, P10 and P11 that the decisions are mostly taken by the top management transmitted to the Style team. Then, these decisions are shared with the part-based function manager, not with a total image. For this reason, P1 and P2 mentioned that they learned that the product was not like in the brief from the R&D supervisor by chance, since they could not see the product in total, and it needed to be revised, thus this communication gap should be improved.

3.3.5.4. Common Terminology

Although it was spoken in a common terminology, it was observed that each department had different terms within itself. In addition, the weakness of the common language among departments was discussed during the interviews. P5 mentioned that there was no common language among departments by saying "It is said in the meeting that we are at the 5th step and I have to decide. But I do not understand if the 5th step is critical or how much time I have". According to P8, it is not understood where they are in the process and what the specified milestones are. About this situation, P9 says, "I wish there was a huge chart and I can understand where the project is in the timeline and which departments take a role." P10 indicated similar opinion. P10 also stated that she received training for this reason, but she did not understand a word at first in this training. She said not only for her but also for other departments that she observed that everyone knew the language of their field.

CHAPTER 4

CONCLUSION

The presented study introduced the brief generation process in a multidisciplinary multinational organization based on a case in the Turkish automotive industry. In this type of company, both having many disciplines from different nations and having a product that does not come out in a short time as a car, brings many difficulties with it. The design brief is very important among these different variants. Apart from being the first step of the product development process, it is an instructive document that everyone understands, and the fact that this product is almost certain in this document reinforces the importance of the subject. Therefore, the first step of making an innovative product can be called at this point. Considering all this, the study focused on how a design brief is created in a multidisciplinary multinational organization, how the brief is expected by all these disciplines and how it captures a common language. In addition, it involves understanding how innovation is created in this complex process. The designer can start designing and differentiate the final product after receiving the brief, or make this differentiation in the complex product such as automobile in the process of creating a brief. Therefore, in the first chapter, the importance of the brief for companies, the strategic advantage that the brief provides in terms of touching the needs of the customer and differentiation in the market, the necessity of collaborative work, and the purpose of the study are mentioned.

Looking at the literature for the study, the product development process can be handled in general terms as concept creation, concept selection, detailing, production and testing. Although the process continues in a linear fashion, what is done in iteration and sub processes are shown. When going into the details of the NPD process, it is mentioned that a similar process is also experienced in the process of creating briefs, which consists of: creation of concept brief, selection of the concept,

improvement of the brief and detailing with cost, and many iterations where the brief was created in the previous stages. It is similar like from the concept to the launch in the new product development process. The brief process can be treated as a design process and opportunity for differentiation can be provided. Especially considering the stages of design thinking, we come across research, identify, ideation, prototype, test and iteration. Therefore, when this process is taken from an innovative point of view, it is explained that creative handling of the process, team motivation and different discipline diversity are important in differentiating the product. As in the way companies with multidisciplinary organization benefit from different minds, issues such as communication for the coordination of these minds are also mentioned. Finally, the subject is approached by explaining what a brief is and what it contains in general. In conclusion, innovative solutions of a brief in a multidisciplinary multinational organization, the handling of the new product development process in different studies, what innovation is, what design thinking is when creativity is considered, multidisciplinary structures and briefs are examined in the literature.

Considering all these issues, the principal focus on the research was the multidisciplinary creation of the design brief within the multinational organization, the creation of a common language, and the possibility of creative solutions in the brief. According to this objective, the field research can be handled in four areas: *The process of the brief formulation*, *the brief document*, *multidisciplinary working and innovation in the brief process.*

4.1. The Process of the Brief Formulation

The process includes various departments to generate a design brief, and these departments need to work together in harmony for the innovative solutions. It necessarily reveals a large ecosystem as the organization is both multidisciplinary and multinational for the case. When it is focused on Turkey's part that is also main question of the study, there is a huge ecosystem can be mentioned. Firstly, the companies headquarter and factory units are in different cities, which are Bursa and

İstanbul. In addition to different disciplines in different cities, there are also many suppliers in the Turkey ecosystem. The formulation of the brief in this collaborative multinational organization can be explained as the process where the Product Planning department is in the center and coordinates each unit, collects the data from these and transfers it to Global Centre after passing it through its own filter. In this process, while the Product Planning department takes its market needs from the Marketing department, it takes the technological developments and the costs of the considered concepts from the R&D department. The issue of receiving customer needs varies from department to department. While the Customer Experience department shares more ethnographic and qualitative research, this qualitative research becomes the document that the Marketing department also makes use of and predicts accordingly. Quality department provides also customer needs with different quantitative researches and some strict norm of the company, and this data helps for setting the goals of the product. At the end, Product Planning department makes the final decision as a result of the research; after the decision is approved by the top management in Turkey pillar, it is laid to the Global Core Team. In the bargains here, not only customer needs, but also master plan, manufacturability, which factory is suitable, are discussed. In summary, the process starts with collecting data about customer needs, market needs, technology drives, and trends from all departments by Product Planning department, then, continues with providing all these data to the Global Centre and finalizes with the result of negotiation.

4.2. The Brief Document

Even though the brief document is named differently by many departments, there are some common expectations that we see in the literature. We can say that it is an important document for catching the common language; everyone understands one thing, but also includes alternative solutions. Due to the high content of the brief, each department is interested in its own field and brief on the subject. In general, expectations from the brief can be stated as target audience, market needs, financial constraints, cost, time, and trends based on the field research as well. Depending on

these inputs, the duties of the departments are separated and they provide inputs to the summary at points related to their fields. According to these points, meaning of the brief documentation is slightly differentiated for each department. For instance, for engineers, it is a document clarifying areas open to interpretation such as customer needs and translating into engineering language. On the other hand, for designers, it is a document for the inspiration to create innovative solutions with personas, moodboards, etc. In addition, most of them agree that it is an understandable document for everyone because it is seen as the only document that provides catching a holistic language for the product, because automobile is a much complicated product.

4.3. Multidisciplinary Working

This issue causes more difficulties, especially in communication. It was mentioned that as it is difficult to keep information even in the game called Chinese Whispers which is played by 5-6-year-olds, there can be some problems in the process of keeping information in a complex product such as an automobile in the multidisciplinary and multinational company and conveying the change to the last designer. When we consider this large organizational structure in the brief formulation process that is also main question of the study, it was found in the decision phase that the process progressed a little slower. Decisions start within the department and go up to the top management. At the end, all data are collected and discussed to be common for each region. In that phase, a required feature in one region may not apply to another region. Therefore, processes can be prolonged, leaving less time for development and manufacturing. In this case, after a decision is made, agile work is required and this can be achieved thanks to team motivation. However, some communication disruptions can occur, and these are addressed during the process in the Turkey pillar and also with the Global Centre. Team motivation can be seriously affected by communication disruptions.

4.4. Innovation in the Brief Formulation Process

It can be mentioned that the process is more time and cost oriented based on field research insights. This can create a barrier for an innovative idea. At the same time, the fact that the company is a pillar of the Global Centre appears as another barrier in terms of authority. Apart from these, different studies are mentioned for better understanding of the customer and developing creative solutions in this regard, and the importance of these being an input to the brief is mentioned. In this regard, it has been stated that the designer has the biggest role, the contribution to the brief for the differentness and the use of the brief will lead to another vision.

4.5. Concluding Remarks

The study can address different fields and disciplines from many points. Addressing the product development process with its ecosystem and process shows the designer the importance of not only the product but also the product development process, and the importance of the roles that will be placed in this process. Handling the product development process with its ecosystem and process shows the designer that not only the product but also the process is effective, and also the importance of the roles that will be placed in this process. In addition, it will be useful for many disciplines to provide up-to-date information since the brief formulation process in the automotive industry is rare in the literature. In many multinational organizations, Turkey is located as the point of manufacturing. Moreover, thanks to this study, it is known that design can be directed with the inputs given, this brief formulation process can be handled as a design, and differentiation can be achieved in the product. Furthermore, the study can be useful to all disciplines if it is considered as a collaborative one. The study can be beneficial from a management point of view as well. It can be useful to designers in terms of looking at the design of this process and the role of the designer, and to engineers in terms of the importance of their role in the process and the way they work.

4.6. Limitations of the Study and Suggestions for Further Studies

There are some constraints of the study, as well as benefits. Conducting the study as a case in a company, being a competitor for other companies and confidentiality of the details of the processes can be shown as the constraints of this study. In addition, many people work for a complex product such as a car, but interviewing all these people requires more work for extending the scope in terms of the time period and effort. The fact that some of the main names are on the Global side can be shown as another constraint. The topic of creativity remains weak in the study, perhaps this issue can be further explored or different suggestions can be offered and tried. In addition to further research and interviews with more people, the inability to share due to privacy in the observation process can be seen as another constraint. Finally, the study is a qualitative one, and the findings are based on qualitative data with the themes determined by the researcher, this is another limit and a developable area. As a result, the study can be improved by including rival companies or by including other industries after overcoming confidentiality issues.

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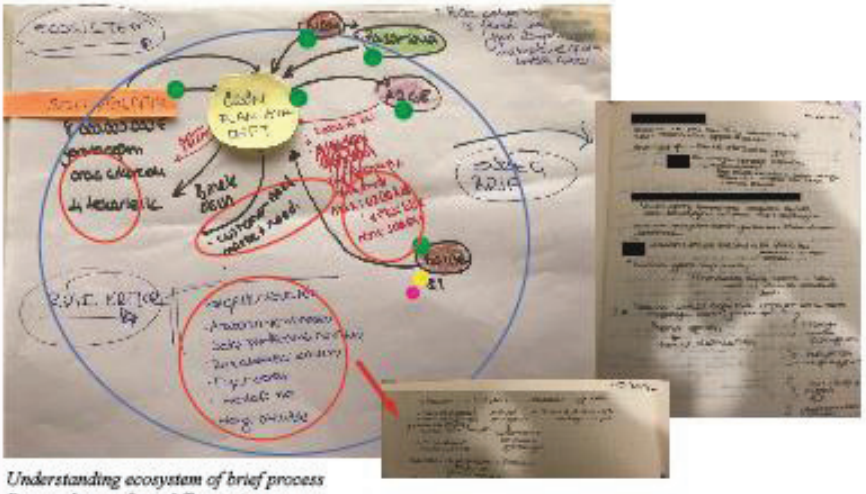
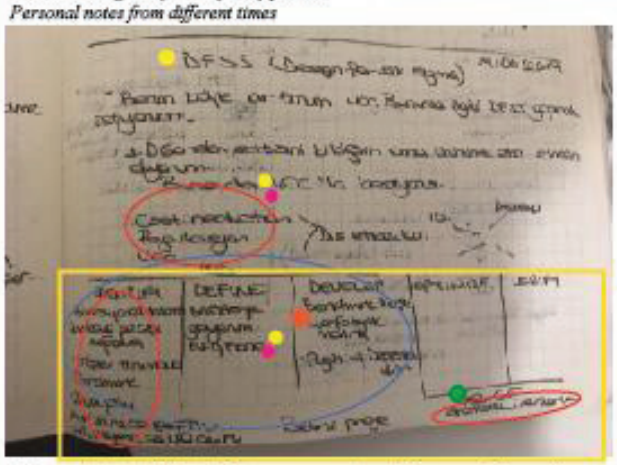
APPENDICES

A. OBSERVATION ANALYSIS

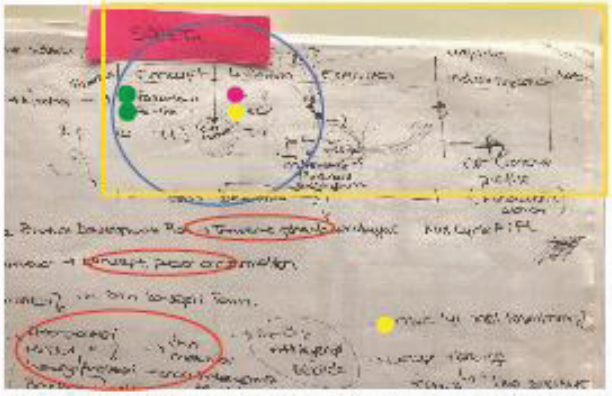
Notes from the meetings



Understanding ecosystem of brief process
Personal notes from different times

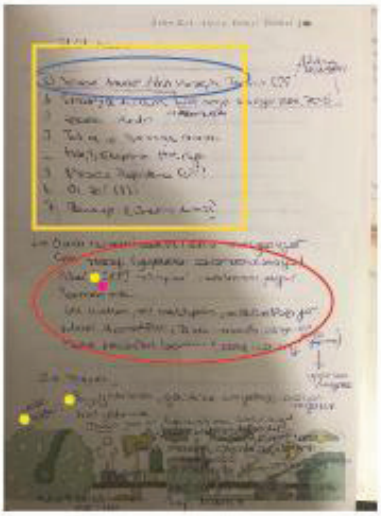


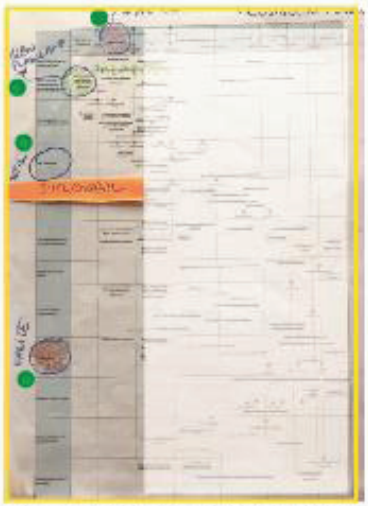
R&D used methods for the brief process personal notes from one of the meeting



Personal notes from the one of the project of company. Describing NPD process by one of the employee. It resembles Stage-Gate model point of 5 steps

Notes from internal trainings

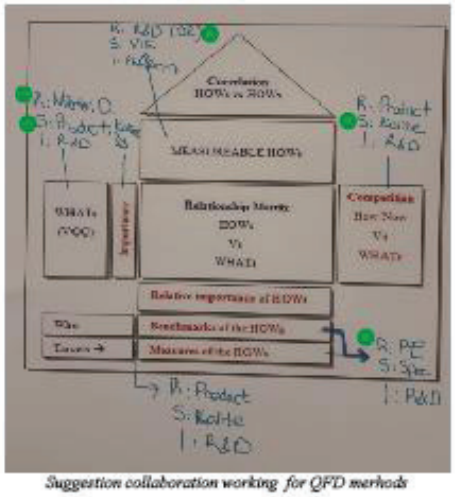




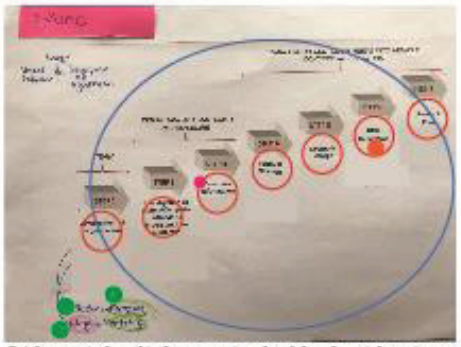
The important parts is showed clearly since the document can be confidential.

Results of the exercise in the training. Although one brief was described, there were lots of shapes as a result.

Notes from workshop about the brief process



Suggestion collaboration working for QFD methods



Brief process is showed in the presentation of workshop. Some information was hidden due to confidentially.

Legends

- Key departments for the brief process
- Terminology
- Methods for customer needs
- Ideation process (possible creation area)
- Contents of the brief
- Different description of the brief process
- Importance of an apprehensible brief
- Different description of the NPD

B. CONSENT FORM

(ENGLISH VERSION)

Date

Dear .....,

I am a graduate student at the Department of Industrial Design at Middle East Technical University. The title of my master thesis is:

'Generating Design in Multidisciplinary Cooperation at a Multinational Organization in Turkey Automobile Industry'

I would like to make interviews with our company's design, product, marketing, quality and R & D employees with your permission on this subject. I would like to record our interview if it is appropriate for you. I would like to state that I will use the interview notes for scientific purposes only and will retain information about employees unless you give me permission.

Any information obtained in relation with this work that is confidential for the company will remain confidential, will not be shared with third parties and will only be disclosed with your consent. The results of the research will be used only in my scientific study in accordance with ethical rules and all confidentiality principles. All data will be stored in a secure and encrypted database with limited access. Even if you decide to participate voluntarily, you can withdraw at any time without losing any rights or penalties.

If you agree to the participation, I will call you to determine the date that is appropriate for you. I believe that your contribution to my research is really important; I would appreciate it if you can provide support.

Best Regards,

Thesis Advisor:
Assoc. Prof. Dr. Naz A. G. Z. Börekçi
E-mail: nborekci@metu.edu.tr

Thesis Student
ÖZGE ÖZDEMİR
ozdemir.ozge@metu.edu.tr

SIGNAGE OF PARTICIPANT

INFORMING TEXT FOR THE INTERVIEW(TURKISH VERSION)

Tarih

Sayın .....,

Orta Doğu Teknik Üniversitesi, Endüstri Ürünleri Tasarımı Bölümünde yüksek lisans öğrencisiyim. Araştırma yaptığım yüksek lisans tezimin başlığı:

'Türkiye'de Yenilikçi Tasarımlar Geliştirmek İçin Çok Uluslu Organizasyonlarda Multidisipliner Çalışma Şekliyle Tasarım İş Tanımının Oluşturulması'

Bu konuda izninizle firmamızın Tasarım, Ürün, Pazarlama, Kalite ve ARGE çalışanlarıyla, görüşmeler yapmak istiyorum. Görüşmemiz sizin için de uygunsa **ses kaydına** alınacaktır. Görüşme notlarını yalnızca bilimsel amaçlarla kullanacağımı ve siz izin vermedikçe çalışanlarla ilgili bilgileri saklı tutacağımı belirtmek isterim.

Bu çalışmayla bağlantılı olarak elde edilen ve firmanızla özdeşleşmiş her bilgi gizli kalacak, üçüncü kişilerle paylaşılmayacak ve yalnızca sizin izniniz ile ifşa edilecektir. Araştırma sonuçları etik kurallar ve tüm gizlilik ilkelerine uyularak sadece bilimsel çalışmamda kullanılacaktır. Tüm veriler sınırlı erişime sahip güvenli ve şifreli bir veri tabanında tutulacaktır. Bu çalışmaya gönüllü olarak katılmaya karar vermeniz halinde dahi, sahip olduğunuz herhangi bir hakkı kaybetmeden veya herhangi bir cezaya maruz kalmadan istediğiniz zaman çalışmadan çekilebilirsiniz.

Görüşme yapmayı kabul ederseniz, sizin için uygun olan tarihi saptamak üzere sizi telefonla arayacağım. Araştırmama yapacağınız katkının gerçekten önemli olduğuna inanıyorum; bu konuda destek verebilirseniz çok sevinirim.

Saygılarımla,

ÖZGE ÖZDEMİR
ozdemir.ozge@metu.edu.tr
Tel: 05.....

Tez Danışmanı,
Doç. Dr. Naz A. G. Z. Börekçi
E-posta: nborekci@metu.edu.tr

C. INTERVIEW QUESTIONS

INTERVIEW QUESTIONS (ENGLISH VERSION)

INTRODUCE YOURSELF

Hello my name ..... My Thesis subject is..... We will talk with you about your experiences

IDENTIFICATION

- What is your name?
- What is your title in the company?
- What is your role in the company?
- What is the job description of your department?
- Could you briefly describe the company such as business area, culture of the company?

INTRODUCTION

Today we will talk to you about the new product development process. Then we will talk about how your role is in forming the design brief and your experiences during this process.

- How does the first product idea come from?
- How do you think it should come?
- Could you describe the New Product Development process with your own experience?
- Where does your department take part in this process?
- How do occasional evaluations take place in this process?

- How do you get customer expectations in the process?
- How do you get market expectation?
- At which stage are you experiencing difficulties in the process and why?
- How is the ideation advance in the process?
- How do you conduct tests?
- Do you test to understand if the customer has the actual need?
- Which tests do you do for product works?

• Do you know how other companies do this process?

Then;

- What is Design Brief/Product Brief?
- How do you define it?
- Are you familiar with the Design Brief process?
- Are you involved in this process and how?
- What do you think about difficulties in this process? Do you have? Why do you think?

CLOSING

I have one last question before I finish.

- How would you design the design brief process if you had the magic power?

INTERVIEW QUESTIONS (TURKISH VERSION)

ARAŞTIRMACI VE ARAŞTIRMA HAKKINDA BİLGİ

Merhabalar ismim..... Tez konum..... Sizinle deneyimlerinizi konuşacağız

TANIMA

- İsminiz?
- Ne işle uğraşıyorsunuz?
- Firmadaki rolünüz nedir?
- Departmanınızın görev tanımı nedir?
- Kısaca çalıştığınız firmayı tanımlar mısınız?

KONUYA GİRİŞ

Bugün sizinle biraz yeni ürün geliştirme sürecini konuşacağız.Sonrasında da bu süreçte tasarım briefi hazırlanırken nasıl rol aldığınızla ilgili ve deneyimlerinizle ilgili konuşacağız

- İlk ürün çıkarma fikri nasıl geliyor?
- Sizce nasıl gelmeli?
- Yeni Ürün Geliştirme sürecini kendi gözleminizle anlatır mısınız?
- Bu süreçte departmanınız hangi rollerde yer alıyor?
- Bu süreçte ara değerlendirmeler nasıl oluyor?
- Süreçte müşteri beklentilerini nereden alıyorsunuz?
- Market beklentilerini nereden alıyorsunuz?

- Süreçte yaşadığınız zorluklar hangi aşamada oluyor? Neden?
- Fikirlerin gelişme süreci nasıl oluyor?
- Bu süreçte nasıl testler yapıyorsunuz?
- Ara testlerle gerçekten kullanıcı mutlu olacak mı gibi testler yapıyor musunuz?
- Sonrasında ürünün çalışıp çalışmadığıyla ilgili ne gibi testler yapıyorsunuz?
- Diğer firmalar sizce nasıl yapıyorlar bu süreci, bilginiz var mı?

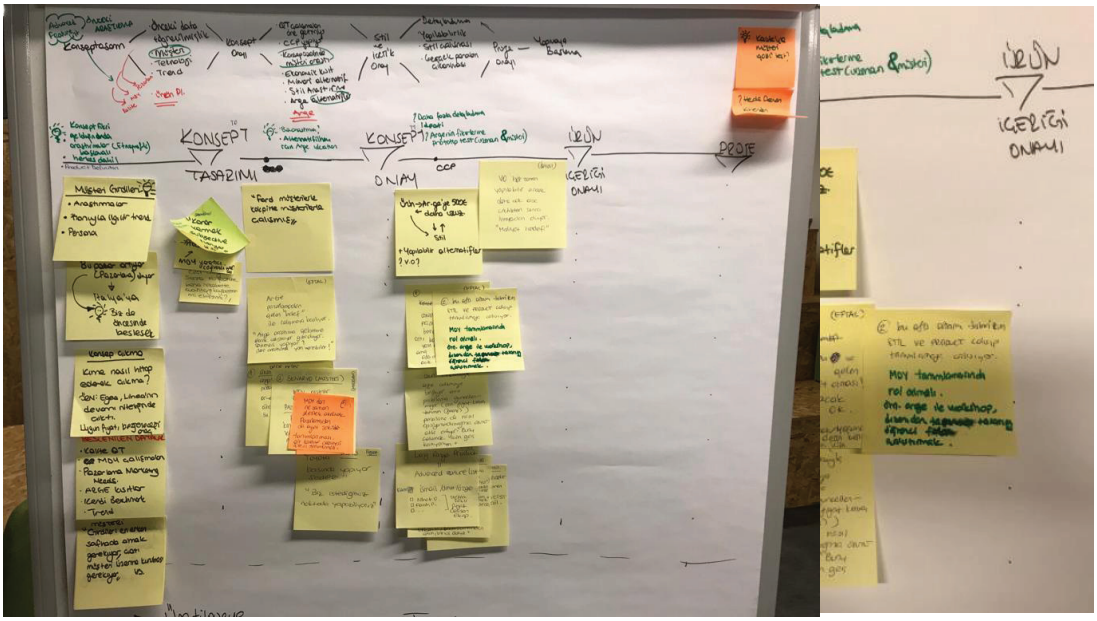
- Tasarım iş tanımı nedir?
- Siz nasıl tanımlarsınız?
- Tasarım iş tanımı süreciyle ilgili bilginiz var mı?
- Bu süreçte sizler yer alıyor musunuz, nasıl?
- Sizce bu süreçte yaşanan zorluklar var mıdır? Nelerdir? Neden sizce?

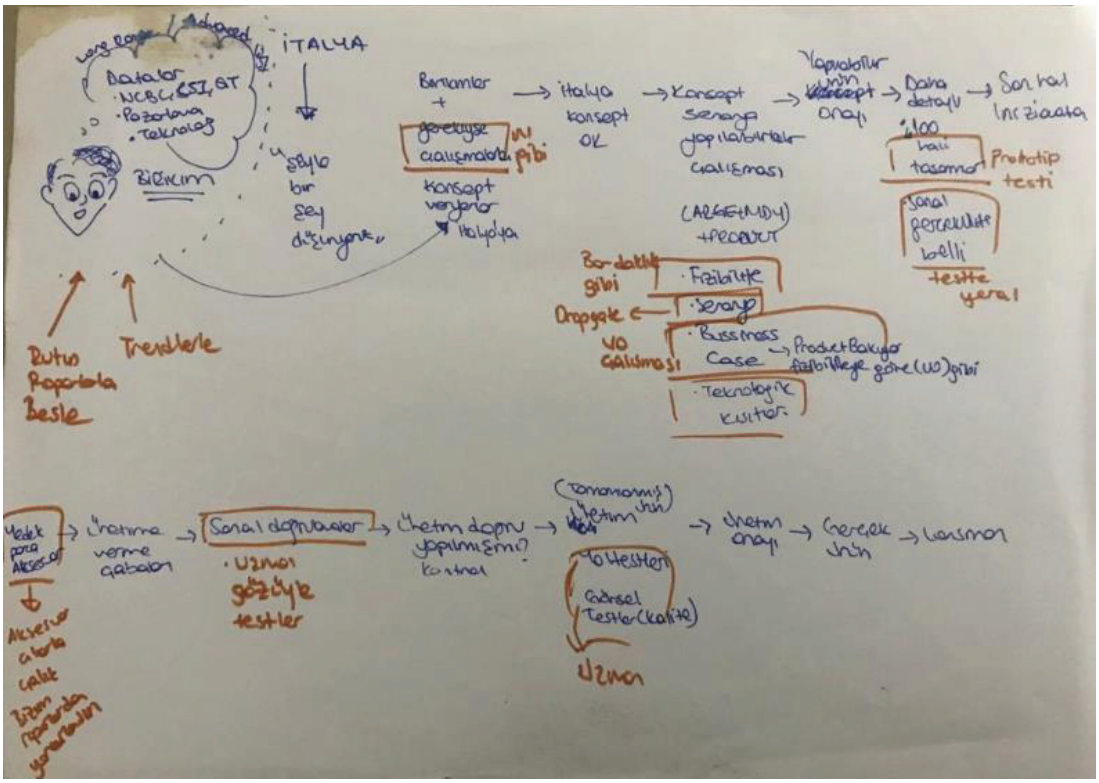
KAPANIŞ

Görüşmemizin sonuna geldik. Ancak bitirmeden son bir sorum olacak.

- Elinizde sihirli bir değnek olsaydı tasarım iş tanımı sürecini nasıl planlardınız?

D. MIND MAP AND DOCUMENTATION OF DATA





E. EXAMPLE OF A DATA ANALYSIS DOCUMENT (Transcript of Per Participant)

E.U(Ergonomi ve Algılanan Kalite Mühendisliği Kısım Yöneticisi)(7 yıldır)

Kendisini tanıtması

ODTÜ Entas 2004 mezunu. 2006'da başlamış. Son senesinde Markanın Global ayağı üniversitelere proje bazlı gelmiş bu sayede Türkiye ayağıyla tanışmış. Proje sonunda İtalya'da 3 öğrenciye staj.3 ay boyunca Milnodaki tasarım ofisiyle yapmışlar, arada markadan uzmanlar gelip sunum yapıyorlarmış. Döndüklerinde Türkiye ayağında işe başlamış ve tasarım ekibinin kurulacağı söylenmiş. Stil için 2 yıl boyunca İtalya'da bulunmuş. Türkiye ayağında ise dış stille alakalı Türkiye'nin müdahale edebileceği alanlarda yer almış. Sonrasında Algılanan Kalite çalışmalarına geçmiş. Bazen Türkiye'de üretilen ürün olmasa da globalin işi de yapılabiliyormuş. Ergonomi-Algılanan Kalite ve Stilin aynı çatıya toplanmasından bahsediliyor ve kompakt olmasının faydasından bahsediliyor. İtalyada da böyle olmuş.

Türkiyedeki Markayı Tanımlaması

Kurumsal ve Global markanın da en güçlü ayağı. Çünkü iletişimi kolay. Global head Avrupada ve iletişimi kolay. Yetkinliği, insan kaynağından ve önceki projelerindeki başarısından dolayı güçlü ayağı. Globalin kendi işlerine outsource olarak hizmet verilmesinden bahsediyor. Çünkü agile şekilde ve flexible şekilde çalışmasından dolayı tercih edilmesinden bahsediliyor. Arge tarafından bahsediyor. Üretim tarafından da güçlü yanımız vardır, çünkü altın fabrikayız dedi.

Brief/Ürün Mektubu nedir?

Pazarlama biriminin Ar-Ge'den beklentilerini net bir şekilde tanımladığı döküman. Pazarlama, müşteriyle Ar-Ge nin ara yüzü. Müşterinin ihtiyacı ya da beklentisinin en doğru tanımı onlar yapar lar. ArGe nin anlayabileceği dile çevirirler, ve üründen beklentilerini tanımladıkları döküman.

Müşteriden gelen girdileri Argeye aktarma konusundaki bakış açısı?

Ar-Ge mühendislik dili kullanıyor. Ne kadar net olursa o kadar rahat. Müşteri ucu açık bir şekilde beklentilerini tanımlıyor olabilir ama bunu ArGe anlayamayabiliyor. Ve bu çeviri gerçekten bir yetkinlik. Olması gerek çok teknik açık olmalı. Yoruma açık olmamalı. Ben ne anlıyorsan başkası da onu anlamalı yoksa ortaya çıkan ürün kimseyi tatmin etmez. Product Brief bize pazarlamanın üründe ne olması gerektiğini söylediği brief.Daha sonra biz içeriğini tanımlıyoruz.

Olması gerekenler neler?

Hangi müşteri kesimine hitap etmesi gerektiği. İçeriğinde kaç tane müşterinin gördüğü kullandığı ürün olacak (koltuk sayısı gibi).

Yoruma açık başlıyor ancak Still moodboardlar çalışıyor. Bu tip insan süsünüyorum ve onun da bu tip bir konseptten hoşlanacağını düşünüyorum. Ürün/pazarlama bu sunumlara uygun diyorsa brife koymaya başlıyor.Moodboard ürün konseptinden netleşmeye başlamada bir geçiş. Sonrasında briefte nasıl bir pazarda hangilerine rakip olacağı girmeye başlıyor. Ar-Ge olarak o rakipleri alıp incelemeye başlıyoruz. CCP(Customer Care Profile) . her bir aracı alıp uzmanlarla kaliteyle birlikte SAE? 10 üzerinden puan veriyorlar. 300 maddelik check listleri var. Belli maddeleri değerlendirip expert ccp yapılıyor. Aynı maddeler müşteriye de götürülüp onlar da puanlıyor ve sonrasında bunlar çakıştırılıyor, unify. Product tarafı (Ürün Planlama Birimi), hedef kararı veriyor. Müşteri bunu demişti,aracın hedefi olarak şunu düşünüyorum diyor Argeye. Buna da target definition diyorlar ve git-gel'lerin çok olduğu süreç. Target'lardan sonra uzmanların test sürecine giriyor. Örnek:uzman ilk başta subjectiv veriyor sonra teste girdikten sonra o madde için hangilerini yapmamız gerektiğini söylüyor. Rengini , parlak seviyesini falan ölçümlüyorum bu testlerle.her performansın uzmanı yapıyor. Her algının altında olan testler var mesela parlaklık algıyı tanımlayan testlerden biri. Ergonomi için ordaki bacak mesafesi boy mesafesi ölçümlenmeye başlıyor.O değerler bumerikleştiriliyor. 8 i sağlamak için şunu şunu yapmam gerekiyor. Paralel de tüm birimler çalışıyor, ürünün içeriği oluşup, şu parça yeni şunu eski üründen şunu kullanacağım diyor. Ürünün contenti oluşmaya başlıyor.her birim bu şekilde çalışıyor. Olmuyorsa product a gidiyoruz ya bu hedefi değiştirin ya da contenti değiştirmek lazım.Netleştirme süreci.

Bu maddelerin birleşiminin kim yapıyor?

Hepsini etkileyten parçaları birlikte değerlendiriyoruz.Tutturmuyorsa aracın her yeri böyle ama seninki böyle diyoruz.

Burada stil bazında aynı dili konuşmasının nasıl sağlandığını sorguluyorum?

Daha bu aşamada stil yok. Paralel de stil eskiz üzerinden çalışmalarını yapıyor. Bunlar yavaş yavaş bir biriyle konuşmaya başlıyor. Matematik modeller çıkmaya başlayınca bu performans birimleriyle bunlar bunu sağlıyor mu sağlamıyor mu konuşmaya başlıyorlar, haftalık toplantılarda.Stilin buna göre ortak dili oluşturmaya başlamalı. Ayrıntılardaki boşluklar müşteri tarafından algılanıyor mu algılanmıyor mu bu tanımlamaları yapıyoruz, stile de aktarılıyor ki stil değişikliği olduğu durumlar olabiliyor. Olgunlaşmaya başlamasıyla product brief şekilleniyor.

Müşteri ..hissetmek istiyor, şu amaçla kullanmak istiyor diye yola çıkıldıktan sonra pazarlama çalışıyor. Prodcut stile söylüyor. Stil de çalışmayaq başlıyor daha Arge'ye gelmiyor.Ardından fonksiyonlar girmeye başlıyor bu konspti yapmak için hangi parçalar carry over kullanılabilir ya da CCP yapılmaya başlanıyor. Birimler iletişime geçerek contenti dondurmaya çalışıyor.

Tamamen müşteri kitlesini product tanımlıyor ve o müşteri kitlesine o soruları o sordurtuyor... Çakıştırıp nihai sonucu söylüyor.

tanımlar. Laptop mı koyacağım her şeyi product tanımlar. Wireless charger yapacaksam hangi ekran boyutuna kadar charg ettirebilirim gibi Product'ın tanımlaması gerekir.Buna göre nereyi çevrelememiz gerektiği çıkıyor. Neleri alacağımız ya da saklayacağımız belli oluyor ama nerede ve nasıl yapacağımız daha bitmiş olmuyor.Sonrasında herkes kendi alanıyla ilgili briefi alıyor.

Süreçteki zorluklar nelerdir?

Süreç bilgi eksikliği var. Geçen sene sizle yaptığımız workshopta kimlerde nasıl devreye giriliyor, nereden o bilgiliyi almak gerekiyor bunu çözmek istedik. Briefen çok haberdar olmadığımızı keşfettik. Çünkü aslında brief yapılıyor yapılıyor belli bir aşamaya geliniyor. Herkes neyi eski neyi yeni yapacak bunu griglia yaya dönüştürüyor product. O griglia'yla Arge yola çıkıyor idi. Eskiden griglia'dan öncesini bilmiyordu Arg-ge ve artık öncesine de hakim olmaya başladı. Asıl kontent birlikte oluşturulmalı. Sonrasında QFD ve Kano calismaları yaptık, sizle qualititave araştırmalar yaptık ama asıl şey griglıadır. Arge'nin mühendislik dili olarak anladığı ve kendine brief dediği şey griglıadır. Griglia bütün teknik tanımı ve her şeyin belli olduğu döküman. Daha sonrasında arge hangi üretimden çıkacak, hangi tedarikçilerle çalışacak buna bakıyor. Kimle iletişime geçecek nasıl aksiyon alacak onu koymaya çalıştık. Her birinin başka hedefi var. Product müşterinin istekleriyle birlikte hedef koyuyor ve sağlanmasını bekliyor. Başka parametreler var.Maliyet, çevresel gibi driverlarımız var. Maliyet ya da regulasyon sebebiyle bazen bu hedefler olamıyor. Bu yüzden çatışmalar ortaya çıkıyor. İletişimin ve herkesi aynı sayfada toplayabilmek challenging bi durum. Çok büyük yapıda çok zor oluyor. İstanbul ayağı var, product tarafı var, arge tarafı,üretim tarafı ve tedarikçi tarafı var. Herkesi aynı pencereden toplamak en zor yanından biri. Bir diğer zor olan da zamanlama. Otomotiv çok dinamik ve hızlı olmak gerekiyor ama uzun sürelerde geliştirme, test ve verifikasyonu söz konusu. Dar zamanda çok şey yapabilmek çok zorlayıcı.

İdeali ne olmalı?

Standarta uyabilsek iyi. Her ürünün ne zaman piyasaya çıkacağı deadline var. Geriye doğru geldiğimizde ne zaman başlaması gerektiği de tanımlı. Doğru zamanda başlamadığı ve son zamanın değişmemesinden dolayı sıkışık bir durum oluşuyor.

Her birimin briefe girdi sağlması önemli.Onaya kadar bir bütün ve takım halinde çalışma .ok önemli ama kısa süre olmamalı.

Geçmiş senelerde hiç müşteriyle iletişime geçen bir birim değildi Arge. Arayüzümüz Producti o briefe yansıtıyor sonra argeye göndererek çalışmaya başlıyorduk. Bu önlmaya çalışıyor. Tasarım Odaklı Düşünceyle. Müşteriyle biraz daha iletişime geçerek bunu tasarlarken müşterinin ne dediğini kafanın bir yerinde tut gibi. Ama bu komponent bazında evet ama araç bütününde düşündüğünde fazla anlam ifade edemez. Çünkü 20 kişilik bir grupla sorarak ya da nış bir kitleye sorarak tasarım yapması

olabilirler.Rakibim belli müşterim belli hemen her şeyi kafanda oluşturabiliyorsun.Detalı nasıl yürütüliyor bilmiyorum.

Design brief ve product brief aynı mı?

Product tek bir brief yapıyor.FIAT böyle ayrı brief yürütmüyor. Bunların hepsi tek bir dökümanda geliyor. Belki bölüyorlardır ama bize bütün olarak geliyor. Direk brief daha çok stille paylaşılıyor.İstersen seninle paylaşılır. Bizimle teknik bilgiyi içeren griglia paylaşılıyor?

Müşteri kitlesinin nasıl yaşadığıyla ilgili bir bilgim yok bu yüzden alternatif çözümler biraz daha stile kalmış durumda.Ama alternatif çözümleri de üretmesi gereken aslında stil.

İlk ürün fikri nasıl geliyor ya da ilk kıvılcım sizde nasıl oluyor?

Product MR a talepte bulunur. Böyle bir ürün yapıyoruz.Buna ne tür cevaplar verilir birimlerinizle planlayın. Vrlar performans birimlerine alıştırır. İhtiyacınız nedir tanımlayın der. Dropgate kapı:kim çalışacak ergonomi mi pq mu çalışacak kendim için. Hangi parçalar ön görülmüş . hepsinin alt alta koyup iş gücü ve zaman planımı paylaşıyorum. Product üst yönetime çıkarıyor ok derse yapıyoruz.

Ara değerlendirme.

Core team toplantıları oluyor haftalık.

Briefte fikir geliştirme süreci?

High trim istediğine cevap vermek için ne tür çözümler olabileceğini gösteriyorlar. Kontente girdi sağlanıyor.

CCP yi Product ve Kalite yapıyor biz sonucu değerlendiriyorz.

Keşke şöyle girdi sağlasaydık dediğin oldu mu?

Ürüne evet ama mektupta yer alıyor muydu hatırlamıyorum. Keşke şu desen uygulanmayıp başka desen uygulansaydı demiştim.Çünkü kötü geri dönüş aldık. Product seçmiştik.Product ve kalite aracığıyla kullanıcı girdilerini alıyoruz.

LEGEND

Red: About difficulties

Green: About brief document

Blue: Process of the Brief

Pink: Starting point of the Brief

Yellow: Communication

CLOSE UP OF AN EXAMPLE OF DATA ANALYSIS DOCUMENT OF TRANSCRIPT

tanımlar. Laptop mı koyacağım her şeyi product tanımlar.Wireles charger yapacaksam hangi ekran boyutuna kadar charg ettirebilirim gibi Product'ın tanımlaması gerekir.Buna göre nereyi çevrelememiz gerektiği çıkıyor. Neleri alacağımız ya da saklayacağımız belli oluyor ama nerede ve nasıl yapacağımız daha bitmiş olmuyor.Sonrasında herkes kendi alanıyla ilgili briefi alıyor.

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İdeali ne olmalı?

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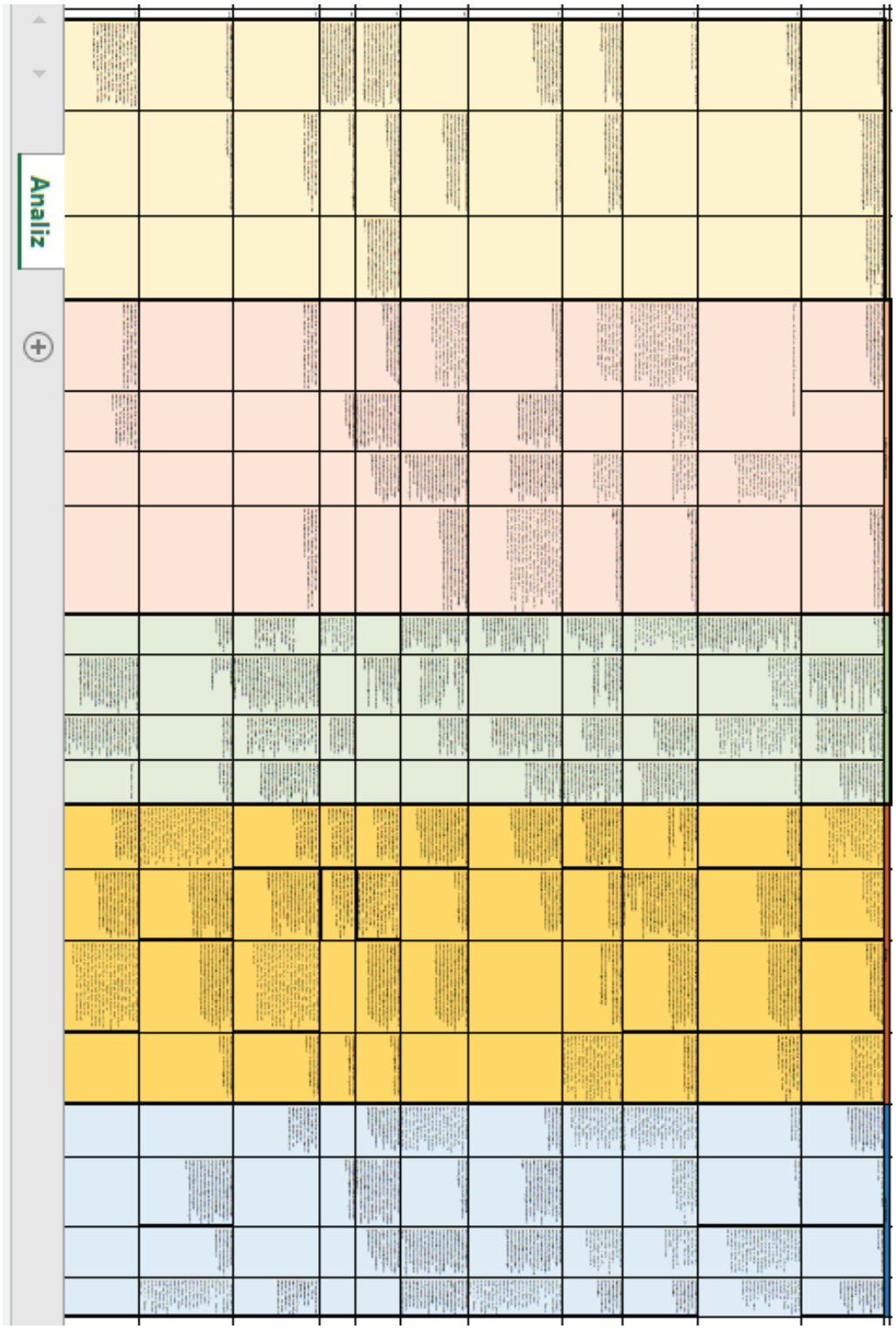
F. EXAMPLE OF A DATA ANALYSIS DOCUMENT (Themes and Sub-themes)



CLOSE UP OF AN EXAMPLE OF A DATA ANALYSIS DOCUMENT

	Brief			
P1	600-700 sayfalık bir döküman : product brief	Bu arabanın varlığının nedeni ne ve neden yapmak istiyorum. Neden sorusunun cevabı olmalı. Satış performansı ne ve ne kadar satmak istiyorum Rekabete karşı nasıl konumlandırcam Fiyat olarak ne düşünüyorum kabaca Stratejik hedefi ne Pazardaki durum ne, rekabetteki durum ne Kabul seviyesinde arabaya hangi özellikleri koymak istiyorum Günün gerekliliği olan teknolojik gelişmeler İhtiyaca göre aracın boyutu Hangi motorlar olsun Argeden gelenler: üretilebilirlik kısıtlar max şu uzunlukta ve şu yükseklikte araç üretilebilir. Şu kadar skalada renklerim var gibi Müşteri çalışmaları falan da	Brif olarak ARGEye de şimdiki araçtan 500 Euro da ucuz olacak dedim şimdi çekişme başlıyor. Örneğin kapıya 3cm lik çıta koyuyorlar(ARGE) kapıyı korusun diye, ucuz da oluyor ama sonra ben diyorumki ben binek için de kullanılsun istiyorum diyorum . Stil bu sefer daha büyük çıta olmalı ve krom ya da boya da olmalı diyor.Arge 3 euroya halletmek için 3cm diyor. Stile maliyet vermiyoruz yaratıcılığını öldürmemek için. Sonra çatışma başlıyor. Arge	Biz briefi hazırlayıp ceo'ya sunuyoruz. Sonra onlar herkesten toplayıp Globalde anlatırken. Biz neden Cargo istiyoruz neden bunu istiyoruz diyor ve sonra Türkiyenin briefi, NAFTA(Kuzey amerika) briefi diye başlıyorlar anlatmaya ve en son biz şu kadar adet düşünüyoruz diye kapatıyorlar.
P2	Ürün mektubu, product brief, design brief Üm ve pb aynı şeyi. Bu arabada 4 teker olacak 4 koltuk gibi. Tasarımdan bağımsız ürün speklerini tanımladıpımız döküman. Aracın çerçevesi netleşmiş oluyo. Tasarım birifi el ele gidiyor. Ve orada biraz daha detaylı çalışıyoruz. Griglia ise onu. Fabrikada anlaşıldığı hali.teknik dökümanı.tasarım briefide görsele	Kime satacaksın, ne kadar hacimde satacaksın, ürünün life cycle ı ne olacak? Ne kadar sürecek ve potansiyel görüyorsun. Özellikleri ne olacak neden. Finansal faydalarını koyuyorsun. Ama partnerinle hareket etmek zorundasın.	%100 hakim değilim ama son projede gördüğüm kadarıyla FIAT stil departmanın gelecekte düşündüğü çizdiği konseptler var. Çıkmasa bile çalıştıkları. Bizim tasarım dilimiz dedikleri konseptleri var. CCP de stil ciddi değerlendirilmeye tutuluyor. Dış görünüşte nereye konumlandırılacağına bakılıyor. O noktada bu ön plna çıkmaya o	Tasarımın hayatına dönüş aşamasında

	Starting Point		
P1	İlk kıvılcım önceden atılmış. Süre gelen araçların yeni modelleri. Firma sıfırdan bi şey yaratmadı.	Bir öncekinde her şey global tarafından oluşturulmuş, ufak tefek dokunuşlar yaparak kendi pazarımıza uydurmaya çalışırken bu sefer en başında biz bizim pazarın nasıl kullandığını söyledik(Briefe katkı).onlar bi ktu 4 teker yeter diyo. Ama bizim taraf binek olsun dedk onlar da briefe input konuldu. Geçmiş öğrenilmişlikle ve mdy ekibiyle yapmış olduğumuz çalışma sonucunda müşteri sesinin daha çok girdiği proje oldu.	İk başta büyük kalemler belirleniyor. Motor, boyut gibi. Sonrasında content konusuna geliniyor. ... iç aydınlatma olacak mı olmayacak mı gibi konular. Buralarda müşteri iç görüsü alıyor gibi hissetmiyorum. Daha ziyade rekabet karşılaştırması yapılıyor
P2	spesifik aracı nasıl çıkardılar bilmiyorum. Bizimle de paylaşmıyorlar. Company X en fazla diyeceği biz baktık elektirkli b araca kayıyor gibi bi şeyler.5 yıl sonraki gedef kitlenin alışkanlığını bulmaya çalıliyorsun		

	Product Brief development			
P1	bir parçayı başında ... şekilde istemiyiz o zaman uygun görünüyordu, proje ona göre maliyetiendirildi ama üretime yaklaşınca fabrika yetkinliği açısından uygun olmayabileceği çıkınca ya yeniden yatırım gerekiyor ya da ürünü tekrar revize edip ona göre devam ediyoruz(			bakıldığında kapağın açılma durumunda kaplayacağı yerden dolayı 1000 araç çıkabilen bandın sayısı 900 e düşüyor. Başta ürün briefte vardı. Bu söylenince karşılayabilecek misin karşılayamıyacak mısın durumunda brief revize olacak.
P2	Ürün tasarım briefini oluşturmak bizim sorumluluğumuzda		Brifi bi aşamaya getirdikten sonra Argenin çalıştığı konular da oluyor, hazırladıkları fikirler olup onu raftan alıp koyabiliyorsun. Ya da teknik kısıtlardan dolayı olmayan ama esnettiğin eş zamanlı olanda oluyor. Projenin ne aşamasında olduğuna ve deadline a göre değişiyor.Pratiği değişiyo. Normalde sen	

G. RESULTS OF DATA ANALYSIS (Themes and Sub-themes)

STARTING POINT OF BRIEF	DEVELOPMENT PROCESS OF THE BRIEF	THE BRIEF AS A DOCUMENT
The Role of Turkey Pillar	The Roles of the Departments in the Brief Process	According to Different Disciplines
Preparation of Turkey	Goal Settings	Brief Input
Preparation of Master Plan	Alternative Solutions in the Process	Studies of Department
Ecosystem of the Process	Iteration on the Brief Process	The Importance of the Brief

CONSTRAINTS OF THE PROCESS	COMMUNICATION
Cost	Company Culture
Time	Communication within Turkey
Creativity	Communication within Global Headquarter
The Authority	Common Terminology