DEVELOPMENT OF A METHODOLOGY FOR SERVICE INTERACTION DESIGN

MASTER THESIS BY KANELLA CHATZIMICHAIL
Development of a Methodology for Service Interaction Design

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SCHOOL OF ECONOMICS, BUSINESS ADMINISTRATION & LEGAL STUDIES
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Thessaloniki – Greece
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I hereby declare that the work submitted is mine and that where I have made use of another’s work, I have attributed the source(s) according to the Regulations set in the Student’s Handbook.

September 2017
Thessaloniki - Greece
Abstract

This dissertation is written by Kanella Chatzimichail as the last part of her studies at the MSc in Strategic Product Design at the International Hellenic University. The aim of this master thesis is to identify and describe important factors that influence the service interaction and to suggest a methodology on how to choose the right methods for every service interaction design case. To investigate these aspects, a survey based on the Delphi method and extensive literature reviews have been conducted, with data retrieved from various scientific fields. Moreover a computer application was created using the Microsoft Visual Studio and the programming languages XMAL and C#, using the results of the survey.

The first three chapters are going to cover the theoretical part of services and the next chapters are a presentation of the results of the survey. The evaluation criteria are not only related to the important factors that influence the service interaction but also criteria related to the performance of the methods’ procedure, like the cost and the time duration. The findings of this dissertation highlight the importance of the human factor and of the environment that the service interaction takes place. Moreover, theoretical contributions, managerial implications along with future research are discussed.

This Master Thesis is the result of my collaboration with the Fraunhofer Institute for Industrial Engineering (IAO). This collaboration would not have been possible without the counseling and encouragement of my Professor, Mr. Thomas Meiren, to whom I would like to express my sincere gratitude for being by my side and believing in me.

Besides my Professor, I would like to thank the faculty of the International Hellenic University and my fellow colleagues at IAO in for the stimulating discussions and guidance. Last but not least, I would like to thank my family and friends for supporting and encouraging me throughout writing this thesis.

Keywords: service, interaction, customers, employees, environment

Kanella Chatzimichail

September 2017
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<th>Full Form</th>
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<tr>
<td>CIA</td>
<td>Central Intelligence Agency</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IAO</td>
<td>Institut für Arbeitswirtschaft und Organisation</td>
</tr>
<tr>
<td>IHU</td>
<td>International Hellenic University</td>
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<tr>
<td>MSc</td>
<td>Master of Science</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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<td>SPD</td>
<td>Strategic Product Design</td>
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1. Introduction

Even though service sector is a very critical aspect of our lives, Service Design is a scientific field where have not been many contributions. This master thesis is an attempt to present the important role that specific factors have in Service Interaction Design. One of those factors is the environment that the service takes place, where the human senses are activated and the client responses to stimuli. The other factor is the human element, meaning the clients and the employees. The attitude and the appearance of the service provider are quite important for the interaction between him and the customer.

1.1. Objectives

This dissertation demonstrates a study related to Service Interaction Design Methodology. The phases of services’ lifecycle until now have many issues to deal with and do require new perspectives, tools and techniques. The primary goal is the evaluation of existing methods for Service Design by experts, and to introduce Services Design science, a new Service Interaction Design selection methodology to support processes.

1.2. Approach

In order to achieve the goals mentioned above, a research procedure was followed. There were used books, papers and articles related to the Service Interaction Design methodology, to Human Resources and Aesthetics field for the literature approach. There was conducted a survey which was based on the Delphi method. According to the BusinessDictionary.com (2017, par.1) Delphi Method is a “collaborative estimating or forecasting technique that combines independent analysis with maximum use of feedback, for building consensus among experts who interact anonymously. The topic under discussion is circulated (in a series of rounds) among participating experts who comment on it and modify the opinion(s) reached up to that point and so on until some degree of mutual agreement is reached. Also it is called Delphi forecasting.” The name Delphi derives from the Greek “Oracle of Delphi” (Adler and Ziglio, 1996) and it was created at the first years of the Cold war (ncbi.nlm.nih.gov 2008).
The survey followed the selection of ten methods for interaction design. Each selected tool was evaluated for the amount of information that provides for three important factors in service interaction: the customer, the employee and the service. Moreover, the selected tools were also evaluated for their cost, for the time consumption, for their complexity and for the amount of special equipment it is used. Moreover a computer application was created using the Microsoft Visual Studio and the programming languages XMAL and C#, using the results of the survey.

1.3. **Fraunhofer Gesellschaft**

Fraunhofer Gesellschaft and the department of New Service Development, in Fraunhofer IAO, is the organization that hosted this master thesis research. “The Fraunhofer Gesellschaft is the largest research organization for application-oriented research in Europe and its research efforts are geared entirely to people’s needs: health, security, communication, energy and the environment” Fraunhofer Gesellschaft (2017, par. 1). The Fraunhofer Gesellschaft consists of 69 institutes and research units that are located in Germany and its employees are nearly 24,000. The Fraunhofer - Institut für Arbeitswirtschaft und Organisation (IAO) - Institute for Industrial Engineering, is one of Fraunhofer Gesellschaft’ institutes. “Fraunhofer Institute for Industrial Engineering IAO helps companies and institutions introduce new business models and efficient processes to make their businesses more successful” Fraunhofer IAO (2017, par. 1). Figure 1 shows important information for Fraunhofer IAO for the year 2016, like the number of employees and the business volume.

![Figure 1: The Fraunhofer IAO in figures 2016 (Fraunhofer IAO, 2017)](image-url)
2. Services

This chapter will present an analysis of the services’ state of the art. The importance of services, service characteristics and Servitization are some of the topic analyzed briefly to prepare the reader.

2.1. The importance of Services

Through the years the importance of the service sector rose and the international economy is today described as an economy of services (Boundless, 2016). In Figure 2, is depicted a worldwide rise in the share of services in GDP for the period 1995-2014. According to world economic history all the developing countries experienced an alteration from agriculture to industry, through the Industrial Revolution in 1760, and then to the service sector. According to Raymond et al. (1993) the evolution and legitimization of services marketing can be characterized in three periods: “Crawling Out (pre-1980), Scurrying About (1980-85), and Walking Erect (1986-present)”. Though, Johnson in 1969 first asked through his dissertation if goods and services are any different Raymond et al. (1993).

Figure 2: Services’ Share of GDP (World Bank national accounts data, and OECD National Accounts data files, 1995-2014)
According to the Central Intelligence Agency, in 2016 the share of services in GDP of the most European countries was on average 73.6%. Table 1 shows the GDP composition by origin in many European countries.

Table 1: GDP composition by origin in European countries for 2016 (CIA)

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP – by sector of origin (%) 2016</th>
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<tr>
<td></td>
<td>Agriculture</td>
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<tr>
<td>European Union</td>
<td>1.6%</td>
</tr>
<tr>
<td>Austria</td>
<td>1.3%</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.6%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>2.3%</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.1%</td>
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<tr>
<td>Finland</td>
<td>2.5%</td>
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<tr>
<td>France</td>
<td>1.7%</td>
</tr>
<tr>
<td>Germany</td>
<td>0.6%</td>
</tr>
<tr>
<td>Greece</td>
<td>4.1%</td>
</tr>
<tr>
<td>Italy</td>
<td>2.2%</td>
</tr>
<tr>
<td>Norway</td>
<td>1.8%</td>
</tr>
<tr>
<td>Spain</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
In Greece also, the share of services in the gross domestic product (GDP) is rising continuously. Especially, over the period of 2004 and 2016 the share of services increased from 72.7% to 80.9%. Figure 3 depicts the distribution of the GDP over the economic sectors from 2004 to 2015, in Greece. Especially, over the period of 2004 and 2008 the share of services in Greece’ GDP rose radically from 72.7% to 79.1%.

![Figure 3: Distribution of GDP over economic sectors from 2004 to 2015 in Greece (World Bank)](image)

This worldwide evolution of the service sector was studied by Vandermerwe and Rada (1988). They defined the term Servitization to describe this movement as “the increased offering of fuller market packages or ‘bundles’ of customer focussed combinations of goods, services, support, self-service and knowledge in order to add value to core product offerings” Vandermerwe and Rada (1988, pp. 314). Baines et al. (2008, pp. 555) defines also servitization as “the innovations capabilities and processes to better create mutual value through a shift from selling product to selling product-service systems”. Rolls-Royce is a company that has used the Servitization philosophy in order to create long term relationship with the customers, through a service operation deal (MSI, 2015).
2.2. Definition of Services

Even though, services have always been an important aspect in our lives, the scientific literature investigated it the last 70 years. According to Shostack (1982, pp. 49) “the difference between products and services is more than semantic. Products are tangible objects that exist in both time and space; services consist solely of acts or process(es), and exist in time only. The basic distinction between "things" and "processes" is the starting point for a focused investigation of services. Services are rendered; products are possessed. Services cannot be possessed; they can only be experienced, created or participated in”.

Another attempt on service definition by Katzan (2008), describes them as an interaction between individuals that co-create value. The individuals can be persons, or offices, institutions and automations.

As for the relation of the services and the products, according to Shostack (1982) even though they are different there is a link between them and they can act together.

Furthermore, a typology of services is proposed by Meiren et al. (see Figure 4). This typology is the result of a survey, which curried out among 1333 companies in order to gain information on the role played by selected criteria (e.g. degree of labor intensity in service delivery) on real services in everyday business. In this typology, each cluster describes services distinguished by the value of Contact Intensity and Technological Complexity.
2.3. Service Characteristics

Zeithaml et al. in 1985 presented the services’ characteristics that are most used in the international bibliography. The four characteristics that he presented are analyzed in the next paragraphs.

*Intangibility:* Unlike products, services are performances that cannot be touched or sensed, tested or felt before they are availed. Also, the intangible nature of most services creates problems both for suppliers and consumers. Though, according to Shostack (1977) this characteristic is not accepted by many researchers since during the service procedure many tangible things are used.

*Inseparability of production and consumption:* This characteristic was firstly presented by Say (1836) who claimed that the production and the consumption of services happen at the same time. Moreover Berry (1980), mentioned that this characteristic also means that the person who provides the service is present at the service consumption.

*Heterogeneity:* It refers to the inability to systematize the quality of the outputs of a service provider (Edgett and Parkinson, 1993). Moreover, according to Zeithaml et al. (1985), this characteristic refers to the possibility that services’ performance can vary. The heterogeneity can also be detected in all the aspects of the service procedure, like the result, the provider and the user (Beaven and Scotti, 1990; Lovelock and

Perishability: Services, unlike products, cannot be stored (Bessom and Jackson, 1975; Thomas, 1978). Many marketing researchers, after the 1980s, stated that the capacity that is not used practically is a loss for the business (Kotler, 1994; Vargo and Lusch, 2004; Bitran, 1993).

The characteristics described above are the most famous, but in literature there are others mentioned as well. One of them is the fact that the quality of the service is not easy to measure. Moritz (2005) explains that it is challenging to measure the quality of services because of their variety. Parasuraman et al. (1988) described the development of a 22 item instrument, which is called SERVQUAL, in order to help companies and organizations to understand better what customers appreciate and how well the existing companies meet customers’ needs and expectations.

2.4. Service Design

According to Wiesner there are three main stages in the Lifecycle of Services. The three stages are: service creation, service engineering, and service operations management and they are depicted in Figure 5.

Figure 5: Service Lifecycle (Wiesner et al., 2014)
According to Goldstein et al. (2002) the term “service design” has been used by researchers to describe all the operations of the lifecycle. This thesis will elaborate on service design and service testing. Though, service design is a developing research field and many other fields use its methods (Mager, 2009; Patricio et al., 2011). It is a very new field of expertise, since it didn’t exist until the early 90s. Shostack in 1982 was one of the first to contribute this field, by introducing the “service blueprint”, a service design method that will be analyzed in the following chapters.

“Service design is all about taking a service and making it meet the user’s and customers’ needs for that service. It can be used to improve an existing service or to create a new service from scratch” Interaction Design Foundation (2017, par. 1). According to Moritz (2005, pp. 7) “service design is a new holistic, multi-disciplinary, integrative field. It helps to either innovate or improve services to make them more useful, usable, desirable for clients, as well as more efficient for organizations”. Furthermore, Moritz (2005, pp. 39) mentions that service design is the “design of the overall experience of a service as well as the design of the process and strategy to provide that service”. Moreover, according to Hayhow (2014) the stage of service design assist in the creation of a brand relationship. Furthermore Goldstein et al. (2002,) defines service design as the combination of physical (e.g. building) and non-physical (e.g. smell) parts.

### 2.5. Service Testing

According to Freitag (2016, pp. 550), “a systematic testing phase before the market launch is crucial to assure a certain quality of new services. However, appropriate solutions, processes and methods seem to be missing”. Meiren and Bath in 2002 introduced four different kinds of test methods:

**Conceptual tests:** At this kind of testing the researchers try to check the flexibility and the validity of the documentation that has been prepared for the new service, like the business plan. Most of these tests are paperwork and real customers are not used (Meiren and Burger, 2010).

**Usability tests:** A new service usually involves a new procedure-software, or hardware. Researchers have to test and evaluate the new service in terms of user friendliness.
For this kind of test, representative customers-users are asked to complete tasks, related to the new service. The customers are being watched by researchers that collect information like the reactions and the satisfaction of the customers (Meiren and Burger et al., 2010).

**Practical tests:** Another way to test the new service is to launch it to a small customer group. After this pilot launch feedback is collected and analysed by experts in order to decide if the service meets customers’ expectations or changes are need to be made (Meiren and Burger et al., 2010).

**Prototyping and simulation tests:** Through this way of testing, researchers can test the new service in a laboratory environment by using technological tools like virtual reality. This realistic environment helps the researcher analyse in depth the touch points of the interaction during the service procedure (Paschou, 2016).

Technology evolution added a very useful tool for service testing, which is the use of virtual reality in laboratory environments. This technology provides supportive techniques in order to evaluate and plan new methods, tools, concepts and the service environment, the servicescape, so that the interaction which takes place between the service provider and user can be analyzed (Freitag et al., 2016).

All over the world several institutes developed laboratories to support services testing; Fraunhofer IAO developed the “ServLab”, which is laboratory that uses virtual reality. Researchers in Fraunhofer IAO use the ServLab to test and visualize new service approaches. Some of the cases that the ServLab is used are to collect requirements for new services, to train the employees that contact the clients, to create service concepts, to simulate service scape and interaction (Freitag et al., 2016).

3. **Service Interaction Design**

Increasingly service providers nowadays have to focus on new tactics to differentiate themselves from their competitors and deal with their deficiencies. Technology evolution, internationalization and new value chains are some of the current challenges that service providers have to face. However problems do not begin with the customers;
instead they occur by the company and its employees. Through effective service interaction design, service providers will be able to overcome problems related to service provision. According to Gabbott and Hogg (2001) the success of the service interaction depends on the level of empathy between the user and the service provider. Wieseke et al. (2012) defines the customer’s empathy as the ability of the emotional matching with the employee, the recognition and understanding of employee’s sentiment, thoughts and situation. Through empathy both the customer and the employee can recognize, perceive and feel what the other feels.

In a service interaction there are two factors involved: the human factor and the environment where the service takes place. Those two factors will be analyzed in this chapter. Though, in order to understand service interaction meaning, the definitions of the terms services and interaction are presented:

“A service is an interaction between two entities that co-create value, as long as the constituent roles are complementary. This means that one role is the service provider and the other role is the service client” Katzan (2015, pp. 1).

Service interaction design is the combination of the touchpoints and the dialog between the service provider and the user. Through interaction design the performance of the employee and the customer can be shaped (Glushko & Tabas, 2010).

During the interaction of a service between two persons, not only symbols and acts are exchanged but also opinions. The way of thinking of the user and the service provider is important for the performance of the service and for the outcome of the interaction (Katzan, 2011).

In conclusion Katzan (2011, pp. 43) references that “a service interaction is ordinarily construed to be a process consisting of several steps organized to achieve an identifiable purpose”.

Another element to consider, during service interaction design, is to create experience centric services. According to Zomdijk and Voss (2010) service providers are trying to create loyal customers and to differentiate the service they offer from competitors by designing and managing customer experiences. Services that are characterized as ex-
experience-centric are designed in such a way to create a personal and memorable connection between the service and the customer (Pine and Gilmore, 1999; Pullman and Gross, 2004). According to Zomerdijk and Voss (2010) the connection described before is built by engagement and create the will to the customer to repeat the purchase and spread the positive word of mouth. Pine and Gilmore (1998) and Metters et al. (2006) state that the level of participation of the customer and the service environment connection influence the type of engagement in a service.

3.1. Environment of the Service

There have been many attempts to define the environment where the service interaction takes place. According to Bitner (1992) in a service facility, where the service delivery takes place is the physical environment. Gupta and Vajic (2000), state that the relational and physical features in the experience environment are the consistency of the service. These features can be the actors, the interactions between the actors and the setting.

In correspondence with Zomerdijk and Voss (2010) customer behavior and perception are influenced by the physical environment. This theory is supported by the environmental psychology, where scientists research the effect of the environmental elements on people (Mehrabian and Russell, 1974).

According to Hoffman and Turley (2002) the management and design of the physical environment where the service takes place can hale in the creation of desired feelings and actions. The design of this kind of environment, where the created feelings affects the buying behavior, is a part of the Atmospherics (Kotler, 1973; Turley and Milliman, 2000). In reference to Roberts (2004) in experience-centric services the five senses are important, because through them the user take information for the service environment. The level of emotions engagement, that the service experience engage, affects the memory of the user (Haeckel et al., 2003; Pine and Gilmore, 1998). Turley and Milliman (2000) refer that the impact of atmospherics, like the music, the colors, the smell etc., in user’s emotions is crucial. Zomerdijk and Voss (2010) state that according to some studies sensory cues might affect the emotions and the actions of the customer-user even when he or she does not notice them. An intangible important element, it is
also the time, which according to Pine and Gilmore (1999) it is as important as in plays
the duration, and the sequence of the acts.

3.2. The Human Factor

The “human” element could also be presented as a part of the environment of the ser-
vice, but in this thesis it will be presented separately. The “human” element is consist-
eted by the Customer and the Employee. “The human element, as part of the product, is
a key feature in the provision of quality service as service firms are more likely to be
labor intensive with employees experiencing direct and frequent contact with the cus-
tomer. Therefore, this interaction is a critical part of the overall service product and
essential to customer’s perception of service quality” (Nickson et al., 2005, pp. 196).
According to Bitner (1992) the servicescape environment creates emotions and can
cause actions both at the user and the service provider. “These internal responses in-
fluence the social interactions between customers and employees, including their ap-
proach and avoidance behaviors. Approach behavior can involve a desire to stay, ex-
plore and interact while avoidance behavior involve the desire to leave or to ignore”
Zomerdijk and Voss (2010, pp. 69).

3.2.1. Customer

In order to satisfy and retain customers, service interaction design must be of success.
According to customer’s expectations the service interaction will either be predictable
or variable. It is difficult for companies and organizations to control fully the service
experience since the customer’s reactions can vary (Hume et al., 2006).

Clients generally cannot recall all the moments of the service experience, but they do
remember the end and the beginning, the high and the low moments (Chase and Dasu,
2001; Cook et al., 2002). Moreover, the end is more of importance for the client in-
stead of the way the service experience began (Hansen and Danaher, 1999).

In reference to Zomerdijk and Voss (2010) clients are also influenced by other clients,
especially in cases like a cafeteria and a theater play. The level of influence can be in-
creased when the clients have to share resources, or when they are in the same place, or when they have to wait (Martin and Pranter, 1989).

Moreover, according to Albrecht et al. (2015, pp. 704) “customers responses are more favorable for both positive and negative interactional experiences when customers have access to information on cause uncontrollability (i.e. notice triggers in the interaction environment). Analyses reveal that these effects stem from feelings of sympathy for negative experiences and authenticity for positive ones”. Furthermore, clients that characterized by empathy is possible to care for the service provider’s working conditions (Bitner et al., 1990).

3.2.2. Employees

Service employees can also influence and engage customers’ emotions. The client’s fulfillment and the perceived quality of the service are affected by the interaction of the client and the service provider (Bitner et al., 1990; De Ruyter and Wetzels, 2000), therefore the staff, that comes in contact with clients, can be used in such a way to establish emotional bond with consumers (Zomerdijk and Voss, 2010). In correspondence with Pine and Gilmore (1999), employees can be asked to interact with clients and create personal and emotional connections.

According to Hochsild (1983), the managing of the emotions and the acts of the employee, when interacting with clients is called emotional labor and an example of this is the formation of rapport (Gremler and Gwinner, 2000). Rapport correlates with an enjoyable interaction between the customer and the employee, along with positive, friendly and personal interest emotions. Moreover it involves the communication of a genuine understanding of the customer, which is crucial in order to create an extended emotional and affectionate service interaction (Price et al., 1995). In reference to Price et al. (1995), when the two parts of the service encounter, the customer and the employee, are not performing their roles, they are connecting with each other and creating emotional bonds.

When the relations of the customers and the employees are authentic and it is not just a commercial friendship, it affects positive the loyalty, the fulfillment of customers’
expectations and the word of mouth (Price and Arnould, 1999; Rosenbaum, 2006; Gremler and Gwinner, 2000; Price et al., 1995; Pullman and Gross, 2004). According to the research of Verhoef et al. (2002, pp. 202), “the results provide evidence that supports the moderating effect of relationship age on the relationship between satisfaction, affective and calculative commitment, and the number of services purchased”.

Smiling is “universally recognized as an indication of a positive emotional experience” Miles and Johnston (2007, pp. 259). In correspondence with Evanschitzky et al. (2011) the authenticity of the smile during the service encounter affects the polite and favorable attitude of the client. The genuine smiling can be achieved by employees’ satisfaction related to the working environment, for example reasonable supervision.

In reference to Nickson et al. (2005) the importance of aesthetics in service interaction is continuously rising. More and more companies are expecting from their employees not only to look good but also to sound right. Realizing the importance of aesthetic labor, many companies have leveraged their experience and created manuals for their employees. Some companies have very strict rules, concerning the appearance of their employees, like the color of the nails and the lipstick for women or the length of the beard for men. BBC (2010) reported that Swiss bank UBS provided employees with a handbook of 44 pages, covering the dress code of the company, mentioning for example the appropriate color of suits, the length of the nails and last but not least there were also tips for a healthy nutrition. Moreover, according to the tech site Gizmodo (2011), Apple created an employee training manual to understand customers and make them happy. This handbook covers all the things and words that employees are forbidden to do and say. Moreover there is also a guide on how to engage an effective interaction with empathy.

There are over important characteristics that are common for both customers and employees, like the gender, which according to Ruegger et al. (1992) is a crucial characteristic in the creation of ethical behavior.
4. Survey and the Results

The ambition of this master dissertation is to recognize and describe important factors that influence the service interaction design and to suggest a methodology of how to choose the right methods for every service interaction design case. To investigate these aspects, an anonymous survey was conducted, using the Delphi method. For this purpose, there were two phases in this survey. The first phase was the collection of the methods and the important criteria and the second one was the evaluation of the collected methods using the suggested criteria, by experts. The experts in service interaction design that participated in this survey are:

- Christian Schiller, University of Stuttgart
- Mike Freitag, Fraunhofer IAO
- Theoni Paschou, University of Brescia
- Thomas Burger, Festo AG & Co. KG
- Sabrina Lamberth-Cocca, Fraunhofer IAO
- Sigmund Schimanski, Bergische Universität Wuppertal
- Simon Weller, awinta GmbH

4.1. Phase 1: The collected Methods and the Criteria

Service design uses many methods originating from various disciplines. According to Saco and Goncalves (2008) not only designers but also other professionals participate in the design of services, therefore the methods they use can be arithmetic, graphical, algorithmic or even virtual. In order to find the methods that experts in Service Design use the most and what criteria do they use to choose them, a questionnaire was created (Appendix 1). The questionnaire involved two questions:

- Which methods do you use for designing service interactions?
- When it comes to the application of the methods in a case, what criteria do you use to select the methods?
The first questionnaire reflected ten methods and six criteria that experts usually use:

<table>
<thead>
<tr>
<th>Methods</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>Customer Journey Map</td>
<td>Cost</td>
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<tr>
<td>Empathy Map</td>
<td>Time Consumption</td>
</tr>
<tr>
<td>Mind Map</td>
<td>Complexity</td>
</tr>
<tr>
<td>Mood Board</td>
<td>Special Equipment</td>
</tr>
<tr>
<td>Personas</td>
<td>Information provided for the customer</td>
</tr>
<tr>
<td>Product Service Design</td>
<td>Information provided for the employee</td>
</tr>
<tr>
<td>Software Matrix</td>
<td>Information provided for the service</td>
</tr>
<tr>
<td>Roleplay</td>
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<tr>
<td>Service Blueprints</td>
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<td>Service Empathy Board</td>
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<td>Story Board</td>
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</table>

The responses of the experts are presented in Appendix 2.

Seven experts expressed their opinion about the methods they usually use during their researches and the methods they usually use are shown in Table 2. The criteria they use to select these methods are presented in Table 3. Each method has different characteristics and provides the user with a variety of information. A description for each one of these methods follows.
4.1.1. Customer Journey Map

The customer journey map, which is also called customer experience map, is a framework that enables organizations to improve customer experience (Curedale, 2013). Customer experience mapping is a method of documenting and visualizing the experience a customer has, as he uses the product or service, by representing the touchpoints that are related with interaction of the customer with the service procedure. It also maps out customer’s responses to his experiences. Moreover, the map can give information for a specific moment, or for the overall service procedure. The customer journey map usually has an infographic form. However the created map aims to give companies more information about their clients and their experience with the organization (Boag, 2015).
4.1.2. Empathy Map

Inventors of the tool, which is increasingly used in businesses of any sector, are Scott Matthews and Dave Gray. The empathy map was created as a tool to help the design team to empathize with the customers whose behavior they are studying. This method can be used for a group of customers or a persona. Thus it can be a very useful tool when it comes to deliver a better user experience of the product/service. In the process, it can also help in the identification of the things that the team doesn’t know about users yet or to synthesize observations and draw out unexpected insights (Curedale, 2013).

What is also important for the Empathy Map is that it is an individual and emotional segmentation. The Empathy Map, we’ll let the team know what customers want, what motivates them and what the team can offer to help. Data have to be gathered, according to the six aspects of the customers’: what they hear, what they see, what they feel and think, what they say and do, what are their efforts and frustrations and what are their results and motivations (Bland, 2016).
4.1.3. Mind Map

This tool was invented by Porphyry of Tyros 3rd century BC and by Allan Collins in 1960. “A mind map is a diagram used to represent the affinities or connections between a number of ideas or things. Understanding connections is the starting point for design.” Curedale, 2013, pp. 57. “The visualization begins with a problem or an idea put in the center of the representation. Then signs, lines, words and drawings are used in order to build a system of thoughts around the starting point” Tassi, 2009, par. 1. “Mind maps are a method of analyzing information and relationships” Curedale, 2013, pp. 57. An important thing with mind mapping is that there is no right or wrong when it comes to their application. They also help with memory and organization.
4.1.4. Mood Board

Mood board was possibly invented by Terence Conran in 1991 (Curedale, 2013). This method is a collage or a visual composition of images, words, sample of colors, fabrics and other materials. They are used to convey the emotional communication of an intended design and to “propose an atmosphere by giving the generic perception of it. The mood board helps in the elicitation of some values the service has that are difficult to be described by words. The use of a visual representation fixes univocally the perception of the service inside the team” (Tassi, 2009, par. 1). It also helps convey complex emotional ideas at an early stage in a design project.
4.1.5. Personas

Alan Cooper, invented in 1998 the Personas method, which according to Curedale (2013, pp. 218) “a persona is an archetypal character that is meant to represent a group of users in a role who share common goals, attitudes and behaviors when interacting with particular product or service. Personas are user models that are presented as specific individual humans. They are not actual people, but are synthesized directly from observations of real people”. Personas are a way to give a description for a market group, so that it will not be difficult to empathize with them and learn information for them. It is important to both describe the person as a human being (background story, common behavior, a quote, goals, etc.) as well as a stakeholder of a service (interests, expectations, etc.). This is also a low cost and a not time consuming method.
4.1.6. Product Service Design Software Matrix

This method was introduced by Ingo Westphal, Mike Freitag and Klaus Thoben in 2015. In a “Product-Service System there are several interactions and corresponding dependencies between physical products and services that have to be managed to obtain an optimal added value from the Product-Service System” Westphal et al., (2015, pp. 575). The aim of this method is to find, visualize and analyze the interactions of Product and Service Lifecycle Management. “The relations in the design structure matrix describe what has to be exchanged, coordinated, solved and negotiated” (Westphal et al., 2015, pp. 582).
4.1.7. Role Plays

At Role Plays method there are used actors, professionals or not, in order to perform a specific service experience. It is very usual the same scene to be performed more than one times, by changing the service’ environment, aesthetics or the human factor, in order to see every aspect of the service experience (Tasi, 2009). This method can be used in every step of the design Service Design Lifecycle. Moreover, this method’s cost may vary, especially when professional actors or a Service Laboratory with special equipment is used, this method can end up being very expensive.

Figure 12: Role playing in Service Laboratory (Paschou, 2016)
4.1.8. Service Blueprinting

The Service Blueprint is one of the most famous methods to direct services’ operations, design and positioning. It was invented by Lynn Shostack, in 1982 and according to her a service blueprint can help a company to gain information about all the stages of a service (Shostack, 1984). A service blueprint is a process map, often used to describe the delivery of services information, presented as a number of parallel rows of activities (Curedale, 2013). According to Zeithmal and Bitner (1996), a service blueprint usually identifies: the customers actions, the front and back stage, the support processes, the inventory and the line of visibility.

Figure 13: Service Blueprint for IKEA (Chatzimichail, Delikostidou, Paparnaki, 2016)
4.1.9. Service Empathy Board

Service Empathy Board is a service interaction design tool, developed by the Fraunhofer IAO senior researcher Lamberth-Cocca. The purpose of this method is to visualize the customers’ and employees’ emotions, of the service process. Moreover this method aims not only to make the service experience better for both the customers and the employees but also to increase the awareness of customer and employee needs in order to develop empathy at the service design process. The board consists of four rows that provide information about the customer and the employee. Specifically the information that provides is about the phases of the service, the activities, the perceptions and the emotions. The origins of this tool are the Customer Journey Map, the Personas and theatrical tools (Workshop ProMobiE-Fraunhofer IAO, 2016).
4.1.10. Story Board

The story board was invented by Walt Disney in 1972. It is a narrative tool that evolves from cinema; it communicates each step of the service sequence of events (Curedale, 2013). The story board is a form of prototyping which communicates each step of an activity, experience or interaction. Used in films and multimedia as well as product and UX design. Storyboards consist of a number of frames that communicate a sequence of events in context (Curedale, 2013).
4.2. Phase 2: The evaluation of the collected Methods

To evaluate the methods that were analyzed above, a second questionnaire was created based on the answers that the experts gave at the first one (Appendix 3). The second questionnaire was given to the same experts that answered the first one, too. The experts had to respond to seven requests and for their answers there was used a three stages scale: minimum, medium and maximum. The requests they had to respond are the following:

- Please evaluate the following methods in terms of time consumption.
- Please evaluate the following methods in terms of budget needs.
- Please evaluate the following methods in terms of complexity.
- Please evaluate the following methods in terms of special equipment needs.
- Please evaluate the following methods in terms of the amount of information they provide about customers.
- Please evaluate the following methods in terms of the amount of information they provide about employees.
- Please evaluate the following methods in terms of the amount of information they provide about the service procedure.
4.2.1. The results of the evaluation

Experts in service design answered the second questionnaire in order to evaluate the methods that have risen from the first questionnaire. As for the criteria that were used to evaluate the methods, are the ones that experts use to decide on a method. These criteria are: the cost, the time consumption, the special equipment needed, the complexity and the information that every method provide for the customer, the employee and the service procedure. In the evaluation there was used a scale from minimum to maximum, with three stages, for example:

- Minimum Time Consumption
- Medium Time Consumption
- Maximum Time Consumption

The charts with the results of the second questionnaire are in Appendix 4. In order to process the data that resulted from the survey, the scale that was used will be named with numbers, from 1 to 3. For example:

- 1=Minimum Time Consumption
- 2=Medium Time Consumption
- 3=Maximum Time Consumption

Table 4 represents how the majority of the experts evaluated each method about the amount of information that each one of them provides about the customers, employees and the service procedure. The methods that are evaluated with the number 3 are the best in terms of information provision about each field and the ones with the number 1 are the worst.
Table 4: The majority evaluation about the amount of information that each method provides about the customers, employees and the service.

<table>
<thead>
<tr>
<th>Methods for Interaction Design</th>
<th>Information Provided for:</th>
<th>Customer</th>
<th>Employee</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Journey Map</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Empathy Map</td>
<td></td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Mind Map</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mood Board</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Personas</td>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Product Service Design</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Software Matrix</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Roleplay</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Service Blueprint</td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Service Empathy Board</td>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Story Board</td>
<td></td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

An organization, in order to make a decision needs also information like a cost and a time analysis. Therefore the second field of criteria includes the cost, the time consumption, the complexity and the required special equipment for each one of the selected methods. For this evaluation to process the data the same scale as in the first one was used, from number one to three, where the number one represents the minimum and number three the maximum. Table 5 represents how the majority of the experts evaluated each method about the cost, the time consumption, the complexity and the required special equipment of each method. The method with the lower score is the best in this evaluation.
Table 5: The majority evaluation of the cost, the time consumption, the complexity and the required special equipment.

<table>
<thead>
<tr>
<th>Decision making factors:</th>
<th>Special Equipment</th>
<th>Cost</th>
<th>Time</th>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods for Interaction Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Journey Map</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Empathy Map</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Mind Map</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mood Board</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Personas</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Product Service Design</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Software Matrix</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Roleplay</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Service Blueprint</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Service Empathy Board</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Story Board</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
Conclusions and Recommendations

In conclusion, there is a methodology suggested in order to help researchers to pick the best suited service interaction design method for every case. This methodology has five basic steps as shown in Figure 16. In Service Interaction Design as soon as the scenario is defined, the researcher should pick four criteria that are important, two from the Information Criteria (Customer, Employee, Service) and two from the Procedure Criteria (Special Equipment, Cost, Time, Complexity) that were used in the previous evaluations. The following step is to decide which criterion, from the selected ones, is the most important. The next step is to check each selected criterion table for the evaluation of the methods and to pick the best evaluated ones. After this step, there should be a list of the best evaluated methods for each criterion selected. From these lists the researcher should find mutual methods between the Procedure and Information criteria lists. From the methods that the researcher found as mutual, the ones that are also on the list of the most important criterion will be chosen for the research. If the methods that will result are not enough then the researcher should find the next best evaluated methods for each criterion, except of the one that was selected as the most important one, which methods should be again the best evaluated ones, and to find again the mutual between the new lists, which will contain also the best evaluated methods. Also in this case the methods that will be selected should also be in the method’s list of the most important selected criterion.

For example, the defined scenario could be to provide new swimming lessons for visually impaired people, at a public swimming pool (Figure 17). The two Information criteria that are most important for the service design, in this case, are: the employee, the service, the cost and the time. In this example the cost is the most important criterion. The results in the tables show that there are four best evaluated methods for the Information criteria list. At the evaluation of the cost and the time consumption of every method, resulted ten methods that were evaluated with the number one. The methods that fulfill the requirements are the: Empathy Map, Mind Map, and Service Blueprints. From the next round of evaluation occur six more methods for the information criteria, employee and service, and eight methods for the time criterion. The next se-
lected methods are the Empathy Board, Mood Board, Customer Journey Map, and Story Board. These methods were collected since they were common in at least three lists, in contrast with others like Personas, which was common only in the list of Cost and Time criteria.

Figure 16: Process model
1) New swimming lessons for visually impaired people, at a public swimming pool.

2) Employee, Service, Cost and Time.

3) Cost

4) **Employee**: Empathy Map, Roleplay
   **Service**: Roleplay, Service Blueprints
   **Cost**: Customer Journey Map, Empathy Map, Mind Map, Mood Board, Personas, Product Service Design Software Matrix, Service Blueprints, Service Empathy Board, Story Board
   **Time**: Mind Map

5) Empathy Map, Mind Map, Service Blueprints

6) **Employee**: Empathy Map, Roleplay, Mood Board, Service Blueprints, Service Empathy Board
   **Service**: Roleplay, Service Blueprint, Customer Journey Map, Service Empathy Board, Story Board
   **Cost**: Customer Journey Map, Empathy Map, Mind Map, Mood Board, Personas, Product Service Design Software Matrix, Service Blueprints, Service Empathy Board, Story Board
   **Time**: Mind Map, Customer Journey Map, Empathy Map, Service Blueprint, Mood Board, Personas, Product Service Design Software Matrix, Service Empathy Board, Story Board

7) Employee: Empathy Map, Roleplay, Mood Board, Service Blueprints, Service Empathy Board
   Service: Roleplay, Service Blueprint, Customer Journey Map, Service Empathy Board, Story Board
   Cost: Customer Journey Map, Empathy Map, Mind Map, Mood Board, Personas, Product Service Design Software Matrix, Service Blueprints, Service Empathy Board, Story Board
   Time: Mind Map, Customer Journey Map, Empathy Map, Service Blueprint, Mood Board, Personas, Product Service Design Software Matrix, Service Empathy Board, Story Board

8) Empathy Board, Mood Board, Customer Journey Map, Story Board

9) Empathy Map, Mind Map, Service Blueprints, Empathy Board, Mood Board, Customer Journey Map, Story Board

Figure 17: Process model example
The presented methodology could also be used as a software application tool. For this dissertation was also created an application with Microsoft Visual Studio. An interface of the created application is presented in Figure 18.

![Figure 18: Interface of the software application](image)

The user has to select four of the given criteria: Time, Cost, Equipment, Complexity, Customer, Employee and Service. Then one of them should be marked as the most important one. The last step is to select the evaluation quality, for the first round of the methodology “High” should be selected, since it will search for the best evaluated methods. Figure 19 represents the implementation of the first phase of the case which was presented above.
Moreover, the technological evolution has many tools to offer in service design, like FaceReader, which is a facial expression analysis software. “FaceReader automatically analyzes 6 basic facial expressions, as well as neutral and contempt. It also calculates gaze direction, head orientation, and person characteristics. FaceReader is used worldwide at more than 500 universities, research institutes, and companies in many markets, such as consumer behavior research, usability studies, psychology, educational research, and market research” (Noldus, 2017, par. 1). Virtual reality can also assist service interaction design research, like the ServLab in Fraunhofer IAO and other products like the Virtual ShopLab and DriveLab by Noldus. In future it would be interesting to be investigated how methods for interaction design could be combined with technology, like the ServLab in Fraunhofer IAO, with the Role Plays method.

During the research of this dissertation, some difficulties were faced. Service Interaction Design is a scientific field where not many practitioners exist; therefore there
were only seven participants in the survey. Moreover, there was observed a lack of awareness in this field by companies. Even though many companies claim to be customer oriented they do not actively design the interaction between the customers and the company. Another issue is that there are not many software tools for interaction design and perhaps if there were more software tools, more practitioners and companies would invest their time and money on this field. Last but not least the literature for Services was plenty, but there was lack of literature specifically in the Service Interaction Design field.
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Appendix 1: The first questionnaire

DEVELOPMENT OF A METHODOLOGY FOR SERVICE INTERACTION DESIGN

This anonymous survey is part of the master thesis “Development of a methodology for Service Interaction Design” at the International Hellenic University which is being written at the Fraunhofer IAO. The aim of this master thesis is to identify and describe important factors that influence the service interaction and to suggest a methodology on how to choose the right methods for every service interaction design case. To investigate these aspects, this survey is being conducted, using the Delphi method. For this purpose, there are two phases in this survey. The first phase is the collection of the methods and of the important criteria and the second one is the evaluation of the collected methods using the suggested criteria.

1. Which methods do you use for designing service interactions?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

2. When it comes to the application of the methods in a case, what criteria do you use to select the methods?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Your input is really appreciated.

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Figure 20: Questionnaire No 1
Appendix 2: Data retrieved from the first questionnaire

Table 6: Data retrieved from the first questionnaire

<table>
<thead>
<tr>
<th>Participants</th>
<th>Methods</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert No 1</td>
<td>Customer Journey, Personas, Roleplay</td>
<td>Problem-solving, Costs.</td>
</tr>
<tr>
<td>Expert No 2</td>
<td>Product Service Design Software Matrix, Service Blueprint</td>
<td>Depends on the complexity and on the qualifications of the people.</td>
</tr>
<tr>
<td>Expert No 3</td>
<td>Personas, Empathy Map, Role Play, Mind Map, Blueprint, Moodboard, Customer Journey Map, Use Cases</td>
<td>Location, kind of service, available infrastructure, the kind of the results that we need, the kind of the case.</td>
</tr>
<tr>
<td>Expert No 4</td>
<td>Service Empathy Board of Fraunhofer IAO, Role Plays, Customer Journey/ Emotional Journey, Experience Map</td>
<td>Easy to understand and use in practise, possibility for individual modification and adaption, possibility to involve customers and employees during the use of the method.</td>
</tr>
<tr>
<td>Expert No 5</td>
<td>Service Empathy Board, Empathy Map, Personas</td>
<td>Customers’ needs, kind of needed information, possibilities.</td>
</tr>
<tr>
<td>Expert No 7</td>
<td>Role Plays, Story Boards, Simulations, Mock Ups, Picture Stories, Customer Feedback, UX/UI, Usability Testing</td>
<td>Budget, timeline, experience with methods, complexity of method.</td>
</tr>
</tbody>
</table>
Appendix 3: The second questionnaire

Methods for Interaction Design
This anonymous survey is part of the master thesis “Development of a methodology for Service Interaction Design” at the International Hellenic University which is being written at the Fraunhofer IAO. The aim of this master thesis is to identify and describe important factors that influence the service interaction and to suggest a methodology on how to choose the right methods for every service interaction design case. To investigate these aspects, this survey is being conducted, using the Delphi method. For this purpose, there are two phases in this survey. The first phase is the collection of the methods and of the important criteria and the second one is the evaluation of the collected methods using the suggested criteria.

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*Required

1. Please evaluate the following methods in terms of Time Consumption: *
Mark only one oval per row.

<table>
<thead>
<tr>
<th>Method</th>
<th>Minimum Time Consumption</th>
<th>Medium Time Consumption</th>
<th>Maximum Time Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Journey Map</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Empathy Map</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mind Map</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mood Board</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Personas</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Product Service Design</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Software Matrix</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Roleplay</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Service Blueprints</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Service Empathy Board</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Story Board</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Figure 21: Questionnaire No2 (1)
2. Please evaluate the following methods in terms of Budget needs: *
   *Mark only one oval per row.*

<table>
<thead>
<tr>
<th>Minimum Budget is needed</th>
<th>Medium Budget is needed</th>
<th>Maximum Budget is needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Journey Map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy Map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mind Map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Service Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Matrix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roleplay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Blueprints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Empathy Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Story Board</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Please evaluate the following methods in terms of Complexity: *
   *Mark only one oval per row.*

<table>
<thead>
<tr>
<th>Minimum Complexity</th>
<th>Medium Complexity</th>
<th>Maximum Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Journey Map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy Map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mind Map</td>
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<td></td>
</tr>
<tr>
<td>Mood Board</td>
<td></td>
<td></td>
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<tr>
<td>Personas</td>
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<tr>
<td>Product Service Design</td>
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<td>Software Matrix</td>
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<tr>
<td>Roleplay</td>
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<td></td>
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<tr>
<td>Service Blueprints</td>
<td></td>
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<tr>
<td>Service Empathy Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Story Board</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Please evaluate the following methods in terms of Special Equipment needs: *
   *Mark only one oval per row.*

<table>
<thead>
<tr>
<th>Minimum Special Equipment</th>
<th>Medium Special Equipment</th>
<th>Maximum Special Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Journey Map</td>
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<td>Empathy Map</td>
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<td>Mind Map</td>
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<td>Mood Board</td>
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<td>Personas</td>
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<tr>
<td>Product Service Design</td>
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<tr>
<td>Software Matrix</td>
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<tr>
<td>Roleplay</td>
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<tr>
<td>Service Blueprints</td>
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<tr>
<td>Service Empathy Board</td>
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<tr>
<td>Story Board</td>
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</tbody>
</table>

Figure 22: Questionnaire No2 (2)
5. Please evaluate the following methods in terms of the amount of information they provide about Customers:

<table>
<thead>
<tr>
<th>Method</th>
<th>Minimum Information Provided</th>
<th>Medium Information Provided</th>
<th>Maximum Information Provided</th>
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</thead>
<tbody>
<tr>
<td>Customer Journey Map</td>
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<tr>
<td>Empathy Map</td>
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<td>Service Empathy Board</td>
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<td></td>
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<tr>
<td>Story Board</td>
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</tbody>
</table>

6. Please evaluate the following methods in terms of the amount of information they provide about Employees:

<table>
<thead>
<tr>
<th>Method</th>
<th>Minimum Information Provided</th>
<th>Medium Information Provided</th>
<th>Maximum Information Provided</th>
</tr>
</thead>
<tbody>
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<td>Customer Journey Map</td>
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<td>Story Board</td>
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</table>

7. Please evaluate the following methods in terms of the amount of information they provide about the Service Procedure:

<table>
<thead>
<tr>
<th>Method</th>
<th>Minimum Information Provided</th>
<th>Medium Information Provided</th>
<th>Maximum Information Provided</th>
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</thead>
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<td>Story Board</td>
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</table>

Figure 23: Questionnaire No2 (3)
Appendix 4: Data retrieved from the second questionnaire

Figure 24: Results of the evaluation of the methods in terms of Time Consumption
Figure 25: Results of the evaluation of the methods in terms of Budget needs
Please evaluate the following methods in terms of Complexity:

Figure 26: Results of the evaluation of the methods in terms of complexity
Please evaluate the following methods in terms of Special Equipment needs:

Figure 27: Results of the evaluation of the methods in terms of Special Equipment needs
Please evaluate the following methods in terms of the amount of Information they provide about Customers:

![Chart](image)

Figure 28: Results of the evaluation of the methods in terms of the amount of information they provide about Customers.
Please evaluate the following methods in terms of the amount of Information they provide about Employees:

Figure 29: Results of the evaluation of the methods in terms of the amount of information they provide about Employees.
Please evaluate the following methods in terms of the amount of information they provide about the Service Procedure:

Figure 30: Results of the evaluation of the methods in terms of the amount of information they provide about Employees.