Expertise
and insight
for the future

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Service design plays an important role at any stage of the service lifecycle in companies regardless of their sizes and businesses. Besides, service design orientates the way to develop a service as well as the engagement to gain users' interest. Therefore, the utilization of service design is essential to bring values for users and benefits for companies in the long run.

The aim of this thesis was to highlight the importance and application of service design into digital service with the focus on users. In the theoretical part of this thesis, the definition and principles of service design are introduced to provide a deeper understanding of its existence and a contribution to service development. Furthermore, service design processes and tools are described. These processes and tools support designers in building services in a logical and meaningful way, leading to the increase of qualified results and the decrease of unwanted risks. In the experimental part of the thesis, a case study of Host My Pet is presented to demonstrate the improvement of pet caring service. Illustrated images of persona, user map journey and business modal canvas are used to show the findings of users' pain points and proposed solutions. After suitable service design tools have been applied, Host My Pet's platform provides end-users better interface and experience, which will result in a significant growth of user's registration and company's profit.

Keywords	service design, user journey, user experience, user interface

Contents

1 Introduction

In a rapidly changing world, the matter of developing service design is gaining increasingly concerns than before due to the important relation between products and digital technologies. Companies are facing the problem of how to solve the right problems and deliver the product to end users in a way that makes them feel comfortable and satisfy their needs. After that, the companies need to decide which measurements should be taken into use for knowing whether targets have been achieved.

Therefore, the appearance of service design assists solving those dilemmas. In order to provide user-centered approach, one can implement service design process and tools which help to understand users and develop innovative products. In addition, for the sake of maintaining user interests and balancing company's objectives, this process is applied with the elimination of irrelevant functionalities and interactions and the detection of usability or utility shortcomings. In general, not only service design helps customers satisfy about product quality and appearance, but also stimulates the interaction between service provider and consumer.

The aim of this thesis was to emphasize the importance and utilization of service design in digital service. The objective of the thesis was to shed light on the improvement of service when service design processes and tools were used and its application on the case of pet caring service - Host My Pet Oy.

2 What is service design

2.1 Service design definition

On the basic of the objective and professional field where service design is utilized, there are many different definitions and approaches to this term. In the first place, service design definition from the academic perspective is regarded as a rising field which emphasizes on creating experiences that generates valuable ideas. Those experiences are the mixture of physical and non-physical factors. Efficiency of service design is maximized when it is used in transport, bank or health public area. The final result in general is to offer functional and useful service for end users when service design process and system are applied. This practice requires various skills from managing, engineering, designing to controlling. Intentionally design service which contains new business system is empathic to user requirement and try to make new socioeconomic value in our world. [1, 28-30.] In other words, service design assists to create new or develop current service in order to enhance its usefulness for clients as well as its efficiency for companies [1, 32].

On the other hand, service design definition from the agency perspective is a design specialization which increases development and delivery of good services. Many aspects are improved such as effectiveness, reliability, easiness of usage and satisfaction in numerous fields ranging from infrastructure to environment. [1, 32.] Moreover, I think service design is a bridge that helps to connect organization to customer as it supports the provider to determine what the client really wants to achieve and why that is needed. To highlight the benefit of service design, a coffee shop can be taken as an example. There are two coffee shops which have same coffee with same costs and near each other; service design is the factor that brings customers to one but not the other [1, 33].

Service design plays an important role in establishing the procedures, toolset and environment, which enables staffs to distribute service and highlight the uniqueness of the brand. To conclude, whether to use academic approach or agency approach, there are three basic elements: business, human aspects and technology are always taken into consideration in service design.

2.2 Service design principles

In order to apply service design process and tools in the right context, it is essential to understand five core service design principles: user centered, co-creative, sequencing, evidencing, holistic. Concerning the user centered principle, it helps to understand or make an impact on people's behavior; therefore, it usually is regarded as a psychological technique, but it can be specified branch expertise in trend or technology [2, 38]. Particularly, with human centered mindset, designers should consider users' requirements, abilities and behavior before designing process. It begins with the understanding of technology and psychology as well as the requirement of clear communication [3, 8]. To specify, the understanding of users and their needs can come mainly from observation as users are usually not aware of their real needs or the problems they are facing. The process of defining specification or scope can be one of the hardest parts of the design as it needs iteration and experiments of the concept as well as to adjust to those accordingly, for meeting user's real needs. [3, 9.] In addition, the culture, lifestyle, motivation and background of user should be taken into consideration of the designing process since they support finding user's insights so that it is possible to slip into user's shoes to gain comprehensive knowledge about individual experience and context [1, 36-37].

When user is placed at the center of designing process, designers might encounter the problem of having many groups with different expectations and requirements. Moreover, many stakeholders ranging from back office staff, frontline employees to administrators and non-human factors, for example, websites and machines. Therefore, one service proposition may include several players and various customer sets, factors and employees. [1, 38.] Specifically, when different stakeholders take part in the process of making, offering and consuming service, it is important to consider different suggestions or solutions about how to develop new services and enhance current ones. Thus, service creators produce a system which accelerates the production and assessment of solutions with diverse stakeholder groups. Multiple ways and tools are applied to get the understanding from various customer viewpoints when creating service and developing prototype as well as testing service ideas. Then, this co-creation plays an important role in service design thinking. Furthermore, with the co-creation, clients have an opportunity to add more value in the early stage of development to service, which evokes co-ownership and enhance customer relationship and engagement in the long run. [1, 39.]

Regarding the third principle, service is an active procedure which happens in a specific time interval. Designers need to take timeline of service into consideration while developing service as the service's rhythm effects users' emotion. [1, 40.] Particularly, service procedure is regarded as a movie that includes a number of static images which can be mixed to produce a moving sequence. On the basic of this similarity, service design decomposes service procedures to individual interactions and touchpoints. When combining those interactions and touchpoints, designers can produce moments of service.

Not only occur in human-human or machine-human relationships, interactions of touchpoint can also happen through third channel, for example, evaluations from other users or through social media. There are three steps in one procedure: pre-service stage (get to know about service), actual service stage (user really use service), and consequent post service stage. A hairdressing service can be a good example here. The moment when a person needs a haircut and search for offers or pass by a hair salon or hear from friends is the first touchpoint of pre-service stage. A good service will keep user's interest remains during service process. Thus, the consequence of service moments is supposed to be arranged in smooth way in order to accomplish a good harmony, which leads to the growth of user's emotion and interaction via different touchpoints. Besides, not only includes events in front stage, a moment of service also contains many procedures behind the stage. Therefore, designers should iterate service prototypes and test them thoughtfully with users. [1, 41-42.]

As for the fourth principle, service usually happens unnoticeably in the backstage process, which is in fact supposed to work like that on purpose. Nevertheless, users' inconspicuousness may differ largely from their expectation, which possibly leads to dissatisfaction with service if the first moment users realize that backstage service occurs. [1, 42.] Memories of good services can be recalled from physical objects, for example, souvenir or perfume, which results in the enhancement of users' perception from service they experienced. Therefore, evidence of service does not stay in actual service stage, but it will extend the user's experience to the post service stage. If this method is applied efficiently, designers will have an opportunity to enhance users' loyalty and their service recommendation to other people. [1, 43.] Furthermore, specific parts of service procedure or touchpoint can be described through evidence, for example, a symbol beside an electrical hair dryer makes the administrator notice that the customer wants a real towel.

Evidence may happen in many kinds of formats, for example, e-mail, bill, brochure, sign, or souvenir, which help to put a visible element to an intangible experience. Nonetheless, it not usually needed to create services more tangible for customers. Hence, evidence can support disclosing backstage processes. The creation of service evidencing should base on the natural story of service and service's touchpoint order. If customers have a good knowledge about service backstage procedures, their experience with service will be improved. [1, 43-44.]

Concerning the last principle, though service is intangible, it occurs in physical place, which utilizes physical objects and conduct in many instances produce several forms of physical result. Then, users observe this system by all senses: seeing, hearing, smelling, touching and tasting service's physical indications. [1, 44.] In fact, it is hard to work in a holistic method because and consider all aspects. Nevertheless, the purpose is that to get broader view of situation where service procedure happens. Service environment is focused in the single touchpoint and service moment level. The consciousness of what users may observe by their senses could affect significantly service experience. Other user's journeys should be emphasized at the service order level. The modification of orders requires reassess frequently from different viewpoints to make sure customer can enjoy the best experience.

Therefore, it is needed to keep track of stakeholders' emotion during journey of service. At the service offer level, service offer's organization must be paid attention because its background, value, composition and operation are essential subjects for designing service. The differences between the company identity symbolized by organization's team and the corporate picture observed by users should be eliminated. This practice leads to the growth of service mind set in company and highlights the significance of customers and employees' enthusiasm. [1, 44-45.]

3 Service design processes and tools

3.1 The double diamond model

Everyone has different ways of working and different specialization, but there are several common practices, which are applied to designing process. One of them is the ‘Double Diamond’ model created by the Design Council. [5, 6.]

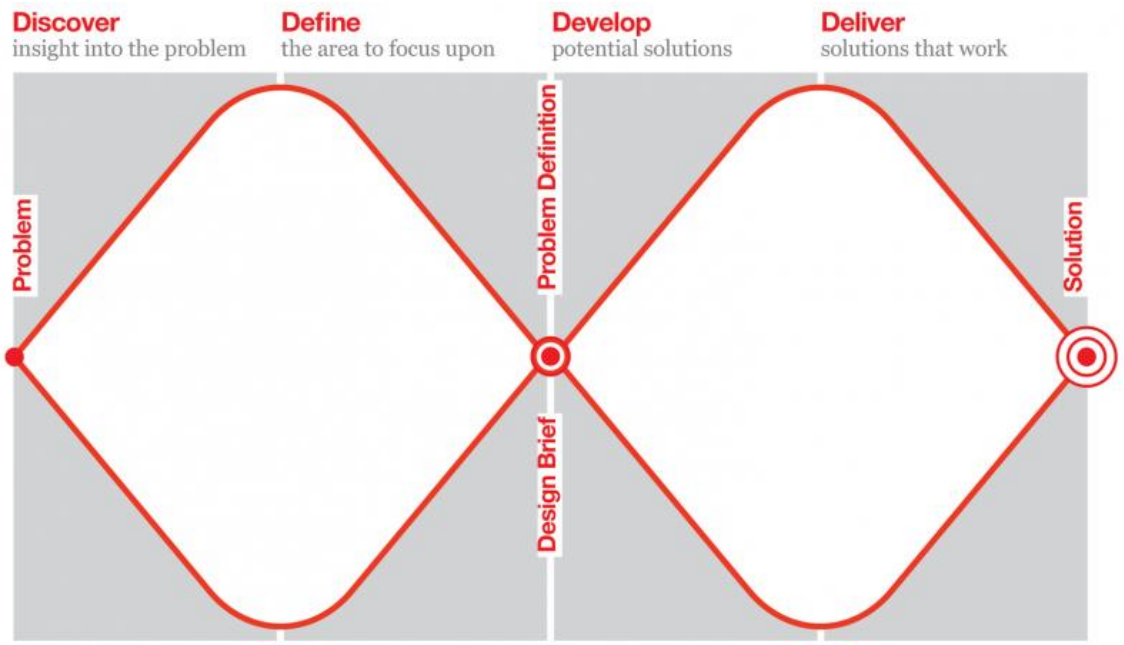

Figure 1. The double diamond phases by Design Council [4].

In the Figure 1, the Double Diamond demonstrates that the designing process is divided into four phases: discovery, definition, development and delivery. Those stages are the components of a design journey which goes from expanding ideas and options as large as possible to contracting those possibilities to serve specific targets [5, 6].

The first section of the model is the discovery phase where project will start with gaining motivation and insights, finding user’s requirements and building draft ideas [5, 7]. There are various ways, for example, social media trend, innovative technology or the introduction of competitor product to activate this phase [5, 8]. Therefore, it is very important for

designers to get knowledge about organization's objectives and culture [1, 128]. Moreover, the procedure begins with the identification of problem, chance or demand to be tackled and find limitations of solution area [5, 8]. Particularly, when identifying problems, designers should try to get better understanding of circumstance from viewpoint of existing and promising customers of specific service in order to have a good design.

At the same time, designers should keep in mind the wider context of service and make sure that they understand thoughtfully the real inspiration behind customers' behavior. Then the next action is that designers need to illustrate their discoveries and fundamental structure of intangible service before, which leads to the reduction of procedure complexity and the possibility of changing planned features that may not be well functioning within the designing team and stakeholders [1, 128-129.] In this discovery stage, designers can utilize quantitative and qualitative researching ways and comprise the interaction with end-users and investigation of broader movement of society and economy, which establishes good foundation that leads the remaining procedure and serves as a guideline and motivation to the designing team. [5, 8.]

The second section of the model illustrates the definition phase where service designers attempt to shed light on all potential options created from the previous phase and consider the most important problems and prioritize the tasks [5,7]. In other words, while designers focus on discovering challenges to find designing matters and possibilities in the first stage; in this stage, they emphasize the transition to practical actions [5,8]. In order to apply definition stage of this methodology effectively in service design, designers should envision procedures, demonstrate connections and relations or note taking during idea generation procedure. Specifically, the mission is to produce and progress solutions according to the determined matters and comprehensive understanding created in the discovery phase; the recognition of clients' requirements, inspiration, expectation, the service suppliers' procedures and limitations, and the demonstration of the user journey, including an order of touchpoints [1, 130.]

It is important to comprise all the key stakeholders and discuss with multidisciplinary teams which contains clients, staff, managers, architects, designers and others participated in the service design as well as the delivery procedure so as to accomplish comprehensive and reasonable solutions. One of the most crucial characteristics of excellent

service designers is to attain creative co-creation among multidisciplinary teams. Moreover, based on five principles, the need to apply human-centered way to co-produce results that reflect the entire order of touchpoints, give proofs and generate comprehensive concepts is beneficial. [1, 130-131.]

A large number of concepts and investigations are examined and classified into an optimized list of problem declarations which are suitable with the company desires and business goals to choose which to proceed further. This stage leads to a well-defined description of the primary challenges and matters to be dealt with. [5, 8.] Besides, other methods used in this phase are: project management and development, project brief sign off [5, 7].

The next section is development stage in which designers will produce, prototype, test and iterate solutions, which supports to find errors or mistakes so that their concepts are improved and optimized [5, 7]. In this phase, preliminary design sketches are considered through a repeated procedure of development and test, and service ideas are enhanced for application preparation. The designing team and co-partners build the separate service modules thoroughly and make sure that these connects to shape a good experience. [5, 9.]

More specifically, as mentioned before, numerous repetitions are conducted between this phase and the previous one. It is not so difficult to test physical product because it contains prototype development according to earlier illustrated concepts and prototype test with several users to receive comments and subsequently enhance these prototypes and test them again till they are qualified for defined requirements. The similar repeated testing and re-testing process is utilized in designing service. Nevertheless, the application of prototype methods in developing intangible service requires distinguishing techniques from those used in designing products.

The key difficulty of the procedure at this phase is to cope with the intangible parts of service because designers are unable to show a service on a table and ask clients questions or feedback. Although it is possible to collect responses by conducting interviews and surveys, it is vital to give customers a clear vision of upcoming concepts in their

mind. Therefore, in this situation, emotional factors of service should be taken into consideration. The proposal of imaginable story via storyboard, images order or video to customers will help to create the engagement of essential emotion, but the meaning of user's interactions is still missing. [1, 132-133.]

Consequently, designers need to prototype concepts of service in real environment or situations similar to reality. On the basic of various theatre staging and role-play methods, service designers can conduct their work via specific cases and integrate the emotional factors of individual interaction with value propositions. The application of this way evokes exciting and emotional involvement for customers as well as being regarded as a powerful way to analyze the intangibility of concept and to provide a chance for quick interference and testing. [1, 133.] To conclude, in this development phase, main actions and goals for service designers are to prototype, conduct interdisciplinary work, manage visualization and apply developing approaches and test. The design team try to put their effort to work and test repeatedly with customers through the procedure, which increases service quality. Furthermore, this response is integrated with service which will be used for implementing preparation [5, 7;9].

The last section of the model is the deliver stage in which service designers have possibility to change implementation if needed, test and analyze feedback iteratively, and finalize solutions [5, 7]. In my opinion, it is very important that the change of procedure or service concepts can happen at this stage before it really is implemented because one can avoid unwanted consequent mistakes, and save time, energy and budget for next process. At the same time, the change management also plays a vital role and should be taken into consideration seriously in this stage. In this situation, it is possible to apply fundamental change in process order: plan, implement, and review change. The formulation and testing of service concepts from earlier phases result in necessary changes. The desire of user experience including emotional factors and good communication is also important. Moreover, the inspiration and interaction from clients and staff are needed for the operation of a good service. [1, 134.] In addition, the change is really implemented when the service concepts are proved convincingly and does not lead to unexpected troubles. Therefore, the staff should participate throughout implementation procedure to address problems fast. It is impossible to control all the appearance of unconsidered elements, but to put an effort for investing resources in previous phases so

that the change might go smoothly is possible. To review the change successfully, it is essential to assess the process, which results are repeated procedures of service design. [1, 135.] Besides, in this stage, if system works as it supposed to work, gathering service feedback and comments from users, allows sharing lessons learned from the procedure, tools or working style to others [5, 9].

3.2 Service design processes with tools

3.2.1 Discovery phase: Customer journey map, diary study

The customer journey map is one of the most useful tools applied in the first stage. A customer journey map is a visual illustration of customer's interactions with service, which shows a clear and organized picture of user experience. In order to build an interesting story (a journey) according to user experience, designers utilize touchpoints in which service interactions from user happen. This enables us to notice which sections of service work and which sections requires improvement. Besides, this map highlights the viewpoints of users and explanation of their real service experience. [1, 158; 5, 11.]

The reason why the customer journey map is used in this exploring stage is that it helps to discover key service aspects and area of problems or area in which new elements could be added, understand the connection among various factors [5, 11]. It shows a general view of elements which effect customer experience, created from user's point of view. On the basic of the understanding of user's need and background, designers can individualize the map with the incorporation of pictures and personal comments, which enhances customer-focused experience. To specific, this map allows us to identify the problem parts and possibility of improvement, while emphasizing specified touchpoints enables the service experience to be divided into smaller phases for additional investigation. At the same time, customer journey map helps us make a comparison of different experiences within the same visualization and among current service and its rivals. [1, 159-160.]

When building up customer journey map, designers should consider two important factors including storytelling and illustration because they are efficient tools for transferring messages in an accurate way, which generates a common vision. Without a common

vision, it is very difficult to make decision to improve user experience. [6.] Furthermore, it is vital to identify the touchpoints in which the interactions between user and service occurs. There are many kinds of interactions ranging from virtual communication with a webpage or physical journey to a shop to individual face-to-face communication among persons.

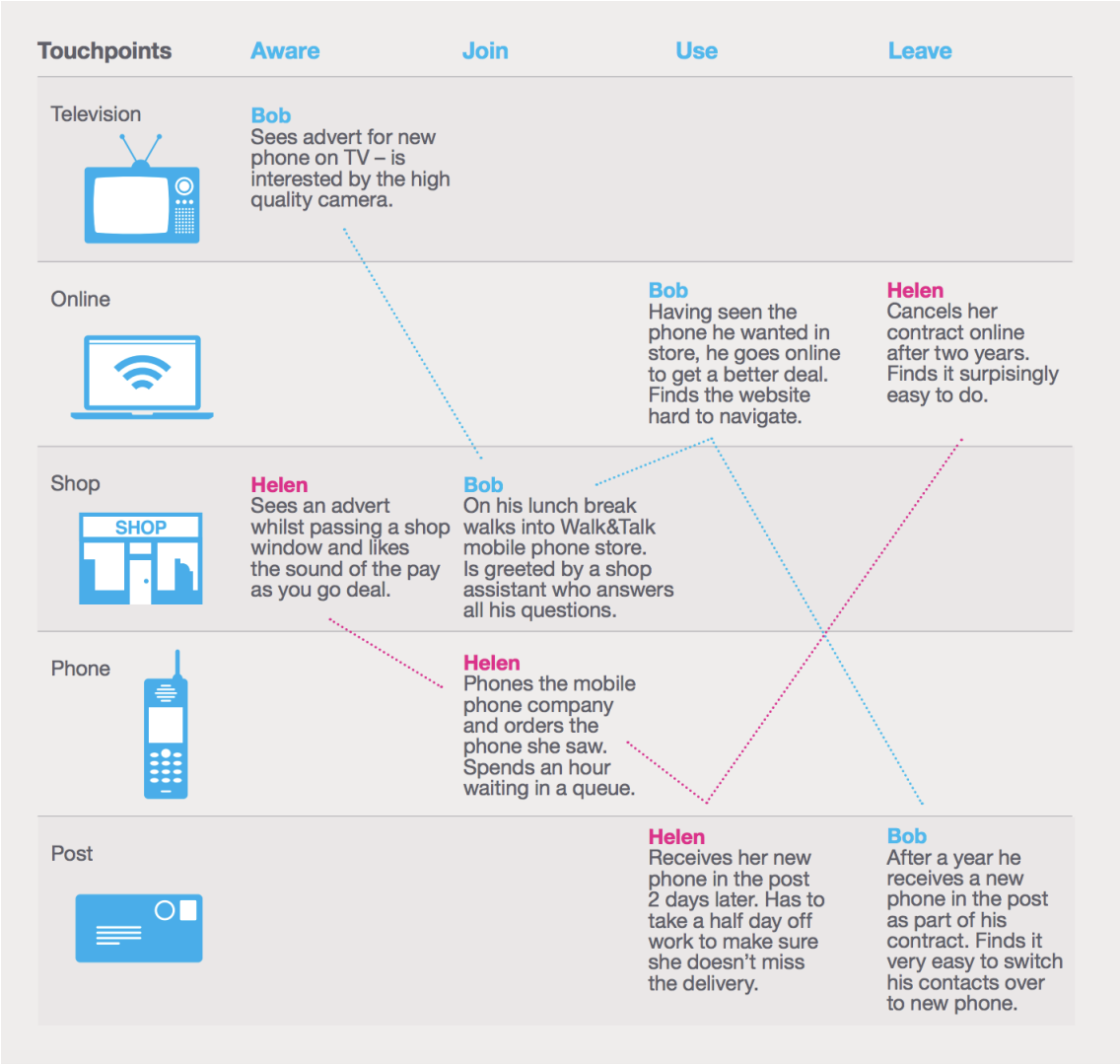

Figure 2. Journey chart example for a mobile phone service [5, 12].

The identification of touchpoints by creating insight of user helps to build a user journey map effectively. After all touchpoints are defined, designer team will connect them to

make a visual demonstration of general service experience. Not only provides high engagement sufficiently, but this representation also combines enough aspect in order to give actual insights. [1, 158-159.]

Figure 2 visualizes the basic simple customer journey map of mobile phone service with two users are: Bob and Helen. As can be seen from Figure 2, this customer journey map is multi-channel and time-based. Regarding Bob's case, his first touchpoint is when he saw advertisement from television and found interested in phone camera's quality. The next touchpoint is when he walks into phone shop where he gets more information about the phone he is looking for. After that, Bob searches online to get a better deal for his wanted phone and found it difficult to navigate in the webpage. The last touchpoint is the post in which he gets his new phone and finds it easy to move his contacts to new phone and he left this service from this point. On the basic of this customer journey map, designers can see the areas that service works well and those need to be improved. For example, when Bob goes to phone shop, he gets the answers from an assistant working there; therefore, at this point, the service works well and customer is happy. However, Bob is not happy because of the difficulty of website navigation; hence, the designers can notice that the service needs improvement at this stage, for instance, get feedback from user and make navigation work better.

The second discovery phase tool, diary study, helps to gather qualitative data related to person actions, behaviors, and experiences though time. This data is gained from the participant's report over an interval ranging from several days to four weeks or even more. In that period, users are requested to maintain the diary and record particular data containing activities related to the subject being studied. There will be a reminder or a notification over a period of time sent to users so that they will not forget to write the requested information to their diaries. There are two factors that make diary study different from other typical ways: period of time and context. [7.] The reason diary study is applied in the discovery phase is that it enables the design team to collect information about actual user's needs and demands, gain knowledge and empathy towards persons' experience, and get the understanding of life story from users over time [5, 13].

The diary study consists of five parts including planning and preparation, pre-study brief, logging period, post-study interview, and data analysis. As for the first section, the design

team need to identify the emphasis on the research and long-run behaviors. Besides, designers should determine the study timeline, participant recruitment, reporting information tool for users, instruction and material preparation. Regarding the pre-study brief, design team will plan a mobile call or face-to-face appointment to talk with user about the research in more detail. At the same time, the agenda or timetable of data report and study expectations are walked through carefully. In addition, designers should introduce tool that will be used and make sure all participants are familiar with the chosen technology and clear up their confusion if they have. [7.]

The third section is logging period which supports efficiently reported activities to produce a basic framework. Designers will specify needed information which users should report in more detail without changing normal variableness and difference that they cannot predict. Moreover, it is important to produce unambiguous and specified logging guidance, and provide participants logging examples in order to support them know the required detail level [7].

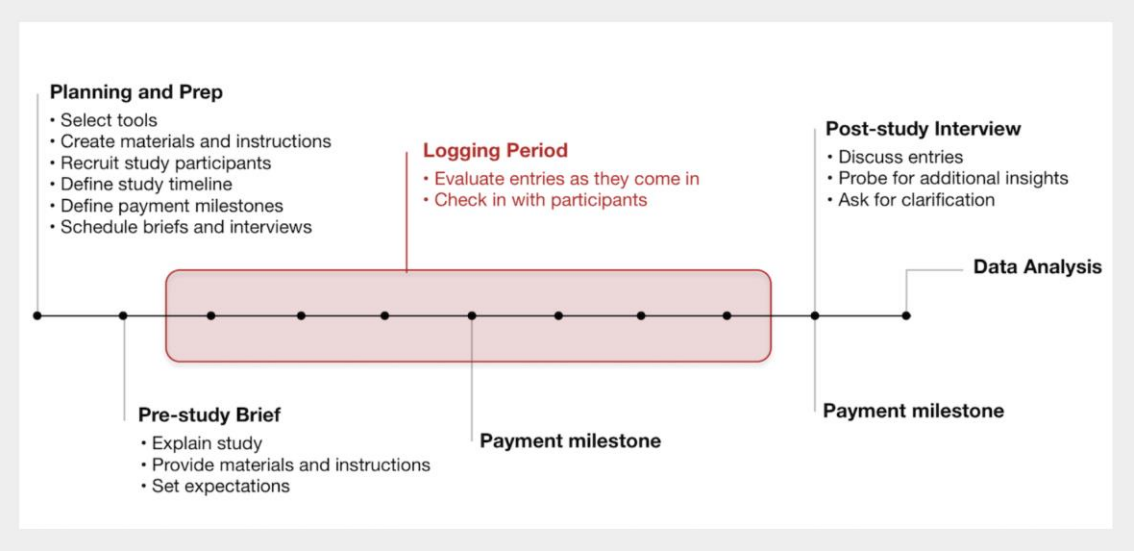

Figure 3. Timeline of activities that take place throughout a typical diary study [7].

As can be seen from Figure 3, the logging period take up the longest time of diary study and designers should regularly discuss with users and check users' reporting inputs when they receive them from different channels. Designers can utilize two typical methods including In-Situ Logging and Snippet Technique to gather diary information from

selected users. Regarding the first technique, users will be requested to record data about related actions in the context they happen. When users interact in a related activity, they should log all essential things in detail immediately. As this method needs users to spend time to log this data right after the event occurs, it is suitable for cases where diary inputs do not occur too often to annoy the users. Besides, device and channel can support logging in the form of organized long-form text input such as email, web-form survey, digital customer-centered gadget or video diary [7].

As for the Snippet Technique, it requires users to report short fragments of data about events when they happen. Participants specify each fragment in more detail through the provision of extra information related to the event. It not only supports recording related important data on time, but this method also does not require participants to provide details right away, which could be unusual in some cases. There are some typical channels including Facebook, Twitter, and text message for users to log their fragments, which are suitable for short-form interaction. Therefore, design team should encourage users to log activities when they occur by using their phones because of easy access. The extension of reporting fragments is possible by using those channels stated above for further report. Designers can get more detail and reliable findings about each fragment by requesting users to fill in a survey related to their reports. [7.]

The next stage is the post-study interview in which designers will assess all data reported by each user and schedule a following interview to talk about report specifically. Besides, participants are asked to expose particular information required to finish the story and the clarification if needed. At the same time, design team should ask users about comments and feedback about their interaction and experience taking part in the research in order to improve next procedure. The diary research will produce qualitative data which designers need during the last phase – data analysis to reconsider study questions and to determine the results. Furthermore, designers should assess determined behaviors during the research by evaluating their development, change and influencing factors over a period of time. [7.]

3.2.2 Definition phase: Persona, Idea generation

Persona is one of the most suitable tools to be utilized in the definition phase. On the basic of the original Cooper's concept, the idea of persona is used for improving design process in efficient way. The purpose of introducing persona is to clarify the description of the user and to help designers emphasize the main user, her or his behavior pattern and demands. Besides, persona is very useful to communicate with other stakeholders, lead designing decision and assess designing concept. A persona consists of texts and image illustrating a user, and currently, persona is designed in many kinds of form, for example, poster, webpage, actual-shape cardboard. [8, 439.] To specific, a persona represents a figure which demonstrates user study in an easy distinguishable and reasonable way. It shows a considerable amount of data related to group of people who share similar interests in order to generate a fictional character. User personas are usually produced as a list which illustrates various kinds of users with various requirements. Normally, it will contain basic information, for instance, full name, age, job, address, hobby and interest as well as other essential information. [5, 16.]

The reason persona is applied in the definition stage is that it shows a variety of service viewpoints, which enables designers to determine and involve various interested-groups which might exist in their aimed marketplace. An efficient user persona can redirect the emphasis from demographical abstraction to demands and requirements of actual users. Although a persona itself might be imaginary, the inspirations and interactions it displays are real. It is an analysis of feedback produced from the previous research phase; therefore, represents the real-life situation encircling a service of an organization. [1, 178.] Not only supports designers to aggregate user study into an understandable form, but persona also helps to keep emphasis on the user's needs throughout the development phase and assess service's concept and idea on the basic of requirements [5, 16].

Designers can create user persona in different detail levels depending on different needs. With a quick sketch in workshop, designers can utilize persona to do brainstorm. It is very useful to synthesize and share l information about user study and test initial phase concept by using a more detailed persona. [5, 16.] Figure 4 demonstrates an example of a user persona created by Giulia Piu from Business Design Tools company. This persona canvas contains fifteen sections:

- A user photo
- A user quote reflecting persona behavior
- Demographic information such as full name, occupation, address
- Biography consisting of lifestyle, culture, attitude, and ambition
- Personality
- Technology Skill
- Approaching channels where designers can contact users
- Motivations which can active user behavior
- Goals or Objectives showing user's requirements and expectations
- Pain Points indicating user's frustration and dissatisfaction
- Favorite Brands, Applications
- Device and platform that user use
- Top reason to use your service
- Deal breaker showing which factors make user leave your service
- Relationship with your service indicating regularity of usage versus value it makes.

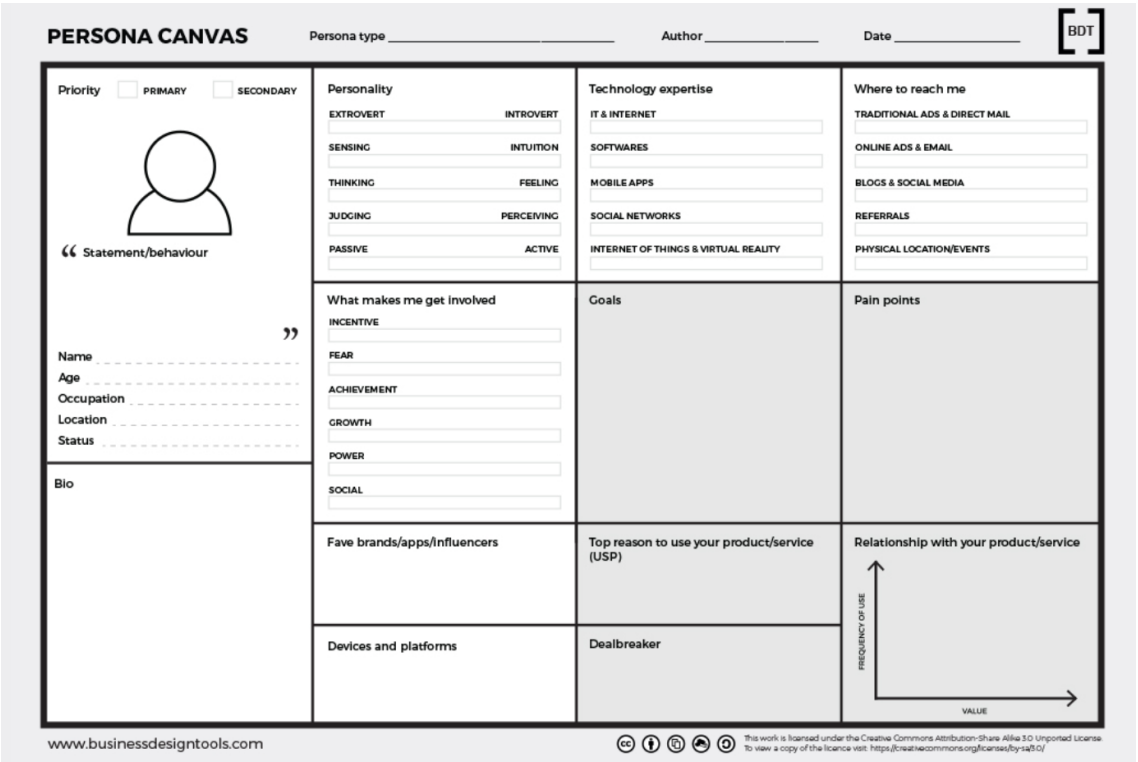

Figure 4. Example of a persona [9].

Depending on user research as well as complexity of requirements or demands, designers can adjust their personas accordingly [9]. The value and effectiveness of user persona are enhanced when it is developed upon qualitative data. Division of user information supports designers to construct the study and determine the important elements of persona. Furthermore, it can be improved by using graphic material or user's quote, which indicates the qualitative study and genuine feeling. [5, 16.]

Concerning the idea generation, it helps designers to construct and stimulate group-brainstorming activity so that solutions and opportunities are created fast. At the same time, it supports the identification of the most exciting and crucial to move on to next design procedure. Specially, this technique plays an important role in finding the patterns and developing new ways of evaluation. Besides, ideation supports designer in dealing with a large amount of difficult problems related to designing procedure. [1, 180; 5, 17.]

The reason idea generation is used in this definition stage is that it is useful to produce many suggestions, determine important ideas for further development, generate a mutual understanding of feasible possibilities related to discussed subject. The common target of motivating ideation enables group work session to go more efficiently. At the same time, provided tasks in ideation workshop should encourage and motivate participants to use graphic material and discuss actively. [1, 180.]

There are many idea generation tools which are applied in group-work session, such as six thinking hats, mind-map, and SWOT analysis. Figure 5 illustrates an example of brainstorming mind map which helps to structure the group discussion and attract people. Mind map is an organized system of complicated information in a graphic format which helps to find patterns and take out meaning from the gathered data by reviewing, observing and interviewing. Not only supports interaction within the group, but mind map also helps to generate valuable service insights and findings.

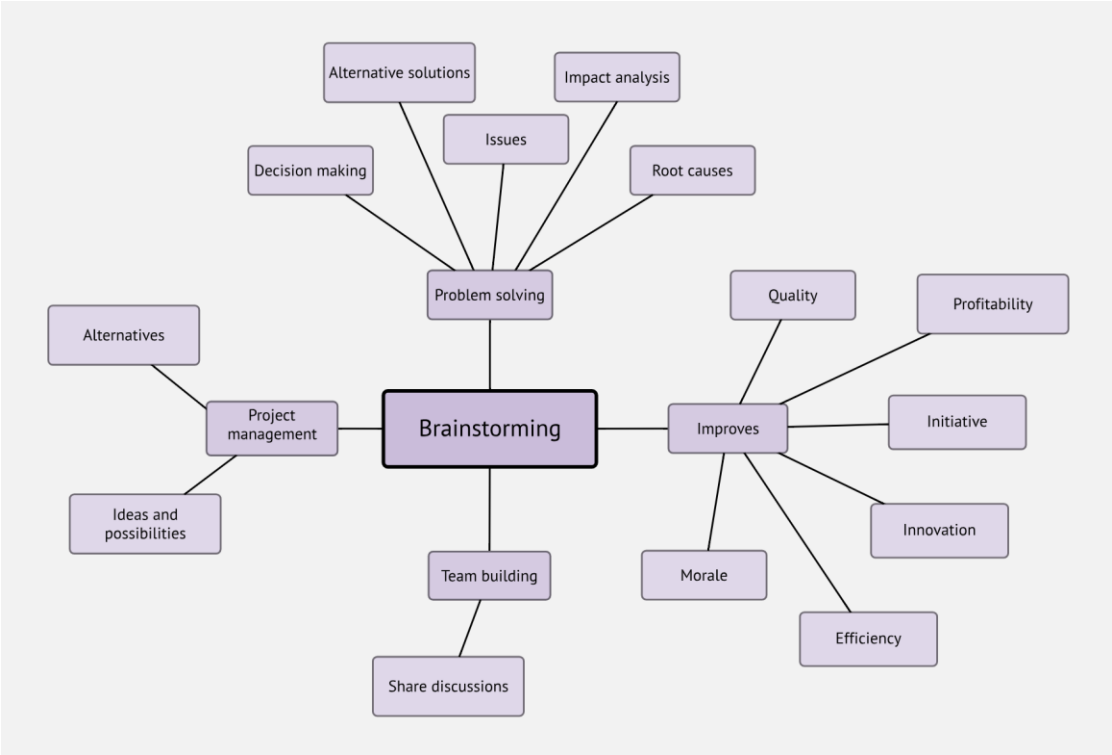

Figure 5. Example of brainstorming mind map [10].

Mind map is a tool which helps to compile suggestions and data because one keyword might be related to other phrases and pictures. From the main subject in the center, designers can develop branches that indicate relations among related areas. Furthermore, designers should utilize colors, pictures and icons to enhance processes and make the result of mind map more understandable and intelligible. [11, 12-13.]

3.2.3 Development phase: Experience Prototype, Business Model Canvas

Experience prototyping is one of the most powerful tools used in the development phase. The phrase experience prototyping means that the focus is on the practical facet of the illustrations which are required to effectively transfer an experience with a service or product. Therefore, for a functioning meaning, designers define an experience prototype as any form of demonstration in any way which is used to figure out and interact with service they are building. Apparently, it makes sense to apply designing prototype methods, for example, design scenarios, storyboards or videos, which results in the increase of user's engagement and interest to service. One of the fundamental principles of this

concept is that an experience is, by its essence, not passive as it supports designers to simulate possible situations in real life and gain better insights of service. Furthermore, experience prototype is regarded as a way of thinking which enables designers to consider solving issues in the matter of building a meaningful journey for users, rather than a list of manual steps. [12, 424-425.]

The reason experience prototype is utilized in this development stage is that it helps to build and evaluate particular interactions and touchpoints, to determine which sections satisfy user's requirements and those that need to be improved, and to enhance engagement of other stakeholders as well as collect feedback and comments from participants. [5, 20.] In addition, experience prototype supports designers to understand deeply the service with described visualizations. At the same time, with the emphasis on users' experience, designers can use prototype to create tangible proof of the solutions. It also helps designers to evaluate concepts, point out improvements and validate solutions quickly. Designers do not need to limit prototype testing session into a workshop or studio, but it can happen in any environment that is suitable with testing criteria. [1, 192-193.]

Designers should not spend much time to refine prototypes because it is more essential to make it fast, evaluate it and repeat the process. The main target of experience prototyping is to test concepts and collect feedback for feasible solutions. There are many different techniques with different forms ranging from paper sketch, a model to a full functioning service. Commonly, experience prototyping consists of mock-up and several components of role playing to generate service experiences. This regeneration may be recorded via videos or photos and the detail level and testing time will be different depending on different requirements. [5, 20.]

Figure 6 illustrates an example of experience prototype built in Excel and developed by Anders Kjeseth Valdersnes from the design team's Microsoft Excel. This prototype includes all required functions to deal with real tables and data visualization. Instead of taking few weeks to design and code a web prototype with backend database, Anders made it like actual webpage to test with clients in two days. By using this prototype, Anders can conduct experience prototyping test in with many cases including the customer purchasing insurance, salesman selling the insurance, and somebody attempt to

make a claim. For the first two situations, the procedure is tested via phone and monitored from two sides of the call. Concerning the last case, the materials are studied through with somebody who just received the incident report. Although actual employees and clients knew that they participated in testing session, their communications were real. Thus, the design team can understand and analyze testing results to produce needed things in order to clarify and sell new value proposition. [13, 11-12.]

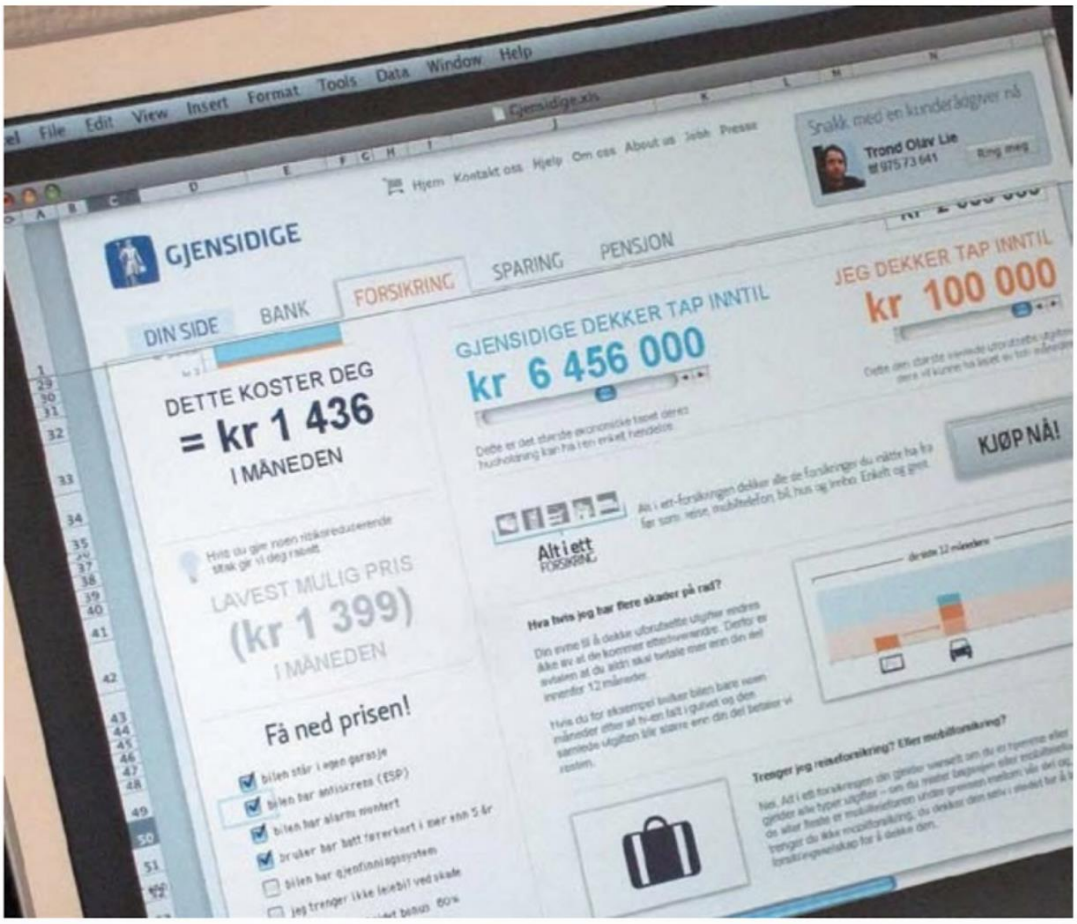

Figure 6. Experience prototype of the insurance website built in Excel so that the real data could be used when testing with customers [13, 11].

Regarding Business Model Canvas, it is a tool for designers to describe, analyze and develop business model which indicates the way that company produces, carries and captures values [5, 21; 16, 14]. This tool is developed by Alex Osterwalder and could be utilized to totally new or current service. Normally, this canvas is displayed in the shape of a table which contains 9 parts. Each part represents one aspect of the discussed

business model. This table is complete when people fill in all sections as a collaborative task. Some of those sections might be defined during the designing procedure, for example, channels or customer segments and the others will be developed further. Depending on requirement level, the business model canvas will be applied in various ways ranging from a fast drawing to gain first understanding of model, to finalize specific factors of service. [1, 212; 5, 21.]

The reason business model canvas is used in this development phase is that it supports designers to build and evaluate the feasibility of new business model, and based on those, they can improve needed elements for next development. Besides, feedback and comments will be gathered from participants for further analysis. Furthermore, this canvas can be utilized flexibly and effectively in different ways in many different areas in our society. [1, 212; 5, 21.] For instance, state sector organization has applied this canvas in order to consider some parts as service-emphasized business. Main advantages of the business model canvas are to bring clearness to a company's key targets while defining the shortcoming, strength and preference, and to show latest status of a company trying to apply outcomes of service design projects. The implementation of business model canvas as a guide or prompt of different elements required incorporation supports designers to control the scope of considerations. [1, 212-213; 15.]

Specifically, as illustrated in Figure 7, the business model canvas has nice sections including customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. Concerning customer segments, it expresses various kinds of persons or organizations that company targets to approach and offer services. The survival of company depends on the relationship with beneficial clients. With the purpose of improving customer's satisfaction, an enterprise can divide them into distinguished segments by mutual requirements, mutual behaviors or other factors. There are five conditions that helps company to differentiate customers to separate groups:

- Customers' requirements need a separate offer.
- Customers are approached via various channels.
- Customers need various kinds of relationship.
- Customers have significantly distinct profitableness.
- Customers do not mind paying for different features of offer.

It might identify one or some small or large customer segments. Besides, company should determine which customer segments they need to focus and which ones can be skipped. After making the decision, company can build a business model based on insights of particular customer's desires. [16, 20.]

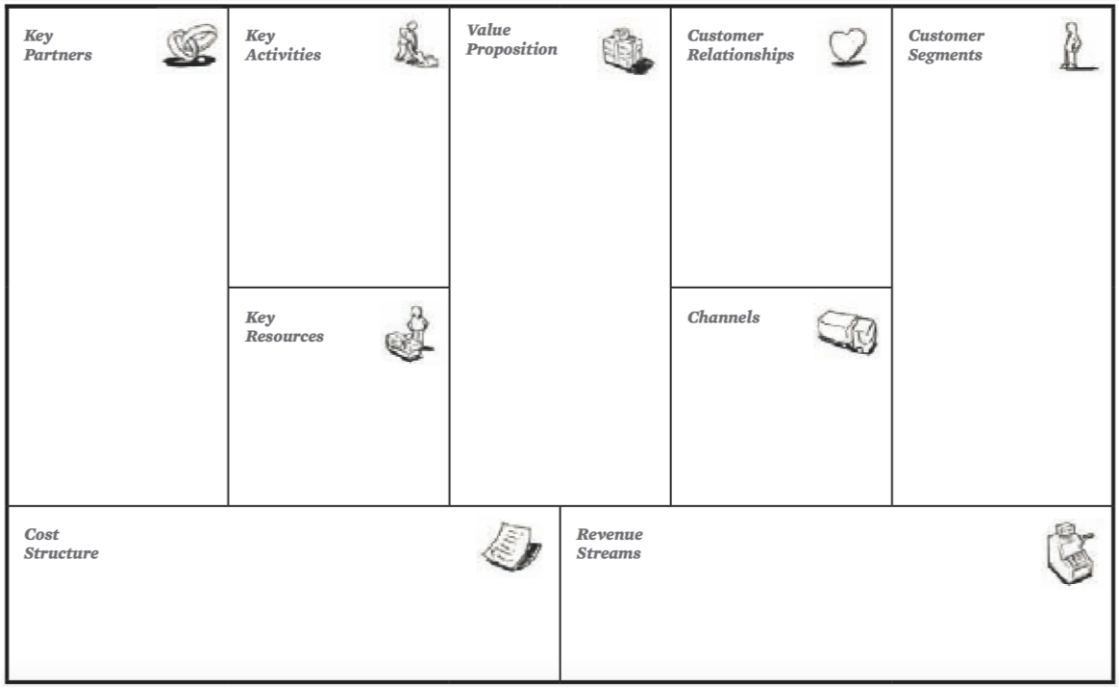

Figure 7. The business model canvas [16, 44].

Regarding the value propositions, it defines the pack of services and products which produce value for a particular customer segment. In addition, it is a key factor that makes clients come back to company because the value proposition helps to deal with customer issues or fulfil customer's demand. Several value propositions might be innovated and show a new offer, and the others might look like current market offers but they should have extra functions. Besides, it emphasizes the significance of catching which products or services that clients actually buy when providers sending their offers. The company's offer needs to correlate with clients' need, for example, with the client's model of what client aims to reach and accomplish with the offer. [14, 322; 16, 22.]

As for the channels, it shows how an enterprise interacts with and approaches its "Customer Segments" to bring a "Value Proposition". An enterprise's interface consists of

interaction, delivery and channels. It is a touchpoint which plays a crucial role in enhancing user experiences. Channels support company in many ways:

- Increase clients' awareness of enterprise's service and product
- Support clients to assess enterprise's value propositions
- Enable clients to buy particular service or product
- Deliver value propositions to clients
- Provide clients support after purchasing.

To conclude, channels help to accelerate communication between enterprise and customers. [14, 323, 16, 26.]

Customer relationship indicates relationship types which enterprise establishes clearly with particular customer segments. There are many kinds of relations ranging from individual to organization which are controlled by clients purchase, clients' retention and sales increase. [16, 28.] The first common type is the personal assistance which helps to increase communication with customers via email, help desk support call or on-site conversation. Another category is self-service meaning that company supports customers indirectly by providing them sufficient materials or tools so that they can do it themselves. The automated service is one level higher than self-service as it will integrate automatic process in helping customers. For instance, it will analyze customer behaviors and personalities and recommend relevant information or product. Another effective way to enhance customer relationship is to build community where company can involve customers and expand connection among community users. Community not only enables member to exchange experience, knowledge and sort out each other 's issue, but also assists company in gaining better insights about customers and their expectations. [16, 29.]

Regarding the revenue stream, it demonstrates company earning modal and investigation focus, which are beneficial factors that customers want to pay [14, 323]. There are many methods to produce revenue stream: asset sales, licensing, brokerage fees, advertisement. Particularly, revenue stream from asset sales comes from possession rights of products, for example, Zalando sells clothes, shoes and other beauty products using e-commerce business model. In terms of the licensing, revenue stream is produced by selling licenses to users so that they have rights to use intellectual property. For instance,

Salesforce, a cloud based software company, is successfully in selling licenses for customers to use its services with different options. Another way to generate revenue stream is to use brokerage method which takes place between different parties in one transactional process, for example, Paypal is a well-known online payment company which charges transaction cost between users and authenticated services. Different types of pricing modal will be applied to different revenue streams also. [16, 31-32.]

As for key resources, they illustrate essential properties which help a company to generate value proposition, active in market, keep relationship with customer segments and gain revenue. Different kind of business model will require different key resources including skill, knowledge, materials and tools from company and customer point of view. [14, 321; 16, 34.] Key resources could be classified into four categories: physical, intellectual, financial and human factors. Physical resources are clearly used in most of businesses, such as offices, computers, cars and facilities. Intellectual resources play an important role to the growth of a company, for example, brand, trademarks or customer data. It is obvious that no business can run without money; therefore, financial resource such as cashes, credits or stocks should be demonstrated in a business model. Finally, human resources are required with professional skills and knowledge to develop and lead company to achieve its goals. [16, 35.] In my opinion, not only a physical resource, but also human is the soul of any company because better staff with right attitude and same goal will bring company beyond expectation.

The next area is key activities which show the most vital things that companies must take actions to leverage their business models. It has the same purpose as the key resources. Depending on the kind of business modal, company should apply suitable and appropriate key activities. There are three key activities categories: production, problem solving and platform. Manufacturing industries mainly use production activities which are related to planning, producing and delivering products. The problem-solving activity is mostly applied in consulting firms and service companies, for instance, Fluido, the largest Salesforce partner in the Nordics, helps customers with marketing automation, sales process and customer relationship management by using Salesforce technology. In key activities, network, software and brands can be regarded as a platform that operates business processes, for instance, Amazon has its own e-commerce, cloud computing platforms and technologies which dominate marketplace worldwide. [16, 36-37.]

The key partner block demonstrates suppliers, partners or networks which help to generate values for company [14, 323]. With those partnerships, company can manage risks easily, improve business model effectively or utilize resources efficiently. In particular, supplier is the most typical partnership which helps to decrease costs, optimize resources distribution and share facilities. In addition, when competitors establish a strategic partnership in one field and compete with each other in another field, their risks will be reduced and revenues will be increased accordingly. It is common that nowadays company can strengthen its ability through other companies' resources and activities. [16, 39.] For example, Infosys acquired Fluido with all resources to expand their market to Europe regarding Salesforce consultancies.

Last but not least, design scenarios method plays an important role in the last phase of the double diamond model. Design scenarios are logical proposed stories which contain enough details to express aspects of a product or service in a meaningful way [1, 184]. There are three main purposes to use this tool in this delivery phase. First of all, design scenarios are utilized as a communication tool, it aims to build insights of possible circumstances and promising services. At the same time, its target is to reflect a scenario of specific service in developing process and to facilitate procedure of making decisions in the future. [5, 22.] Furthermore, design scenarios can be demonstrated in different ways from normal text, pictures to videos, which fits various user preferences [1, 184]. In fact, design scenarios could be used in other phases to maximize its benefits. For example, in the development phase, it supports partners' communication and use-cases testing in proper context.

4 Case study: Host My Pet Oy

4.1 Background

Host My Pet Oy is a start-up founded in 2016 by a group of young and ambitious students who passionate about business and technology. The idea was from one of the founders, who struggled with balancing his time for studying, working and taking care of his pets. With the aim of providing trustworthy pet sitters to pet owners, Host My Pet grows rapidly which ended up in the top 100 hottest Finnish start-ups after one year of establishment. In 2017, I joined the team as a front-end developer with a mission to enhance user interface and user experience and work closely with design and development teams.

Particularly, Host My Pet Oy provides pet services through website and mobile application. There are two customer groups who directly use this service: pet sitters and pet owners. The group of pet sitters are those who love pets, but they do not have enough abilities to have their own pets. On the other hand, the group of pet owners are those who seek for trusted pet lovers to take care of their pets when they are busy. Due to the high demand of these two groups, Host My Pet Oy built a bridge to connect them, which facilitates a common channel for information exchange between pet sitters and pet owners. Currently, the main targeted pets are dogs and cats living in metropolitan area of Finland.

4.2 Service improvement activities

4.2.1 Defining problem: Personas

After the first production release of Host My Pet platform, customer support team gathered feedback from users to discover new user problems and improve user experience. On the basic of the information, I created a profile of a pet owner as illustrated in the Figure 8 below. Petteri is a friendly and opened-mind solution manager who have two golden retriever dogs living with his family in Espoo. He found one pet sitter near his place through Host My Pet website to take care his dogs for two weeks in summer vacation. When trying to find information from website, he felt confused about searching

function and frustrated by the lack of crucial highlight. In addition, when he needed someone to take his dogs for a walk within a day, he could not find any help or available service. Therefore, he was eager to have a short-time flexible service, and easy-to-use platform with relevant and concise information.

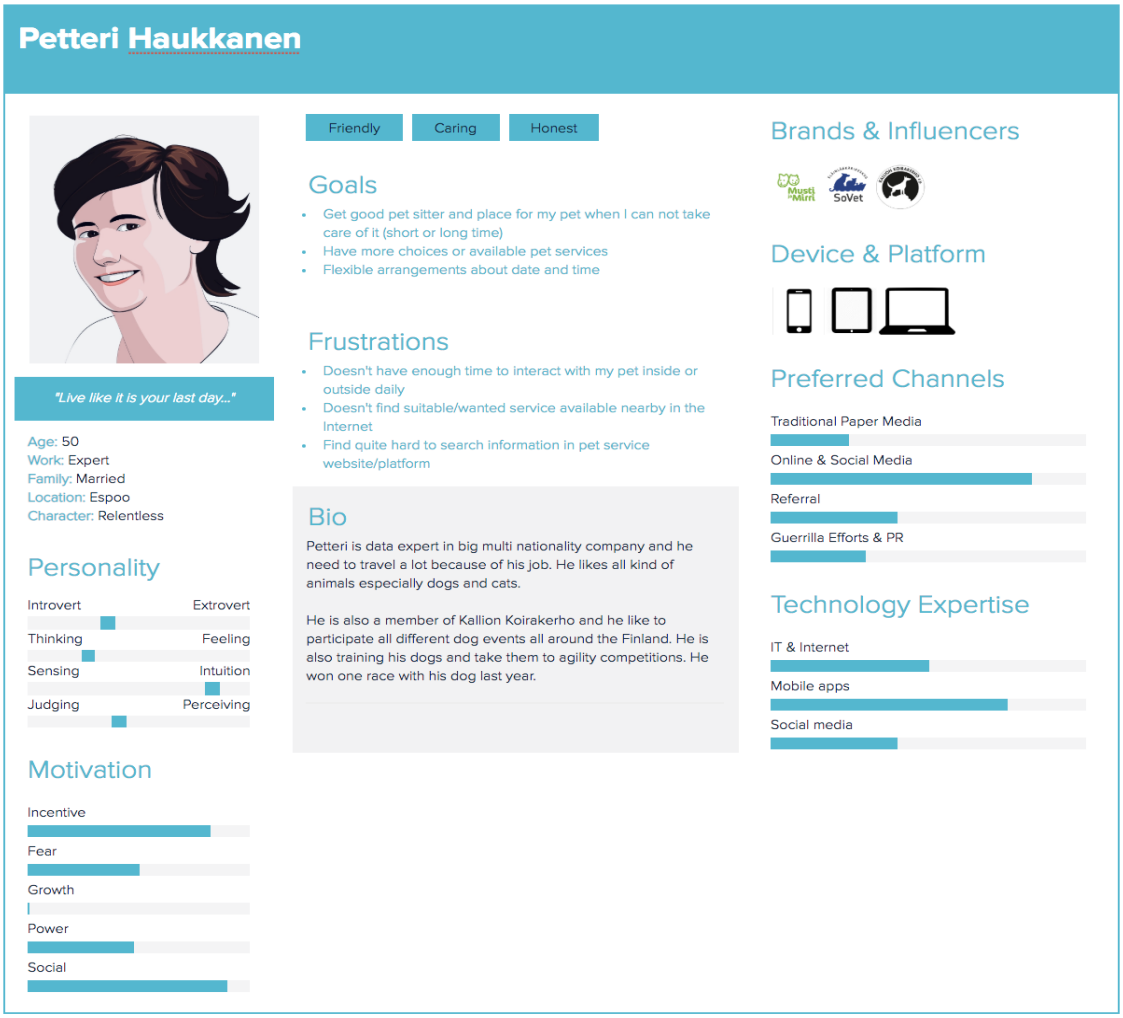

Figure 8. The persona of pet owner.

Besides, I made a profile for pet sitters to identify their pain points and help them overcome their difficulties in using Host My Pet service. Inia moved to Finland three years ago to pursue a Bachelor's degree in engineering. She missed her cat and dog in her hometown in Russia very much since she did not have chance to play and enjoy her time with them. She knew Host My Pet through her classmate and registered herself as pet sitter in the website so that she can interact with pets and earn some extra money at the

same time. After the first experience with pet boarding service where pet owner brings pets to the pet sitter's home, she found it is inconvenient to communicate with the pet owner via email. Communication through email is time-consuming, and it is difficult to track down previous information, especially when the discussion is getting longer. For that reason, she would be happy to use a fast and user-friendly communication channel with pet owners rather than traditional email.

4.2.3 Potential Solutions: User journey map

After defining problems of pet sitters and owners when using Host My Pet service, our team devised several promising solutions and visualized them through the user journey map as illustrated in Figure 9.

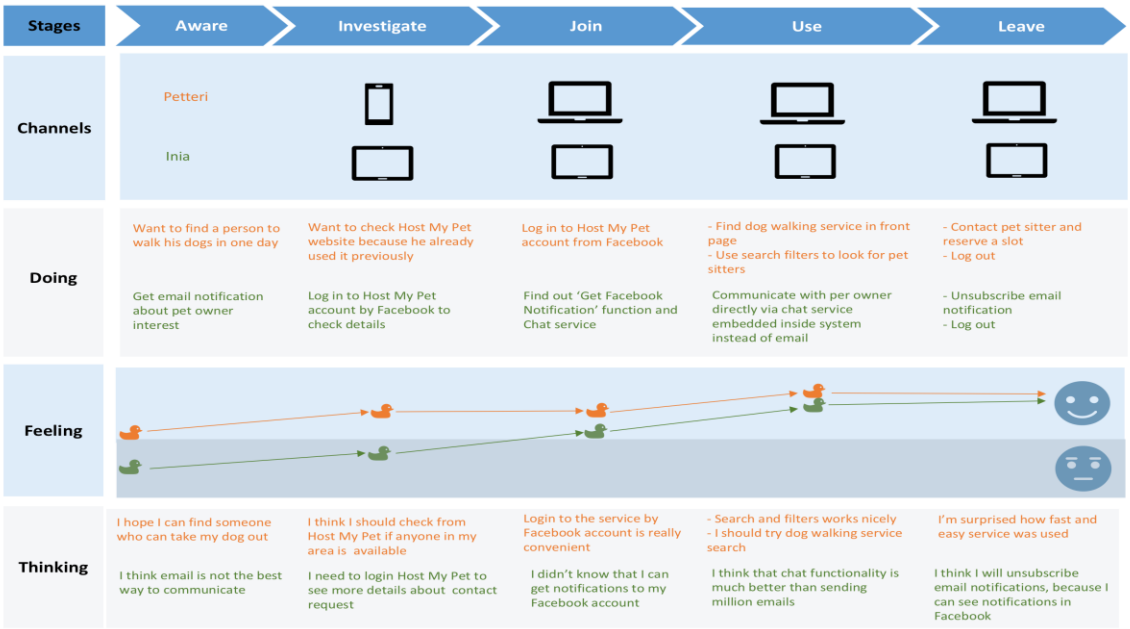

Figure 9. User journey map of Petteri and Inia.

To deal with pet owners' pain points, business team suggested to provide dog walking service which is suitable for short time service (few hours per day) and for which no experienced pet sitters are required. Besides, in order to enhance user experience, I proposed to improve searching functionality and content highlight. Reading pet sitters'

pain point, I thought it would be useful if email communication is replaced by chat service embedded inside the system.

After indicating proposed solutions in user journey map, our team applied them to Host My Pet web application. In particular, dog walking and chat services were developed, and the search function and the content were improved to enhance user experience. More specifically, the Figure 10 demonstrates a simple and elegant user interface of instant messaging chat in website application.

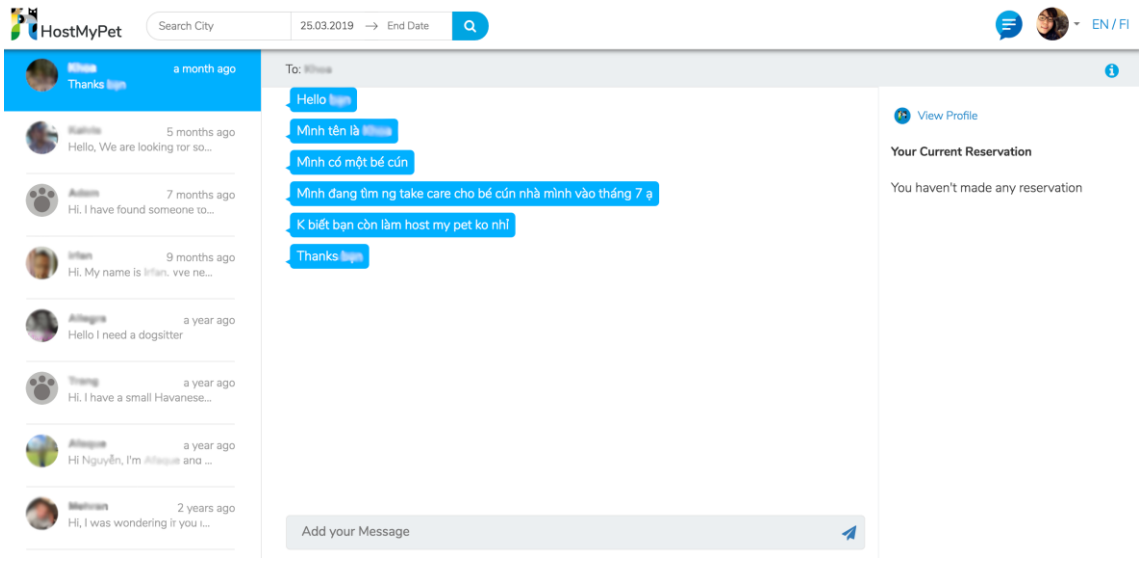

Figure 10. Screenshot of the user interface of Host My Pet chat page. [17] © 2017 Host My Pet Oy. All rights reserved.

The header of the website is divided into two areas with the left-hand side indicating Host My Pet logo and search bar and the right-hand side illustrating chat icon, user avatar and language switch. The main section is separated into two parts: list of senders and chat detail with the possibility to show or hide more information about pet owner's profile and pet sitter's reservation from the right-side panel. Currently, users can send only text messages; file or image attachment will be considered for further development. With the implementation of chat page and Facebook notification, users can exchange information and contact each other easily.

As can be seen from Figure 11 below, search result page has two main sections. While the left-side panel indicates searching filter and list of results, the right-side section

shows a map of pet sitters' location. To be clearer, for the sake of eliminating pet owner's pain point, I implemented a searching filter by service categories including pet boarding, home visit, day care, dog walking and house, which helps the user to narrow down their search results. Moreover, in order to highlight important information and gain quick first impression from pet's owners, I developed the pet's sitters quote, number of reviews and price range in searching result list. In addition, search bar has fixed position in the header of website so that users can use the search function at any time.

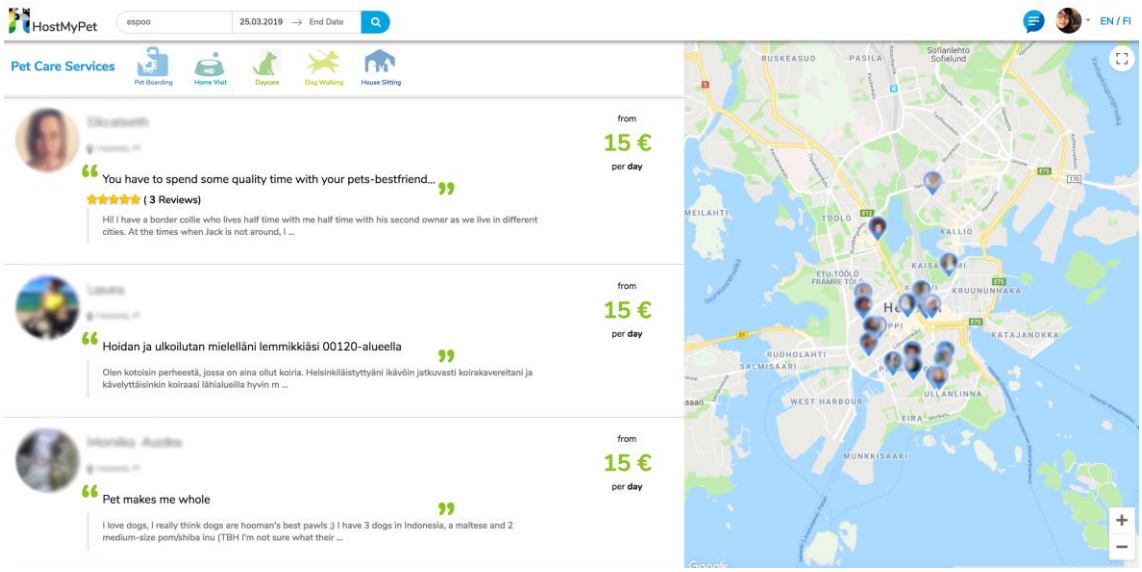

Figure 11. Screenshot of the search result page of Host My Pet's website. [17] © 2017 Host My Pet Oy. All rights reserved.

4.2.4 Host My Pet's Business modal canvas

As illustrated in Figure 11, in terms of value proposition, Host My Pet Oy targeted at pet sitters and pet owners. As there is a gap between them, Host My Pet's application creates value by offering a communication channel. The outstanding features of the platform are user-friendly design, high speed processing, 24/7 customer support service.

Especially, there is a 100% refunding policy for dissatisfaction customers, which ensures the quality of the service. For pet sitters, Host My Pet Oy not only provides them with additional income but also enables them to have a chance to play with pet and add more joy to their lives. For pet owners, they offer various reliable options thanks to huge data

based and transparency review and rating system. Furthermore, the key activities are analyzing data, managing service and building the pet lovers community. Host My Pet Oy created social media channels to attract targeted customers. On the basic of data collected from those customers, design and development team improved user interface as well as meaningful content to better serve them. Besides the social media, Host My Pet Oy held many events for pet lovers to share knowledge and experience about taking care of pets and enjoy fun time together.

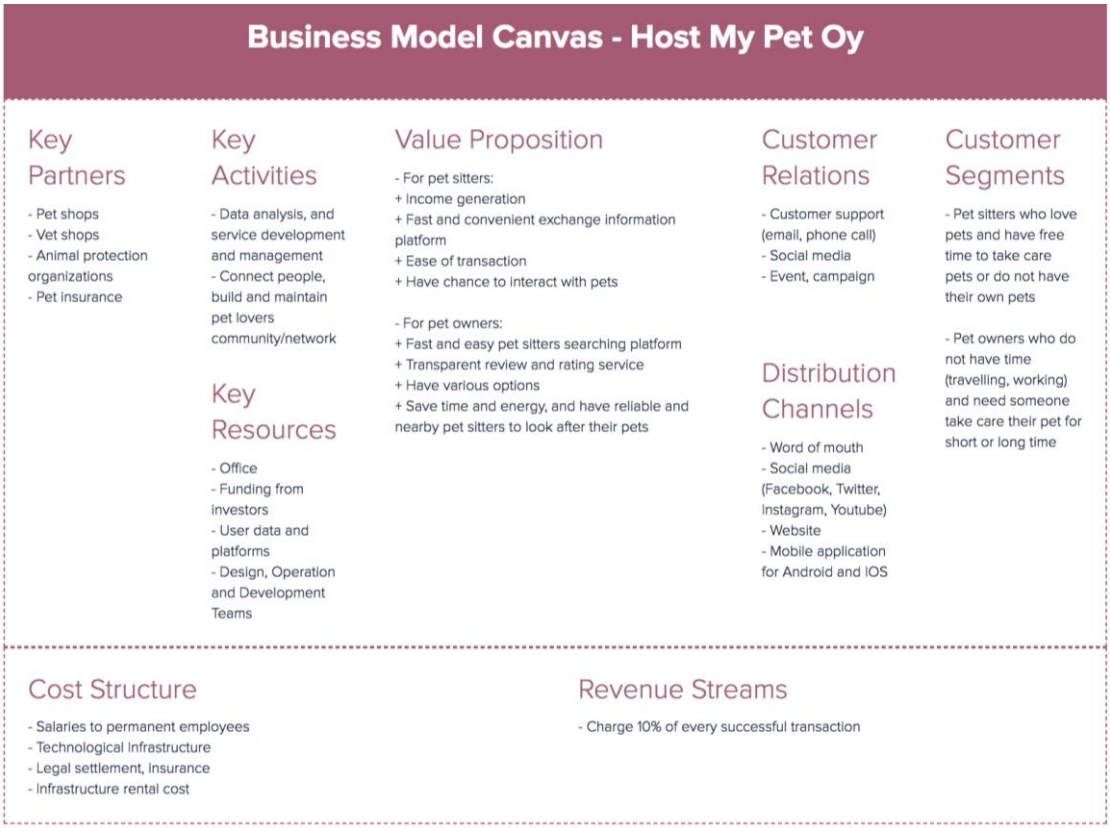

Figure 12. Business modal canvas of Host My Pet Oy.

For distribution channels, Host My Pet Oy mainly focuses on engine search which will lead searcher to the website or the social media page. Therefore, the interface of those channels is very important as it represents for the company and is crucial touch point of the service process. Host My Pet Oy needs to make sure those channels easy to understand and use at the same time professional enough to build credibility for the company. Besides, the word of mouth is another way to bring Host My Pet's service to more people. The main customers from the pet sitters' side are students, so the network is wide and

the information can be easily spread. Furthermore, the company provides mobile application for Android and IOS so that users can use it any time and at anywhere. All in all, Host My Pet's platform is a better choice for pet sitters and pet owners because of the large number of participants and excellent application design and function.

5 Conclusion

To summarize, this thesis examined the application of service design into digital service benefiting both company and end-users, which is worth the investment. From the beginning to the end of service lifecycle, service design plays a key role in brainstorming ideas, conducting researches, validating concepts, developing products and testing results. Besides, with concrete principles, effective process and various available tools, service design gains more and more interest and attention from the technology community.

As demonstrated in the case study of Host My Pet Oy, it is essential to utilize service design to improve user interface and user experience. Especially, when it comes to discovering users' pain points, service design supports designers to focus on service scope and analyze gathered information, which facilitates the definition of right problems. Based on discoveries, potential solutions are proposed and visualized in an attractive and understandable way for all parties involved, which are important factors in making decision for further development. Consequently, when Host My Pet Oy solved correct problems, the number of new registered users as well as the satisfaction of current users increased significantly after the pet caring service had been improved.

All in all, service design should be applied when companies build new service or improve existing service in long run. Because it is a logical journey that keeps people focusing on targets, solves right issues and maintain customer relationship. As a result, company can maximize their profit and reputation, and customers can enjoy their interaction and experience ultimately.

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