

Analyzing cost efficiency of customer service using the
interactive kiosk
The case of Etäpalvelutekniikka Oy

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ABSTRACT

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<p>This research aims to study cost efficiency of customer service using the interactive kiosk. The first objective of my research is to find out how the interactive kiosk can be used to conduct customer service. The second objective of my research is to analyze cost efficiency of customer service using the interactive kiosk. The Chief Executive Officer in Etäpalvelutekniikka Oy commissioned this research.</p> <p>To achieve the research objectives, I studied previous literature and research on the concepts of customer service, the interactive kiosk, and the role of the interactive kiosk in customer service. Furthermore, I conducted research into cost efficiency of customer service, including the concept, the key cost components, and the steps to measure cost efficiency. Relevant sources were collected in order to profoundly understand cost efficiency of customer service using the interactive kiosk.</p> <p>This qualitative research was conducted as a single case study for the case company Etäpalvelutekniikka Oy. Explanatory research approach was chosen to provide an insight into cost efficiency of customer service using the interactive kiosk. This research gathered relevant data from previous literature and research, my working experience, and an in-depth interview with the Chief Executive Officer of the case company.</p> <p>On the basis of the theoretical discussions, my working experience, and the in-depth interview, the research results pointed out how and why customer service using the interactive kiosk is cost efficient. The research results are not only beneficial to the case company but also to its customers. In terms of the case company, this thesis research recommends the case company to recruit human resources from different time zones to reduce human resources cost. With regard to the case company's customers, this research recommends that the case company's customers should utilize both their existing human resources and the case company's human resources to provide optimal cost efficient customer service. Furthermore, the case company's customers are recommended to have their existing human resources trained with training programs provided by the case company.</p>	
Key words: cost efficiency, customer service, interactive kiosk, Etäpalvelutekniikka Oy	

CONTENT

ABSTRACT

FIGURES AND TABLES

1 INTRODUCTION.....	7
1.1 Background and motivation	7
1.2 Case company's background	9
1.3 Research objectives and questions	10
1.4 Research methodology, scope, and limitation.....	11
1.5 Structure of thesis.....	12
2 RESEARCH PROCESS AND METHODOLOGY	13
2.1 Research process	13
2.2 Qualitative case study	13
2.3 Data collection and analysis.....	14
3 INTERACTIVE KIOSK IN CUSTOMER SERVICE	17
3.1 Customer service.....	17
3.2 Interactive kiosk.....	19
3.3 Interactive kiosk in customer service.....	21
4 COST EFFICIENCY	23
4.1 Reasons for analyzing cost efficiency.....	23
4.2 Concept	25
4.3 Key cost components	26
4.4 Steps to measure cost efficiency	30
5 COST EFFICIENCY OF CASE COMPANY'S SERVICES.....	32
5.1 Case company's services.....	32
5.2 Measurement of cost efficiency	33
5.3 Research results.....	40
5.4 Recommendations	41

6 DISCUSSIONS AND CONCLUSIONS	44
6.1 Discussions.....	44
6.2 Conclusions	45
6.3 Suggestions for future research	48
REFERENCES.....	49
APPENDIX 1	53
APPENDIX 2	54

FIGURES AND TABLES

Figure 1. Model of the interactive kiosk (Bothnia Invent AB 2013).....	20
Figure 2. Value proposition canvas.....	23
Figure 3. Steps to measure cost efficiency.....	31
Figure 4. Total cost of customer service operations.....	40
Table 1. Total direct cost.....	27
Table 2. Total indirect cost.....	28
Table 3. Key cost components.....	29
Table 4. Total cost of the traditional customer service.....	34
Table 5. Labor cost calculation	36
Table 6. Total cost of customer service using EPT's kiosks and Customer Company's human resources.....	36
Table 7. Total cost of customer service using both EPT's kiosks and the human resources.....	38

1 INTRODUCTION

Firstly, this chapter begins with background and motivation for the research. Secondly, case company's background is described. Thirdly, discussion of research objectives and questions are made, following by research methodology, scope, and limitation. Lastly, structure of thesis is given.

1.1 Background and motivation

Service industry has grown very fast in recent years, for example banking and insurance, retail and wholesale, and tourism. In Finland, services accounted for 71.9 percent of the whole country's Gross Domestic Product in 2013. (Bailey & Gruhl & Maglio & Spohrer 2007, 3; Central intelligence agency 2013.) Therefore, customer service today is a part of businesses and it is considered as the connection between businesses and customers. However, providing suitable customer service is a challenge to any businesses.

In the past, the traditional customer service was the most widely used customer service which allowed the face-to-face contacts between service providers and customers, allowing customers to gain assistance in troubleshooting and problem solving. However, human resources and office rental costs required to implement the traditional customer service are very high, which costs businesses a lot of money. Besides the traditional customer service, the automated teller machine (hereinafter ATM) was first installed in Enfield, North London in 1967 by the chief inventor John Shepherd Barron, elevating customer service to a new stage (BBC News 2007). The ATM, however, allows customers to conduct transactions with limited information dissemination capabilities (Sihvola & Syrjanen & Vilmunen 2011, 823). To remedy this challenge, this thesis suggests that the interactive kiosk as a new tool to conduct customer service can provide customers with the interactive experience through technologies. The interactive kiosk does not only help increase trust, security, and customer-friendly service environment but also reduce service operation costs. (Kuutti & Sihvola & Syrjänen & Vilmunen 2012, 292.) Therefore, this research focuses upon demonstrating both scientific and practical value of cost efficiency of customer service using the

interactive kiosk. In the framework of this research, the theoretical discussions of cost efficiency of customer service using the interactive kiosk do not cover other fields besides business.

This research is commissioned by the Chief Executive Officer (Hereinafter CEO) of Etäpalvelutekniikka Oy (Hereinafter EPT), Mr. Vesa Sihvola. Despite the fact that customer service using the interactive kiosk provides many different economic values, the case company has not successfully approached prospective customers because of the competitive kiosks market. I searched for relevant literature to support the empirical research in cost efficiency of customer service using the interactive kiosk. The outcome of this thesis work is a set of recommendations for both the case company and its customers to provide optimal cost efficient customer service.

This research is based on my practical working experience at Bothnia Invent AB from August to December in 2013. During my practical training period, I had an opportunity to become familiar with the concept of the interactive kiosk. Importantly, I was involved in the startup process of EPT which is the service provider of the interactive kiosk concept developed by Bothnia Invent AB. My main working responsibility was to be in charge of administrative tasks, and to assist the CEO Vesa Sihvola in the startup process of EPT. I came to know the advantages of the interactive kiosk when it is used to conduct customer service. With the concept of the interactive kiosk, customer service is facilitated. It offers the real interaction between the customers and the CSRs and at the same time provides cost efficient customer service. Furthermore, the previous working experience is valuable for me to understand cost efficiency of customer services that EPT can provide its customers with. This economic value is also pointed out in previous research (Kuutti et al. 2012, 292).

This research studies cost efficiency of customer service, as well as measures cost efficiency of customer service using the interactive kiosk. As I was particularly interested in the economic value of cost efficiency, I interviewed Mr. Vesa Sihvola about the advantages of customer service using the interactive kiosk compared to other types of customer service in terms of costs allocation. Based upon the previous literature, including books, articles, and journals, the discussion and analysis of how this empirical research is related to these relevant sources are provided in the following chapters. Additionally, this research stems from documentation from the case company's customer on how it creates cost structures of the traditional customer service

and customer service provided by the case company. To sum up, this research is valuable for both the case company and its customers because the interactive kiosk has not been widely known in conducting customer service. Therefore, the case company can introduce its customer services to prospective customers through this research and its customers can have an insight into cost efficiency of customer service using the interactive kiosk.

1.2 Case company's background

EPT is the service provider through the interactive kiosk invented and developed by Bothnia Invent AB. EPT engages in the Call Center field to provide customer service through the interactive kiosk with the help of technologies. The company uses new information and communication technologies in which Front-Point technology is used to carry out regular customer service processes. EPT is completely owned by Bothnia Invent AB.

In terms of service technology, the company uses unique technology which enables audio and video communication to remotely connect the customers to the CSRS. The core concept is the interactive kiosk where Front Point technology is utilized to offer interactive customer service in different fields such as retail, logistics, and transportation. Customer service using the interactive kiosk allows the customers to be served from a long distance with real time video communication. The customers can be located in anywhere and connected to customer service representations (hereinafter CSR) from different places. The CSRs are people who remotely serve the customers through the interactive kiosk. Therefore, customer service using the interactive kiosk saves money to hire CSRs to serve customers at specific locations. The idea is to keep communicating, as well as to apply technologies to deliver flexible customer service processes.

The goal and benefit of customer service using the interactive kiosk are to attract customer businesses by lowering service operation costs. The case company's technological solution creates the possibility to adapt to customers' demands with high-quality customer service processes, as well as to provide the same customer servicing

quality level in all locations. The case company's services are discussed specifically in chapter 5.

1.3 Research objectives and questions

The topic of my research focuses on cost efficiency of customer service using the interactive kiosk. The first objective of this research is to find out how the interactive kiosk can be used to conduct customer service by referring to literature research, and particularly to the case company EPT. This research objective originated from the fact that customer service can weaken or strengthen businesses' images. Therefore, customer service plays an essential role in business development. (Goodman 2009, 16.) The second objective of this research is to analyze cost efficiency of customer service using the interactive kiosk. At the end, the outcome of this research is a set of recommendations for both the case company and its customers for providing optimal cost efficient customer service.

Three main research questions are formulated to achieve the objectives of this research and to reach the final outcome. The steps needed to answer the three research questions are explained.

1. What is the role of the interactive kiosk in customer service?

To analyze the economic value of cost efficiency of customer service using interactive kiosk, the fundamental role of the interactive kiosk in customer service must be profoundly understood. To answer this question, the concepts of customer service and the interactive kiosk need to be carefully defined to understand how the interactive kiosk can be used to conduct customer service.

2. How can cost efficiency of customer service provided by Etäpalvelutekniikka Oy be measured?

This research question aims to focus on cost efficiency of customer service using the interactive kiosk despite the fact that the involvement of technologies in the interactive kiosk enables customer service to flexibly provide customers with different values (Bolton & Iyer 2009, 99). In order to be able to measure cost efficiency of customer

service provided by EPT, firstly, discussions of concept of cost efficiency and key cost components of customer service operation are given. Secondly, steps to measure cost efficiency of customer service are chosen. Deriving from the theoretical framework of cost efficiency of customer service, cost efficiency of customer service provided by EPT is measured.

3. How does the measurement of cost efficiency influence the cost structures of service operation to provide optimal cost efficient customer service?

The measurement result of cost efficiency of customer service provided by EPT is analyzed in order to clearly recognize limitations of the cost structures of customer service operation. This research question aims to find out if there is any limitation of the cost structures of customer service operation that is based on the measurement result of cost efficiency of customer service using the interactive kiosk. The analysis of the measurement of cost efficiency drives to a set of recommendations for both the case company and its customers to provide optimal cost efficient customer service.

1.4 Research methodology, scope, and limitation

In terms of the research methodology, qualitative case study was used to conduct the research with the case company EPT. The explanatory research approach was the most relevant to this research because the analysis of cost efficiency of customer service using the interactive kiosk requires the explanation of how and why customer service using the interactive kiosk is cost efficient. An in-depth interview with the CEO of the case company was conducted to gain information on how the interactive kiosk can be used to conduct customer service. Moreover, the data from previous research and literature, including books, journals, and articles were collected. Importantly, the working experience as a trainee at Bothnia Invent AB was valuable for me to understand the interactive kiosk as well as its roles in customer service. Therefore, this empirical research can be considered as the combination of the previous research, the literature, and my working experience. The choices of research methodology are discussed further in chapter 2.

With regard to the scope, I only concentrate on analyzing cost efficiency due to my own interest despite the fact that there are different economic values of customer service using the interactive kiosk, for example time effectiveness and brand recognition. This thesis research helps the case company understand cost efficiency of its services. The case company can use this thesis to introduce its services and the economic value of cost efficiency to prospective groups of customers.

The limitations of this research process are related to previous literature and documentation from the case company and its customers. Firstly, since the interactive kiosk is quite a new concept, previous literature about the interactive kiosk is limited. Consequently, finding the relevant literature concerning the interactive kiosk, in particular how the interactive kiosk can be used to conduct customer service is challenging. Secondly, the case company has not successfully approached a number of customers because it is a newly established company. This fact restricts the analysis of how the case company's services are used by its customers. Lastly, in view of the measurement of cost efficiency of customer service using the interactive kiosk, cost structures of the case company's customer are required. The analysis of cost efficiency of customer service using the interactive kiosk might be limited since only one customer's financial information is available for this research.

1.5 Structure of thesis

This thesis research is divided into six chapters. Chapter 2 provides a detailed discussion about the research methodology. An introduction to customer service and the interactive kiosk is given in chapter 3, followed by the analysis of the role of the interactive kiosk in customer service. Chapter 4 analyzes cost efficiency of customer service, including the concept, the key cost components, and the steps to measure cost efficiency of customer service using the interactive kiosk. In chapter 5, cost efficiency of the case company's services is measured based on theoretical framework provided in the previous chapters. In addition, research results and recommendations are also provided in chapter 5. Lastly, chapter 6 presents the discussions and conclusions of this thesis research, and suggestions for further research.

2 RESEARCH PROCESS AND METHODOLOGY

This chapter gives an analysis of research process and methodology. Firstly, the research process is discussed. Secondly, the research methodology, including the qualitative case study, data collection and analysis are presented respectively with explanation of the methodology choices.

2.1 Research process

The research process began with a commission agreement signed by the CEO of the case company, Mr. Vesa Sihvola and the thesis supervisor at the university, Mr. Esa Jauhola. At the same time, a discussion between Mr. Sihvola and me was conducted to understand his expectations from my thesis work, and to express my own interest in conducting this research in cost efficiency of customer service using the interactive kiosk provided by the case company. Therefore, to meet his expectations and my own interest, I searched for relevant sources in which I used the explanatory research approach. The literature needed for this research was collected from different sources, i.e. books, journals, and articles. In addition, the data of cost efficiency of customer service using the interactive kiosk were collected from my previous working experience as a trainee at the case company and an in-depth interview with Mr. Sihvola. On the basis of understanding cost efficiency of customer service, I started measuring cost efficiency of customer service using the interactive kiosk to reach the final outcome of the research.

2.2 Qualitative case study

This research is conducted as a qualitative case study. Case study is an approach to answer “how” or “why” questions which depends upon the types of research questions (Ghauri 2004, 110). The case study is one of the most suitable choices for international business research. Data is gathered from different cultures and places (Ghauri 2010,

111.) The case study approach is commonly used to “investigate a phenomenon, in which the boundaries between phenomenon and context are not shown clearly” (Yin 1994 as cited by Biklen & Bogdan 1998, 27). Central intelligence agency (1988, 21) defines a qualitative case study as “an intensive, holistic description and analysis of a single instance, phenomenon, or social unit”. However, Yin (2009, 3) emphasizes that case study is one of the most challenging choices to conduct research. In this research, I chose the qualitative case study as a research method to achieve the research objectives because the qualitative case study allows me to measure the economic value of cost efficiency of the case company’s services based on a literature review. In addition, I conducted the qualitative research as a single case study for the case company. The reason for choosing the single case approach is because it allows examining relations between intervention and outcome (Michel & Nock & Photos 2007, 341).

In the qualitative case study, I chose the explanatory research approach. The explanatory research approach helps explain the casual links in real-life interventions which are complex to explain through survey result or experiment (Yin 2003 as cited by Baxtex & Jack 2008, 547). Therefore, the explanatory research approach is relevant to this research because the analysis of cost efficiency of customer service using the interactive kiosk requires the explanation of how and why customer service using the interactive kiosk is cost efficient compared to other types of customer service. To give a clear explanation to this issue, the concept, key cost components, and steps to measure cost efficiency are provided explicitly. Furthermore, another reason for choosing the explanatory research approach is because it offers an insight into how cost efficient the case company’s services are when reflecting upon the theoretical framework about cost efficiency of customer service.

2.3 Data collection and analysis

In order to achieve the research objectives, different sets of data sources were required. First of all, my previous working experience at the case company was used as participant observation because I was directly involved in the startup process of the case company. I was able to understand the case company’s services, i.e. what kinds of services the case company provides the customers with and how costs are allocated to

implement customer service using the interactive kiosk. The data were also gathered through discussions with the CEO of the case company and some demonstration presentations to the customers.

In addition, an in-depth interview was conducted with Mr. Vesa Sihvola. The reason for conducting only one interview with Mr. Vesa Sihvola is because he is not only the CEO of the case company but also the inventor of the interactive kiosk. Hence, he knows exactly how the interactive kiosk can be used to conduct customer service. In addition, he has expertise in the field of the interactive kiosk with some published articles. Lastly, Mr. Vesa Sihvola is directly involved in any decision-making processes in the case company. Therefore, his interest and expectations towards my thesis work influences my research motivation.

Yin (2009, 106) states that interview is a very essential source of case study because it can drive conversation more naturally than survey. Daniels and Cannice (2004, 185) also point out that interview is where the data and findings are taken from the conversation between the researcher and the interviewee. An in-depth interview is regarded as one type of case study interview in which the interviewer is able to ask the interviewee a wide range of questions as well as his or her opinions about particular issues (Yin 2009, 107). Therefore, an in-depth interview is relevant for my research because I am able to flexibly ask the CEO of the case company about the company's services and the influences of the interactive kiosk on customer service. Furthermore, I can ask about his insights into the economic value of cost efficiency of customer service using the interactive kiosk. Before conducting the interview, the interviewee was given a list of questions some days beforehand for the preparation. Some general questions were concerning the operation of the interactive kiosk in customer service. Following the general questions, economic values of customer service using the interactive kiosk were asked. Due to the nature of this research, the interviewee was asked to choose the most important economic value of customer service using the interactive kiosk that helped me narrow down the research scope. All the interview questions were written in English and the in-depth interview was also conducted in English because English is the language used between the interviewer and the interviewee. During the interview, I took notes and the interview was recorded properly. I did not only receive valuable information from the case company, but also documentation from the case company's customer about the cost structures while it used the case company's services. In this research, the case company's customer is named as Customer Company since its name

cannot be made public. The reviewers of the thesis text have access to the original documentation provided by the Customer Company.

To sum up, all choices of research methodology discussed above are necessary to achieve the research objectives. The data collected from my previous working experience as a participant observer, the literature, the in-depth interview, and the documentation from the Customer Company, were relevant for the research analysis. By defining the theoretical background, including the concept, the key cost components, and the steps for measurement of cost efficiency of customer service using the interactive kiosk, the cost efficiency of the case company's services were measured to accomplish the final research outcome.

3 INTERACTIVE KIOSK IN CUSTOMER SERVICE

This chapter gives an understanding of customer service using the interactive kiosk. The first section elaborates discussions of the concept of customer service in business development. The second section introduces the concept of the interactive kiosk. Lastly, the third section gives an insight into the role of the interactive kiosk in customer service with concrete examples of how the interactive kiosk can be used to conduct customer service.

3.1 Customer service

There are two principal issues that primarily build the theoretical framework of customer service which are the concept of customer service and its importance to business success. With regard to the concept of customer service, there are many suggestions by different researchers. This paper draws from Lucas (2005), Turban, King, Warkentin and Chung (2002), and Kisperka (2005) for defining the three different concepts of customer service. First of all, Lucas (2005, 5) points out that customer service is a variety of activities to sell or barter products from where they are made. While customer service in the past was provided from business owners to neighbors without chain stores, customer service today is motivated and conducted by frontline employees in a diverse aspect (Lucas 2005, 5). In addition, Turban et al. (2002) define that “customer service is a series of activities designed to enhance the level of customer satisfaction, that is, customer’s feeling that a product or service has met their expectations”. However, according to Kisperka (2005, 122), customer service is a broad term that varies differently among companies. Service providers and customers have different perceptions concerning customer service which are based on their individual expectations. Therefore, from Kisperka’s point of view, there is no specific concept of customer service.

In general, the two concepts defined by Turban et al. (2002) and Kisperka (2005) together illustrate the importance of customers’ expectations and those researchers stress that customer service is mainly concerned with how to meet the customers’

expectations regardless of the products that businesses offer. The concept of customer service defined by Lucas (2005) is similar to what Turban et al. (2002) define in view that customer service is a number of activities to approach customers. This research mainly relies on Turban et al. (2002) and Lucas (2005) in approaching the concept of customer service because they clearly define the concept of customer service. Meanwhile, this research is also in agreement with Kisperka's perception in terms of the importance of customers' expectations. To summarize, understanding the concept of customer service is necessary for comprehending its importance to business success.

In connection with the importance of customer service to business success, different researchers carried out the discussions about the importance of customer service. Goodman (2009) and Gerson (1998) are the two researchers that have deep analyses of the importance of customer service. According to Goodman (2009, 16), poor customer service can seriously harm businesses. Most customers do not complain about what they are unsatisfied with. It means that businesses would lose the number of customers and profit amount would consequently be reduced. Meanwhile, businesses' images might be affected strongly since the complaints themselves do not come directly to businesses, but travel even further to the society. Deriving from a survey conducted by Goodman, about 60 percent of overall customer dissatisfaction comes from products' quality and marketing messages, and not from customer service itself. Furthermore, it is a good signal that if complaints are handled properly and customers are encouraged to make complaints, businesses can keep those customers. (Goodman 2009, 16-21.) Therefore, handling and managing a good customer service is very important for businesses to keep customers.

Besides Goodman's perception of the importance of customer service to business success, Gerson (1998) also becomes aware of the importance of customer service. Gerson (1998, 9) comprehends that customer service is an essential factor for business success. Customer service must be good enough to compete with other competitors to attract and keep customers. To carry out customer service successfully, customers' needs and wants must be met completely despite the fact that there might be complaints or requests. In a general point of view, customer service is a marketing tool, helping tell others about businesses. Having the same opinion with Goodman, Gerson stresses that poor customer service could harm businesses significantly. Businesses do not only lose customer revenue, but also opportunity revenue. In other words, businesses have to pay

for customer replacement cost (Gerson 1998, 13). Hence, the higher the quality of customer service, the higher the likelihood of the business success.

In conclusion, customer service is a series of activities designed to enhance customers' expectations. Customer service plays an important role in business success since it helps attract and keep customers. On the basis of understanding the concept of customer service and its importance to business success, the question of how customer service should be conducted is proposed.

3.2 Interactive kiosk

There are two principal issues that primarily build the theoretical framework of the interactive kiosk, the concept of the interactive kiosk and the reason for using the interactive kiosk to conduct customer service. The concept of the interactive kiosk was discussed in previous researches and literature. This paper draws from Sihvola, Syrjänen and Vilmunen (2011), Holfelder and Helmann and (1994), and Camilli, Dibitonto, Medaglia, Nocera and Vona (2011) for defining the three different concepts of the interactive kiosk. According to Sihvola et al. (2011, 823), the interactive kiosk is a computer-like device that takes advantages of audio and video connection to remotely connect CSRs and customers with applications set up in the kiosk. Furthermore, Helmann and Holfelder (1994, 344) perceive an interactive kiosk as a computer-based information system machine which is located in public areas. Customers can stand anywhere and make call to CSRs from the interactive kiosk. After a relatively short time, customers are connected to CSRs and information or transactions can be provided remotely. On the other hand, the perception of the interactive kiosk by Camilli, Dibitonto, Medaglia, Nocera and Vona (2011) is more general than the perception from Sihvola et al. (2011) and Helmann and Holfelder (1994). According to Camilli et al. (2011, 89), the interactive kiosk is a redesign of the ATM which aims to enhance the effectiveness of customer service and to provide customers with the interactive experience in customer service. On the basis of these three suggestions above for defining the concept of the interactive kiosk, one common essential feature of the interactive kiosk is provided. The three groups of authors referred to above together point out that the interactive kiosk is a tool of remote communication between

customers and CSRs. Therefore, this research relies on the combined meaning of these three concepts of the interactive kiosk. To summarize, the interactive kiosk is a computer-like device that can offer interactive customer service remotely with the help of technologies and the Internet. Figure 1 below illustrates the interactive kiosk model that is designed and developed by Bothnia Invent AB.

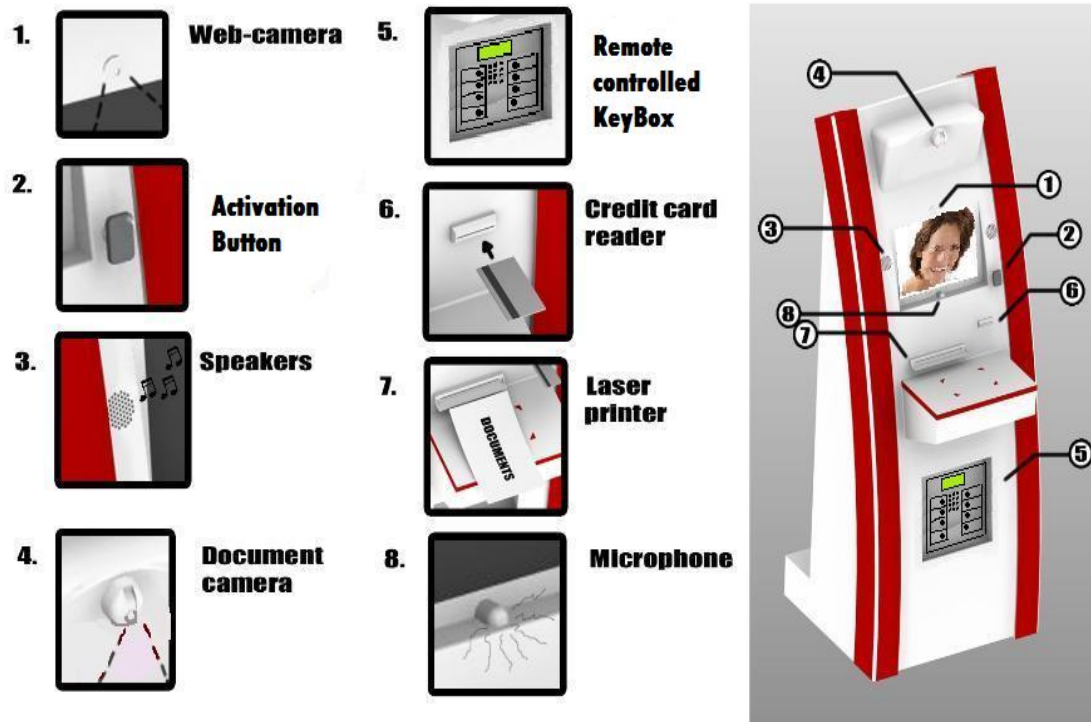


Figure 1. Model of the interactive kiosk (Bothnia Invent AB 2013)

The numbered items in the figure above are descriptions of the interactive kiosk, including remote controlled key box, web-camera, credit card reader, activation button, speakers, laser printer, microphone, and document camera (scanner). All these items are set up in the interactive kiosk to handle not only simple but also complex customer service situations which depend on specific customers' demands. Furthermore, the interactive kiosk consists of different software installed inside the computer to support the interaction between customers and CSRs which means that real humans are involved in customer service processes. Importantly, other software and devices can be also added to the interactive kiosk to adapt to specific customers' demands. (Bothnia Invent AB 2013.)

With regard to the reason for using the interactive kiosk to conduct customer service, there are three reasons that can be also considered as winning factors of the interactive kiosk compared to other types of customer service. First of all, the interactive kiosk

provides a dynamic two-way information flow between customers and CSRs. Secondly, the interactive kiosk is designed to offer customers with different ranges of information. The interactive kiosk can be used to help customers with both simple transactions and complex customer service processes. Thirdly, the interactive kiosk provides a CSR with the possibility to serve a large number of customers from different locations. Furthermore, in an amount of time, a CSR can serve different customers from the back-office. The back-office is a working station with computers accessing to the Internet in which many CSRs can serve customers remotely. Therefore, the interactive kiosk helps reduce costs of human resources, office premises, and other resources. (Sihvola et al. 2011, 823-827; Kuutti et al. 2011, 294.)

To conclude, the interactive kiosk can be utilized to become a suitable tool to handle any customer service processes. With advantages compared to other types of customer service, the interactive kiosk can provide quick and convenient customer service to the customers without any location barriers. At the same time, it offers cost reduction in human resources, office premises, and other resources.

3.3 Interactive kiosk in customer service

Regarding to the information gathered from the in-depth interview with the CEO of the case company, it is emphasized that the case company's customers can receive a personal customer service session remotely with great quality in both audio and video offered through the interactive kiosk. The customers have chance to experience customer service as a Face-to-Face phenomenon with the same flexibility and possibility as they receive in the traditional customer service. (Sihvola 2014.) He pointed out that there are six main uses of the interactive kiosk in customer service that the case company can provide the customers with.

First of all, the interactive kiosk is used as a service provider. For example, the interactive kiosk can be installed in the entrance of insurance companies, banks, or tourism agencies to help the customers connect to the CSRs. Secondly, the interactive kiosk is used as system of appointment booking. The appointment booking system through the interactive kiosk can be used in health center, theaters, hotels, and all kind of renting and booking stations. Thirdly, the interactive kiosk is used as a product-

presenting tool in marketing events, exhibitions, and shops. As an alternative of having a CSR introducing products, product presentation can be conducted through the interactive kiosk. The presentation can be made remotely between the customers and the CSRs without any distractions. In addition, the interactive kiosk is used as a receive-return station. For instance, the customers can handle car-renting process through the interactive kiosk with the help of the CSRs. All technological figures are installed in the interactive kiosk to handle the whole car-renting process. Moreover, the interactive kiosk is used as information stations such as info desk and call center. With the interactive kiosk solution, the CSR is always available to answer questions requiring high information dissemination capability that makes the customer service using the interactive kiosk different from the ATM. Lastly, the interactive kiosk is used as a tool to sell the case company's services and products through the network of kiosks in non-peak time period. The case company can distribute products through its own channel due to the fact that sale and distribution channel is essential to bring services' values to the customers. Hence, the interactive kiosk can become a new and valuable marketing channel which are specially located in locations where the customers are. (Sihvola 2014.)

To conclude, the six different uses of the interactive kiosk in conducting customer service were discussed above since the case company perceived them as common services that the customers might need. The more demands that the customers have, the more responsibilities that the case company would carry on to meet those demands properly. Particularly, many companies today specialize in providing services only, for example consulting firms and banks (Lucas 2005, 4). Therefore, the interactive kiosk can bring customer service to a new stage with cost efficiency.

4 COST EFFICIENCY

This chapter focuses on cost efficiency of customer service that is the most important part of this research and the foundation to answer the second and the third research question. The reasons for analyzing cost efficiency are discussed first. In addition, the cost efficiency of customer service is analyzed thoroughly, including the concept, the key cost components, and the steps to measure cost efficiency.

4.1 Reasons for analyzing cost efficiency

In order to compete in today competitive business environment, customer-driven factor is one of the key success factors in any businesses. Therefore, meeting customers' expectations becomes the most prominent concern to achieve customer satisfaction. (Drury 2006, 13.) According to Sihvola (2014), the interactive kiosk is designed to meet the customers' expectations based on different surveys conducted by Bothnia Invent AB. Cost of customer service using the interactive kiosk is one of the concerns of the case company's customers. Therefore, in order to meet customers' expectations, cost efficiency is one of the important economic values that the case company provides the customers with. Figure 2 below illustrates the value proposition canvas of the case company's services.

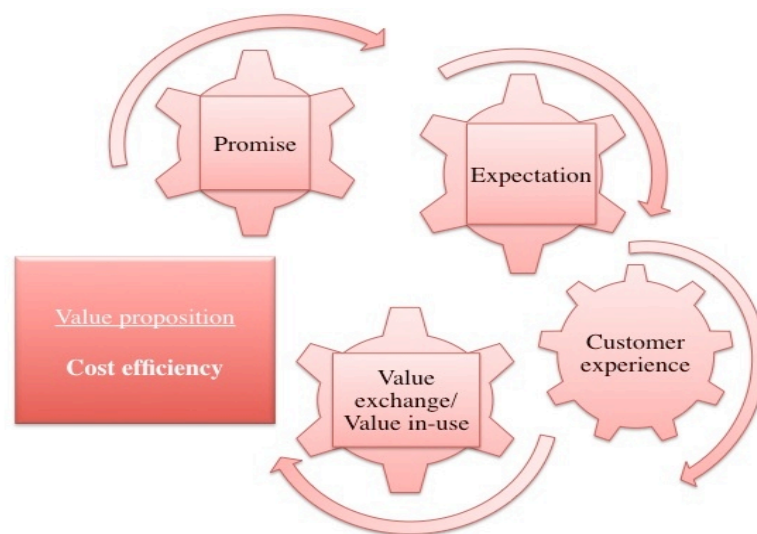


Figure 2. Value proposition canvas

In the figure above, the case company's customer services are conducted through the interactive kiosk to provide the customers with the value proposition of cost efficiency. To formulate the value proposition canvas, there are four different aspects need to be taken into consideration, i.e. promise, expectation, customer experience, and value exchange or value in-use. First of all, having the promise of service quality or product quality is very crucial for any businesses. Within the context of the case company, it promises to provide the customers with cost efficient customer service using the interactive kiosk. The promise is created to meet the customers' expectations. Therefore, the customers' expectations have a connection to the case company's promise. The customers can only evaluate service quality through their own experiences by examining the services since they set expectations themselves. According to Scullin, Fjermestad and Romano (2004, 411), with the evolution of the Internet, traditional customer service today becomes "a thing of the past". The purpose of the interactive kiosk is to provide instant customers' demands which creates satisfactory customer experience compared to what the traditional customer service could provide customers with (Scullin & Fjermestad & Romano 2004, 411). Schmitt (2010, 230) also emphasizes that integration between customers and CSRs can create a meaningful relationship which helps companies attract and retain customers. Customer experience is evaluated by the customers which consequently affects value exchange or value in-use. If the value exchange or value in-use is good, the value proposition is met. As a result, there is a continuous success circle of the case company to attract the customers. If not, the interactive kiosk is not able to provide the customers with optimal cost efficient customer service. To conclude, in order to meet the customers' expectations and provide satisfactory customer experience, the case company's services must provide the economic value of cost efficiency.

On the basis of research findings, customer experience might vary differently based on the customers' individual expectations. However, the promise of cost efficient customer service using the interactive kiosk from the case company stays unchanged. Hence, to measure cost efficiency of the case company's services, cost efficiency of customer service must be understood precisely.

4.2 Concept

“Cost” does not have any definite meaning that varies broadly and generally (Arora 2009, 24). Consequently, defining the concept of cost efficiency is even more difficult than defining the concept of cost itself. In fact, cost efficiency is defined differently as specified by particular fields or areas of research. To define the concept of cost efficiency of customer service, “cost” and “efficiency” are defined separately.

With regard to “cost”, many researchers and organizations provide suggestions for defining the concept of cost. According to Committee on Cost Concepts and Standards of American Accounting Association (as cited by Arora 2009, 24), cost can be regarded as economic sacrifice which is to measure a particular objective in monetary term. Similarly, Harper and Cost Accounting Standards of ICWA of India (as cited by Arora 2009, 24) point out that cost is a monetary measurement of the resources used to produce goods or provide services. In connection to “efficiency”, Tajeddini, Elg and Trueman (2013, 455) define efficiency as return on investment, on sale, and on assets. Considering customer service using the interactive kiosk, the efficiency of customer service is to have investment returned in which companies can attract and retain customers from customer service.

On the basis of the above suggestions, cost efficiency of customer service using the interactive kiosk can be understood that the monetary measurement to implement customer service through the interactive kiosk is low. Drury (2006, 13) argues that a product or service is cost efficient when it is purchased at the lowest price despite the fact that he does not provide any specific concept of cost efficiency. Drury (2006, 13) also stresses that having cost efficient products or services is one of the key success factors for any businesses in competitive markets. However, within the scope of this research, perceiving cost efficiency as the lowest price of a product or service is not always accurate when there is no comparison or measurement provided. Thereby, key cost components required to implement customer service need to be defined correctly to measure whether customer service using the interactive kiosk is implemented at the lowest cost or not. In the section to follow, key cost components of customer service are described.

4.3 Key cost components

To calculate the total cost of customer service operation, key cost components need to be defined clearly. According to Drury (2006, 28), cost objects should be understood before defining cost components. Cost object is any activity for which individual calculation of costs is counted. The total cost of a particular thing is calculated based on given accounting information. There are two stages to calculate the total cost of a particular thing. Firstly, costs objects are classified according to particular categories. Secondly, cost objects are allocated to specific cost components and those cost components are summed up as the total cost. (Drury 2006, 28.) Within the context of customer service, there are basically two cost objects defined: direct costs and indirect costs in which they include key cost components to calculate the total cost of customer service operation. Costs of all activities required to implement customer service are considered as key cost components of customer service. Because the research only concerns about the operation cost of customer service, other cost objects, i.e. period and product costs, sunk costs, opportunity costs, and incremental and marginal costs, are excluded.

$$\text{Total cost} = \text{Direct costs} + \text{Indirect costs}$$

In terms of direct costs, direct costs are defined as specifically and exclusively identified costs concerning cost objects. Direct costs are the sum of direct material cost and direct labor cost. (Drury 2006, 28-29.)

$$\text{Total direct cost} = \text{Direct material cost} + \text{Direct labor cost}$$

Within the context of customer service, direct material is what is used to implement customer service. Facilities and machinery are needed to help CSRs in customer service processes. Therefore, costs of facility renting and machinery purchase are direct material cost of customer service operation. Similarly, direct labor is people who are directly involved in customer service processes. Hence, the wage of CSRs is the direct labor cost because CSRs are directly involved in the process of delivering customer

service to customers. Moreover, personnel substitute cost must be included to avoid uncertainties in customer service routine since customer service is required continuously and regularly in any businesses. Drury (2006, 28) emphasizes that direct costs can be accurately calculated because they are physically identified. Therefore, the more direct costs can be traced, the more accurate the cost calculation of customer service operation is (Drury 2006, 28). On the basis of the discussions above concerning direct costs, table 1 below demonstrates key cost components included in direct costs of customer service operation. The information in table 1 is taken from the Customer Company's documentation.

Table 1. Total direct cost

Facility rental cost	xxx
Machinery purchase cost	xxx
Labor cost	xxx
<u>Personnel substitute cost</u>	<u>xxx</u>
Total direct cost	xxx

In contrast to direct costs that are identified physically, indirect costs cannot. In other words, indirect costs cannot be identified specifically and exclusively with particular cost objects. Indirect costs are the sum of indirect material cost, indirect labor cost, and overheads. (Drury 2006, 28-29.)

$$\text{Total indirect cost} = \text{Indirect material cost} + \text{Indirect labor cost} + \text{Overheads}$$

Within the context of customer service, first of all, indirect materials are used to support customer service processes. The indirect materials cannot be identified because they are used only for the benefit of the whole customer service process. Therefore, furniture that is used to support customer service processes can be considered as the indirect material. Secondly, due to the nature of this research, labor is defined as CSRs only. Thus, there is no indirect labor cost required in customer service processes. Lastly, all other overhead costs are indirect costs which consist of all costs other than direct labor cost, direct material cost, and direct expenses. The overhead costs include office rental

cost, telecommunication cost, phone cost, wash and transfer cost, consulting cost, transportation cost, and other expenses. Drury (2006, 30) stresses that the overhead costs cannot directly traced to the whole operation of customer service. As an alternative, the overhead costs can be only estimated based on the allocation of direct costs. Deriving from discussions above in relation to indirect costs, table 2 shows all cost components included in indirect costs with regard to customer service operation. The information in table 2 derives from the Customer Company's cost structures of customer service operation.

Table 2. Total indirect cost

Furniture cost	xxx
Premise rental cost	xxx
Telecommunication cost	xxx
Phone cost	xxx
Wash and transfer cost	xxx
Consulting cost	xxx
Transportation cost	xxx
Personnel training cost	xxx
<u>Other expenses</u>	<u>xxx</u>
Total indirect cost	xxx

To achieve the research objective that is to analyze cost efficiency of customer service using the interactive kiosk, key cost components of both the traditional customer service and customer service using the interactive kiosk must be understood profoundly. Table 3 below describes key cost components in each type of customer service. The details provided in table 3 in view of cost components are translated from the Customer Company's documentation.

Table 3. Key cost components

Cost components	The traditional customer service	Customer service using the interactive kiosk
Facility rental cost	Facilities rent	Kiosk rent
Machinery purchase cost	Working computer in the office	Working computer in the back-office
Labor cost	CSR's salary	CSR's salary
Personnel substitute cost	Personnel replacement	Personnel replacement
Furniture purchase cost	Furniture for the office	Furniture for the kiosk location
Premise rental cost	Office rental	Kiosk location rental, back-office rental
Telecommunication cost	Telecommunication	Telecommunication
Phone cost	Phone call	Phone call
Wash and transfer cost	Maintenance of furniture and facilities in the office	Maintenance of the kiosk
Consulting cost	Consulting	Consulting
Transportation cost	Freight/cargo to transfer facilities from one office to another office	Freight/cargo to transfer kiosk from one location to another location
Personnel training cost	CSR training	CSR training
Other expenses	Other expenses	Other expenses

To summarize, direct costs and indirect costs are the two cost objects which include key cost components of customer service operation. From my understanding, the measurement of cost efficiency cannot be done unless cost objects and cost components are identified because there is no identified object and component to measure. Steps to measure cost efficiency of customer service based on key cost components are discussed in the following section.

4.4 Steps to measure cost efficiency

Wide discussions were carried out in previous research and literature on the measurement methods of cost efficiency. This paper draws from Rogge and Jaeger (2013) and Farrell (2005, 271) for suggesting measurement methods of cost efficiency. According Rogge and Jaeger (2013, 657), data envelopment analysis (hereinafter DEA) is one of the most popular techniques for measuring cost efficiency. The purpose of DEA is to evaluate costs of similar activity units. In this analysis, particular inputs are used to produce desired outputs in case there is no reliable information on prices or costs of inputs or outputs. The evaluation of cost efficiency by DEA is based on a comparable standpoint in terms of the input and the output data given. Therefore, the evaluation of cost efficiency can only provide the best possible result, not the most accurate result. (Rogge & Jaeger 2013, 657.) On the other hand, Farrell (2005) points out that an easy measurement of cost efficiency is cost comparison because a company's efficiency is always based on its cost. Cost comparison can only be done when all the cost components of two subjects are the same. Classifying costs into particular categories to achieve an accurate result is important to achieve an accurate result of cost comparison. (Farrell 2005, 271.)

Regarding the information gathered from the interview with the CEO of the case company, all cost components to implement customer service through the interactive kiosk are the same as those that are required to implement the traditional customer service. Thus, there is no challenge in comparing costs of the two types of customer service which are the traditional customer service and customer service using the interactive kiosk (Sihvola 2014). Additionally, all cost components of customer service operation in both types of customer service were defined clearly in the previous chapter. Therefore, this research relies on Farrell's (2005, 271) suggestion which is to use cost comparison as the measurement method of cost efficiency of customer service.

Referring to the key cost components discussed in sub-chapter 4.3, there are totally 13 different cost components included in customer service operation. In order to make a comparison of the total costs of the two types of customer service, each cost component must be given correctly. Subsequently, the 13 key cost components of each type of customer service are summed up as the total cost of customer service operation. Steps to measure cost efficiency of customer service are described in figure 3 below.

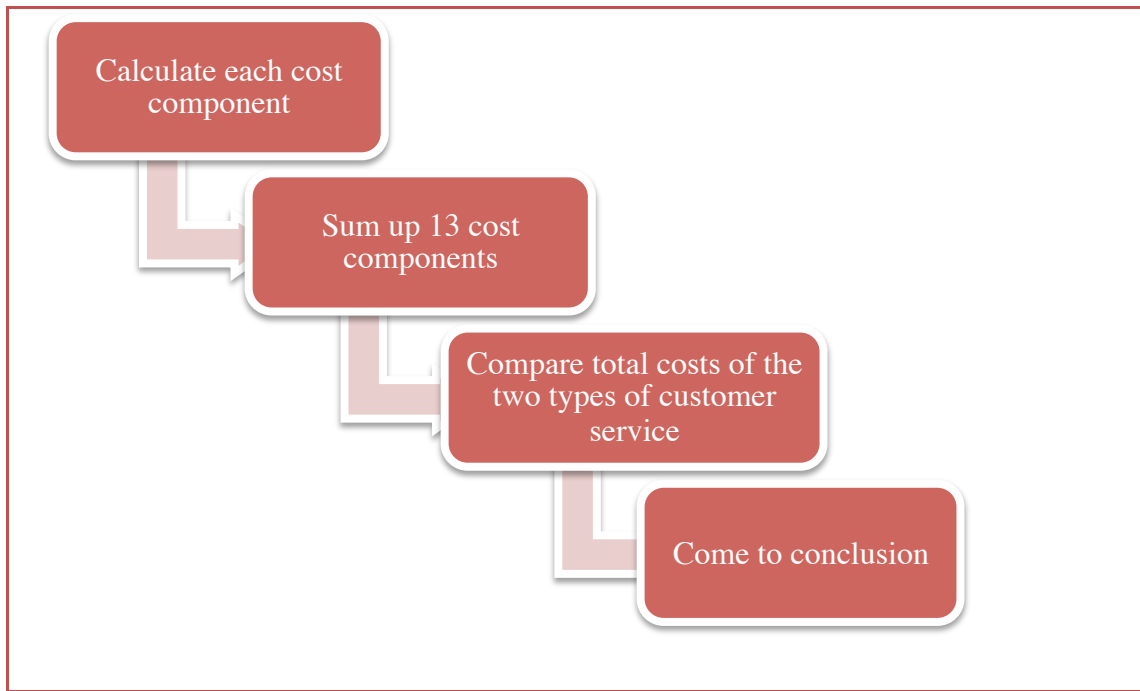


Figure 3. Steps to measure cost efficiency

Deriving from the discussions above, this research assumes that both customer service conducted through the interactive kiosk and the traditional customer service have the same cost components. To reach the final outcome of this research, a measurement of cost efficiency of customer service using the interactive kiosk provided by the case company is made in the chapter below.

5 COST EFFICIENCY OF CASE COMPANY'S SERVICES

To provide an accurate measurement of cost efficiency of the case company's services, a brief overview of the case company's services is provided first. Secondly, the measurement of cost efficiency of customer service using the interactive kiosk is made. Lastly, the research results and recommendations are given.

5.1 Case company's services

EPT provide the customers with most kinds of customer service through the interactive kiosk that the traditional customer service does. While the CSRs are present in the office to assist the customers in the traditional customer service, the CSRs can stay in the back-office to remotely serve the customers with the interactive kiosk. If there are any specific branding functions required by the customers, suitable technological functions could be added into the interactive kiosk to adapt to the customers' demands. (Sihvola 2014.) To provide the customers with flexible customer service, EPT provides two different services which are kiosk rental and human resources hire. The customers can choose either to rent kiosk or to hire human resources from EPT depending on their specific demands. Otherwise, the customers can both rent kiosks and hire human resources from EPT. (Etäpalvelutekniikka Ltd 2014.)

EPT focuses on a number of groups of customers. First of all, EPT's prospective group of customers is companies who work in service industries such as insurance companies, banks, and tourism agencies. The reason for focusing on this group of customers is that customer service is essential in service companies (Wirespring 2002). Secondly, the group of health center, theaters, hotels, renting companies and booking stations is a targeted group of customers since EPT is able to provide the interactive kiosk to support appointment-booking system for those companies. Thirdly, the group of stores, shops, and manufacturers is another prospective group of customers of EPT because the interactive kiosk can be a presenting tool to advertise brand images. Another targeted customer group of EPT is rental companies who are in need of receive-return stations. For example, EPT can provide services through the interactive kiosk to help rental

companies handle renting processes that end-user customers can always receive and return products through the interactive kiosk. (Etäpalvelutekniikka Ltd 2014.)

The cost efficiency of customer service using the interactive kiosk is measured through the cost comparison between customer service using the interactive kiosk and the traditional customer service. To accomplish an accurate measurement, financial statistics are taken from the Customer Company who is a car rental company and one of the regular customers of EPT. The Customer Company previously used the traditional customer service in the business. It today uses EPT's interactive kiosks to conduct customer service and its own human resources. For further consideration, the Customer Company also makes a financial estimation in case it both rents the interactive kiosks and hires the CSRs from EPT. Therefore, cost comparison is made based on three cost structures made by the Customer Company as follows:

1. Cost structure of the traditional customer service
2. Cost structure of customer service using EPT's kiosks and Customer Company's human resources
3. Cost structure of customer service using both EPT's kiosks and human resources.

5.2 Measurement of cost efficiency

To accurately measure cost efficiency of customer service using the interactive kiosk, the total costs of customer service operations of the three cost structures are calculated for one location in one month. In terms of the traditional customer service, the Customer Company summed up all the cost components when it used the traditional customer service. Table 4 below demonstrates the total cost of the traditional customer service. The details given in table 4 in view of cost components both in euro and in percentage are extracted from the Customer Company's documentation.

Table 4. Total cost of the traditional customer service

Cost components	The traditional customer service	
	In Euro	In Percentage
Facility rental cost	123.33	3.26%
Machinery purchase cost	33.33	0.88%
Labor cost	2467.92	65.33%
Personnel substitute cost	200.00	5.29%
Furniture purchase cost	20.00	0.53%
Premise rental cost	132.29	3.52%
Telecommunication cost	155.00	4.1%
Phone cost	50.00	1.34%
Wash and transfer cost	375.00	9.93%
Consulting cost	0.00	0.00%
Transportation cost	0.00	0.00%
Personnel training cost	0.00	0.00%
Other expenses	220.00	5.82%
Total cost	3778	100%

In the table above, labor cost is the highest among all cost components which counts for 65.33% of the total cost. Wash and transfer cost, other expenses, and personnel substitute cost are among the highest costs which count for 9.93%, 5.28%, and 5.29% of the total cost respectively. On the basis of the research findings, the reason for having the labor cost as the highest cost component is because the Customer Company needs to pay for a full-time CSR in one office location even though sometimes there is no customer visit. Despite the fact that wash and transfer cost, other expenses, and personnel substitute cost are among the highest costs, they are reasonable. Moreover, other cost components such as machinery cost and facilities cost are inexpensive. Therefore, it can be concluded that the less the labor cost, the lower the total cost.

For further calculations, average salary rate for one CSR needs to be computed. As it is shown in table 4, labor cost for one full-time CSR per month is 2467.92 euro. Since one full-time CSR works 5 days per week and 4 weeks per month, it can be calculated that one full-time CSR works 160 hours per month. Hence, average salary of a CSR is calculated below.

$$\text{Average salary} = \frac{\text{Total salary}}{\text{Total number of working hours}} = \frac{2467.92}{160} = \mathbf{15.5 \text{ (euro/hour)}}$$

With regard to customer service using EPT's kiosks and Customer Company's human resources, the monetary amount of all cost components are different from those in the traditional customer service. In this cost structure, the Customer Company uses EPT's kiosks to deliver customer service remotely to its customers. However, human resources are existing CSRs of the Customer Company who are trained to serve the customers via the interactive kiosk.

Cost components are the same in conducting the traditional customer service and customer service using EPT's kiosks and the Customer Company's human resources. However, there are two big differences in costs calculation between the two types of customer service. First of all, the Customer Company is required to pay for kiosk rental and personnel training which are decided by EPT. One kiosk rental costs 740.00 euro and CSRs training costs 27.08 euro per month. Secondly, human resources are utilized only when the customers are connected to the CSRs through the interactive kiosk. Therefore, labor cost would be computed according to the number of customer visits. The Customer Company rented 12 kiosks from EPT in total that attracts 2948 customer visits per month. For one customer visit, 2 to 3 minutes are required to reset the kiosk system, and 5 to 8 minutes are the real-time length of serving the customer. Table 5 below indicates labor cost calculation. The Customer Company provides the information required in the calculation.

Table 5. Labor cost calculation

Average number of visits per kiosk = $\frac{\text{Total number of customer visits}}{\text{Total kiosks}} = \frac{2948}{12} = 246$ visits (1)
Average amount of minutes per customer visit = = 2.5 + 6.5 = 9 minutes (2)
Total time of customer visits = (1) x (2) = 246 x 9 = 2214 minutes = 36.9 hours
Labor cost per kiosk per month = Total time x Salary rate = 36.9 x 15.5 = 571.95 euro

Table 6 below demonstrates the total cost of customer service using EPT's kiosks and Customer Company's human resources.

Table 6. Total cost of customer service using EPT's kiosks and Customer Company's human resources

Cost components	Customer service using EPT kiosks and their own personnel	
	In Euro	In Percentage
Facility rental cost	740.00	25.28%
Machinery purchase cost	166.67	5.69%
Labor cost	571.95	19.6%
Personnel substitute cost	140.00	4.7%
Furniture purchase cost	42.92	1.47%
Premise rental cost	132.99	4.5%
Telecommunication cost	234.17	8.00%
Phone cost	34.17	1.16%
Wash and transfer cost	357.42	12.3%
Consulting cost	238.33	8.2%
Transportation cost	21.67	0.7%
Personnel training cost	27.08	0.9%
Other expenses	220.00	7.5%
Total cost	2927.00	100%

In connection with customer service using both EPT's kiosks and human resources, the total cost is different from the total costs of the traditional customer service and customer service using EPT's kiosks and Customer Company's human resources. In this cost structure, the Customer Company does not only rent the interactive kiosks but also hires the CSRs from EPT to serve its customers remotely. In other words, the Customer Company has to bear costs to EPT not only for kiosk rental but also for human resources. The labor cost for 9-minute customer visit is 13.5 euros that is required by EPT (Etäpalvelutekniikka Ltd 2014). Therefore, labor cost of customer service using both EPT's kiosks and human resources is calculated below:

$$\text{Labor cost} = \text{Total time} \times \text{Salary rate} = 36.9 \times 13.5 = 498.15 \text{ euros}$$

Table 7 below shows the total cost of customer service using both EPT's kiosks and human resources. All cost components except for the labor cost given in euro and in percentage in table 7 are taken from the Customer Company's documentation. Labor cost is calculated as shown above.

Table 7. Total cost of customer service using both EPT's kiosks and human resources

Cost components	Customer service using personnel and kiosk from EPT	
	In Euro	In Percentage
Facility rental cost	740.00	32%
Machinery purchase cost	0.00	0%
Labor cost	498.15	21%
Personnel substitute cost	14.17	0.6%
Furniture purchase cost	2.92	0.2%
Premise rental cost	132.99	5.7%
Telecommunication cost	84.17	3.6%
Phone cost	14.17	0.6%
Wash and transfer cost	360.00	15%
Consulting cost	195.00	8.4%
Transportation cost	21.67	0.9%
Personnel training cost	0.00	0%
Other expenses	280.00	12%
Total cost	2343.00	100%

On the basis of discussions and calculations above, the total costs calculated based on the three different cost structures are different which are 3,778 euro, 2,927 euro, and 2,343 euro respectively. To measure cost efficiency of customer service, total costs of the traditional customer service and EPT's services are compared to each other. In view of EPT's services, it is divided into two different cost structures that are customer service using EPT's kiosks and Customer Company's human resources, and customer service using both EPT's kiosks and human resources. Therefore, there are two measurements of cost efficiency of customer service.

1. The traditional customer service and customer service using EPT's kiosk and Customer Company's human resources.

2. The traditional customer service and customer service using both EPT's kiosks and human resources.

Deriving from table 4 and table 6, the measurement of cost efficiency of the traditional customer service and customer service using EPT's kiosks and Customer Company's human resources is made below.

$$\sum_{j=1}^{n=13} tr_j - \sum_{j=1}^{n=13} k_j = 3778 - 2927 = 851$$

In the formula above, there are 13 cost components required to implement the traditional customer service and customer service using EPT's kiosks and Customer Company's human resources. While the total cost of the traditional customer service is referred as "tr", the total cost of customer service using EPT's kiosks and Customer Company's human resources is referred as "k". As is shown in the formula above, the total cost to implement customer service using EPT's kiosks and Customer Company's human resource is lower than the total cost to implement the traditional customer service. Therefore, it can be concluded that using EPT's kiosk to conduct customer service is cost efficient.

On the basis of table 4 and table 7, the measurement of cost efficiency of the traditional customer service and customer service using both EPT's kiosks and human resources is demonstrated below.

$$\sum_{j=1}^{n=13} tr_j - \sum_{j=1}^{n=13} kh_j = 3778 - 2343 = 1435$$

In the formula above, there are 13 cost components required to implement the traditional customer service and customer service using both EPT's kiosks and human resources. While the total cost of operating the traditional customer service is referred as "tr", the total cost of operating customer service using both EPT's kiosks and human resources is referred as "kh". As is shown in the formula above, the total cost to implement customer service using both EPT's kiosk and human resources is lower than

the total cost to implement the traditional customer service. Therefore, using both EPT's kiosks and human resources is cost efficient.

Originating from the two different measurements of cost efficiency of customer service above, the total costs of customer services provided by EPT are lower than the total cost of the traditional customer service. Either renting EPT's kiosks only or using both EPT's kiosks and human resources helps the Customer Company reduce the total cost to implement customer service. The research results are analyzed clearly in the section below.

5.3 Research results

Both theoretical discussions and empirical evidences were needed to achieve the research results. The theoretical framework of cost efficiency was discussed precisely in chapter 4 which included the concept, the key cost components, and the steps to measure cost efficiency. The 13 cost components required to implement customer service were analyzed based on particular characteristics of the traditional customer service and customer service using EPT's kiosks and human resources. From the theoretical discussions and empirical evidences, the total costs of customer service derived from the Customer Company's documentation are summarized in figure 4 below.

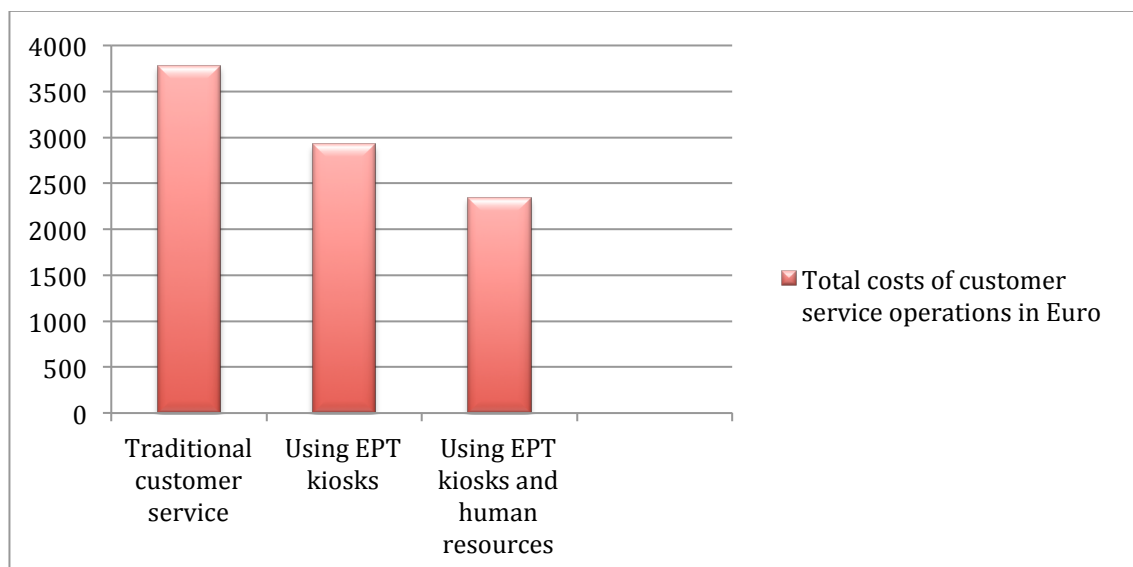


Figure 4. Total cost of customer service operations

As is shown in the figure above, a total of 3,778 euro is spent by the Customer Company to implement the traditional customer service. When the Customer Company uses EPT's kiosks only, 2,927 euro is the amount of money it spends to implement customer service. Furthermore, the Customer Company spends 2,343 euros to implement customer service when it uses both EPT's kiosks and human resources. The total costs of the three different customer service operations are calculated for one location in one month. This result illustrates that the interactive kiosk can help prospective customers of EPT reduce the operation cost of customer service.

The customers can either rent kiosks or hire human resources from EPT which depend on their particular interests and demands. Independent of what kinds of service the customers choose, costs would be reduced significantly if the customers have long-term contracts with EPT. For example, machinery cost is not included in the total cost if the customers choose to only rent EPT's kiosks because EPT itself provides enough machinery to support the interactive kiosk. Alternatively, if the customers hire human resources from EPT only, human resource training cost might be decreased considerably when EPT's CSRs become familiar with specific branding requirements in customer service processes. Therefore, the customers can choose either to rent kiosks or hire human resources from EPT which depends on their specific demands to have cost efficient customer service.

5.4 Recommendations

Deriving from the above discussions, the calculations, and the measurements of cost efficiency of customer service, customer service using the interactive kiosk is cost efficient. However, the Customer Company only demonstrated the utilization of either its own human resources or EPT's human resources as is shown in the three cost structures. The company does not consider its existing CSRs in case it hires both EPT's kiosks and human resources. Consequently, human resources allocation challenges both the case company and the Customer Company. Therefore, recommendations are given for both the case company and its customers in relation to human resources allocation to provide optimal cost efficient customer service. The reason for giving recommendations for both the case company and its customers is that the case company's human resources allocation completely depends on the customers' demands. If human

resources allocation is not carefully taken into consideration, the case company is not able to make profit because human resources cost that is spent to adapt to the customers' demands is expensive.

In terms of the case company's customers, human resources should be utilized flexibly. According to Occupational Safety and Health Administration (2006), employers cannot layoff employees without any reasonable justification when the duration of the employment contract is indefinite or fixed term. This regulation means that companies that have existing CSRs must employ CSRs according to the contract validity. Therefore, it is highly recommended that those companies should utilize both their existing human resources and EPT's human resources to conduct customer service. This utilization helps the customers lower labor cost and comply with the Finnish employment contract regulation. In view of existing CSRs, they are recommended to work in a certain period of time depending on the frequency of customer visits. EPT's CSRs should be utilized in the period that the frequency of customer visits is high. Furthermore, EPT's CSRs can work during other periods of time to ensure that customer service using the interactive kiosk is always available. Sihvola (2014) emphasizes the challenge of training existing CSRs to carry out customer service processes remotely through the interactive kiosk. According to surveys made by Bothnia Invent AB, existing CSRs prefer serving the customers with the traditional customer service. They hesitate to learn working tasks through computers in the back-office because they lack of physical awareness of customers. Therefore, in order to be able to achieve high-quality customer service using the interactive kiosk, EPT's customers are recommended to have their existing CSRs trained with training programs provided by EPT. EPT can provide expertise for using its interactive kiosk to conduct customer service.

With regard to the case company, human resources should be allocated efficiently to provide cost efficiency in customer service. As is recommended for the case company's customers, they should utilize the case company's human resources in the high-frequency period of customer visits and other periods of time. Simultaneously, it challenges the case company since the case company has to hire over-time CSRs. Therefore, it is recommended that the case company should hire CSRs from different time zones for not having to pay for over-time CSRs because the interactive kiosk enables CSRs from different locations to remotely serve the customers. For example, in working hours between 8:00 and 16:00, CSRs from Finland are hired because the case

company is not required to pay for over-time CSRs. However, from 16:00 to 24:00, CSRs from United States or Canada should be hired because the time zones in those countries is 7 hours or 8 hours behind the Finnish time zone which depend on specific areas within those countries. Hence, the case company does not need to afford over-time CSRs. Furthermore, CSRs from Australia and New Zealand could be employed during the period of time from 24:00 to 8:00 of the next day because the time zones in those countries are 7 hours or 9 hours ahead the Finnish time zone. In other words, there are possibilities for the case company to recruit CSRs from different time zones because customer service using the interactive kiosk can be carried out remotely at the back-office in which a computer accessing to the Internet is required.

To summarize, the measurement of cost efficiency of customer service takes into account the 13 cost components in the three different cost structures. One of the biggest costs to implement customer service is labor cost. Due to that fact, customer service using the interactive kiosk is provided to help companies reduce labor cost. On the basis of the above recommendations, the case company's customers are recommended to utilize both their existing human resources and EPT's human resources. Their existing CSRs can be trained to carry out customer service processes remotely through the interactive kiosk. To efficiently train existing CSRs, EPT's training program is recommended because EPT conducts customer service using the interactive kiosk with the expertise. Meanwhile, EPT is suggested to recruit CSRs from different time zones to reduce labor cost of customer service to adapt to specific customers' demands.

6 DISCUSSIONS AND CONCLUSIONS

The research results presented in chapter 5 were derived from both the theoretical discussions and the empirical findings. The objectives of this research were to find out how the interactive kiosk can be used to conduct customer service, and to analyze cost efficiency of customer service using the interactive kiosk. Initially, this chapter synthesizes the discussions of cost efficiency of customer service using the interactive kiosk. Deriving from the analysis of cost efficiency of customer service, the conclusions of this research are drawn. To complete this chapter, the answers to the three research questions are provided, followed by suggestions for further research.

6.1 Discussions

The main results of this research suggest that customer service using the interactive kiosk is cost efficient since the interactive kiosk helps to reduce the labor cost significantly. Those results are supported by Lucas (2005, 242) who states that the interactive kiosk is a powerful tool to deliver customer service through technologies. Customer service using the interactive kiosk can help businesses reduce costs of human resources and other resources (Lucas 2005, 242). In this research, cost efficiency of customer service using the interactive kiosk was measured carefully. The cost efficiency measurements aim to help the case company and its customer to understand how to utilize customer service using the interactive kiosk to provide optimal cost efficient customer service. The customers cannot simply hire the interactive kiosks and human resources from EPT, but also to take into consideration the regulation of existing human resources. Meanwhile, the case company cannot gain profit unless it allocates costs of human resources and other resources efficiently. Therefore, the aim of the cost efficiency measurement is to help both the case company and its customers to provide optimal cost efficient customer service.

Deriving from the measurements of cost efficiency of customer service in chapter 5, neither the case company nor its customers can provide optimal cost efficient customer service because the consistency of ability and the demand on working hours in both the case company and its customers has a strong influence on each other. For example, if

the customers hire human resources from EPT during the evening, EPT has to handle human resource allocation efficiently to gain profit and satisfy the customers at the same time. Cost allocations could be actively managed by the case company as a customer service provider to adapt to any specific demands from the customers.

6.2 Conclusions

This research was conducted by drawing from relevant literature sources, the case company's data, the Customer Company's documentation, the in-depth interview, and my working experience as a trainee at the case company. As this thesis work was structured, the discussions given in chapter 3 and chapter 4 provide the theoretical framework for the empirical findings in chapter 5. The outcome of my research is a set of recommendations both for the case company and its customers to provide optimal cost efficient customer service.

In chapter 3 and chapter 4, the whole theoretical framework of the three key elements, i.e. customer service, the interactive kiosk, and cost efficiency, was created to support the empirical findings. Despite the fact that the concept of customer service is not new, and both service providers and the customers clearly perceive the importance of customer service, the interactive kiosk used to conduct customer service is not widely known. Therefore, this research first of all focused on defining the concept of customer service and the interactive kiosk to provide a deep understanding of how the interactive kiosk can be used to conduct customer service. The interactive kiosk, although not well known, gives possibilities to elevate customer service to a new stage.

The analysis of cost efficiency of customer service is the focus of this research. A foundation was created to support the empirical study based on previous literature on cost efficiency. This thesis presented the concept, the key cost components, and the steps to measure cost efficiency of customer service. Subsequently, the case company's services were measured in terms of cost efficiency. On the basis of understanding how to measure cost efficiency of customer service from the theoretical discussions, the case company's services were measured by cost comparison among the three cost structures of the traditional customer service, customer service using EPT's kiosks and Case

Company's human resources, and customer service using both EPT's kiosks and human resources.

In agreement with the research objectives, both the theoretical discussions and the empirical findings helped to achieve the research objectives. In terms of the first research objective, the theoretical discussions of customer service and the interactive kiosk helped to determine the role of the interactive kiosk in customer service. With regard to the second research objective, the theoretical discussions about cost efficiency helped choose the relevant measurement method for cost efficiency of customer service.

The various stages of the research process contribute to achieving this thesis work. The findings in chapter 5 show that the combination of using EPT's kiosks and human resources is the most cost efficient which costs 2,343 euro. Hence, customer service using the interactive kiosk is appraised as cost efficient. However, there was a challenge in existing human resources in the case company's customers. Basically, the case company's customers cannot layoff existing human resources without any reasonable justification. However, labor cost provided by EPT is low that can help its customers reduce costs and increase profits. Therefore, my recommendation for EPT's customers is that they should utilize both their existing human resources and EPT's human resources. For instance, their existing CSRs work in a certain period of time and EPT's human resources work in other periods of time to make sure that customer service using the interactive kiosk is always available. Furthermore, EPT's human resources can be utilized in high-frequency period of customer visits.

In conclusion, the theoretical discussions and the empirical findings had a connection to each other. For achieving the research objectives, it was necessary to combine the theoretical discussions and the empirical findings. As was discussed in Sub-chapter 1.5, the three research questions were formulated to achieve the objectives of this research. The answers for the three research questions are given below.

1. What is the role of the interactive kiosk in customer service?

The concepts of customer service and the interactive kiosk were defined profoundly in sub-chapter 3.1 and 3.2 which created a base for answering the first research question. Customer service is defined as a number of activities to enhance the customers' expectations. The interactive kiosk is a computer-like device that helps the customers communicate remotely with the CSRs with the help of technologies. Therefore, the

interactive kiosk can be regarded as a new tool to conduct customer service. For the purpose of answering the first research question, the role of the interactive kiosk in customer service was determined clearly in sub-chapter 3.3. During the interview, the interviewee pointed out the six main uses of the interactive kiosk in customer service, including service providers, system of appointment booking, product presenting tool, receive-return stations, information stations, and service provider for the case company. Importantly, technological figures can be also added to the interactive kiosk to adapt to the customers' demands. The interactive kiosk can be installed in anywhere which helps the customers easily get access to the CSRs.

2. How can cost efficiency of customer service using the interactive kiosk be measured?

Customer service is designed to meet the customers' expectations since customer-driven factor is one of the key success factors in any companies. On the basis of understanding the importance of customer service, customer service using the interactive kiosk provides the customers with cost efficiency. The concept of cost efficiency was theoretically defined, followed by the key cost components and the steps to measure cost efficiency of customer service. Based on the theoretical framework of cost efficiency, the case company's services were measured. This research relies on cost comparison to measure cost efficiency of customer service derived from the three cost structures provided by the Customer Company. Those cost structures include cost structures of the traditional customer service, customer service using EPT's kiosks and Customer Company's human resources, and customer service using both EPT's kiosks and human resources.

3. How does the measurement of cost efficiency influence the cost structures of service operation to provide optimal cost efficient customer service?

The measurement result of cost efficiency of customer service was made based on the Customer Company's documentation. The findings show that human resources allocation is the limitation for both the case company and its customer to provide optimal cost efficient customer service. Therefore, recommendations were given for both the case company and its customers. With regard to the case company's customers, they are recommended to utilize both their existing human resources and EPT's human resources to reduce costs and at the same time comply with the employment regulation. Meanwhile, it is recommended that their existing human resources should be trained

with training programs provided by the case company because the case company provides expertise for using its interactive kiosk to conduct customer service. With reference to the case company, the case company is recommended to hire CSRs from different time zones which depends on specific customers' demands. CSRs could be chosen from suitable countries so that the case company is not required to pay for over-time CSRs. Therefore, both the case company and its customers can provide optimal cost efficient customer service.

6.3 Suggestions for future research

On the basis of this research, cost efficiency creates the value proposition of customer service using the interactive kiosk. However, cost efficiency is not enough to deliver a strategic customer service, particularly through a newborn tool to conduct customer service. Therefore, further research will be needed to explore other economic values to create a strategic customer service besides cost efficiency. Additionally, it would also be possible to research on skills for success of strategic customer service. I would suggest focusing on not only customer service using the interactive kiosk, but also customer service via technologies in general.

In addition, within the context of this research, cost efficiency of customer service using the interactive kiosk is only measured from the case company's point of view and the case company's customers' points of view. Therefore, it is suggested to conduct research into cost efficiency of customer service using the interactive from end-users' points of view.

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APPENDIX 1

Appendix 1

1(1)

INTERVIEW QUESTIONS FOR THE INTERVIEW WITH VESA SIHVOLA, THE CHIEF EXECUTIVE OFFICER OF EPT, CONDUCTED ON 28 FEBRUARY, 2014

1. What kinds of customer service can EPT provide the customers with?
2. What makes customer service using the interactive kiosk different from the traditional customer service or the ATM?
3. Which economic values can EPT's customer service provide the customers with?
4. Why is the operation cost of EPT's customer service lower than the operation cost of the traditional customer service?
5. Are cost components required to implement customer service using the interactive kiosk the same as those required to implement the traditional customer service?
6. Are there any challenges in implementing customer service using the interactive kiosk?

INTERVIEW WITH VESA SIHVOLA, THE CHIEF EXECUTIVE OFFICER OF EPT, CONDUCTED ON 28 FEBRUARY, 2014

Interviewer: What kinds of customer service EPT can provide the customers with?

Interviewee: EPT can provide any kinds of customer service as the traditional customer service can. With the traditional customer service, there is a CSR in an office location to face-to-face assist the customers. The interactive kiosk is used to handle customer service processes remotely. However, there are some limitations of customer service using the interactive kiosk. In fact, customer service processes are different among brands or businesses. While there are approximately 50 percent of tasks that are similar, another 50 percent of tasks are dissimilar which is particularly due to specific customers' demands. The interactive kiosk is designed to deliver the most common customer service processes to the customers. Importantly, additional functions could be added into the interactive kiosk when there are any specific brand functions. To conclude, EPT provides the basic model of the interactive kiosk that can cover 80 percent of duties in customer service process. The interactive kiosk can be redesigned and upgraded to adapt to specific customers' demands. Customer service using the interactive kiosk is conducted through technologies remotely which provides the same steps and processes that the traditional customer service can provide the customers with.

Interviewer: What makes customer service using the interactive kiosk different from the traditional customer service or the ATM?

Interviewee: First of all, I would say that customer service using the interactive kiosk is place-independent. Customer service is offered automatically with the help of the Internet and technologies. The interactive kiosk gives the customers the feeling and experience of awareness that they are served in the office even though they are served remotely. In other words, the interactive kiosk helps

remotely serve the customers from different locations. The customers need only stand in front of the kiosk and push the call button and they are automatically connected to CSRs. From my point of view, that is the huge difference between customer service using the interactive and other types of customer service.

Interviewer: Which economic values can EPT's customer service provide the customers with?

Interviewee: I can see many different economic values that customer service using the interactive kiosk can provide the customers with. The first economic value of customer service using the interactive kiosk is cost efficiency. For example, human resources cost is reduced significantly because one CSR can serve the customers in different locations. In other words, his or her competences can be used in many different locations through the interactive kiosk. The most suitable CSRs are utilized to many locations without sending them out to those locations. For example, technologies make CSRs' competences available in the first location, and five minutes later in the second location in a distance of 400 kilometers. The second economic value is profit increase because cost efficiency has direct impact on profit margin. If costs are saved and sale profit is increased, the customers can achieve a good profit margin. Thus, cost efficiency and profit margin have a connection to each other. In addition, the interactive kiosk is a new tool to conducting customer service and the technologies can be used for visibility in the market. For instance, the interactive kiosk can be used to advertise brands' images. Therefore, the customers can also have benefit from the interactive kiosk in marketing aspect. Particularly, the interactive kiosk has "WOA" impact on people because the latest technologies are used in customer service processes. In other words, the customer service using the interactive kiosk provides the customers with technology recognition.

Interviewer: Are there any other economic values?

Interviewee: As I said earlier, human resources in customer service using the interactive kiosk can be reduced significantly because human resources are utilized in many locations in a short period of time. Therefore, another economic value of customer service using the interactive kiosk is time effectiveness.

However, from end-users' point of view, there is one disadvantage when this type of customer service is newly used. In fact, the amount of time to carry out customer service using the interactive kiosk is more than the amount of time required to conduct the traditional customer service because the customers are not familiar with technologies. Hence, the customers need to be instructed on how to use the interactive kiosk at the beginning of customer service processes. After a certain amount of time, the speech of delivering customer service through the interactive kiosk can be the same as the speech of delivering the traditional customer service because customers become familiar with the interactive kiosk and technology. To sum up, customer service using the interactive kiosk is time effective when it is referred to the customers' point of view. However, this type of customer service is challenging to end-users in the beginning of customer service processes.

Interviewer: Why is the operation cost of EPT's customer service lower than the operation cost of the traditional customer service?

Interviewee: There are some reasons that lower the operation cost of EPT's customer service compared the operation cost of the traditional customer service. First of all, with the traditional customer service, CSRs are required in each office location to assist the customers face-to-face. Hence, facilities cost is expensive because tables, computers, and other necessary furniture are required for an office. Secondly, full-time CSRs are required in each office regardless of the time the customers approach. Labor cost is consequently expensive. Facilities cost and labor cost together add up to a big cost to implement the traditional customer service. For example, labor cost can be up to 3,000 euro for a full-time CSR in one office location in a month. Sonera and Elisa are typical examples because customer service is highly required in these companies. In view of customer service using the interactive kiosk, labor cost is computed according to the number of customer visits. Thirdly, premise rental is expensive in the traditional customer service because office must be rented to serve the customers face-to-face. On the other hand, customer service using the interactive kiosk requires a small space to install the interactive kiosk and a back-office for CSRs.

However, a number of CSRs can work in one back-office that helps to reduce the office rental cost. Thus, customer service using the interactive kiosk makes a big difference in premise rental cost. To sum up, the operation cost of customer service using the interactive kiosk is lower than the operation cost of the traditional customer service because of cost reductions in facilities, human resources, and premise rental. However, I must to admit that the operation cost of customer service using the interactive kiosk is also scalable. If there are time-demanding tasks and high-frequency period of customer visits, human resources are required more to adapt all the customers' demands. Therefore, human resources allocation is an important issue that needs to be taken into consideration carefully.

Interviewer: Are cost components required to implement customer service using the interactive kiosk the same as those required to implement the traditional customer service?

Interviewee: The number of cost components required to implement the two types of customer service is the same. However, each cost component counts for different amount of money. I would say that some cost components of customer service using the interactive kiosk are lower than those of the traditional customer service. As I said earlier, costs of facilities, premise rental, and human resources are reduced significantly in customer service using the interactive kiosk.

Interviewer: From my point of view, the number of cost components required to implement customer service using the interactive kiosk are the same as the number of cost components required to implement the traditional customer service. However, I recognize that maintenance cost is required in customer service using the interactive kiosk only. How do you think about it?

Interviewee: Well, I believe that maintenance cost is also required in the traditional customer service because all computer systems, offices, and facilities can break down anytime. Therefore, maintenance cost is needed to repair those stuffs.

It can be understood that those stuffs do not need to be fixed every month, but sometimes in a year. The maintenance agreement is included in the buying contract and consequently maintenance cost has to be paid. For example, a working computer with necessary software is required in an office. When the computer does not work properly, it needs to be fixed. On the other hand, when a computer screen is broken in the interactive kiosk, maintenance cost is required to have the computer screen fixed. In general, the number of cost components of the two types of customer service is the same. However, those cost components must be calculated to compare carefully which depend on particular types of customer service.

Interviewer: Are there any challenges in implementing customer service using the interactive kiosk?

Interviewee: Yes, unfortunately there are challenges to implement customer service using the interactive kiosk. In the traditional customer service, CSRs have excellent communication skills and social skills. Thus, they have the ability to communicate with different groups of customers. The conversation between the customers and the CSRs is very friendly and nice. According to a survey conducted by the company, most CSRs prefer having face-to-face conversations with the customers. When customer service using the interactive kiosk starts to be implemented, those CSRs felt hesitate to learn new things, particularly working tasks through computers because they lack of physical awareness of customers. To carry customer service using the interactive kiosk, I must say that not social skills and customer servicing skills but also information technology skill are required. Hence, it might be difficult to hire competent CSRs who can remotely serve the customers through the interactive kiosk with the help of technologies. This fact is challenging to EPT because we have light and darkness, or back and white at the same time. The company carried out some researches in relation to CSRs' experiences of using the interactive kiosk to conduct customer service. The research findings show that it is difficult to recruit existing CSRs and re-educate them to carry out customer service processes with the involvement of technologies. I would say that it is still possible to recruit existing CSRs but a lot of trainings are required that wastes

time and costs money. It is not simply about training people to become competent. It is more about training people to start enjoying customer service processes through technologies. Therefore, I conclude that it is more efficient to recruit new CSRs who just graduate as CSRs. Otherwise, IT people who have excellent communication skills could be also recruited.

Moreover, the interactive kiosk is considered as a new tool to conduct customer service. I notice that in Finland and Scandinavian countries, people increase using automatic customer service which means that the customer service is completely automatic. One typical example is the ATM which is typically used to withdraw money. Due to this fact, it is challenging for EPT because customer service using the interactive kiosk is in the middle of traditional and automatic customer service. EPT has been the pioneer and the newly established company working in this field for only few years. Today EPT has 2 or 3 competitors in the world developing the interactive kiosk to provide the same type of customer service. Therefore, making EPT outstanding and different from other competitors is a challenge.

In addition, one challenge for EPT is that how to attract businesses to start using the interactive kiosk to conduct customer service. In fact, we are able to find the prospective customers and give them a good impression of customer service using the interactive kiosk. However, it is very challenging to convince those customers to reach the final decision of using the interactive kiosk to conduct customer service. I must say that there are some mental barriers in the customers' point of view. They have used the traditional customer service for many years. Therefore, breaking a tradition is difficult. Otherwise, the customers have not trusted technologies yet.

Lastly, there are some obstacles that might occur to the customers. For example, when there is a conversation between the customer and the CSR, technological figures installed in the interactive kiosk might not work properly. In this situation, the customer has to face the problem without any helps from the CSR because they are far from each other. At the same time, this issue causes feeling barriers to the customer since she or he cannot receive any assistance from the CSR even though the CSR knows the issue.

To summarize, I would say that EPT is the pioneer and the company tries to break through to convince the customers that they should use the interactive kiosk to conduct customer service since this type of customer service offers many economic values to them. The company is making progresses towards the business development. In the near future, we will attract more customers. From my point of view, it is easier to convince startup companies to implement customer service using the interactive kiosk than to convince long-term existing companies such as hotels and banks. It is very difficult to change their mind since they have been using the traditional customer service for a long time.