

# A study of the factors influencing customer satisfaction and efficiency in contact centers: the combined effect

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Terhi Rekilä  
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## A STUDY OF THE FACTORS INFLUENCING CUSTOMER SATISFACTION AND EFFICIENCY IN CONTACT CENTERS: THE COMBINED EFFECT

### OBJECTIVES

The purpose of this study is to expand understanding of the factors influencing customer satisfaction and efficiency in contact centers. More specifically, the focus is on examining the grouped impact of the factors. First, this research draws on existing research on the factors influencing customer satisfaction. Second, an empirical research is conducted to discover the combined effect of different factors on hand on customer satisfaction and on the other hand on efficiency.

### METHOD

A novel method in marketing called fuzzy set qualitative comparative analysis is the used method. It was chosen because it is suitable for a research with a small population and because it takes both quantitative and qualitative aspects into consideration. It also analyses the impact of factors combined together rather than as separate individuals.

### KEY FINDINGS

The main findings include the notion that a factor can have a different impact on customer satisfaction and efficiency depending on which other factors it is combined with. Additionally, separate factors or the same factors in a different form influence customer satisfaction and efficiency. Hence, there are tradeoffs while attempting to achieve very good levels of both customer satisfaction and efficiency. In addition, the results include findings related to individual factors. For example, it is indicated that a high degree of feedback can have a positive effect on customer satisfaction.

### KEY WORDS

Customer satisfaction, efficiency, contact center, fuzzy set qualitative comparative analysis, FS/QCA

## TUTKIMUS ASIAKASTYYTYVÄISYYTEEN JA TEHOKKUUTEEN VAIKUTTAVISTA TEKIJÖISTÄ ASIAKASPALVELIKESKUKSISSA: TEKIJÖIDEN YHTEISVAIKUTUS

### TAVOITTEET

Tämän tutkimuksen tarkoitus on laajentaa ymmärrystä asiakastyytyväisyyteen ja tehokkuuteen vaikuttavista tekijöistä asiakaskeskuksissa. Tarkastelun keskiössä on eri tekijöiden yhteisvaikutus. Aluksi tarkastelussa on aikaisemmassa tutkimuksessa tunnistetut asiakastyytyväisyyteen vaikuttavat tekijä. Tämän jälkeen tutkimuksella kartoitetaan eri tekijöiden yhteisvaikutusta toisaalta asiakastyytyväisyyteen ja toisaalta tehokkuuteen.

### METODI

Tutkimuksessa on käytössä markkinoinnin alalla vielä melko tuore menetelmä nimeltä FS/QCA, joka on lyhenne englanninkielisestä termistä fuzzy set qualitative comparative analysis. Suomennettuna se tarkoittaa sumean logiikan kvalitatiivista vertailevaa analyysia. Kyseinen menetelmä valittiin tutkimuksen tekoon, koska sen käyttämiseen riittää pieni tutkimusjoukko, minkä lisäksi sen piirissä voidaan tarkastella sekä määrällistä että laadullista aineistoa. Menetelmä tarkastelee lisäksi nimenomaan tekijöitä yhdessä niiden yksittäisen analysoinnin sijaan.

### TULOKSET

Tutkimuksen pääasiallisiin tuloksiin kuuluu löydös, että tietyllä tekijällä voi olla eri vaikutus asiakastyytyväisyyteen ja tehokkuuteen riippuen muista samaan aikaan vaikuttavista tekijöistä. Tulokset osoittavat myös, että asiakastyytyväisyyteen ja tehokkuuteen vaikuttavat eri tekijät. Vaihtoehtoisesti myös samat tekijät voivat vaikuttaa niihin, mutta eri tavoin. Näin ollen asiakastyytyväisyyden ja tehokkuuden yhtäaikainen optimoinnissa on vaikeaa. Lisäksi tuloksiin sisältyy havaintoja yksittäisten tekijöiden roolista. Esimerkiksi säännöllisellä palautteenannolla vaikuttaa olevan positiivinen merkitys asiakastyytyväisyyteen.

### AVAINSANAT

Asiakastyytyväisyys, tehokkuus, asiakaspalvelukeskus, sumean logiikan kvalitatiivinen vertaileva analyysi

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# 1 Introduction

What factors lead to high customer satisfaction and efficiency in contact centers?

This question is the focus of this research. Hence, the aim is on improving understanding of the factors influencing customer satisfaction and efficiency in contact centers. However, customer satisfaction is the main focus. This means that the prior studies this research leans on come from literature concerning customer satisfaction and service quality in contact centers.

The need to conduct research in the specific context of contact centers derives from its importance that is recognized in both academic and managerial research. Contact centers have the potential be the preferred and the most prevalent ways for companies to establish, maintain and retain long-term relationships with current as well as potential customers (Abdullateef, Mokhtar & Yusoff 2011). As proof of this Abdullateef et al. (2011) point out that according to estimations Fortune 500 companies each operate an average of 30 contact centers Furthermore, they argue that the contact center industry is noted to have continuous growth in the amount of workforce and its economic scope. In addition, a survey about customer service made by a Finnish company called Sentraali shows that 91 percent of the companies who took part in the study use phone as a customer service channel (Sentraali 2012). This made it the most often used channel of the companies in the study. Overall it can be said the importance of the contact center industry is evident.

In this introductory chapter the topic and the objectives of this thesis are introduced. First background for the importance of conducting research about customer satisfaction and efficiency in the specific context of contact centers is given. The section explains why there is a knowledge gap in the area that should be filled. After this the explicit research objectives and questions are described followed by a brief initial depiction of the methodology and scope of this research. Then, the main contributions this research aims to give are explicated. Last, a summary of the structure of this thesis is given to help guide the reader.

## 1.1 Background for the research

Despite the importance of the contact center industry, there is a lack of extensive and deep research on it. Many aspects of the field, such as call center agents' sales competence (Downing 2011), the relationship between job functions like content, variety autonomy and quality of work life (Zeenobyah & Vo 2011) and models of density forecasting on arriving calls (Taylor 2012), have been studied but often there is not enough research to give a fully comprehensive, accurate and reliable understanding of the phenomena in contact centers. More specifically, there is often plenty of research about the same or a similar phenomenon in a face-to-face service context but a lack in the contact center side. For example, Downing (2011) notes that the knowledge, skills and abilities of salespeople have been largely studied by scholars but much more in face-to-face situations than in mediated environments like call centers.

One aspect among the contact center industry that has not been thoroughly examined is the focus of this research, namely customer satisfaction. Feinberg, Kim, Hokama, de Ruyter & Keen (2000) state that no literature explicating which variables are related to customer satisfaction in contact centers existed prior to their research, with the exception of a few manuals. Bennington, Cummane & Conn (2000) make a similar notion stating that despite customer satisfaction has raised concerns in the contact center industry, empirical studies have mostly been conducted on staff (dis)satisfaction rather than customer satisfaction. Although the research of both Feinberg et al. (2000) and Bennington et al. (2000) is twelve years old now, the statements of both parties indicate that the research of the factors influencing customer satisfaction in contact centers is still relatively young and would benefit from further development. For example, researching which variables can be best used together to achieve high customer satisfaction and in what way could bring valuable insight to the field.

The relationship of customer satisfaction and efficiency is also relevant in examining the conditions related to contact centers goals. This derives from the indication derived from academic research that pursuing high efficiency can result in impaired



customer satisfaction through a lowered level of customer service. The research of Anderson, Fornell & Rust (1997) indicates that service industries in comparison to manufacturing companies are more likely to suffer from tradeoffs while pursuing both superior customer satisfaction and superior productivity. This means that pursuing one is likely to result in lowering the level of the other. In sum, this finding means that pursuing a high level of both customer satisfaction and efficiency is difficult in service industries to which the field of contact centers can also be categorized

Furthermore, Grönroos & Ojasalo (2004) note that having better production efficiency can sometimes create an illusion of achieving a wholly improved productivity. This is because the enhancement of production efficiency can also hamper perceived service quality, customer value and in the end, the economic result of the firm.

Mahesh & Kasturi (2006) on the other hand state that although customer satisfaction is generally emphasized in organizations, the efficiency of processing customer interactions is still given more importance than the quality of a customer interaction. Related to contact centers in particular, Raz & Blank (2007) note that while the relevance of customer satisfaction and service quality are recognized, operational efficiency is given more emphasis due to the mass production model used in contact centers. Taking these findings into consideration, it would be beneficial to examine the relationship between customer satisfaction and efficiency in call centers to get a good understanding on exactly how emphasizing actions targeted at one can affect the other.

Moreover, according to Lywood, Stone & Ekinci (2009), the profitability of contact centers is influenced by customer experience. They further argue that companies should strive to treat their customers with greater empathy while also recognizing the need to have good control over the costs of calls to manage profitability. This means that although there seems to be a trend among companies to emphasize productivity, they should also manage customer service levels and customer satisfaction.

Anderson et al. (1997) also note that the incompatibility of customer satisfaction and efficiency does not mean that companies should not try to improve them both. Similar

argument is offered by Grönroos & Ojasalo (2004). They acknowledge that it is difficult to pursue a high level on both customer satisfaction and productivity at the same time but still advice that companies should attempt to make improvements on both.

All in all it is clear that it would be beneficial for contact centers to discover which factors influence efficiency and which customer satisfaction to be able to make well-informed decisions while balancing the tradeoff and optimizing the levels of both of them. Furthermore, it would be especially useful to discover whether there are any factors that affect both in the same or a similar way because it would help avoid the tradeoff.

This is supported by the views of Marinona, Ye & Singh (2008) and Lywood et al. (2009). According to the former, it is strategically relevant for companies to aim at having both enhanced productivity and enhanced quality. The latter argue that due to the importance of both customer satisfaction and cost management, there is a need for companies to determine an optimal level between empathy and cost.

The goal of this research is to investigate one angle of the objective of finding the optimal level. The aim is to find groups of factors on one hand leading to improved customer satisfaction and on the other hand leading to efficiency. Moreover, it is examined whether there are some factors influencing both in the same way. According to the knowledge of the author of this thesis, such studies have not been conducted so far. Hence, this research aims to fill in the gap. After all, it is not only important to recognize the need to find an optimal level but it would also be beneficial to understand how the factors behind customer satisfaction and efficiency work. This would help determine what actions can be done based on the factors to achieve the optimum in the levels of customer satisfaction and efficiency.

## **1.2 Research Objectives and Questions**

As mentioned in the previous sections, the main focus of this research is on customer

satisfaction and the factors influencing it. However, the entire objective is to discover factors influencing customer satisfaction in contact centers and, then, test them for their impact on efficiency. Thus as an end result, the idea is to discover which factors have an effect on both.

For the basis of the research, potential factors influencing customer satisfaction are first identified from existing research. Based on this, a theoretical framework of the factors is established. After this, an empirical research is conducted to test the impact of selected factors not only on customer satisfaction but also on efficiency. Hence, the focus of the secondary literature research is on customer satisfaction while the empirical research also includes efficiency. It could be said that studying the factors leading to high customer satisfaction is a first tier objective whereas studying the factors enhancing efficiency is a second tier goal.

The actual research questions of this research are the following:

1. Which factors influence customer satisfaction and efficiency in contact centers?
  - a) What factors can together as groups lead to a high level of customer satisfaction?
  - b) What factors can together as groups lead to a high level of efficiency?
  - c) What factors can together as groups lead to a low level of customer satisfaction?
  - d) What factors can together as groups lead to a low level of efficiency?
2. Do some factors influence both customer satisfaction and efficiency in the same way?

### **1.3 Methodology and scope**

The topic of this thesis was initiated within a MediaMark project in the Department of Marketing in Aalto University School of Economics. Moreover, it was constructed with a Finnish mobile marketing company collaborating in the project. Thus, the aim of this research is not only academic but instead, the purpose is to also discover

managerially usable results.

The aim of the empirical research is to discover what kind of different groups of factors lead to high or low customer satisfaction and efficiency. This is done by using a relatively novel method in the field of marketing, namely fuzzy set qualitative comparative analysis (FS/QCA). The method combines qualitative and quantitative aspects and is suitable for research with small N populations (Ragin 2007).

This choice of a method benefits the research by introducing a new aspect of analyzing the factors influencing customer satisfaction and efficiency. Hence, rather than identifying lone, unconnected factors leading to high customer satisfaction and efficiency, the method produces results that take the factors into consideration as groups. However, the research is limited to a restricted number of factors that can be used in analysis because the FSQCA method cannot handle very high numbers of different variables. This means that all factors that may have an influence on customer satisfaction and efficiency are not included. Instead, a small number of variables based on prior literature and empirical considerations is selected for examination.

#### **1.4 Main contributions of the research**

The purpose of this research is to further both theoretical and practical understanding of customer satisfaction and efficiency in contact centers. To benefit the theoretical side the study offers a new way of understanding and researching customer satisfaction and efficiency in contact centers with the use of the FS/QCA method. According to the knowledge of the author of this thesis, factors influencing customer satisfaction and efficiency have not been researched for their combined influence. Instead, the focus of the earlier research has been on studying the factors as separate variables without including the possible connections between them that comes with the FS/QCA method.

This study also offers a framework constructed of prior research of the factors influencing customer satisfaction in contact centers that can be used as a tool in future research. The merit of the framework is that offers a wide composition of the results found in prior research.

For managers this research offers information on groups of factors leading to high levels of customer satisfaction and efficiency in contact centers. They can use the information in allocating resources and making better informed decisions on which factors to develop. Though it needs to be remembered that the configurations that are the outcome of this research do not represent any kind of one and only truth. They can only serve as one aspect in enhancing the understanding of the factors related to customer satisfaction and efficiency.

## **1.5 Structure of the research**

This thesis contains a total of nine chapters which address different aspects of the study. This chapter contained the introduction including the presentation of objectives and research questions. The first three following chapters examine prior literature regarding customer satisfaction and the method used in the empirical research while the rest focus on the empirical study and its results.

Chapters two and three focus on prior research in the field of contact centers. Chapter two is a literature review of existing literature concentrated on factors influencing customer satisfaction and service quality in contact centers. Chapter three builds on chapter two by introducing a framework of the factors influencing customer satisfaction. Chapter four on the other hand gives an overview of the FSQCA method that is used in the research. It contains a brief description of the method's background and a depiction of how the method is used and what kind of limitations it entails.

Chapter five depicts how the FSQCA method was used in this research. It is followed by chapter six which depicts the results derived from conducting the analysis examined in chapter five. Chapter seven then elaborates on the findings by providing

a discussion of them, especially in relation to prior research. Chapter eight consists of theoretical and managerial implications of the results including suggestions for future research. Last, chapter nine describes important limitations of this research that should be considered in the interpretation of the findings.

## **2 Literature Review**

This chapter consists of a literature review summarizing prior research conducted on customer satisfaction in contact centers. Information is given about the research approaches and overall results of the different studies. Thus, this chapter organizes the studies and factors around the scholars who conducted the research. This is because the idea is to give an overall view of the studies that are then used as a basis for constructing a framework of influential factors for customer satisfaction. The framework is presented in the next chapter, “Framework of influential factors”.

This chapter is divided into three parts. The first is the most comprehensive and important one as it examines studies of factors that have been identified as influencing customer satisfaction and service quality. The second part illustrates findings of the studies related to factors that have been found to be irrelevant for customer satisfaction. Additionally, the part also includes identification of comparative studies that showcased factors that were rated lower in importance than other, more relevant factors. The third part examines studies that include factors with conflicting results. That is, the part is concentrates on factors that some studies have found relevant while some studies have deemed them not very or not at all relevant.

### **2.1 Studies of factors with significant influence on customer satisfaction**

The studies examined in this section identify factors that are found influential for customer satisfaction or service quality. As the objective of any research focused on the factors influencing customer satisfaction in contact centers has traditionally been on identifying factors with influence rather than without influence, this part is the most comprehensive one of the three parts of this literature review. This is also the most

important part for the framework because the purpose of the framework is to showcase the influential factors for customer satisfaction.

The studies examined here represent different types and use different kind of approaches. Some scholars like Feinberg, Kim, Hokama, de Ruyter & Keen (2000) use statistical methods to test for the impact of several individual factors on customer satisfaction while others like Rafaeli, Ziklik & Doucet (2008) rely on qualitative methods among other things to uncover factors behind customer perceived service quality

One of the most comprehensive studies, when it comes to the number of variables influencing customer satisfaction in contact centers, is conducted by Feinberg et al. (2000). They based their selection of factors for the research on a contact center manual by Anton (1997). The manual includes a total of 13 factors. Feinberg et al.'s (2000) focus was on confirming which factors are linked to customer satisfaction with an academic research.

Feinberg et al. (2000) found correlation between seven of the factors and customer satisfaction. These factors are the average speed of answer, caller queuing time, calls closed on first contact, caller abandonment rate, contact center representative's average work time after call per call, percentage of calls blocked and service levels. The speed of answering refers to the time elapsed before a caller even gets on a queue thus separating it from the factor of caller queuing time. Calls blocked refers to the number of callers who never even get to the queue but instead receive a busy signal. Service levels means the number of calls answered in less than a certain predefined number of seconds divided by the number of total calls. It needs to be noted that the speed of answer was only found to be marginally significant with a p-value smaller than 0,1. (ibid.)

Boardman Liu (2010) on the other hand explored contact center service quality in an expert panel study. She had experts rate different factors for their importance on service quality in a seven point Likert scale. Regarding the contact center measures of service quality, like the ones in Feinberg et al.'s (2000) research, Boardman Liu's

(2010) research indicates that the six most important variables for service quality are first call resolution, average speed of answer, number of blocked calls, employee churn rate, service level and caller abandonment rate. The total number of the variables rated by the panelists was thirteen. Compared to Feinberg et al.'s(2000) research, it can be seen that first call resolution, average speed of answer number of blocked calls, service levels and caller abandonment rate appear in both studies as influential factors.

DeNucci (2011) also examined the factors affecting service quality in call centers but in a more general level. According to him, high quality customer service is about a balance between people, processes and technology. Complete training, management of employee turnover, measurement and reporting of relevant results that reflect quality and accessible, easy-to-use technology are four factors that can be used to create the balance.

Boardman Liu (2010) also included in her research an examination of the importance of customer experiences to service quality in contact centers. The expert panelists in the study ranked the factor "knowledgeable agents" highest in importance to customer experience. In second place was agent demeanor which means that the agents, among other things, are polite, professional and friendly as well as easy to understand. One call resolution ranked third highest out of the total list of six variables in the list.

One call resolution is a variable that is often either a part of even the focus of a research. In addition to being deemed influential by Boardman Liu (2010) and Feinberg et al.(2000), it is the focus of the research of Abdullateef, Mokhtar & Yusoff (2011). Their research confirmed that one call resolution has a statistically significant effect on customer satisfaction in contact center.

Contact center representative's demeanor, which was only one variable in Boardman Liu's (2010) study, is also the main focus in some studies. Rafaeli, Ziklik & Doucet (2008) identified five categories of contact center agent behavior or as they call them, "customer orientation behaviors" by conducting inductive analyses of 166 telephone



service interactions in a retail bank call center. These behaviors consist of anticipating customer requests, offering explanations and justifications, educating the customer, providing emotional support and offering personalized information.

Employees are also the center in the research of Kantsperger & Kunz (2005). According to them, customer satisfaction is primarily affected by employee satisfaction in contact centers. This is because the satisfaction of the employee is highly important in creating intensive customer relationships (ibid.). It is also possible that employee satisfaction mediates how well the employee performs in the customer orientation behaviors listed by Rafaeli et al. (2008). The premise of course is that a happy employee does a better job. A finding similar to this is offered by Rothbard & Wilk (2011). According to their research employee's positive mood has positive effect on his performance.

Specifically, Rothbard & Wilk (2011) found that whether an employee starts work in a positive or a negative mood has an effect on his performance. Their research was based on affective events theory according to which affect-driven behaviors, which include performance, are influenced by affective reactions (Weiss & Cropanzano 1996). According to Rothbard & Wilk (2011), the impact of mood on performance stems from mood affecting how employees perceive the affective reactions related to the work which in turn are the factors that in the end affect the performance.

Dean & Rainnie (2009) on the other hand conducted research on organizational factors that can have an effect on service quality in contact centers. The research was actually based on the views of the contact center agents. Their findings include nine themes which were found to affect service quality by the contact center employees who took part in the study. The themes are listed below based on how frequently they were discussed starting with the most frequently discussed theme. The themes are: management emphasis on sales, performance monitoring and feedback, efficiency demands on contact center work, all center structures and support, employee-job fit, human resource management issues, teams, service encounter stress and managerial attitudes.

Raz & Blank (2007) also examined the views of contact center agents. They did a case study of the management of frontline employees in a call center located in Israel. They investigated how pre-shift debriefing, call monitoring, computerized directory and professionalism were appraised by veteran and novice call center agents and their team leaders for their effect in service quality, efficiency and professionalism. All four factors were rated high on average by the different groups. The means concerning the factors were rated mostly above four on a one to five scale and all factors were rated a minimum of three on average by all groups. However, Raz & Blank also did a p-value test on the results. The test showed that pre-shift debriefing and computerized directory had a p-value smaller than 0,05 in relation to service quality which often is the limit for statistical significance. Only call monitoring had a p-value smaller than 0,05 in regards to efficiency. In relation to professionalism pre-shift debriefing and call monitoring had p-values below 0,05.

Jasmand, Blazevic & de Ruyter (2012) also had the agents in the focus of their research. They examined the ambidextrous behavior of contact center agents. The concept of ambidextrous behavior is not originally introduced by Jasman et al. (2012) though. Raisch & Birkinshaw (2008) define ambidextrous behavior as “organization's ability to be aligned and efficient in its management of today's business demands while simultaneously being adaptive to changes in the environment” Jasmand et al. (2012) refer to this definition as background for their research. However, instead of comparing organizations, Jasmand et al. (2012) examined the relations of sales, customer service and efficiency in the work of the agents. Thus they refer to ambidextrous behavior as the pursuit of constant quality, low cost and simultaneous cross- and up-selling. This definition by Jasmand et al. (2012) refers to the level of the employee: their skills and orientations.

More specifically, Jasmand et al. (2012) investigated what role the agents' motivational orientations and responses to typical call center characteristics have on ambidextrous behavior and in turn, the influence of ambidextrous behavior on customer satisfaction, sales performance and efficiency. According to their results, customer satisfaction and sales performance are increased by ambidextrous behavior whereas efficiency is decreased as a result of it.

Contact center attributes have also been examined from the overall point of view of the caller. Bennington et al. (2000) identified contact center attributes that contact center callers value as well as attributes in the centers that can irritate the callers. The valued attributes are reliable follow through, respect and mutual trust, understanding and caring staff, prompt efficient service, easy accessibility, open and effective communication, personalized service and reliable information. The irritants on the other hand consist of lack of personalized service, having to wait on the phone, uncaring communication, getting the "run around", the complexity of the telephone system and unreliable information and service. It can be noted that the identified attributes resemble to quite a high degree the attributes that could be linked to any human services operation, as pointed out by Bennington et al. (2000).

In sum, this part identified several different factors influencing customer satisfaction ranging from specific variables such as one call resolution to issues including several aspects like employee demeanor. These are the factors presented in the framework in the next chapter, "Framework of influential factors".

## **2.2 Studies of factors with insignificant influence on customer satisfaction**

This part focuses on the factors that have been either identified as insignificant or as having low importance. There are several factors including average talk time, time before caller abandons a call and the number of total calls. The factors are derived from the studies of Feinberg et al. (2000) and Boardman Liu (2010).

According to Feinberg et al.'s (2000) research six variables mentioned in Anton's (1997) manual do not have an effect. These variables are contact center representative's average talk time per caller, contact center representative's adherence to schedule, time before caller abandons a call, inbound calls per contact center representative's eight-hour shift, contact center representative's turnover rate and the number of total calls.

The six highest ranking factors for service quality in Boardman Liu's (2010) panels study were mentioned in the previous part. They form almost half of the total number of factors in her study regarding service quality. The rest of the of the factors are adherence to schedule, abandon time, average handle time, average work time, maximum call duration, calls per agent and number of total calls. These factors were rated lower in importance on average by the experts in the study than the other six factors. In sum, the average importance of the six highest ranking factors that were included in the previous part is considerably higher than the average importance of the seven factors that are included in this part. As it can be seen, the factors deemed insignificant by Feinberg et al. (2000) and low in importance by Boarman Liu (2010) are very similar For example, adherence to schedule and abandon time are mentioned by both.

Boardman Liu (2010) also asked the panelists to rank factors in their importance on call center experience. A total of six variables were under scrutiny. The highest ranking half was again illustrated in the previous part. The three lower ranking factors are good technology, limited transfers and rapid answers to callers which are regarded here as factors with insignificant importance.

All in all it is clear that not many studies have identified factors not influencing customer satisfaction in contact centers as only two are presented here too. This is an understandable situation as it is usually more beneficial to know what works than what does not. Still, it is useful to know what not to concentrate on too.

### **2.3 Studies of factors with mixed results**

This part is constructed around factors that on one hand have been found influential for customer satisfaction by some studies and on the other hand have been deemed low in relevance by others. The factors are employee turnover rate, the usage of queuing music and contact center outsourcing.

There is a contradiction between the studies of Feinberg et al. (2000), Boardman Liu (2010) and DeNucci (2011) about the relevance of employee turnover rate.

Boardman Liu's (2010) panel study indicates that employee churn rate is an important factor for customer satisfaction which is also argued by DeNucci (2011). The research by Feinberg et al. (2000) on the other hand excludes it from the list of factors with an impact.

Queuing music is the second factor that has brought conflicting findings among different studies. Tom, Burns & Zeng (1997) as well as Whiting & Donthu (2009) studied its impact with opposing findings. Tom et al. (1997) researched the effect of caller queuing time and the effect of music on customer perception and customer satisfaction. More specifically, they examined two studies addressing whether music, silence or the choice of music influence customer perceptions of their waiting time and their level of satisfaction. Their research indicates that filling the callers' queuing time with music increases their satisfaction. In addition, they find that giving the callers' the option to choose their queuing music provides even a greater level of satisfaction.

Whiting & Donthu (2009) studied customer's perceptions, expectations and estimations of customer queuing times in contact centers. Their focus was on discovering factors that impact the gap between actual queuing times and callers' perceptions of the length of the times. They argue that using queuing music leads to lower caller satisfaction through callers' increased estimation error between actual waiting time and the estimated waiting time by the caller. This is because they find that customer satisfaction is lower when the estimation error is higher. Furthermore, they find that issues such as being able to select music reduce the error. Callers with urgent issues overestimate the error more than others. Women also overestimate more than men and have higher estimation errors.

Walsh, Gouthier, Gremler & Brach (2012) as well as Bharadwaj & Roggeween (2008) on the other hand studied the effect of offshore and onshore contact centers on customer service evaluations with conflicting results. Whereas Walsh et al. (2012) argue that the customer orientation of contact center agents is more important than

the location of the contact center, Bharadwai & Roggeween (2008) did find customer satisfaction to be higher when both the customer and the agent were located in the same country. Hence, like in the case of employee turnover rate and queuing music, the impact of outsourcing on customer satisfaction in contact centers is still unclear.

### **3 Framework of influential factors**

A framework of the factors influencing customer satisfaction is introduced in this section. It is based on the prior research introduced in the literature review. It consists of the factors found relevant in one or more of the studies and the factors with mixed results. Factors depicted in the section 2.2 “Factors with insignificant influence on customer satisfaction” are excluded as the idea of the framework is to illustrate factors identified as having an impact on customer satisfaction.

This chapter is divided into four parts. The first three identify and discuss the factors influencing customer satisfaction identified in the literature review whereas the fourth part contains the finalized framework. The focus of first three parts are (1) customer perception related factors, (2) phone call related factors and (3) agent related factors in that subsequent order. It needs to be noted that the purpose of this threefold structure is to sort the factors into a more comprehensible and easily approachable form. It is not a representation of how the researchers have themselves identified their research or the factors in them.

#### **3.1 Customer perception related factors**

Table 1 on the next page contains a list of customer perception related factors that have been found to have an impact on customer satisfaction. The researchers who have identified a factor to be relevant are named beside each factor. In the opinion of the author, these factors could be well researched by studying the subjective opinions and views of the customers.

CUSTOMER PERCEPTION RELATED FACTORS	
Factor	Research
First call resolution	Feinberg, Kim, Hokama, de Ruyter & Keen (2000); Boardman Liu (2010); Abdullateef, Mokhtar & Yusoff (2011)
Agent demeanor: politeness, friendliness emotional support	Bennington, Cummane & Conn (2000); Boardman Liu (2010); Rafaeli, Ziklik & Doucet (2008)
Agent know-how: knowledge, justification & explanation	Boardman Liu (2010); Rafaeli, Ziklik & Doucet (2008)
Anticipation of customer requests	Rafaeli, Ziklik & Doucet (2008)
Perceived queuing time	Feinberg, Kim, Hokama, de Ruyter & Keen (2000); Whiting & Donthu (2009)
Personalized service	Bennington, Cummane & Conn (2000); Rafaeli, Ziklik & Doucet (2008)

*Table 1: Customer perception related factors to customer satisfaction*

First call resolution is the most occurring variable identified in the literature. It was identified by Feinberg et al. (2000), Boardman Liu (2010) as well as Abdullateef et al. (2011). As its name suggests, first call resolution means that the caller's issue is solved during his first call. No other calls are necessary. The findings of all the parties indicate that a high level of one call resolution is a factor in improving customer satisfaction. Additionally, prompt efficient service is valued by callers according the findings of Bennington et al. (2000). Hence it was a natural choice to be presented first in the framework.

Agent demeanor refers to the politeness and friendliness of the contact center agent as it is defined by Boardman Liu (2010). The factor's relevance for customer satisfaction is supported by Rafaeli et al.'s (2008) findings that providing emotional support has a positive effect on service quality. The research of Bennington et al. (2000) gives further support. This is because it indicates that when a contact center agent show understudying and care and when the calling situation includes respect and mutual trust as well as open and effective communication, customer satisfaction is likely to be higher.

Agent knowhow is also adapted to the framework mainly from Boardman Liu's (2010) research. However, it is also linked to Rafaeli et al.'s (2008) customer orientation behaviors of educating the customer and offering explanations and justifications. The expectation is that when customers feel they receive good and accurate information they feel more satisfied. This would mean that when a contact center has more knowledgeable agents, the higher the level of customer satisfaction is likely to be.

The customer orientation behavior of anticipating customer requests necessitates the agent to utilize both empathy and knowledge. According to Rafaeli et al. (2008) anticipating customer requests means the agent anticipating the customer needs and wants and providing him with the answer without the customer having to explicitly ask for it. It thus requires knowledge about the issues concerning the customer as well as the motivation and sense of a situation to be able to provide valuable information to the customer. It is thus sort of a combination of the previous two factors, agent demeanor and agent know-how. Because it is separately identified in the literature, it is still included in the framework.

A statistically significant correlation between the length of queuing time and customer satisfaction is one of the findings of Feinberg et al. (2000). Their study indicates a beneficial effect of shorter queuing times for customer satisfaction. Furthermore, according to Whiting & Donthu (2009), the error people make while estimating the length of their queuing time affect their satisfaction. This is based on the premise is that shorter queuing times lead to higher satisfaction than longer queuing times.

Personalized service, which of course means how individually a caller is treated, is adopted to the framework from the researches of Rafaeli et al. (2008) and Bennington et al.(2000). They both mention it as an enhancing factor for customer satisfaction.

In conclusion, this section identified factors with an emphasis on customer perception of service quality and satisfaction. The table of factors was constructed mainly around the studies of Feinberg et al. (2000) and Boardman Liu (2010) as well as Rafaeli et al. (2008) as they provided the most comprehensive studies regarding the number of factors. Further support for the relevance of the factors was derived from other



scholars such as Bennington et al. (2000).

### 3.2 Process related factors

Table 2 below contains a list of process related factors that are found to have an impact on customer satisfaction in the different studies. In the view of the author of this thesis, they differ from the customer perception related factors and agent related factors by being possible to measure objectively in numbers.

PROCESS RELATED FACTORS	
Factor	Research
Queuing time	Feinberg, Kim, Hokama, de Ruyter & Keen (2000); Whiting & Donthu (2009)
Queuing music; the choice to select music*	Tom, Burns & Zeng (1997); Whiting & Donthu (2009)
Percentage of blocked calls	Bennington, Cummane & Conn (2000); Boardman Liu (2010); Feinberg, Kim, Hokama, de Ruyter & Keen (2000)
Average speed of answering a call*	Feinberg, Kim, Hokama, de Ruyter & Keen (2000)
Average work time after call	Feinberg, Kim, Hokama, de Ruyter & Keen (2000)
Service levels	Boardman Liu (2010); Feinberg, Kim, Hokama, de Ruyter & Keen (2000)
Abandonment rate	Boardman Liu (2010); Feinberg, Kim, Hokama, de Ruyter & Keen (2000)
Contact center outsourcing*	Bharadwaj & Roggweeen (2008)
Employee turnover*	Boardman Liu (2010); DeNucci (2011)
*Weak evidence/mixed results	

*Table 2: Process related factors to customer satisfaction*

Shorter queuing times are expected to enhance customer satisfaction as elaborated on in the previous section. Instead of measuring the caller perception of the queuing time, it is also possible to examine the impact of the actual queuing times as done by Feinberg et al. (2000). This is why queuing time is also mentioned on this list.

The second factors on the list, queuing music, is related to queuing time. Whiting & Donthu (2009) find that the chance for a caller to choose music decreases his estimation error between actual and perceived queuing time while listening to preset music does not. Hence, the latter scenario decreases customer satisfaction whereas the latter increases it. Tom et al. (1997) on the other hand find that already music alone without the possibility to choose enhances customer satisfaction. Due to the discrepancy between the findings Whiting & Donthu (2009) and Tom et al. (1997) queuing music is marked in the framework with an asterisk in the list to indicate that there are mixed findings related to it. The choice of music is not separated as its own factor since it is closely linked to having queuing music as a factor in general.

The smaller the percentage of blocked calls, the higher the average rate of customer satisfaction is expected to be. This is based on the findings of Feinberg et al. (2000) which show a statistically significant correlation between the amount of calls blocked and customer satisfaction. This is reason why percentage of blocked calls is in the framework. Its relevance as a factor is further supported by the results of Boardman Liu (2010) where calls blocked ranked third highest in importance for service quality as well as the findings of Bennington et al. (2000) of callers valuing easy accessibility.

It is important not to mix the percentage of blocked calls to the similar sounding factor caller abandonment rate. As described by Feinberg et al. (2000), the former refers to the situation where the caller receives a busy signal and thus cannot even get to a queue whereas the latter refers to the situation where the caller hangs up prior to answer after getting on the queue.

Including average speed of answering a call to the framework is also supported by the finding related to easy accessibility by Bennington et al.(2000). However, a greater basis for including the factor comes from the research of Feinberg et al.

(2000). According to it the decrease of average speed of answer leads to higher caller satisfaction. However, as noted before, average speed of answer was only found relevant at marginal significance. It is thus marked to the framework with the note “weak evidence/mixed results”.

Average work time of contact center agents after call is also included in the framework from Feinberg et al.’s (2000) research. Their research indicates that as the work time after call sinks the customer satisfaction increases. They explain the correlation by the fact that the decrease in work means the agents are resolving the problems of the customers directly without additional work or contact. This obviously hints that it would be related to the previously mentioned factor of first call resolution. The factor is still included in the framework to preserve the possibility that it could have an impact on its own.

Contact center service level is an often measured variable among contact centers. It is indicated in Feinberg et al.’s (2000) research that higher service levels will result in higher customer satisfaction. The definition of service levels is adopted from their research. It refers to the number of calls answered in less than a certain predefined number of seconds divided by the number of total calls. They further state that “Service levels is a measure of how effective the center is in achieving call answer goals”. Service level is also one of the variables identified as important in the panel study of Boardman Liu (2010).

Caller abandonment rate, the measure of how often callers abandon the call before answer, is ranked sixth highest by the experts in Boardman Liu’s (2010) panel study. Hence, it is not very high in importance in that study. However, its relevance is supported by Feinberg et al. (2000) who found a statistically significant correlation between it and customer satisfaction.

There are clearly mixed results when it comes to the factor of outsourcing a contact center. Although Walsh et al.(2012) found other conditions of a contact center to be more relevant than the location stemming from outsourcing, the results of Bharadwaj & Roggweeen (2008) supporting the relevance of outsourcing lead to including

outsourcing as a factor to the framework. Due to the mixed results, outsourcing is marked into the framework with the note “weak evidence/mixed results”.

Mixed results are the case for employee churn rate also. It is found the fourth most relevant issues among the call center measures affecting service quality by the experts in Boarman Liu’s (2010) research. It is also rated important by DeNucci (2011) whereas Feinberg et al.’s (2000) research did not show it having a statistically significant relation with customer satisfaction. Hence, employee churn rate is also included in the framework with the note: “weak evidence/mixed results”.

In sum, this section consists of process related factors that could be studied with relatively objective measures such as statistics about phone call lengths. Like in the case of customer perception related factors, the studies the table of factors mostly rely on are conducted by Feinberg et al. (2000) and Boardman Liu (2010) with an emphasis on the former party. It is also important to note that some of the factors included in the table were not found influential by all studies concerning them or were found only marginally relevant.

### **3.3 Agent related factors**

Table 2 on the next page is a list of agent related factors that have been found to have an impact on customer satisfaction in the different studies. They could be studied by examining the opinions and views of agents but also by analyzing the work circumstances, demands, tools and other things arranged for them in relation to their work.

AGENT RELATED FACTORS	
Factor	Research
Employee satisfaction	Kantsperger & Kunz (2005)
Employee mood	Rothbard & Wilk (2011)
Management emphasis on sales	Dean & Rainnie (2009)
Ambidextrous behavior	Jasmand, Blazevic & de Ruyter (2012)
Performance monitoring & feedback	Dean & Rainnie (2009); DeNucci (2011); Raz & Blank (2007)
Efficiency demands on call center work	Dean & Rainnie (2009)
Contact center structures and support systems	Dean & Rainnie (2009); DeNucci (2011); Raz & Blank (2007)
Employee-job fit	Dean & Rainnie (2009); Jasmand et al. (2012)
HR management issues: recognition, rewarding	Dean & Rainnie (2009); DeNucci (2011); Raz & Blank (2007)
Team support	Dean & Rainnie (2009)
Service encounter stress	Dean & Rainnie (2009)
Managerial attitudes	Dean & Rainnie (2009)

*Table 3: Agent related factors to customer satisfaction*

The first factor in the list is employee satisfaction which was researched by Kantsperger & Kunz (2005). It is mentioned first because it indicates overall that influencing the working conditions, capabilities and working atmosphere of the employees may influence customer satisfaction.

Agent's mood in work is found to influence customer service in the research of

Rothbard & Wilk (2011). It is derived to the framework as a factor from their research only, like employee satisfaction is included to the framework based solely on the findings of Kantsperger & Kunz (2005).

A basis for most of the other factors in the agent related factors is in the research by Dean & Rainnie (2009) which focuses on organizational factors that can have an effect on service quality in contact centers. Their findings consist of nine themes which were found to affect service quality in the view of the agents. The themes are listed below based on how frequently they were discussed starting with the most frequently discussed theme. It is thus indicated that the higher the theme is on the list, the more relevant it is. The themes are: management emphasis on sales, performance monitoring and feedback, efficiency demands on contact center work, all center structures and support, employee-job fit, human resource management issues, teams, service encounter stress and managerial attitudes.

According to Dean & Rainnie (2009) management emphasis on sales means that the contact center agents are expected by management to offer higher value options for the customer while servicing him. The research shows that this is seen by many agents as opportunistic behavior and ill-suited with keeping up service quality. Jasmand et al. (2012) studied a similar matter, namely the ambidextrous behavior of contact center agents. They define ambidextrous behavior as agents' ability to both provide good quality service and engage in cross- and up-selling. As opposed to Dean & Rainnie's (2009) results, they found that ambidextrous behavior positively influences customer satisfaction while it has a negative effect on efficiency instead.

Since the research of Dean & Rainnie (2009) focused on managerial attitudes towards the work of the agents whereas Jasmand et al's (2012) research focused on the abilities and skills of the agents, the differing results are not necessarily in conflict with each other. It is possible that the managerial pressure towards sales hampers the work of the agents but when the sales orientation comes from within the agents it aids their ability to provide good customer service as well. Due to this reason, the factors are included separately in the framework.

Performance monitoring and feedback refers to the processes of asking and answering questions for feedback and monitoring purposes as well as conducting surveillance as it is described by Dean & Rainnie (2009). Similarly, Raz & Blank (2007) used covert monitoring of calls by management as one factor in their research. By it they refer to the typical contact center practice of inspecting calls and giving feedback to the employees. DeNucci (2011) also recognizes the measurement and reporting of relevant contact center results, which reflect quality, as one relevant factor for high-quality customer service.

Regarding the third highest factor in Dean & Rainnie's (2009) list, the efficiency demands on call center work, they state that it is linked with workload, time pressures and the conflict between productivity demands and service quality. More specifically, their research indicates that the pressure of complying with key performance indicators made the agents feel less able to handle interactions with customers which obviously may negatively influence the level of service quality and customer satisfaction.

Contact center structures and support refer to the technical procedures and support systems utilized in contact centers, according to the definition by Dean & Rainnie (2009). The findings show that the systems and procedures were assessed to facilitate quality when they functioned at an adequate speed (not too slow).

Raz & Blank (2007) also used the existence of computerized directories as a factor while researching efficiency and service quality in contact centers. By computerized directory they refer to IT software which incorporates all information about the systems and procedures used by call centre employees. DeNucci (2011) states that: "A contact center is about people, process and technology. High-quality customer service balances those three elements by focusing on four key factors." One of these factors is accessible, easy to use technology for the employees. Contact center structures and especially the support systems are thus acknowledged by several scholars and accordingly included in the framework.

How well the employees are suited for their job by their natural skills in multitasking,

solving problems and acting positively in all situations illustrates the fifth theme by Dean & Rainnie, the employee-job fit. The theme encompasses the employee's feelings about his job, or in simple words, whether he likes it or not. This was rated important by all focus groups in Dean & Rainnie's (2009) study. As mentioned previously, a part of their research, Jasmand et al. (2012) also studied the orientation of a person in relation to ambidextrous behavior. This means, they studied how well a person's inner personal orientation supports ambidextrous behavior. In other words, they researched whether the characteristics of the employees influence their suitability for the job and found that the answer is yes. Hence, the factor of employee-job fit is included in the framework.

According to Dean & Rainnie (2009) human-resource management issues include recognition, rewards and incentives as well as issues like training and shift times. These issues are touched upon by other as well. For example, DeNucci (2011) recognizes training with ongoing refreshers as one of the four important factors for call center management. Raz & Blank (2007) include employees' views about a bonus system and pre-shift debriefing as two of the factors used to study service quality and efficiency. Dean & Rainnie (2009) note that the human-resource management issues can affect service quality either positively or negatively since it may influence the attitudes and skills of employees.

Teams on the other hand offer a basis for social and emotional support for the employees while it represents an operational framework for contact centers as argued by Dean & Rainnie (2009). They further note that teams are important because they help diminish employee isolation and give employees access to immediate support.

The focus groups in Dean & Rainnie's (2009) research underlined the need for management to recognize the difficulty of the contact center agents work and help them by providing flexibility with breaks from work, possibilities to de-brief and allowing them more control over the service process. The reason for this is that those actions would help the agents manage service encounter stress which is the second last factor in Dean & Rainnie's (2009) list and also the second last factor included in



the framework. In general, Dean & Rainnie (2009), note that work stress is clearly linked to contact center work as it has already been established by earlier research (e.g. Deery, Iverson & Walsh 2002) that working in contact centers causes stress and emotional exhaustion.

The last theme by Dean & Rainnie (2009) and also the last factor in the framework, managerial attitudes, means the general attitudes of managers in contact centers experienced by the employees. This includes issues such as negative comments and lack of support or denying employees the opportunity the influence decisions affecting them or daily not giving the employees sufficiency time to prepare for calls. This is thus a measure of how supported the agents feel by their managers.

This section examined factors representing the agents' point of view. Dean & Rainnie's (2009) study was used as a main basis for this. That is, their study acted as the source for the majority of the factors though some were also supported by findings of other scholars. Important studies for the identification of factors were also done by Kantsperger & Kunz (2005), Rothbard & Wilk (2011) and Jasmand et al. (2012) as factors were also included to the framework solely based on their work.

### **3.4 Full framework**

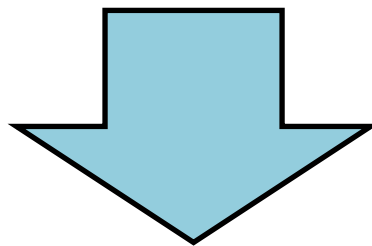
The full framework presented in this section is constructed by combining the tables of the different factors presented in the three previous sections. No additional factors have been added to it outside them. The framework is used as a basis for the empirical research in this study.

Once more, it is noted that the division of factors into the three categories is not a representation of how the authors of the studies represented them. Instead, the categorization functions in making the list more comprehensible. In addition, the categorization is based on assessing what type of methods would be best suited for each group of factors. This means that customer surveys and other methods scrutinizing the customer's point of view could be well suited for the customer

perception related factors. The process related factors on the other hand can be researched using objective numbers derived from the performance measurement systems of the contact centers. These should not be affected by anyone's subjective views. Lastly, the third category, agent related factors, could be well researched from the agents' point of view.

The framework of the influential factors is presented in figure 1 on the next page.

CUSTOMER PERCEPTION RELATED FACTORS	PROCESS RELATED FACTORS	AGENT RELATED FACTORS
First call resolution	Queuing time	Employee satisfaction
Agent demeanor: politeness, friendliness emotional support	Queuing music; the chance to select music*	Employee mood
Agent know-how: knowledge, justification & explanation	Percentage of blocked calls	Management emphasis on sales
Anticipation of customer requests	Average speed of answering a call*	Ambidextrous behavior
Perceived queuing time	Average work time after call	Performance monitoring & feedback
Personalized service	Service levels	Efficiency demands on call center work
	Abandonment rate	Contact center structures and support systems
	Contact center outsourcing*	Employee-job fit
	Employee turnover*	HR management issues: recognition, rewarding
		Team support
		Service encounter stress
		Managerial attitudes
*Weak evidence/mixed results		



**CUSTOMER SATISFACTION**

Figure 1: Full framework

Some of the factors in the different categories of the framework are such that they could also influence some of the other factors instead of influencing customer satisfaction directly. That is, they could mediate the level of customer satisfaction through other factors.

The likelihood to impact through mediation is especially true for the agent related factors. For example, the satisfaction level of an employee could have an effect on his demeanor, that is, how friendly or polite he is. It is often said in marketing and business in general that you get what you measure. Performance monitoring could thus affect average work time after call or the rate of first call resolution, to name a few examples. Efficiency demands on call center work could influence how personalized service agents offer for the customers and so on. Hence, it could also be beneficial to research whether some of the factors are mediating factors to other factors that in the end lead to high or low customer satisfaction.

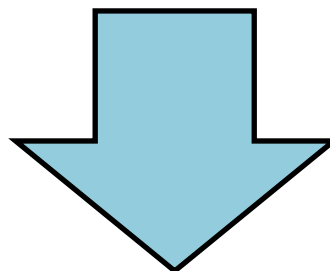
Figure 2 on the next page is an illustration of how the framework could be structured taking the possible mediated effects into consideration. However, it is not the only possibility but rather an example. Other factors than just the ones in the agent related factors category could have more impact by mediating another factor than the outcome directly.

AGENT RELATED FACTORS					
Employee satisfaction	Employee mood	Management emphasis on sales	Ambidextrous behavior	Performance monitoring & feedback	Efficiency demands on call center work
Contact center structures and support systems	Employee-job fit	Human resource management issues	Team support	Service encounter stress	Managerial attitudes



CUSTOMER PERCEPTION RELATED FACTORS	PROCESS RELATED FACTORS
First call resolution	Queuing time
Agent demeanor: politeness, friendliness emotional support	Queuing music: the chance to select music*
Agent know-how: knowledge, justification & explanation	Percentage of blocked calls
Anticipation of customer requests	Average speed of answering a call*
Perceived queuing time	Average work time after call
Personalized service	Service levels
	Abandonment rate
	Contact center outsourcing*
	Employee turnover*

\*Weak evidence/mixed results



**CUSTOMER SATISFACTION**

Figure 2: Alternative framework

## **4 Methodology**

A novel method in marketing called fuzzy set qualitative comparative analysis (FS/QCA) is used in the research. It is suitable for a research with a small population of cases. FS/QCA also combines aspects of both quantitative and qualitative research (Ragin 2007). According to the knowledge of the author of this thesis, it has never been applied in the research concerning customer satisfaction in the contact center industry. It can thus provide new aspects to the field.

This chapter gives an overview of the FS/QCA method. Firstly, a short description of its background in research is given. Secondly, information about use of the method is offered. Thirdly, its previous use in the field of marketing is briefly described and lastly, the limitations of the method are summarized.

### **4.1 Background of FS/QCA**

FS/QCA has its roots in the late 1980's and the early 1990's as qualitative comparative analysis (QCA) was introduced to the study of macro-comparative questions in the fields of political science and historical sociology. The maximum number of cases in the level of entire societies, economies, states and other similar entities that belong in the macro level sociological studies is both currently and historically fairly low. This results in a small number of cases and is the reason why QCA has been considered and is still conceived as a small-N approach. However, nowadays the use of different QCA techniques has been extended to studies with medium-N and large-N number of cases as well as to other fields than only political science and historical sociology. (Berg-Schlusser et al.2009)

### **4.2 Using FS/QCA**

The end result of using fuzzy sets is a set of configurations of conditions (factors) that lead to an outcome. The configurations illustrate what kind of groups of conditions together lead to an outcome, for example high customer satisfaction. To get to the

configurations a researcher must first calibrate the conditions and the outcome(s).

Researches can calibrate partial memberships in fuzzy sets using values in an interval between 0 (nonmembership ) and 1 (full membership). 1 and 0 are qualitative assignments (“fully in” and “fully out”) and values between 1 and 0 are indications of partial membership. The cases are then assigned a membership score in the set. It is important to note that this calibration requires substantive and theoretical knowledge from the researcher and thus should not be mechanical. (Ragin 2007)

Fuzzy sets include three breakpoints, namely full membership (1), full nonmembership (0) and the point of maximum ambiguity; weather a case is more in or out of a set (0,5). The point 0,5 is also qualitatively anchored like the other two. In sum, this set with three points is a rudimentary three-value fuzzy set. However, fuzzy sets can also include less or more points than three, as depicted in image 3 below. (ibid.)

Crisp set	Three-value fuzzy set	Four-value fuzzy set	Six-value fuzzy set	"Continuous" fuzzy set
1 = fully in	1 = fully in	1 = fully in	1 = fully in	1 = fully in
		.67 = more in than out	.9 = mostly but not fully in	Degree of membership is more "in" than "out": $.5 < X_i < 1$
	.5 = neither fully in nor fully out	.33 = more out than in	.6 = more or less in	.5 = cross-over: neither in nor out
			.4 = more or less out	Degree of membership is more "out" than "in": $0 < X_i < .5$
0 = fully out	0 = fully out	0 = fully out	.1 = mostly but not fully out	0 = fully out
			0 = fully out	

Figure 3: Crisp versus fuzzy sets, Ragin, C.(2007) *Qualitative Comparative Analysis Using Fuzzy Sets*

The simplest set called crisp set is based on Boolean algebra with only two membership scores, 1 and 0. With it the cases can be sorted with a dichotomy of either being fully in or fully out. (ibid.)

Ragin (2007) illustrates the calibration into fuzzy sets of three or more with the example of calibrating rich countries. The basis of the fuzzy set in the case is GNP per capita where 1 represents a membership score in “definitely rich country” and a 0

represents a membership score in "definitely not a rich country". As Ragin (2007) points out, it would be a mistake here to score the richest country by GNP per capita an automatic 1 and the poorest country an automatic 0. Instead, qualitative anchors should be established for the point 1 (full membership), point 0 (full nonmembership) and 0.5 (the maximum point of ambiguity). The researcher needs to give reasoning for the specification of the qualitative anchors. For example, the researcher needs to specify why he chose a certain level of GNP per capita to be the requirement for a case to be assigned a score 1, full membership.

There can be variation among the GNP size of the countries assigned a score 1. Ragin (2007) notes that the qualitative anchors make it possible to make distinctions between relevant and irrelevant variation. In the example, the variation among the GNP numbers of the countries with score 1 is thus irrelevant but the variation between the fuzzy set membership scores is relevant.

After the calibration, a researcher can input the calibrated conditions, outcome and cases into FS/QCA software. The software produces a truth table of the calibrated conditions about their relation to the outcome. In the truth table the researcher needs to set threshold values for frequency and consistency. This is because frequency is used to divide between relevant and irrelevant rows in the truth table. Consistency is used to make a distinction between the configurations that are a subset of the outcome and those that are not. (Ragin 2008)

A frequency value of 1 or 2 is suitable for research with small number of cases. The more cases a research includes the higher the frequency number should be. Consistency on the other hand is measured on a scale of zero to one. In it values under 0,75 are a sign of substantial inconsistency. Hence, rows on the truth table with values under it should not be used. (ibid.)

Once the thresholds have been set in the truth table, the program can be used to produce sets of configurations leading to an outcome or its negation. The configurations form the base for the interpretation of the researcher. Regarding the configurations there are values related to solution consistency and solution coverage



that need to be considered. Solution consistency measures the degree to which membership in the set of configurations is a subset of membership in the outcome. Solution coverage measures the proportion of memberships in the outcome that is explained by the complete solution. (ibid.)

This is a brief summary of some of the basics of using FS/QCA. Information about the use of FS/QCA in marketing can be read from the doctoral dissertation of Antti Vassinen from the Aalto University School of Economics, Department of Marketing. The dissertation is from the year 2012 and it is called “Configurational explanation of marketing outcomes: a fuzzy-set qualitative comparative analysis approach”. Example of the method’s use in another master’s thesis can be found in the master’s thesis of Vaito Sauna-aho “Interacting performance effects of marketing and sales activities: Case Aalto EE Open programs and Forums” (2012). It also contains a more detailed explanation of how to use the method.

The FS/QCA software can be accessed online free of charge at <http://www.u.arizona.edu/~cragin/FS/QCA/software.shtml>. The site also contains a manual for the use of the software and literature references about the method.

### **4.3 FS/QCA in marketing**

In the past 10 years FS/QCA has been introduced as a new research tool in the field of marketing. Kent (2005) notes that the act of analyzing marketing data by the implementation of variable-centered analyses is not very suitable for finding logical relationships between combinations of different factors. He further argues that most categorizations of factors cannot be defined with high precision because the categories tend to be fuzzy with varying degrees of membership.

Kent (2005) uses the categories “loyal customer” and “innovative organization” as examples. It is obvious that it would be very difficult to rate a company as strictly zero percent innovative or one hundred percent innovative. FS/QCA allows taking the different degrees into consideration and thus gives a more realistic representation of

the categorizations (ibid.).

The use of FS/QCA in marketing is also examined by Tikkanen & Vassinen (2011). They note that the existence of many different paths leading to the same outcome is quite usual in marketing. By paths they refer to the different combinations of factors that together result in an outcome. One of their main arguments is that FS/QCA can be used to discover the different paths and thus bring about new information about different phenomenon. Thus Tikkanen & Vassinen propose that FS/QCA can be used to find answers to the basic question in marketing: What in marketing works, when, where and how?

An example of a research in the field of marketing where FS/QCA has been successfully used is the doctoral dissertation of Antti Vassinen from the department of marketing in Aalto University School of Economics. His stated main argument is that it is possible to use FS/QCA in explaining marketing outcomes as results of configurations of causal conditions in certain contexts that result in easily interpretable and accessible knowledge for company management.

#### **4.4 Limitations of FS/QCA**

FS/QCA cannot be used to unravel the existence of an objective reality but to operate within a certain ontological reality (Tikkanen & Vassinen 2011). Furthermore, it is not possible to descry unavailable information with it (ibid). Kent (2005) also notes that for the use of FS/QCA a clear outcome or an event needs to exist and the variables influencing it have to be known and understood. Hence, the importance of being able to collect data of a well-defined phenomenon is vital.

The ability to limit the number of variables is also necessary. This is because FS/QCA can only process a restricted amount of variables at one run. (Kent 2005). Simply put, the more variables there are, the more configurations can also be formed. Kent (2005) exemplifies this by noting that with 15 variables there can be over 14 million configurations. These kinds of multitudes would of course be impossible for any

researches to analyze.

Lastly, according to Kent (2005) there is no procedure for testing the statistical significance of the results in the cases when a random sample of a wider population is used as a basis for the research. However, as determining statistical significance is not an objective typically related to research with FS/QCA, this is not an issue in most studies.

## **5 FS/QCA in case contact centers**

According to Wierenga (2010) marketing entails quantifiable, well-structured phenomenon like the number of sales, price, market share, but it also includes qualitative elements that cannot be expressed in numbers. This applies in the case of customer satisfaction and efficiency in contact centers. Some factors like phone call durations or waiting time lengths can be quantified while issues such as managerial support are more difficult to study and express in numbers only. This is also a reason why FS/QCA is a good selection of method for this research. The qualitative data obtainable from contact centers can be turned into quantitative form and analyzed with a tool that is not restricted to only qualitative or quantitative approach.

This chapter depicts the use of FS/QCA in answering the research questions regarding the factors influencing customer satisfaction and efficiency in contact centers. This chapter consists of five parts. The first part, data collection, explains the methods used for collecting data. The second subsection, specification of outcomes, deals with how the outcomes of the research, namely the high level customer satisfaction and high level of efficiency, were approached within the FS/QCA method. The third subsection, selection of conditions, depicts the selection of the factors (conditions in the FS/QCA terminology) influencing customer satisfaction and efficiency that are included in the research. The fourth subsection, the calibration of conditions, is based on subsections two and three. It describes how the outcomes and the selected conditions were calibrated to a suitable form for the FS/QCA system based on the collected empirical data. Finally subsection five, FSQCA analysis, ends

this chapter by describing the actions after calibration.

## **5.1 Data Collection**

Contact centers were contacted through the mobile company collaborating with this research project. With the help of the company, a total of eight contact centers participated in the research. A representative of the collaborative company was also present and provided aid in some of the data collection ventures elaborated on below.

The complete empirical data for this research was collected from different sources regarding the eight contact centers. Interviews and questionnaires were used to obtain both qualitative and quantitative data. In addition, the collaborative company also provided the research with data about customer satisfaction they had collected for the contact centers. This data was based on a text message survey sent to the customers of the contact centers after a completed phone call. The data was used to rate the customer satisfaction in each center as it included the ratings of the customers about the success of the phone call.

The participating contact centers all belong to different companies located in Finland. The companies and their respective contact centers represent various industries and sizes ranging from employing 20 up to nearly 130 customer service representatives. Most of the contact centers operate in a b-to-c environment but some of them focus on both business clients and consumers or only business customers. Two of the contact centers are outsourced by the host company. In those two cases the contact centers produce the contact center activities for several companies instead of only serving the company participating in the research. However, the focus of this research was on the operations related to the host company.

Extensive interviews were the main data collection method conducted in the contact centers but as mentioned, the use of questionnaires was also employed. Prior to the interviews representatives of the contact centers were asked to fill in a short questionnaire containing questions mainly about numerical data that was easier to

obtain through a questionnaire rather than an interview. The questions were related to the amount of employee sick leaves, phone call duration times, the average number of phone calls per agent a day and other issues in the same nature. In the outsourced centers the interviews and the set of predesigned questions were mainly concentrated on the contact center activities related to the host company.

Two to five people were then interviewed in each center depending on the size and organization of the contact center. While most of the interviews were done face to face, some of them were conducted as a phone interview due to practical reasons. The interviewees were selected from different levels of the contact centers to obtain rich data with different views. The duration of the interviews ranged from nine minutes to little over an hour. As the main rule, one or two of the interviewees were managers, one was a team leader and two were customer service representatives. A total of 32 people were interviewed. All the interviews were recorded and transcribed.

After the interviews were conducted it became evident that more information was needed to successfully and reliably carry out the research. Thus the contact centers filled in another questionnaire designed to obtain the needed additional information. The questionnaire included more specific questions about the numbers of phone calls, the lengths of customer queuing times and so forth. However, due to a delay in the interviewing schedule of one contact center, it was not asked to fill in this questionnaire. Instead, it only filled out the first questionnaire after it was specifically designed for it to include questions about additional needed information.

In conclusion, the empirical data for this research consists of interviews with representatives of different organizational levels of each contact center, questionnaires sent to the contact centers before and after the interviews and the customer satisfaction data provided by the service provider of the contact centers. To give an idea of the type of gathered data, the interview questions are illustrated in appendix 4.

## **5.2 Specification of outcomes**

In according to the purpose of this research, the outcomes under investigation are customer satisfaction and efficiency. A fuzzy set qualitative comparative analysis is conducted to discover configurations leading to each of them individually.

Customer satisfaction refers to the callers' overall satisfaction to the service in the contact centers. Hence, it is measured by the aggregate ratings given by the callers. Data collected from the text message survey of the service provider of the contact centers elaborated on in the previous section is the source of this data. In addition, the centers were asked about their objectives related to the levels of customer satisfaction to provide further basis the calibration process. However, many of the centers did not have goals set. The reason for this is partially that the centers have all only started measuring customer satisfaction with the survey method this year. Hence, the calibration was based only on the actual levels of customer satisfaction.

Efficiency refers to the amount of work done by the agents. Different contact centers had varying practices about what the work includes. In some of the centers the agents only answer phone calls while in some centers the job entails not only answering phone calls but also answering e-mails and making outbound calls as well as conducting various types of back office work. The centers were asked about their objectives for the amount that should be done by agents in the various types of work. However, this information was often not available and thus could not be used. Hence, only the actual amounts of tasks done were used. To improve the quality of the calibration, knowledge about the centers and the nature of the tasks done in them collected during the interviews were also taken into consideration. This assessment was supported by examining the typical lengths of phone calls and average time needed to answer an e-mail in the centers.

## **5.3 Selection of conditions**

The framework of factors influencing customer satisfaction in contact centers introduced in chapter three was used as a basis for the selection of the conditions for

analysis. However, other issues were also considered. For example, discussions with the representatives of the collaborative company of this research as well as the empirically collected data were taken into consideration.

Table 4 in the next page shows a full list of conditions that were considered to be included in the final set of conditions for analysis before the empirical research was started. However, it should be noted that many of the conditions on the list are generic issues that only formed the basis for the data collection. The idea was to approach the conditions on a wide scale to see what kind of issues would emerge. This means that the conditions were redefined after the data collection or certain small aspects of the conditions were chosen for the final analysis after reviewing the empirical data. Moreover, some of the conditions had to be left out to obtain a suitable set of conditions for analysis.

CONDITION	DESCRIPTION
Outsourcing	Weather the contact center is outsourced to another company.
Queuing music	Weather the contact center has queuing music for the customers.
Queuing time	How long the customer queuing time is.
Employee turnover	How big the employee turnover is.
Sales orientation	To which extent the work of the agents includes sales.
Quality orientation	How quality oriented as opposed to efficiency oriented the contact center is.
FCR emphasis	How much emphasis is placed on first call resolution (FCR)
Rewarding system	How frequently and personally agents get rewarded and in which ways.
Feedback system	How often and what kind of feedback agents get.
Duration of contact	How long time agents spent on each customer. This includes the phone call and the actions related to the customer after the phone call.
Duration of phone call	How long the phone call is.
Average work time after call	How much time agents' use on a caller's issue after the call ended.
Contact center size	How many agents work in the contact center.
Agent-job fit	How well suited the agents are for the job.
Agents' job variation	How much variation is in the work of the agents.
Agents' job satisfaction	How satisfied the agents are with their work place.
Amount of employee sick leaves	How high percentage of sick leaves among the agents the contact center has.
Agent friendliness	To which extent friendly customer service is emphasized.
Agent know how	To which extent agent know how is emphasized.
Management support	How supportive the management is for the agents.
Personalized service to customers	How personalized service is provided to customer.
Criteria for new employees	What kind of process the selection of new employees is and what kind of criteria for new employees is used.
Training system for agents	What type of training is employed and how often and regularly it is offered.
Computerized support systems	What kind of and how functionable and good computerized support systems for the agents the contact centers have.

*Table 4: Preliminary conditions*



Some of the preliminary conditions were left out from final analysis due to the homogeneity of the answers in different contact centers. This means that the conditions were so similar that including them in the calibration would not have made sense due to all being assigned the same value in calibration. For example, there was a clear indication that individual service is emphasized in all cases in a similar manner. When inquired about the practices of the contact centers regarding this, the answers always followed the pattern that there are guidelines and rules that the agents need to follow but each customer is still treated individually to find and answer his problem. If exceptions would be made, they should usually be discussed with management first.

A reason for excluding a condition could also stem from the conclusion that wider and deeper information would be required to be able to calibrate the condition. This was for example the case with the training provided for the agents in the contact centers. First of all, the type for training required is different in each contact center based on the education and other skills of the hired employees as well as the contact center structures and goals. In one case the manager of the center pointed out that they do not need to train their employees so much in the customer service area because it is emphasized in the selection of new employees. Hence, their focus in training is more on technical matters. Secondly, the training systems in each center are so different and sometimes complex that the amount of information gathered would not suffice. To study the effect of the training methods a larger scale of research focusing on them should be used. This was not possible within the schedule and resources of this research as quite a substantial amount of data was already gathered.

Finally, some conditions needed to be excluded because information related to them could not be gathered from all contact centers. Employee job satisfaction is the most prominent example of this. No data could be obtained from few of the contact centers which obviously meant that successful calibration could not be done.

In addition to excluding conditions based on the empirical data, two new ones were also added. Contact center location is the first and it is based on the hypotheses that the attributes of a location, such as the population and number of potential employees

and rivaling work places for agents, could have an effect on customer satisfaction and efficiency through the stability and longevity of work force. The second new condition addresses weather the contact center has an assigned tutor or coach for the training and feedback for the agents. As the training system of agents' had to be excluded from the conditions, this is a type of a representation of that aspect.

After the exclusions and inserts, the definitions of the final conditions were altered to a suitable form for the FS/QCA analysis. Table 5 contains a list of them.

CONDITION	DESCRIPTION
Queuing music	Whether the company uses queuing music or not.
Queuing time	How long the queuing time in each company is.
Employee turnover	How big the employee turnover is.
Sales orientation	To what degree sales is emphasized in the contact center and required from the agents.
Quality orientation	Whether the quality of customer service as opposed to efficiency is emphasized and to which extent.
Outsourcing	Whether the company has outsourced its call center operations.
FCR emphasis	Whether FCR is emphasized and to which extent.
Rewarding: Frequency	How often an agent has the chance to get a reward based on preset performance metrics and goals.
Rewarding: Orientation	To which extent the agents are rewarded on one hand based on individual performance and on the other hand based on team or group performance.
Degree of organized personal feedback	How often, regularly and personally agents get feedback.
Tutor system	Weather the company has a tutor or coach for the agents in addition to their manager
Agents' job variation	How much variation is in the work of the agents; to which extent they have other tasks than just answering calls.
Duration of contact	How long time agents spent on each customer. This includes the phone call and the work time after it.
Contact center size	How many agents work in the contact center.
Contact center location	Where the center is located: in a highly populated area with many rivaling jobs vs. a lower populated area with fewer rivaling jobs.

*Table 5: Final list of conditions for fuzzy set calibration*

It is noteworthy that the list is quite extensive for the FS/QCA analysis. As elaborated on in the previous about the limitations of FS/QCA, the number of conditions cannot be very high with the risk of producing an incomprehensible amount of possible configurations of conditions. To address this problem, it was decided to make tests with all of the conditions and exclude some of them if needed.

After the tests it was clear that the number of conditions needed to be cut down. It was found that the program could produce comprehensible results with a maximum of eleven conditions. Thus four of the conditions in table 5 were excluded. They are agents' job variation, duration of contact, contact center size and contact center location. The decision to exclude them derived from taking the initial tests and previous literature into consideration. None of the conditions are identified as influential for customer satisfaction in the existing literature.

Other main reason to leave out agents' job variation and contact center size, besides the lack of support from existing literature, was that they did not seem to have great impact on the configurations whether included or excluded. The same is true for contact center location but it was mainly excluded because seven out of the eight centers had the same fuzzy set membership score. Lastly, the decision to eliminate duration of contact was highly based on the fact that information required to calibrate it was not available for all centers and had to be estimated by the author of this thesis. Since conditions had to be excluded anyway, it was a logical choice to exclude one with uncertainty. The calibration of these four conditions is presented in appendix 1.

Table 6 is a list of the conditions used in the final analysis. Information about the relationship of the literature framework and these factors as well as the reasons for choosing these particular factors for analysis are included in section 5.4 which depicts the calibration of the factors under the FSQCA method.

CONDITIONS IN FINAL ANALYSIS
Queuing music
Queuing time
Employee turnover
Sales orientation
Quality orientation
Outsourcing
FCR emphasis
Rewarding: Frequency
Rewarding: Orientation
Degree of organised personal feedback
Tutor system

*Table 6: Conditions used in final analysis*

#### **5.4 Calibration of outcomes and conditions**

The contact centers form the group of cases for the calibration and are also referred to as cases from now on. For the purposes of calibration, the centers are each tagged with a name as they cannot be called with their real names due to confidentiality reasons. The nametags are Center1, Center2 and so forth up the last contact center, Center8.

The following subsections handle the calibration of the outcomes and the conditions leading to the outcomes. The first subsection describes the calibration of the outcomes, customer satisfaction and efficiency. Subsections two to three explicate how the conditions were calibrated using the Boolean method, three-value fuzzy sets and four-value fuzzy sets in that respective order. Lastly, subsection four consists of a summary of the calibration of the outcomes and all the conditions. As the conditions agents' job variation, duration of contact, contact center size and contact center location were calibrated but not used in the final analysis, their calibration is not presented in this section but only in appendix 1.

#### 5.4.1 Calibration of the outcomes

A different method is used on the calibration of customer satisfaction and efficiency. Three-value fuzzy set is the method used in the calibration of customer satisfaction while efficiency is calibrated using the four-value fuzzy set. The reason for this is that numeric information suitable for calibration with the three-value fuzzy set could be obtained for the former but not for the latter. Below are descriptions of the calibrations of each.

##### Customer satisfaction

Customer satisfaction was the simpler outcome to calibrate out of the two. Overall, customer satisfaction data from the months of February, June, August and September from the year 2012 were used. However, data regarding each of those months was not available for all the cases. Hence, two months best representing the case and information available were chosen to be examined for each case.

Half of the centers used a scale of one to ten and the other half a scale of one to five for the ratings of customer satisfaction. This means that the values had to be scaled to match each other. To make the scaling simple and comprehensible, the values on the scale of one to ten were simply divided by two to transform them into following a one to five scale. Thus, the scale of one to five was used in the calibration.

After this the means, medians, modes and standard deviations of the examined months of each case separately were calculated to form the basis for calibration. It was decided to use the mean as the value to determine the membership score for each case. However, in some cases the value was adjusted up to be closer to the values of the median and the mode. This was done when the median and the mode were considerably higher than the mean. Hence, all eight centers had a value between 1 and 5 assigned to them to form the basis for calibration.

To set the cross-over point and the thresholds for full membership and full nonmembership, the mean, median, minimum and maximum of the assigned values of the cases were calculated. For example, this means that the mean was calculated by calculating the sum of the adjusted means of the eight cases and dividing this by eight. The derived mean was 4,11 and the median was 4,09. The minimum value was 3,33 and the maximum was 4,60. The cross-over point was set to the mean rounded down to one decimal (4,1). The threshold for full membership was set to 3,55 while the threshold for full nonmembership was set to 4,55. Figure 4 illustrates the degrees of membership of the cases.

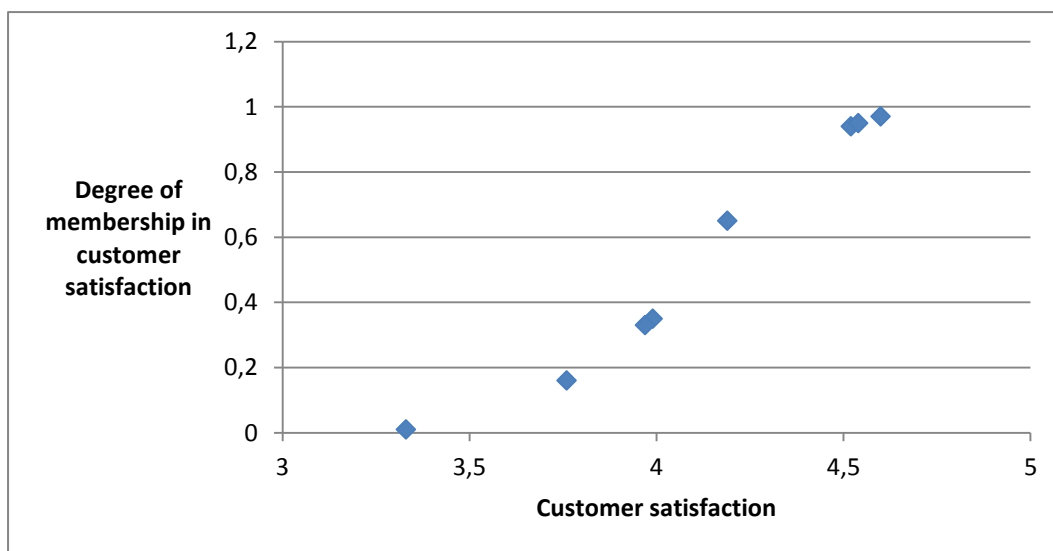


Figure 4: XY-plot of degrees of membership in customer satisfaction

## Efficiency

Efficiency was calibrated with the four-value fuzzy set. Data about the average amount of phone calls, e-mails and other tasks done in a month by an agent was used as the basis for calibration. However, this data was not available for all centers in a comparable form to the others. Unfortunately as a result, two of the centers had to be excluded from the calibration. Thus, only six centers are used in the analysis regarding efficiency.

As the field of the centers and the nature of tasks done in them most likely influenced the amount of the different tasks that could be achieved by agents in the examined

time period, discretion was also used in assigning a membership score for the centers. Knowledge about the complexity and nature of the tasks conducted in the centers built during the interviews was used to evaluate whether the scores derived by using the amount of tasks done by agents give an accurate view of the score assigned to each center. Additionally, the average lengths of phone calls were used to guide this decision as well as the average time needed to answer an e-mail. As a result, the score assigned to some centers were either dropped or raised by one level from the score derived solely based on the amount of tasks done. For example, this means that a score of a 0 could be raised to 0.33 because the former did not represent the score correctly when the field of the center and nature of the issues handled in it were taken into consideration. In practice this means that the tasks in the center with the raised score are more demanding and time consuming than in other centers which obviously means that a lower amount of tasks is done in it. Hence, it does not mean the center has lower efficiency. Raising the score alleviates the problem.

Table 7 below depicts the degrees of membership of the cases.

EFFICIENCY			
0	0.33	0.67	1
Center8	Center1 Center3 Center6	Center7	Center4

*Table 7: Membership scores in efficiency*

#### 5.4.2 Calibration of conditions with the Boolean method

Three of the conditions were calibrated with the Boolean method of assigning each case either a membership score 1 (full membership) or a membership score 0 (full nonmembership). These conditions are outsourcing, queuing music and tutor system. Each was calibrated so that a zero (0) was assigned for the absence of the issues handled in the condition and a one (1) was assigned for the presence of the issue handled in the condition.

Hence, a zero was assigned when the contact center does not have queuing music for callers and a one was assigned when the contact center has queuing music for callers. A zero was assigned to a case when the host company has not outsourced the contact center to another company and a one when it has. A zero was assigned when a center does not have a tutor for the agents and a one when it does.

Queuing music and outsourcing are derived to the analysis directly from the process related factors of the literature framework. Both are also among the factors that have resulted in conflicting findings in different studies. Hence, this research aims to give further insight onto the question if they are influential or not. Tutor system on the other hand is derived from the performance monitoring and feedback factor which belongs to the agent related factors of the framework. It is used due to the lack of information of better variables concerning agent training and monitoring. That is, it is the only condition regarding training that could be calibrated with the collected data.

Table 8 depicts the definitions of the conditions as well as the definitions of the individual membership scores.



CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
<b>Queuing music</b>	Crisp 0/1		Whether the company uses queuing music or not.
	0	No music	The company does not have music for the customers to listen to while queuing.
	1	Music	The company has music for the customers to listen to while queuing.
<b>Outsourcing</b>	Crisp 0/1		Whether the company has outsourced its call center operations.
	0	Not outsourced	The company operates its own call center.
	1	Outsourced	The company has outsourced its call center operations.
<b>Tutor system</b>	Crisp 0/1		Whether the company has a tutor or coach for the agents in addition to their manager
	0	No tutor	The company has no separate tutor.
	1	Tutor	The company has tutor(s) for agents in addition to a team leader.

*Table 8: Definition of conditions and membership scores under crisp sets*

Table 9 on the other hand is depiction of the dispersal of the cases in the calibrated conditions.

Music	0	1	Source	0	1	Tutor	0	1
	Center2	Center1			Center1		Center3	
Center6	Center3		Center2	Center7		Center2	Center5	
	Center4		Center4			Center3	Center7	
	Center5		Center5			Center6	Center8	
	Center7		Center6					
	Center8		Center8					

*Table 9: Membership scores in crisp sets*

#### 5.4.3 Calibration of conditions with three-value fuzzy set

Calibration with the three-value fuzzy set is used for two conditions. These are called queuing time and employee turnover. The method is used because data collected from these conditions is in a numerical form that can be best calibrated with it.

The cases in each of the conditions are calibrated according to three thresholds of the three-value fuzzy set, namely the point of full membership (1), the point of full nonmembership (0) and the cross over point (0,5) which indicates the point of maximum ambiguity of which group the case belongs to. Data related to the conditions was collected with the questionnaires sent to the contact centers. Below is a description of the calibration of each condition.

##### Employee turnover

Employee turnover is a measure of the size of the employee turnover in the centers. Each center was asked about the number of agents who left the company (both fired and resigned) within the last year and the number of agents who were hired within the last year. The time period was specified to 1.9.2011-31.8.2012. They were also asked about the number of agents they employed in August 2012.

The condition was chosen to the analysis directly from the process related factors of the literature framework. It is one of the factors with conflicting results about its importance for customer satisfaction. Hence, like in the case of queuing music and outsourcing, this research could help determine the relevance of its role for customer satisfaction.

The formula, that is depicted below, for calculating the turnover based on the numbers mentioned above was derived from the general instructions of the Finnish accounting board (original title Kirjanpitolautakunnan yleisohjeet).

$$\frac{(\text{The number of people who entered the company 1.9.2011-31.8.2012} + \text{the number of people who left the company 1.9.2011-31.8.})/2}{\text{The number of personnel 31.8.2012}}$$

The smallest turnover rounded up to three decimals was 0.163. The biggest turnover was 0.591. The mean of all the cases was 0.262 and the median was 0.211. The cross-over point was set between the mean and the median to 0.23. The threshold for full membership was set to 0.51 whereas the threshold for full nonmembership was set near the first quartile to 0.17. Figure 5 is an illustration of the degrees of membership of the cases.



Figure 5: XY-plot of degrees of membership in employee turnover (1)

This XY-plot shows the degree of membership when 1 indicates big employee turnover and 0 small turnover. Considering that it is more logical to have the indication the other way around, a FS/QCA method called negation is applied. With it the membership scores are negated (Ragin 2007). In the dichotomous crisp sets this would mean turning a 1 to a 0. The following formula is used to calculate the new membership scores for each case: (membership in set not A) = 1 - (membership in set A). (ibid.). The new XY-plot is presented in figure 6.

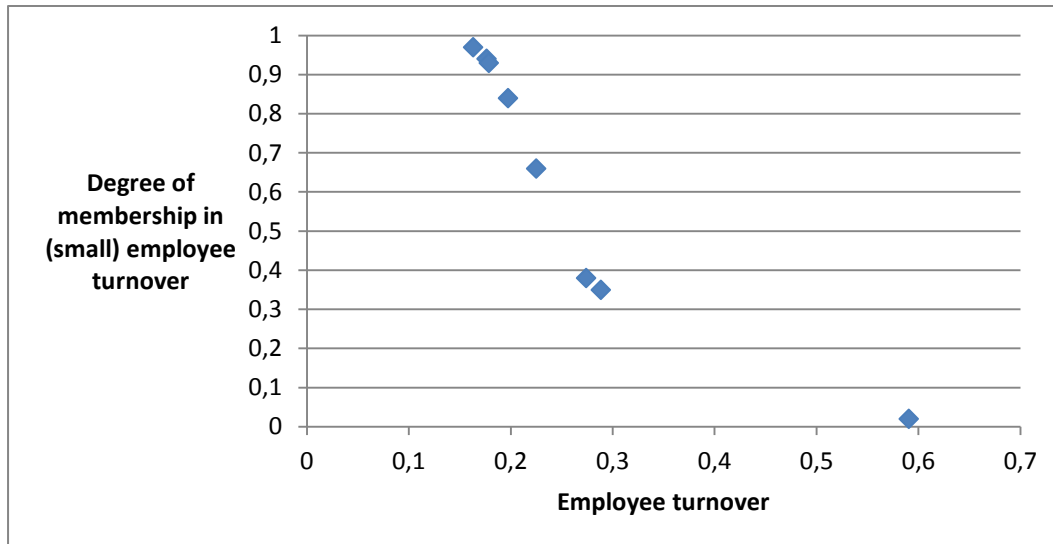


Figure 6: XY-plot of degrees of membership in employee turnover (2)

### Caller queuing time

Caller queuing time focuses on whether the length of the queuing time has an impact on customer satisfaction and efficiency. It is included in the analysis directly from the process related factors of the literature framework. For the basis of the calibration, the contact centers were asked to indicate how long the average queuing times in their center had been in the year 2012 during the months of February, June, August and September. The months used for the calibration for customer satisfaction were also used for this calibration. An average of them was calculated to form the basis for the calibration.

The mean of all the cases' queuing times was 104,3 and the median was 99,3. The maximum was 252 and the minimum was 17. The cross over point was rounded down from the average to 104. The thresholds for full membership and full nonmembership were set to 20 and 235, respectively.

Figure 7 is a XY-plot of the degrees of membership of the cases in the fuzzy set.

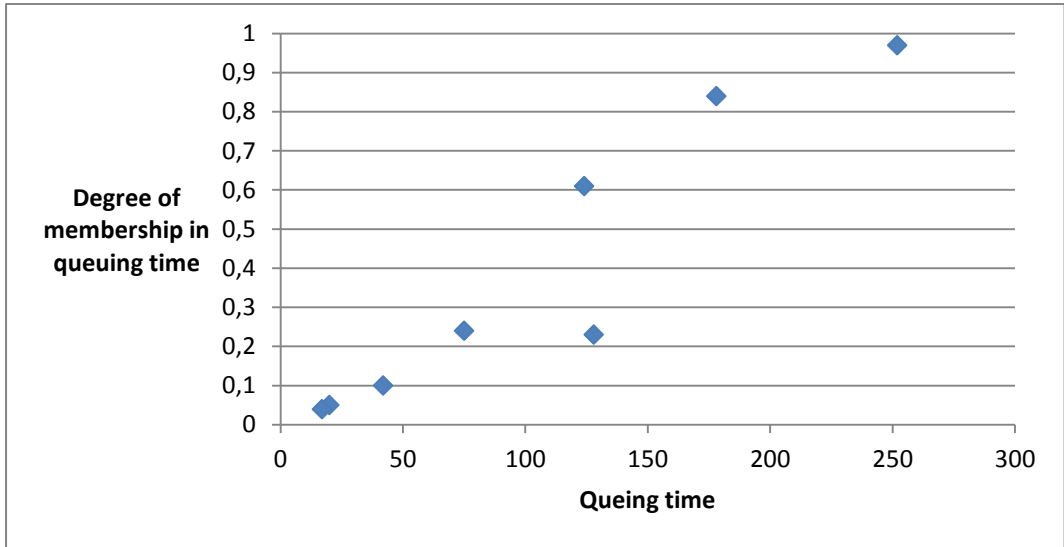


Figure 7: XY-plot of degrees of membership in queuing time (1)

This XY-plot shows the degree of membership when 1 indicates long queuing times and 0 short queuing times. As in the case of employee turnover, the opposite would be more logical. Hence negation is applied with the same formula as in employee turnover to create new degrees of membership which are shown in figure 8.

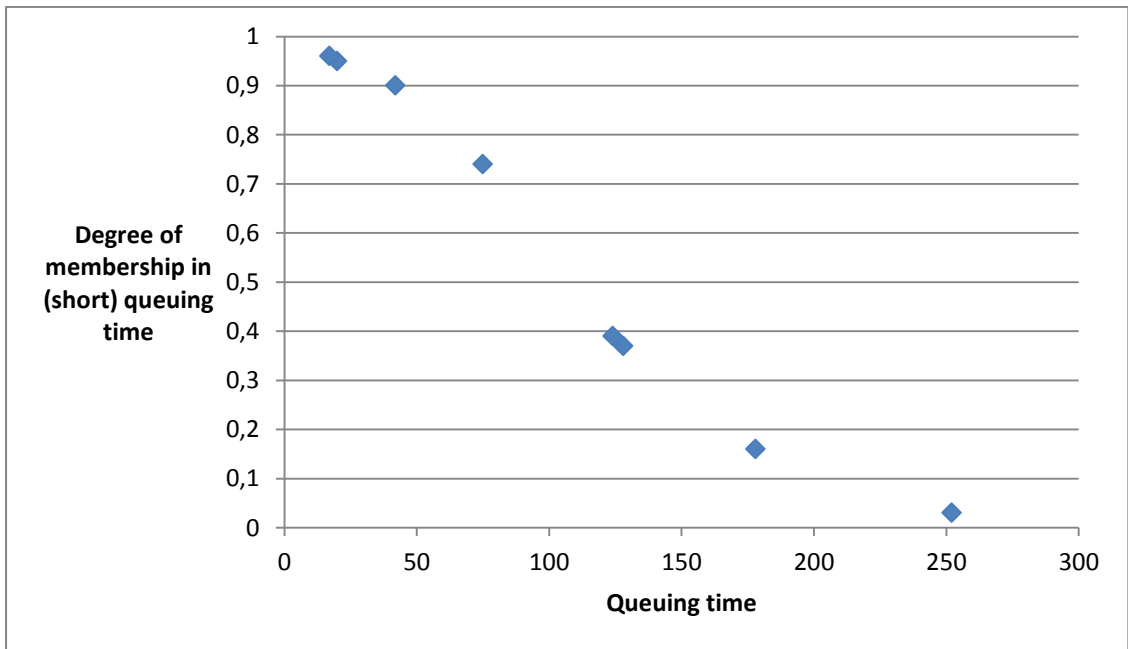


Figure 8: XY-plot of degrees of membership in queuing time (2)

5.4.4 Calibration of conditions with four-value fuzzy set

Calibration with the four-value fuzzy sets is the most used method in this research due to the amount and varying nature of the information related to the majority of the conditions. According to Ragin (2007) it is particularly suitable in situations where a large quantity of information is available to the researcher but the information is not identical among all the cases. The method is used in the sales orientation, the degree of quality orientation, FCR emphasis, rewarding frequency, rewarding orientation, the degree of organized personal feedback and agents' job variation.

In each variable the cases are defined a membership score of either 0,0.33,0.67 or 1. The definitions for the membership scores are different for each condition. In general, they follow a rule of 0 indicating nonmembership and 1 indicating membership. 0.33 indicates a case is more out than in and 0.67 means that the case is more in than out. Below are descriptions of the calibrations for each condition. The calibrations are based almost entirely only on the conducted interviews but some of the information on the questionnaires is also used.

#### Sales orientation

Sales orientation refers to the level of sales activity demanded from the agents and the level of emphasis sales in given overall in a center. The higher the sales level demanded and the higher the strength of emphasis is, the higher the orientation is.

Sales orientation derives to the analysis from the agent related factor of management emphasis on sales. However, instead of only considering the weight set on sales by management, sales orientation also includes the aspects of the rewarding systems and performance metrics. Combined with the condition quality (versus efficiency) orientation, sales orientation represents the agent related factor of ambidextrous behavior that refers to the requirement for agents to balance sales, efficiency and quality in their work.

The focus of the four-value fuzzy set is thus on the extent of which the cases are fully sales oriented or not sales oriented at all. A membership score 1 thus indicates that a case is fully in in sales orientation which means sales is conducted, emphasized and

carefully monitored. A score 0 means that a case is fully out from sales orientation which means the center does not include any kind of sales to its activities. 0.67 means a case is more in that out in sales orientation, which means sales is important but not to a very high degree. Accordingly, 0.33 means a case is more out than in in sales orientation. This means that instead of requiring sales from agents, they only need to tip other departments about potential customers.

In table 10 is an illustration of what the different membership scores indicate in practice. It is followed by a table 11 of the assigned membership scores of the cases.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
Sales orientation	four-value fuzzy set 0/1,33/0,67/1		To what degree sales is emphasized in the contact center and required from the agents.
		No sales orientation 0	The agents only resolve customers problems and needs, their job description does not involve any kind of selling.
		Modest degree of sales orientation 0,33	The agents are not required to do actual sales but they are asked to pass along tips for sales departments about potential customers. They get small rewards for this.
		Moderate degree of sales orientation 0,67	A part of the daily work of the agents is the sales of products or services. Sales can also be a part of the agents rewarding system but only to a moderate extent. Sales is not emphasized in performance metrics or goals although it is a part of them.
		A high degree of sales orientation 1	A part of the daily work of the agents is the sales of products or services. The performance metrics and goals of the company include a high number of sales related issues. The number of sales is an important basis for the agents' rewarding system.

Table 10: Definition of sales orientation and its membership scores

SALES ORIENTATION			
0	0.33	0.67	1
Center2 Center3	Center1	Center6 Center5 Center4	Center7 Center8

Table 11: Degrees of membership in sales orientation

Quality orientation

Quality orientation refers to the extent of which a center is quality oriented; how much emphasis quality is given in different levels of the organization. It is mainly derived to the analysis from the agent related factor of ambidextrous behavior customer but it also touches upon the customer related factor of agent demeanor. This is because it examines the emphasis of quality and efficiency requirements on agents work and rates the centers based on how high quality they want to offer to customers.

For the calibration of the condition, the interviewees were asked their opinion about whether efficiency or the quality of customer service is more important in their center. In addition to their own views, agents were also asked about their beliefs of what the management in their center thinks about this matter. The answers to these questions provided the basis for the calibration. In addition, it was considered whether the center has rewarding systems that use the quality of customer service as a basis. Moreover, answers to other questions where the issues were touched upon were also taken into consideration, especially in uncertain cases where a decision between assigning a membership score between two options had to be made.

A membership score 1 means that a case is fully in in high quality orientation. This means that all the interviewees in the center explicitly emphasized quality of customer service over efficiency. The emphasis on quality is also spontaneously expressed in other answers and quality is a part of the rewarding system of the center. A membership score 0.67 means that a company is more in than out in high quality orientation. This means in practice that quality is emphasized in general more than efficiency but not in the extent as in the cases with membership score 1.

The score 0.33 means that a case is more out than in in high quality orientation. In this case no generalizable emphasis of quality over efficiency is expressed. Instead they are mostly rated equally important, especially by management. However, the overall answers to all interview questions indicate a tendency to emphasize the quality of customer service. Thus, there is still a small emphasis on the quality of customer service as opposed to putting more weight on efficiency. Finally, a membership score 0 indicates that a case is fully out of high quality orientation. In practice this means that the quality of customer service is found equally important as



efficiency by some of the interviewees while some explicitly rate efficiency more important. With an overall view of the interviews, emphasis is placed more on efficiency than the quality of customer service.

However, it needs to be noted that customer service is not deemed unimportant in any of the cases. Hence, membership score 0 does not mean that the quality of customer service is seen as an unimportant issue in the cases with the score.

Instead, it indicates the lack of high quality orientation as explained above.

Accordingly, when a case is assigned a membership score 1 it does not mean that efficiency is rated unimportant in the center. The only indication is a high quality orientation.

The definitions of the membership scores are depicted in table 12 whereas table 13 shows the assigned degrees of membership.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
Quality orientation	four-value fuzzy set 0/1,33/0,67/1		Whether the quality of customer service as opposed to efficiency is emphasized and to which extent.
		No quality orientation 0	There are differences in opinion in the center. Some find the quality of customer service and efficiency equally important while some stress efficiency more. Overall, efficiency is more emphasized than the quality of customer service.
		Modest quality orientation 0,33	The quality of customer service and efficiency are mostly rated equally important, especially by management. There is no clearly strong emphasis of quality of customer service over efficiency but in the overall view quality is more emphasized.
		Moderate quality orientation 0,67	The quality of customer service is emphasized more than efficiency although efficiency is also deemed important. Performance metrics regarding customer service or satisfaction are also used and monitored.
		High quality orientation 1	The quality of customer service is seen as more important than efficiency in all organizational levels. It is explicitly emphasized. Quality related performance is monitored and quality is one basis for the rewarding scheme of the agents.

*Table 12: Definition of quality orientation and its membership scores*

QUALITY ORIENTATION			
0	0.33	0.67	1
Center3	Center7 Center4	Center5 Center1 Center2 Center8	Center6

*Table 13: Degrees of membership in quality orientation*

## FCR emphasis

FCR is an abbreviation of first call resolution. FCR emphasis refers to the extent of which high rates of FCR are pursued and to which extent FCR is overall emphasized in the centers. It is based on the process related factors of the literature framework. It is used instead of using actual rates of FCR, which is the factor mentioned in the framework, because it was not tracked in all the cases in this research.

A membership score 1 indicates a high FCR emphasis. It is assigned to a case when FCR belongs to its performance metrics, a clear goal to obtain high rates of FCR is set and the agents are instructed to aim for it. The score 0.67 indicates that a case is not fully in the high FCR emphasis but is still more in than out. In practice this translates into the requirements that FCR is tracked and high rates of it are pursued in the aggregate level of the center. However, it is not an explicitly set goal or for the agents. 0.33 means that a case is more out than in of high FCR emphasis. This means that FCR is not measured in the center but its importance is still noted, especially by management. Lastly, the score 0 refers to no FCR emphasis which means it is not measured nor is it even emphasized as a particularly important goal.

Table 14 includes the definitions of the membership scores while table 15 is an illustration of the degrees of membership.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
<b>FCR emphasis</b>	four-value fuzzy set 0/1,33/0,67/1		Whether FCR is emphasized and to which extent.
		No FCR emphasis 0	The company does not measure FCR nor is it an objective of any kind.
		Modest FCR emphasis 0,33	FCR is not measured but it is deemed somewhat important by management.
		Moderate FCR emphasis 0,67	FCR is measured and the objective is to have high rates of FCR.
		High FCR emphasis 1	FCR is measured and the company has a clear goal of reaching a high level of FCR. The agents are instructed to aim for FCR.

*Table 14: Definition of FCR emphasis and its membership scores*

FCR EMPHASIS			
0	0.33	0.67	1
Center5		Center2 Center6 Center8	Center4 Center7

*Table 15: Degrees of membership in FCR emphasis*

### Rewarding frequency

As its name suggests, rewarding frequency refers to how often agents' are rewarded for their work. More accurately, it could be described as the potential or frequency of chance of all agents getting a reward. This is because a certain level of efficiency or sales can for example be required from agents for them to get the reward. It is important to note that it does not differentiate cases on how or on what basis agents' get the rewards. It does not matter whether sales numbers or something else is the basis. The condition also includes both individual rewards and team rewards without differentiating them. Hence, the focus is solely on the frequency.

Rewarding frequency is adapted to the analysis from the agent related factors of the

literature framework. Rewarding is one aspect of the factor that concerns human resource management issues. A reason for including rewarding in general to the conditions comes from the want to examine factors that can be easily influenced by contact center top management. Rewarding frequency is specifically chosen because enough reliable data could be collected of it for the purposes of FSQCA calibration.

Score 1 is assigned when a case is fully in high frequency rewarding. This means that agents get rewarded monthly according to preset goals. Score 0.67 means that the case is more in than out in high frequency rewarding. In practice this means that agents are rewarded two to four times a year according to preset goals. In addition, exceptional or outstanding performances of selected few individuals get rewarded on a monthly basis. Score 0.33 is quite close to the score 0.67. It is the same as 0.67 but without the monthly extras. Score 0 means that the center does not have a regular rewarding scheme that incorporates rewarding all agents on achieving explicit preset goals. The only reoccurring rewarding scheme is limited to rewarding few selected individuals based on outstanding performance noted by management or co-workers.

As usual, the definitions of membership scores and the assigned scores are depicted in tables below.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
<b>Rewarding: Frequency</b>	four-value fuzzy set 0/1,33/0,67/1		How often an agent has the chance to get a reward based on preset performance metrics and goals.
	0	Low frequency	Few individuals with outstanding performance are rewarded on a monthly basis or less frequently without clear preset metrics and goals.
	0,33	Modest frequency	All agents will be a rewarded 3-4 times a year if preset goals are met.
	0,67	Moderate frequency	All agents will be a rewarded 3-4 times a year according to preset goals. Few individuals with exceptional performance get an extra reward on a monthly basis.
	1	High frequency	All agents will be rewarded on a monthly basis according to preset goals.

*Table 16: Definition of rewarding frequency and its membership scores*

REWARDING FREQUENCY			
0	0.33	0.67	1
Center1	Center2 Center3	Center6	Center4 Center5 Center7 Center8

*Table 17: Degrees of membership in rewarding frequency*

## Rewarding orientation

Rewarding orientation examines whether the rewarding scheme of a center is individually based or team based and to which extent. It is derived to analysis from the human resource management issues factor of the agent related factors as its counterpart, rewarding frequency, is too. It was decided that rewarding frequency alone does not give enough information about rewarding in contact center which is why rewarding orientation was also included. It was also the only other condition related to rewarding that could be calibrated reliably and sensibly enough.

Score 1 means that a case is fully in in completely individually oriented orientation. This simply means that rewarding is solely based on agents' individual performance. Score 0 on the other hand means that a case is fully out from completely individually oriented orientation. In practice this means that the rewarding scheme is completely team based. Score 0.67 means that a case is more in than out in individually oriented orientation or in other words, its rewarding scheme is more individually than team oriented. Accordingly, score 0.33 means that a case is more out than in from being individually oriented. Instead, it is more team oriented than individually oriented. The emphasis of the rewarding is thus on team incentives rather than rewards based on individual performance.

Table 18 is a depiction the membership definitions while table 19 shows the membership scores.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
<b>Rewarding: Orientation</b>	four-value fuzzy set 0/1,33/0,67/1		To which extent the agents are rewarded on one hand based on individual performance and on the other hand based on team or group performance.
		0 Completely team based.	Rewarding is based solely on team performance.
		0,33 More team than individually based.	Rewarding is based more on team performance than individual performance. This means that the major rewarding scheme is team based but there is a rare or small individual reward as well.
		0,67 More individually than team based.	Rewarding is based more on individual performance than team performance. This means that the major rewarding scheme is individual based but there is a rare or small team reward as well.
		1 Completely individually based.	Rewarding is based solely on individual performance.

*Table 18: Definitions of membership scores in rewarding orientation*

REWARDING ORIENTATION			
0	0.33	0.67	1
	Center2 Center5 Center6	Center4 Center8	Center1 Center3 Center7

*Table 19: Degrees of membership in rewarding orientation*

#### Degree of organized personal feedback

Degree of organized personal feedback addresses how often, regularly and personally agents get feedback from management. It is an aspect of the performance monitoring and feedback factors in the agent related factors of the literature framework. Another reason for including it in the analysis is that it was brought up during discussion with the collaborating company of the research and was often deemed important by the interviews in the data collection phase of this research.

It is noteworthy that annual and semiannual employee feedback discussions (in

Finnish kehityskeskustelut) are not taken into consideration as they are a norm in Finnish companies in general. They do not give enough information to differentiate between cases.

Score 1 means that a case is in a high degree of feedback. The score is thus an indication that a center has a monthly, regular feedback system in place accompanied by casual daily feedback on a need-by-need basis. The monthly feedback incorporates personal face-to-face discussions between an agent and his manager. Score 0 on the other hand reflects a low degree of feedback which means that the feedback is irregular, on a need-by-need basis or fairly regular but in a written form. There is no established, formal continuum of regular feedback discussions. The written feedback, no matter how regular, does not suffice to indicate higher levels of feedback because it is seen as insufficient and often poor quality by the interviewees who discussed the matter. This includes agents, team leaders and representatives of higher management.

Score 0.67 means that a case is more in than out in high degree of feedback which translates into regular feedback discussions between individual agents and their manager but in less than monthly frequency. Daily ad hoc feedback is also incorporated. Score 0.33 on the other hand is an indication of a modest degree of feedback meaning that a case is more out than in in high degree of organized personal feedback. In practice this means that only 1-2 regular feedback sessions are set for agents in a year. Though the daily ad hoc feedback is also incorporated.

Table 20 illustrates the definitions of the membership scores. Table 21 shows the membership scores of the cases for this final condition used in the FS/QCA analysis.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
Degree of organized personal feedback	four-value fuzzy set 0/1,33/0,67/1		How often, regularly and personally agents get feedback.
		Low degree of feedback 0	Agents get feedback irregularly, on a need basis, and/or regularly but in a written form. No clearly established regular feedback discussions.
		Modest degree of feedback 0,33	Agents have feedback discussions 1-2 times a year with their managers. Additionally, team leaders give them casual daily feedback on a need basis.
		Moderate degree of feedback 0,67	Agents have mostly regular feedback discussions with their managers 3-4 times a year. Additionally, team leaders give them casual daily feedback on a need basis.
		High degree of feedback 1	Agents have regular monthly feedback discussions with their managers. Additionally, team leaders give them casual daily feedback on a need basis.

*Table 20: Definitions of membership scores in degree of organized personal feedback*

DEGREE OF ORGANISED PERSONAL FEEDBACK			
0	0.33	0.67	1
Center1 Center7 Center8	Center5	Center2	Center3 Center4 Center6

*Table 21: Degrees of membership in degree of organized personal feedback*

#### 5.4.5 Summary of the calibrations

Table 22 on the next page that lists the outcomes, conditions and their definitions used in the FSQCA analysis. It also explicates the type of data used for the calibrations and type of set that was used, namely the Boolean crisp set, three-value fuzzy set or four-value fuzzy set.



CONDITION	TYPE OF DATA	TYPE OF SET	DEFINITIONS OF CONDITIONS AND MEMBERSHIP SCORES
<b>Customer satisfaction (outcome)</b>	Quantitative	Three-value fuzzy set 0/0,5/1	How high the callers rate their satisfaction towards the service they received.
<b>Efficiency (outcome)</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	How many calls, e-mails and other contacts agents handle on average per month compared to the complexity and nature of the tasks.
<b>Queuing music</b>	Dichotomous	Crisp 0/1	Whether the company uses queuing music or not.
<b>Outsourcing</b>	Dichotomous	Crisp 0/1	Whether the company has outsourced its call center operations.
<b>Tutor system</b>	Dichotomous	Crisp 0/1	Whether the company has a tutor or coach for the agents in addition to their manager
<b>Queuing time</b>	Quantitative	Three-value fuzzy set 0/0,5/1	How long the queuing time of callers is.
<b>Employee turnover</b>	Quantitative	Three-value fuzzy set 0/0,5/1	How big the employee turnover is.
<b>Sales orientation</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	To what degree sales is emphasized in the contact center and required from the agents.
<b>Quality orientation</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	Whether the quality of customer service as opposed to efficiency is emphasized and to which extent.
<b>FCR emphasis</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	Whether FCR is emphasized and to which extent.
<b>Rewarding: Frequency</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	How often an agent has the chance to get a reward based on preset performance metrics and goals.
<b>Rewarding: Orientation</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	To which extent the agents are rewarded on one hand based on individual performance and on the other hand based on team or group performance.
<b>Degree of organised personal feedback</b>	Qualitative	Four-value fuzzy set 0/1,33/0,67/1	How often, regularly and personally agents get feedback.

*Table 22: Summary of calibration methods for conditions and outcomes*

## 5.5 FSQCA analysis

After the calibration, the cases in the outcomes and conditions were input to the FS/QCA software to produce configurations leading to high and low customer satisfaction and efficiency. The software always produces three different sets of

configurations, namely parsimonious solution, intermediate solution and complex solution. The parsimonious solution represents, as its name suggests, the configurations with the least amount of conditions leading to the outcome. As Ragin (2007) states, it is a simplified or streamlined solution from the complex solution, which is the detailed and preferred option. Albeit easier to interpret, the parsimonious solution makes simplifying assumptions that make it less reliable than the complex solution is (ibid.). The intermediate solution lies between the complex and the parsimonious solution. However, like the parsimonious solution it also incorporates simplifying assumptions that include untenable or difficult counterfactuals in analysis (ibid.). Thus, the complex solution gives the most accurate picture of the configurations.

In the analysis for this research, only the complex and parsimonious solutions are used. This is due to two reasons. First, the intermediate and complex solutions in this research are very similar to each other. Second, the parsimonious and complex solutions give enough and best usable information as they represent the two extremes of the solutions.

The software can be used to produce separate configurations using the outcome and its negation. In this research this is done which means configurations are produced using the outcome of high customer satisfaction and high level of efficiency as well as their negations, low customer satisfaction and low level of efficiency.

Abbreviations of the conditions are used in the configurations. Table 23 is a list of the abbreviations and their explanations in the configurations. As the list indicates, tilde sign means negation in the FS/QCA logic. An asterisk in the configurations on the other hand is a replacement for the word and.

ABBREVIATION	CONDITION	MEANING IN CONFIGURATIONS
qmusic	Queuing music	qmusic= music is present; ~qmusic=music is not present
qtime	Queuing time	qtime=short queuing time; ~qtime=long queuing time
turno	Employee turnover	turno=small turnover; ~turno=big turnover
sales	Sales orientation	sales=center is sales oriented; ~sales=center is not sales oriented
quali	Quality orientation	quali=center is quality oriented; ~quali=center is not quality oriented
source	Outsourcing	source=center is outsourced; ~source=center is not outsourced
fcr	FCR orientation	fcr=center is FCR oriented; ~center is not FCR oriented
rewardf	Rewarding: frequency	rewardf=rewarding is frequent; ~rewardf=rewarding is infrequent
rewardo	Rewarding: orientation	rewardo=rewarding is individually oriented; ~rewardo=rewarding is team oriented
feedba	Degree of organized personal feedback	feedba=high degree of feedback; ~feedba=low degree of feedback
tutor	Tutor system	tutor=center has a tutor; ~tutor= center does not have a tutor

*Table 23: Explanations of abbreviations used in FS/QCA analysis*

## 6 Results

This chapter examines the configurations produced by the FCQCA software and is divided into three parts. The first examines the configurations regarding customer satisfaction whereas the second discusses the configurations concentrated on efficiency. The third part is an evaluation of the goodness of the findings.

Overall, the purpose of this chapter is to answer the research question: “Which factors influence customer satisfaction and efficiency in contact centers?”. Answers are also sought for its four sub-questions regarding which factors lead to high or low customer satisfaction and efficiency.

## 6.1 Customer satisfaction

This part consists of two sections. The first examines the configurations leading to high customer satisfaction while the focus of the second section is on the configurations leading to low customer satisfaction. The second section builds on the first so that the configurations discussed in the first section are also taken into consideration.

### 6.1.1 Configurations leading to high customer satisfaction

As explained in section 4.2 “Using FS/QCA”, thresholds for the frequency and consistency of the truth table need to be set. The value 1 is set for both here. Consistency can be set to 1 because its value is 1 in four combinations while the rest have a substantially lower consistency. The truth table that resulted after these actions is depicted in appendix 2A. The solutions that resulted from the analysis are discussed below. An image printed from the FS/QCA software about the solutions can be found in appendix 3A.

The parsimonious solution is below.

```
-rewardo  
-source*feedback  
fcr*feedback  
feedback*qtime
```

Solution coverage: 0.821101

Solution consistency: 0.895000

As it can be seen, the solution consists of four separate configurations. Both solution coverage and solution consistency are on a good level although it would of course be desirable to especially have a consistency of 1.

It is notable that the degree of organized personal feedback in its positive form is represented in three of the configurations. This indicates that having regular, personal feedback discussions with the agents is an important factor in achieving high customer satisfaction. This is logical since the feedback discussions in the centers were usually reported to include going through quality related issues with the agents such as negative feedback they have gotten from customer surveys. Hence, it can be said that the regular feedback needs to include quality related discussions for them to be useful in enhancing customer satisfaction.

Another indication drawn from the solution is that high customer satisfaction can be obtained through several paths as four differing configurations are produced. There is no clear one issue that would alone suffice. However, it needs to be remembered that the parsimonious solution is not a very rigorous illustration of the results. Thus, it is important to turn to the complex solution for more detailed view. It is illustrated below.

~qmusic\* ~**source**\* ~tutor\* ~sales\*quali\*fcr\* ~rewardf\* ~rewardo\*feedba\* ~turno\*qtimes

qmusic\* ~**source**\* tutor\*sales\*quali\* ~fcr\*rewardf\* ~rewardo\* ~feedba\*turno\* ~qtimes

~qmusic\* ~**source**\* ~tutor\*sales\*quali\*fcr\*rewardf\* ~rewardo\*feedba\* turno\*qtimes

qmusic\* ~**source**\*tutor\* sales\* ~quali\* fcr\*rewardf\*rewardo\*feedba\*turno\*qtimes

Solution coverage: 0.600917

Solution consistency: 1.0000000

Solution consistency is on the best possible level while the solution coverage is lower than in the parsimonious solution. However, it is still on a decent level so analysis can be conducted.

It can be seen that the complex solution further underlines the notion that high

customer satisfaction is a sum of many conditions and can be obtained in different ways. As it can be seen, the four configurations all differ from each other quite a lot.

However, there is one overlapping condition in all the configurations. It is the highlighted condition -source. Hence, it would seem that it is better for a company to have its own contact center than to outsource it. However it is important to remember that the result does not prove this claim as statistical generalizations cannot be drawn with the method. It is still indicated that in the perspective of customer satisfaction outsourcing is an important matter and it would be more beneficial for a company to operate its own center.

Most of the conditions appear in its same (positive or negated) form in three of the configurations, namely sales orientation, quality orientation, FCR emphasis, rewarding frequency, rewarding orientation, degree of organized personal feedback, employee turnover and queuing time. With the exception of rewarding orientation, they are all in their positive form in the three configurations. Thus, it seems that their positive form is usually the impacting factor for achieving high customer satisfaction.

In practice this for example means that including a high degree of sales work, sales performance metrics and sales based rewarding is often a player in combinations towards high customer satisfaction. Furthermore, emphasizing quality in attitudes over efficiency is more probable to lead to high customer satisfaction than the opposite is as is the case with emphasizing first call resolution. Rewarding frequently and in a team oriented manner is more likely to play a part in achieving high customer satisfaction than the opposite course of action. In line with the findings in the parsimonious solution, a high degree of organized feedback seems to be beneficial. Last, small employee turnover and short queuing times are likely to be a part in leading to high customer satisfaction.

It is also notable from the configurations that the conditions queuing music and tutor system are in their positive form in two of the configurations and respectively in their negative form in the other two configurations. Neither of them are part of the parsimonious solution. It seems that their influence could be highly likely to vary

depending on which other factors they are combined with. Taking these matters into consideration, it was decided to conduct another GSQCA analysis without them to simplify the solutions and to see whether the removal alters the results in any way. The thresholds for the truth table frequency and consistency were again set to 1. The truth table is in appendix 2B. The parsimonious solution and the complex solution regarding the analysis are illustrated below. The parsimonious solution is depicted first followed directly by the complex solution. The solutions printed from the FSQCA software are in appendix 3B.

~rewardo

~source\*feedback

fcr\*feedback

feedback\*qtimes

Solution coverage: 0.821101

Solution consistency: 0.895000

~**source**\* ~sales\*quali\*fcr\* ~rewardf\* ~rewardo\*feedba\* ~turno\*qtimes

~**source**\*sales\*quali\* ~fcr\*rewardf\* ~rewardo\* ~feedba\*turno\* ~qtimes

~**source**\*sales\*quali\*fcr\*rewardf\* ~rewardo\*feedba\* turno\*qtimes

~**source**\* sales\* ~quali\* fcr\*rewardf\*rewardo\*feedba\*turno\*qtimes

Solution coverage: 0.600917

Solution consistency: 1.0000000

The only difference between these solutions and the solutions including queuing music and tutor system is that queuing music and tutor system do not appear in the

configurations. Based on this and the split influence of the conditions in the four configurations, it seems that they are not critical in importance for high customer satisfaction. Instead, the results indicate that they can rather only play a small part in effecting customer satisfaction and their influence can change depending on other factors they are tied to.

### 6.1.2 Configurations leading to low customer satisfaction

This section concentrates on the interpretation of configurations leading to low customer satisfaction. The threshold for frequency is set to 1 but the threshold for consistency is set to 0.95. This is because the consistency values were 1 for two rows, 0.97 for one row and substantially lower for the rest. Value 0.97 is very close to 1 and thus high enough to give good results. It is mentioned by Ragin (2008) that values below 0.75 indicate substantial inconsistency. 0.97 is well above it. The truth table is in appendix 2C and the solutions printed from the FSQCA software are on appendix 3C.

The parsimonious solution is presented below.

```
source
~feedba*~turno
~quali*~fcr
qmusic*~turno
qmusic*~rewardf
qmusic*~sales
qmusic*~tutor
rewardo*~turno
~reward*rewardo
~fcr*rewardo
~sales*rewardo
~tutor*rewardo
```

Solution coverage: 0.705376

Solution consistency: 0.901099



The parsimonious solution consists of a total of twelve configurations which is obviously a very high number. This is an indication that low customer satisfaction is a sum of many conditions like the case with high customer satisfaction is also. Both solution coverage and solution consistency are on a good level.

Interesting in the solution is that the use of queuing music is a part of four of the configurations leading to low customer satisfaction. It is obviously against common logic and previous research that queuing music would decrease customer satisfaction. However, the solution does not necessarily pose this claim although it might seem so. Firstly, the method and especially the parsimonious solution in general do not have the power to prove this. Secondly, the combination of the presence of queuing music with another factor is only present in four configurations out of the total. Thirdly, it can be also interpreted that it actually supports the findings described in the previous section about the weak relationship of queuing music and high customer satisfaction. That is, it could be deduced that instead of having a great importance on its own, queuing music can only play a small part in influencing customer satisfaction when tied to other factors.

Other factors may also overpower the influence of music. For example, this could mean that not giving feedback to agents has a stronger negative effect on customer satisfaction than having queuing music has a positive effect. Hence, even though a center has queuing music, combining it to the lack of feedback for agents negates the overall impact.

Another condition that is present in the same form several times in the solution is rewarding orientation. It appears in five configurations in its positive form which illustrates high individual orientation in rewarding. Thus, the basic interpretation of the solution regarding rewarding is that high individual orientation is influential in ending up with low customer satisfaction. Thus, utilizing team rewards could help avoid low customer satisfaction.

However, the same caution as in the appearance of queuing music applies to the team rewarding condition. The limitations of the FS/QCA method itself and the

condition's presence in only five out of twelve configurations revoke the claim that individual orientation in rewarding always results in low customer satisfaction. Instead, it can be said that the rewarding orientation of a center is indicated to have some influence over attaining high level of customer satisfaction. This applies especially when considered with the results of the parsimonious solution concerning high customer satisfaction. In it rewarding orientation's negated form formed alone one configuration, which indicates that team oriented rewarding has the potential to help achieve good customer satisfaction. This is because the negated form refers to low individual orientation, which corresponds with high team orientation in the calibration of this research. Thus it can be interpreted jointly from the solutions leading to high and low customer satisfaction that team rewarding is beneficial when attaining good levels of customer satisfaction.

It is also important to note that rewarding in general was usually at least partially tied to efficiency. This means that individuals would get bonuses or other similar incentives based on how efficient the work. If rewarding was based on quality, the results might be different, meaning that high individual orientation in rewarding would help enhance customer satisfaction.

Below is next the complex solution regarding low customer satisfaction. Both solution coverage and solution consistency are on a reasonable level although a higher coverage would be desirable.

qmusic\* source\* ~tutor\* ~sales\* ~quali\* ~fcr\* ~rewardf\*rewardo\*feedba\* turno\* ~qtimes

qmusic\* ~source\* ~tutor\* ~sales\*quali\* fcr\* ~rewardf\*rewardo\* ~feedba\* ~turno\* qtimes

qmusic\* source\* tutor\*sales\* ~quali\* ~fcr\*rewardf\* rewardo\* ~feedba\* turno\*qtimes

Solution coverage: 0.530220

Solution consistency: 0.989744

The solution does not bring much new information to the table. Queuing music and team rewarding are highlighted in it as they were before since they are the only conditions in the same form in all the configurations. In addition, the notion that there are several different combinations of conditions leading to low customer satisfaction is underlined.

From all the solutions regarding high and low customer satisfaction, it is overall clear that customer satisfaction is a complex matter. There is no one single generalizable path that would bring along excellent customer satisfaction.

## **6.2 Efficiency**

This part examines the configurations geared towards efficiency. The configurations are based on of the same conditions used in the analysis for customer satisfaction. This part consists of three sections. The first examines the configurations leading to high levels of efficiency while the focus of the second section is on the configurations leading to low levels of efficiency. The second section builds on the first so that the configurations discussed in the first section are taken into consideration in the interpretation in the same ways as in the previous part. The third includes important considerations regarding the analysis.

### **6.2.1 Configurations leading to high levels of efficiency**

As in the case of customer satisfaction, the thresholds for the frequency and consistency of the truth table are set to the value 1. Consistency can again be set to 1 because its value is 1 in two rows while the rest have a substantially lower consistency. The truth table is in appendix 2D and the truth table analyses are in appendix 3D.

As usual findings derived from the parsimonious solution, which is presented in the next page, are examined first. .

tutor\* ~quali

sales\* ~quali

~quali\*rewardf

Solution coverage: 0.751880

Solution consistency: 0.858369

Solution coverage and consistency are both on a good level in the solution. It is apparent that the configurations are in line with common logic. As the negation of quality orientation is efficiency orientation, it is no surprise that it is a part of all the configurations leading to a high level of efficiency. It seems that focusing on efficiency can really bring results in enhancing it.

Since the rewarding system in most of the centers was at least partially based on the number of phone calls answered by agents or other efficiency related issues, the presence of rewarding frequency in one of the configurations is also very logical. It would have been more surprising if it was not present. However, since it is present in only one configuration, its role is not as apparent as the relevance of emphasizing efficiency.

The linkage of tutor system and sales orientation to efficiency is not as predictable as the linkage is with negated quality orientation and rewarding frequency. They are also only a part of one configuration each. They still also make sense. This is because the presence of tutor system means that a center has an extra person to guide and mentor the agents. Sales orientation on the other hand means that a company is geared towards producing sales. One aspect of it is making as many sales transactions as possible. Hence, the more calls an agent makes, the more sales he also has the potential to get. This works also the other way around. The more sales an agent does, the more calls he probably answers. Though of course, many items can be sold to a same caller during a same call which means the relationship is not so linear. In sum, there is an indication that the conditions of having a tutor for agents and being sales oriented are relevant in achieving high levels of efficiency.

However, as mentioned before, the parsimonious solution is not the best representation of the configurations. Hence, the complex solution below is discussed next.

qmusic\* source\* tutor\*sales\* ~quali\* ~fcr\*rewardf\* rewardo\* ~feedba\* ~turno\* ~qtime

qmusic\* ~source\* tutor\*sales\* ~quali\*fcr\*rewardf\* rewardo\*feedba\* turno\*qtime

Solution coverage: 0.488722

Solution consistency: 1.0000000

Solution consistency is on the best level while the solution coverage is not particularly high. It would be better to have a higher coverage but it does not prevent making an analysis of the configurations. The level just needs to be kept in mind.

As it can be seen, the solution consists of only two configurations. Yet they still contain five conditions in a different form to each other, namely outsourcing, first call resolution emphasis, degree of organized personal feedback, employee turnover and queuing time. At first glance this seems slightly contradictory to common logic, especially regarding the degree of organized personal feedback and employee turnover. This is because would make sense that providing more feedback to agents would help them work more efficiently as it would also make sense that a small turnover rather than a big turnover would be beneficial for attaining good levels of efficiency. The notion regarding turnover derives from the thought that long-term employees have more experience and do not have to be trained as much as new employees. However, this can also be viewed differently as well. It is possible that new agents are more efficient because they might want to prove their skills and still have instructions in fresh memory.

It needs to be remembered that the solution does not proof that the mentioned conditions do not make a difference for efficiency. The method does not validate it and it is furthered by the small number of configurations and the low coverage level. It is more of a proof that efficiency is a complex matter which can be influenced through

different ways and combinations. Moreover, the same condition can affect efficiency in a different way depending on the forms of the other factors it is combined with.

Furthermore, the solution indicates that there are other factors that influence efficiency possibly more than the mentioned conditions as the solution coverage is low. The factors with the most critical impact on efficiency are probably not among the configurations. This is especially due to the fact that the factors were chosen for the analysis based on customer satisfaction.

### 6.2.2 Configurations leading to low levels of efficiency

The thresholds for the frequency and consistency of the truth table are again set to the value 1. Consistency can again be set to 1 because its value is 1 in four rows while the rest have a substantially lower consistency. The truth table is in appendix 2E and the solutions printed from the FSQCA software are in appendix 3E. Once again, the parsimonious solution is examined first.

-tutor

quali

turno\*~qtime

Solution coverage: 0.901198

Solution consistency: 0.695150

Here the coverage is substantially high but the consistency is rather low. This indicates that the degree of membership in the configurations is a subset of low levels of efficiency only to a limited extent. As explained in section 4.2 Using FS/QCA, solution consistency measures the degree to which membership in the solution is a subset of membership in the outcome (Ragin 2008).

The solution indicates that not having a tutor for agents and being quality rather than efficiency oriented can lead to low levels of efficiency. This supports the opposite indicated in the parsimonious solution regarding high levels of efficiency. That is, having a tutor and being efficiency oriented have potential to lead to high levels of efficiency.

The third configuration in the solution on the other hand is more surprising. It indicates that having a small turnover combined to long queuing times can lead to low efficiency. Having long queuing times lead to lowered efficiency is in line with common logic but having a small turnover is not. As discussed in the previous section, having a small turnover should fairly probably rather be a part in achieving high levels of efficiency because experienced agents do not need to be trained as much as new ones and they have established routinized work.

qmusic\* source\* ~tutor\* ~sales\* ~quali\* ~fcr\* ~rewardf\* rewardo\*feedba\* turno\*~qtimes

qmusic\* ~source\* ~tutor\* ~sales\*quali\*fcr\*~rewardf\* rewardo\* ~feedba\* ~turno\*qtimes

~qmusic\* ~source\* ~tutor\*sales\*quali\*fcr\*rewardf\* ~rewardo\*feedba\* turno\*qtimes

qmusic\* ~source\* tutor\*sales\*quali\*fcr\*rewardf\* rewardo\* ~feedba\* turno\*~qtimes

Solution coverage: 0.775449

Solution consistency: 1.0000000

As it can be seen from the complex solution, turnover is in its positive form three times out of four. Hence, having a small turnover is more often present in the configurations leading to low levels of efficiency than having a big turnover is. This is in line with the parsimonious solution.

None of the conditions in the solution appear in all of the configurations in the same form. The configurations also all differ from each other to a quite high extent. When this is combined with the parsimonious and complex solutions concerning high levels of efficiency, it is apparent that efficiency is a complex matter. Increasing its level can be done in many ways and there is no one, simple solution to achieve it. Moreover, it is underlined that factors can have different kinds of an impact depending on the other factors. The key is the joined impact, not the individual impact of certain factors.

### 6.2.3 Important considerations

When interpreting the solutions regarding efficiency, it is important to remember the way it was calibrated. The calibration was partially based on the assessment of the author about the nature and complexity of the tasks done by agents in the call centers. Hence, the calibration contains the possibility of an error of judgment that is related to such evaluation.

Additionally, it can be questioned whether it is overall the best method to measure efficiency. There are after all other ways to approach efficiency. For example, cost efficiency could be considered as it can take the price of a phone call to the center into consideration. However, the chosen method was the best suited for this research. This is because information regarding it was possible to collect from most of the centers and it is suitable for the FS/QCA calibration.

### **6.3 Evaluation of the goodness of the solutions**

One aspect of the FSQCA method that separates it from purely qualitative methods is that it aims to produce more replicable and transparent results. This is done through certain rules concerning the validity and reliability of the analysis that can be used to assess the goodness of the solutions. The focus of this section is on examining the goodness of the results of this research.



To improve the results of an FSQCA analysis, Schneider and Wagemann (2010) introduce standards for good practice in QCA and fuzzy sets. Their most relevant standards for this research are discussed below.

Among other things Schneider and Wagemann (2010) specify criteria that should be taken into consideration in the research strategy of a QCA research. Two of those criteria in relation to this research are discussed in the first section of this part. It is followed by an examination of Schneider and Wagemann's (2010) criteria for representation of QCA. Third, their criteria for the selection of cases, conditions, set memberships as well as criteria for truth table algorithms is discussed for this research. Last is given an overall assessment of the goodness of the results of this research.

### 6.3.1 Criteria for research strategy

*QCA should never be applied in a mechanical way; instead, it should always be related to the cases.*

Schneider and Wagemann (2010) point out that QCA methods entail the risk of a researcher simply inputting data to a QCA software to see what kind of results can be produced. This should not be done but instead the type and nature of cases need to be considered in the data selection as well as in the calibration. This criterion is filled in this research as data collection was carefully planned to suite the cases and data was input to the software only after thorough calibration of data. The calibration process is also documented for transparency.

*Familiarity with the cases is a requirement before, during and after the analytical moment of a QCA analysis.*

By this criterion Schneider and Wagemann (2010) underline the importance of the researcher familiarizing self with the cases in the QCA analysis at all stages. This was done in this research by collecting data with questionnaires and interviews before and after the analysis and initial calibration. Moreover, the author had discussions about

the cases before the data collection was started with the collaborating company of the research project who is a service provider to the cases.

### 6.3.2 Criteria for the representation of QCA

Schneider and Wagemann (2010) also presented criteria concerning the representation of QCA. Their relation to this research is discussed next.

*Whenever possible, the raw data matrix should be published*

Publishing raw data, which is what this criterion means, is unfortunately not possible in this research. This is due to confidentiality reasons: the centers could be recognized by the data and this would be against the agreements with the centers.

*The truth table should always be reported*

This criterion is filled in this research as all the truth tables are included in appendix 2. This makes the results more transparent as the raw data could not be disclosed. This transparency also makes the results more replicable and reliable. As Vassinen (2012) points out, a reliable analysis process means that another researcher could repeat the analysis to get the same results. Furthermore, the possibility to do this depends on the transparency and reliability of documentation (ibid.) To further aid the replicability and transparency of this research, the information used to calibrate the factors which produced the analysis (and the truth tables) is explicated.

*The consistency and coverage measures should always be reported.*

Schneider and Wagemann (2010) argue that filling this criterion is important because the consistency and coverage measures do not only express the adequacy of the analysis but also illustrate weights of the different paths of the equifinal solution. This criterion is filled in this research as all consistency and coverage measures are all reported.

There are also certain thresholds linked to the consistency measures. An example of this is the notion by Ragin (2008) that solution consistency below 0.75 is a sign of high inconsistency. Vassinen (2012) on the other hand points out that the minimum outcome consistency criterion for case inclusion is acknowledged to be at 0,85 throughout the literature concerning FSQCA. Both measures are filled in this research for almost all of the solutions. The only exception is on the parsimonious solution regarding low efficiency. Its solution consistency is only 0,70. However, it can overall be said that the consistency measures are on an adequate level in this research.

### 6.3.3 Criteria for the selection of cases, conditions, set memberships, and truth table algorithm criteria

Criteria for the selection of cases, conditions, set memberships, and truth table algorithm criteria is the last category of Schneider and Wagemann's (2010) standards for good practice that is discussed for the validity and reliability of this research. Criterion under it are discussed next.

*There should always be an explicit and detailed justification for the (non)selection of cases.*

Schneider and Wagemann's (2010) note that cases should not be chosen, for example, to prove the researcher's hypothesis. Hence, explicit justification of the selection cases needs to be given. The cases for this research were chosen based gaining volunteers among contact centers so that information could be gathered. This allowed the collection of a substantial amount of information that also included topics that are generally held as confidential or company secrets. The cases also represented several fields to give comprehensive results about contact centers in general.

*The conditions and the outcome should be selected and conceptualized on the basis of adequate theoretical and empirical prior knowledge.*

Schneider and Wagemann (2010) note that unlike for many statistical methods re-specifications of cases and even re-specification of values in the cases can be done and sometimes should be done in QCA. This is also the case in this research as the conditions and outcomes were formed and reformed based on prior literature and the empirical study of this research.

*The number of conditions should be kept moderate.*

As elaborated on already before in this thesis, Schneider and Wagemann (2010) also point out that a high number of variables is dysfunctional for QCA. This is why the number of condition for this research was also limited to a maximum of eleven.

#### 6.3.4 Overall assessment of the goodness of the results

Substantive amount of data collected about the cases used in the research as well as open and comprehensive documentation of the different phases of the research bring transparency and replicability and well as validity and reliability to the findings of this research. These measures include detailed explanation of the calibration process and the disclosure of interview questions and FSQCA analysis material such as the truth tables and truth table analyses with consistency and coverage values. These also mediate the absence of the raw data which would have made the results even more transparent but could not be done.

Despite the weight placed on validity and reliability of the research, it needs to be remembered that FSQCA like all QCA methods have important limitations. As Rihoux & Lobe (2009) point out the researcher has an active role with the interaction of cases as well as with the QCA software tools. FSQCA always involves subjective appraisals and assessments.

The degree of subjective valuation and the use of qualitative data is especially high in this research. This means that there is a higher level of uncertainty and the possibility of error related to the findings of this research as opposed to many other research conducted with FSQCA. Moreover, the results need to be treated with the limitations

related to the generalizability and other restrictions of the qualitative methods in mind. More about the limitations of this research is explained in the last chapter of this thesis, namely “Limitations of the research”.

Overall, the results and their interpretation is done following the rules of FSQCA with the aim to high validity and reliability. As the findings are also in line with previous research to a fairly high extent, it can be said that the findings are quite reliable. It is noteworthy that this is more true in regards to customer satisfaction than in regards to efficiency as the former could be calibrated with a higher level of objectivity and general validity than the latter. Hence, more research to verify the findings regarding efficiency would be beneficial.

## **7 Discussion of results**

This chapter discusses the interpretation of the findings especially in relation to prior research. The relevance of some the factors that were left out from the FSQCA analysis are also taken into consideration.

This chapter is divided into three parts. The first is a discussion of the findings concerning customer satisfaction. The second part on the other hand discusses the findings related to efficiency. Last, the third part examines a joint analysis of the findings concerning customer satisfaction and efficiency. Thus, the third part focuses on answering the research question: “Do some factors influence customer satisfaction and efficiency in the same way?”.

### **7.1 Customer satisfaction**

This part is divided into two sections addressing the findings related to customer satisfaction. The first addresses the configurations regarding customer satisfaction in relation to prior literature. The second examines important considerations for the research on customer satisfaction from prior literature and particularly from some of the excluded factors of the FSQCA analysis.

### 7.1.1 Discussion of configurations in relation to prior research

When considering all the configurations regarding high or low customer satisfaction, a general trend was found that all factors can have a different role in customer satisfaction depending on the role of the other factors. As stated before, there are thus clearly many paths and ways to pursue good levels of customer satisfaction. This makes sense when reflected upon prior research of customer satisfaction in general. The literature framework composed of the existing research shows there are numerous different factors that have been found influential for customer satisfaction. There are also conflicting results regarding some of them on whether they are influential or not. With a high number of potential factors, with the impact of some of them being questionable, it is no surprise that the results of this research underline that there are several ways to achieve high customer satisfaction.

Furthermore, the contact centers who participated in this study operate in different fields ranging from insurances to travelling. The type of the callers as well as their problems and requests vary greatly among the centers as well as, for example, the skills needed from employees. Hence, it is highly possible that issues, such as the field in which a contact center operates, have an influence on determining the best way to pursue excellent customer satisfaction.

Additionally to the comparison between the findings of this research and prior research in general, it is interesting to look at the relationship of the findings of this and previous research related to some of the individual factors. First, it is interesting to look at the factors which have with conflicting evidence about their influence across different studies.

Contact center outsourcing, queuing music and employee turnover are the factors that have conflicting results about their relevance for customer satisfaction in prior research. Considering that other factors, like first call resolution, were found highly important across several studies, it is interesting that the only condition that occurred in the same (negated) form in all the configurations towards high customer

satisfaction (in the complex solution) is outsourcing. No other condition occurred in the same form in any of the configurations, not even in the parsimonious solution of high customer satisfaction or in the configurations towards low customer satisfaction. Thus it seems that outsourcing has a significant role for customer satisfaction. This supports the previous research of the relevance of outsourcing for customer satisfaction found by Bharadwai & Roggeween (2008) instead of giving support to the findings of Walsh et al. (2012) about contact center agents' customer orientation being more important for customer satisfaction than the attributes, such as a differing location between a center and the host company, of outsourced centers.

However, it is noteworthy that the focus of the research of Bharadwai & Roggeween (2008) was on offshore versus onshore centers whereas all the centers and their host companies are located in the same country in this research. Hence, instead of proving their claim this research broadens the view of the relevance of outsourcing by suggesting that outsourcing within the same country can also make a difference.

Though there are also underlying reasons that could affect why the condition "not outsourced" is a part in all the configurations towards high customer satisfaction. That is, only two of the eight participating companies had outsourced their center and both of the centers had circumstances out of the ordinary work routine during the time period examined in the research. It may be that the unusual events played a part in leading to a lowered customer satisfaction in the outsourced centers during the time period under examination in this research. This may be the cause why not outsourcing came up as the preferred way in the configurations. It is out of the reach of this research to determine whether such unusual circumstances occur in outsourced contact centers more frequently than in centers operated by a host company. All in all, it would be beneficial to conduct future research on the role of both offshore and onshore outsourcing in customer satisfaction to verify the influence and to find reasons behind it.

In relation to the importance of queuing music, it can be said that this research does not support the findings of Tom, Burns & Zeng (1997). According to them, queuing

music increases customer satisfaction. In this research music did not have a critical role. Instead, its role seemed to change depending on which other conditions it is combined with suggesting that it has more of a secondary role. Hence, this research is more in line with the study of Whiting & Donthu (2009) who found that plain queuing music without the possibility for a caller to choose its type decreases customer satisfaction through an increased estimation error between actual and perceived waiting time. However, it cannot be said that the findings of this research verify the findings of Whiting & Donthu (2009) either since the findings cannot be anyhow interpreted to invalidate the relevance of queuing music for high customer satisfaction.

Employee turnover was found high in relevance for the quality of customer service by Boardman Liu (2010). This notion was also supported by DeNucci (2011) but rebuffed by the research of Feinberg et al. (2000). The results of this research do not give enough verification to prove either claim. However, they are more in line with the claims of Boardman Liu (2010) and DeNucci (2011) as they indicate that a small turnover plays a role for high customer satisfaction more often than its opposite big turnover does.

The influence of some of the factors agreed upon in previous studies is also supported by this research. Queuing time and FCR emphasis are in their positive form in three of the configurations towards high customer satisfaction in the complex solution. Thus, it seems that short queuing times and emphasizing first call resolution are likely to be a part in leading to high customer satisfaction which gives support to the finding made in previous research about the positive relationship between short queuing times and first call resolution to customer satisfaction. However, according to the findings when the conditions are combined to other factors in a certain way long queuing times and the lack of first call resolution can also play a part in forming high customer satisfaction.

In contrast to the findings of Dean & Rainnie (2009) about the detriment of management emphasis on sales for customer service, the findings of this research are more of an indication of the opposite effect. That is, the solutions suggest that



management emphasis on sales is more often a factor in resulting in a high customer satisfaction which indicates that the service level would also be good. Thus, this research in a way challenges the findings of Dean & Rainnie (2009).

#### 7.1.2 Implications of factors outside the FSQCA analysis

Some of the preliminary factors identified for analysis, which are depicted in in table 4, were excluded from the analysis due to being too similar across cases. That is, all of them were on a very good level in each center. Hence, they may have a positive impact on customer satisfaction that is not shown in the analysis of this research.

The homogenous factors are managerial support, personalized customer service and team support. The interviews conducted with the agents and their team leaders showed they felt their centers have a good atmosphere. It was also noted across centers that agents can get help and support from managers and colleagues. The managers were also often praised by the agents for their friendliness or competency. All centers also were geared towards treating each customer individually although within the lines of certain rules and regulations.

If the factors were included in the analysis all cases would have been assigned a 1 or at least a 0.67. That means they would have undoubtedly been underlined as important in the FSWCA analysis. When it is taken into consideration that the level of customer satisfaction is relatively high in all call centers, it is very possible that these conditions play an important part in achieving high customer satisfaction. They might even be prerequisites to achieve good levels of customer satisfaction.

Each of these factors has been found relevant by different scholars in prior research. Managerial attitudes and team support were identified as relevant by Dean & Rainnie (2009). Individualized service was on the other hand found positively influential for customer satisfaction by Bennington et al. (2000) as well as Rafaeli et al. (2008).

Some of the factors on the other hand were excluded because enough data could not be collected about them to conduct calibration. Employee satisfaction is the most

relevant of them regarding the results. Although it could not be included in the analysis due to lack of data, it generally seemed by the interviews that the employees in all centers are quite happy with their job. The good atmosphere and managerial and collegial support that were present in the centers give further support this idea. Hence, there is also indication in the data about the importance of employee satisfaction to customer satisfaction that is argued by Kantsperger & Kunz (2005).

In conclusion, the factors under scrutiny in the empirical analysis of this research do not represent all important factors for customer satisfaction. Other conditions such as personalized service or employee satisfaction can play a role that may be even more important than the one of the analyzed conditions.

## **7.2 Efficiency**

This part examines the implications of factors outside the FSQCA analysis for efficiency instead of also comparing the findings to prior research. This is because the literature this research is based on stems from customer satisfaction studies which means the configurations related to efficiency do not target the same phenomenon as previous research results depicted here.

First of all, it is important to remember that since the selection of conditions was largely based on the factors influencing customer satisfaction, it is highly likely that important factors with high potential to influence efficiency were left out. The solutions are thus more of a representation on what kind of influence conditions that impact customer satisfaction have on efficiency.

Some of the originally identified factors that were left out could be more influential for efficiency than some of the ones included in the analysis. Agents' average work time after call that was included in the literature framework but not included in calibration is an example. It would be logical that longer work times on a call after it is done lead to lower efficiency rates. As a sign of the importance of the work time after a call, one

case in the study measured quality on the basis of the time needed by agents to input a call to the booking system of the center.

Out of the excluded calibrated factors, it can be speculated that the duration of an entire contact could also potentially have an effect on efficiency as it measures the time spend on each caller from the beginning of the call to finishing booking it to a computer. Again, it would be logical that minimizing the time needed would result in higher efficiency. Though this is true of course on the condition that a caller's issues are still handled so that he does not have to make a new call right after the previous has ended because the agent did not allow him enough time to go through his concerns or requests.

There are also more factors that could be forecasted to have an important effect on efficiency. The factors, like the mentioned examples, probably include many statistical natured measures about how many calls and caller's problems are handled by agents and how fast. Furthermore, measures of how much work on average is needed to resolve callers' issues could be a relevant factor. All in all, it can thus be concluded that this research does not give a full picture of all conditions related to efficiency. This is a natural result of the fact that the main research focus is on customer satisfaction. The purpose related to efficiency is mainly on determining if factors influencing customer satisfaction can also conjointly be used to increase efficiency. This question is examined in the next section.

### **7.3 Joint discussion of customer satisfaction and efficiency**

This section focuses on the combined interpretation of the configurations, and the individual factors in them, for customer satisfaction and efficiency. Hence, this section aims to answer the research question "Do some factors influence customer satisfaction and efficiency in the same way?".

The findings indicate that different things and opposites influence customer satisfaction and efficiency more than there are factors that could be managed the

same way to enhance both. This is in line with the findings of Anderson, Fornell & Rust (1997) and Grönroos & Ojasalo (2004) about the difficulty of pursuing both superior quality and high efficiency.

Rewarding orientation is perhaps the most prominent example of opposites affecting customer satisfaction and efficiency. Whereas rewarding teams is indicated to improve customer satisfaction, individual rewarding seems to be the more important thing for managing efficiency. However, the view is not necessarily so straight forward. This derives from the fact that rewarding in the centers was often geared towards rewarding for efficiency. When an agent gets extra to his salary for being efficient it is understandable that individual rewarding is highlighted in achieving high efficiency rather than customer satisfaction. Although team based rewarding was also often at least partially tied to efficiency related performance metrics, it is possible that team rewarding also raises the spirit and the atmosphere in the working place. That could mediate customer satisfaction positively through employee satisfaction and increased joined efforts to work better. This can however not be proved by the results.

Quality versus efficiency orientation seems to play a bigger role in efficiency than customer satisfaction. When efficiency was rated as more or at least equally important as service quality in different levels of the organizational level in the centers, which is what efficiency orientation means, the indication is that it can help attain high efficiency and avoid low efficiency. Emphasizing quality across the organization on the other hand was not particularly prominent in the parsimonious solutions or complex solutions regarding customer satisfaction. Though overall, the configurations of course were inclined to the notion that when a center is quality oriented it can help in attaining good customer satisfaction. When interpreting this, it is important to once again go outside the configurations. Although quality was emphasized more often and more deeply in some centers, it was by no means deemed unimportant or irrelevant in any of them. On the contrary, its importance was recognized in all centers although with varying levels. Hence, it is possible that efficiency can be emphasized a little more without damaging customer satisfaction as long as the importance of service quality is also clear to all.

The degree of organized personal feedback on the other hand was more highlighted for customer satisfaction than efficiency. The indication was that arranging regular one-on-one feedback sessions to agents can play a big role in achieving high customer satisfaction. One reason for this is probably that the feedback sessions were reported to include discussions about occasions when the agent has had a bad customer satisfaction rating from a caller. Another likely reason is that the sessions were also often mentioned to include discussions about recorded phone calls between the agent and a caller that are used to monitor quality. However, the feedback discussions usually were also reported to include going through efficiency related performance. Hence, it would make sense if a high degree of organized personal feedback would also aid efficiency. This notion is however not supported by the results. Instead, it seems that giving feedback has a bigger relationship with customer satisfaction than efficiency.

On the other hand, having a tutor for the agents to give additional feedback is moderately indicated to have a positive effect on attaining high efficiency. The results concerning general feedback could thus be explained if the tutor concentrated more on efficiency and the feedback discussions held by managers on quality. However, this conclusion cannot be drawn from the collected data so it needs to be treated as a speculation only.

In conclusion, the solutions presented in the analysis do not reveal any factors that could be easily utilized by contact center management to increase the level of both customer satisfaction and efficiency. Instead, it seems different factors influence them or the same factors but in a different form. Furthermore, both outcomes are complex and can be pursued by different paths. Additionally, factors in the paths can have a different impact depending on the status of the other factors they are combined with. However, some factors are highlighted in importance more than others like team oriented rewarding for customer satisfaction and efficiency orientation in attitudes and performance tracking for efficiency.

## **8 Implications**

This chapter focuses on the implications of the findings of this research and is separated into two parts. The first addresses theoretical implications whereas the second examines implications for contact center management. The theoretical implications section also includes directions for future research.

### **8.1 Theoretical implications**

The first part of this research includes the conceptual framework composed based on previous literature about factors influencing customer satisfaction. It offers a basis for future research to examine the links of the factors to customer satisfaction, including the ones left out from this study. In a way, it can serve as a road map to the prior research for future researchers in the field.

The empirical part of this research on the other hand shows a clear need to conduct more research in the field of contact centers. For example, certain individual aspects like the impact of outsourcing on customer satisfaction would benefit from future studies. Based on this and the previous research it seems that outsourcing can have an influence on customer satisfaction but it has not yet been verified how and to what extent. It should also be examined closer whether domestic outsourcing and outsourcing abroad differ in their impact.

Another important implication of this research is the finding that same factors can influence customer satisfaction differently when they are combined with different groups of other factors. The same is true for efficiency. This is one reason that could explain why same factors can yield different kinds of results in different studies.

However, the joined impact of factors on customer satisfaction and efficiency would also benefit from future studies. It would be interesting to conduct similar research as this by using at least some different factors to see whether the results are similar. Moreover, it would be interesting to test the factors' impact on FS/QCA first and then do statistical analyses of the individual influence level of each factor. This means

identifying centers representing different configurations and then collecting information about the individual factors in the centers to conduct statistical analyses for the strength of the factors' individual impact on customer satisfaction. This would give information about the size of the different factors' impact.

## **8.2 Managerial Implications**

First and foremost the results of this research show a need for managers to define what levels of customer satisfaction and efficiency they want to achieve and the need to manage them accordingly. This is because of the finding that customer satisfaction and efficiency cannot very likely be enhanced by allocating resources to the same factors.

Moreover, managers need to recognize the possibility that a factor can influence customer satisfaction and efficiency differently depending on which other factors it is combined with. Hence, the need to manage the overall picture instead of separate individual factors is emphasized.

Managerial implications concerning individual factors can however also be noted. Providing agents personal monthly feedback seems to improve customer service which means that if customer satisfaction is more important for contact center management than efficiency is, it is wise to emphasize feedback. However, having a tutor who gives feedback to agents is helpful to achieve high efficiency. Hence, it cannot be said that feedback in general could be ignored in managing efficiency either.

Outsourcing a center to another company is indicated in the results to rather have a negative than a positive effect on customer satisfaction. Though it needs to be remembered that this does not necessarily mean outsourcing is a bad thing per se as discussed before. The intake from the results for managers is that is advisable for the host companies to define together with the centers what their goals are, what should be emphasized and what is the best way to reach the goal.

Some of the centers that took part in the research reported to either have recently started or to be planning to focus more on service quality. For example, this was to be done through including customer satisfaction levels of first time resolution rates to the agents' rewarding system. The results of this research indicate this can be the right choice for contact centers to enhance customer satisfaction but it does also include the risk to influence efficiency in a negative way. This is because the results indicated that emphasizing efficiency was found to play a highlighted role for leading to high efficiency. Thus shifting the focus to from efficiency customer satisfaction may harm efficiency.

Furthermore, the role of individual rewarding is emphasized in the results for attaining high efficiency. This is probably because rewarding agents in the centers was often based on efficiency related metrics. Hence, it is advisable for top management to consider it as a tool when attaining high levels of efficiency.

Still, most importantly the findings underline the need for priorities to be set for how high levels of customer satisfaction and efficiency are pursued. This is because, for example, shifting focus from efficiency emphasis to a balance between efficiency and customer satisfaction may improve the latter but lead to lowering the other. Once priorities are in place tactics for optimizing factors can be thought of.

## **9 Limitations of the research**

Due to the restricted number of factors that can be included in the FS/QCA method, the configurations that resulted from this research cannot be considered to be the only possible options as pointed out in the chapter on results. Neither can the results be generalized to all contact centers in the way related to statistical quantitative methods.

The research was conducted based on data across several different business fields. Although this gives a broader view of the factors influencing customer satisfaction and efficiency than a research concentrated on contact centers belonging to one



same industry would have, generalizations are still not possible across individual fields. For example, Feinberg, Hokama, Kadam & Kim (2002) researched variables influencing customer satisfaction in banking and financial contact centers. None of the 13 variables they researched were found to have a statistically significant effect on customer satisfaction. These variables are the same as the variables used in the research of Feinberg et al. (2000) in which seven of them showed a correlation to customer satisfaction. This is a clear indication that the influence of the different factors may vary for contact centers in different industries.

Another limitation related to the method is that it cannot express anything about the differences on the size of the impact of the different factors. This means that it cannot be for example said that holding regular, monthly feedback sessions for agents is twice or thrice as important for achieving high customer satisfaction as some other factor is.

Furthermore, it is also noteworthy that the factors included in the research are based on prior literature concerning customer satisfaction in contact centers. Hence, factors that have not so far been linked to the contact center industry are left out with the few exceptions that were inserted based on the empirical data. Hence, it is possible that other factors influencing customer satisfaction exist that just have not yet been examined in academic research.

Lastly, the fact that all of contact centers participating in the research are located in Finland and belong to Finnish companies needs to be noted. Although it can be argued that contact centers have a similar operating mode everywhere, it is possible that the traits of Finnish customers can influence their ratings of customer satisfaction through culture and local habits. Furthermore, the legal and cultural settings for the employees and contact centers may have an impact on the results of the research. Hence, caution needs to be practiced when examining the results in the context of other countries than Finland.

## **Appendices:**

### **Appendix 1: Calibrations of conditions excluded from final analysis**

As explained in section 5.3 “Selection of conditions”, the conditions Degree of agents’ job variation, Contact center size, Duration of contact and Contact center location were excluded after initial tests using different sets of conditions. Their calibrations are illustrated in the appendices 1A-1D below.

Two main reasons for excluding these conditions are that they are not identified as influential for customer satisfaction in previous research and their role was not critical in the configurations produced in the initial FSQCA tests. There are also separate, individual reasons for the exclusions. For example, the condition “duration of contact” had to be estimated by the author of this thesis for some of the cases which would cause uncertainty for the reliability of the results. The condition Degree of agents’ job variation and contact center size also included some uncertainty in their calibration. “Contact center location” on the other hand did not include uncertainty in calibration but had only very little variation in the membership scores which was an important reason for leaving it out from the final analysis. In the crisp set only one case was assigned the score 1 while all the rest were assigned a 0.

#### **1A) Degree of agents’ job variation**

Degree of agents’ job variation examines the work tasks of the agents. Its calibration is based on the amount of different kinds of tasks the agents’ job entails and it is calibrated with the four-value fuzzy set.

A score 1 is assigned when the agents’ have a lot of variation in their work. It includes not only answering phone calls which is the typical call center activity but also answering e-mails, making outbound calls, dealing with traditional post and conducting a large amount of other back office tasks. A 0 is assigned when agents have no variation in their work. 0.67 is assigned when the agents tasks include answering phone call and e-mails as well as making outbound calls and some back

office tasks. The effort and time spent on other issues than phone call is still considerably smaller than in the case of membership score 1. The case is more in than out of high degree of job variation. 0.33 is assigned when agents' work entails answering calls and e-mails making it more out than in from high degree of job variation.

Below are two tables concerning the calibration. The first illustrates the basis of the calibration whereas the second depicts the membership scores allocated to each case.

CONDITION	TYPE OF SET	DEFINITIONS OF MBS SCORES	EXPLANATION OF CONDITION AND MEMBERSHIP SCORES
Degree of agents' job variation	four-value fuzzy set 0/1,33/0,67/1		How much variation is in the work of the agents; to which extent they have other tasks than just answering calls.
	0	No variation	The agents' only task is to answer calls.
	0,33	Modest degree of variation	The agents' tasks consist of answering calls and e-mails.
	0,67	Moderate degree of variation	The agents' tasks involve answering calls and e-mails, making outbound calls and doing other occasional tasks.
	1	High degree of variation	The agents' tasks involve answering calls and e-mails and traditional posts as well as making outbound calls and other tasks. They are not on the phone in the entire duration of their working time.

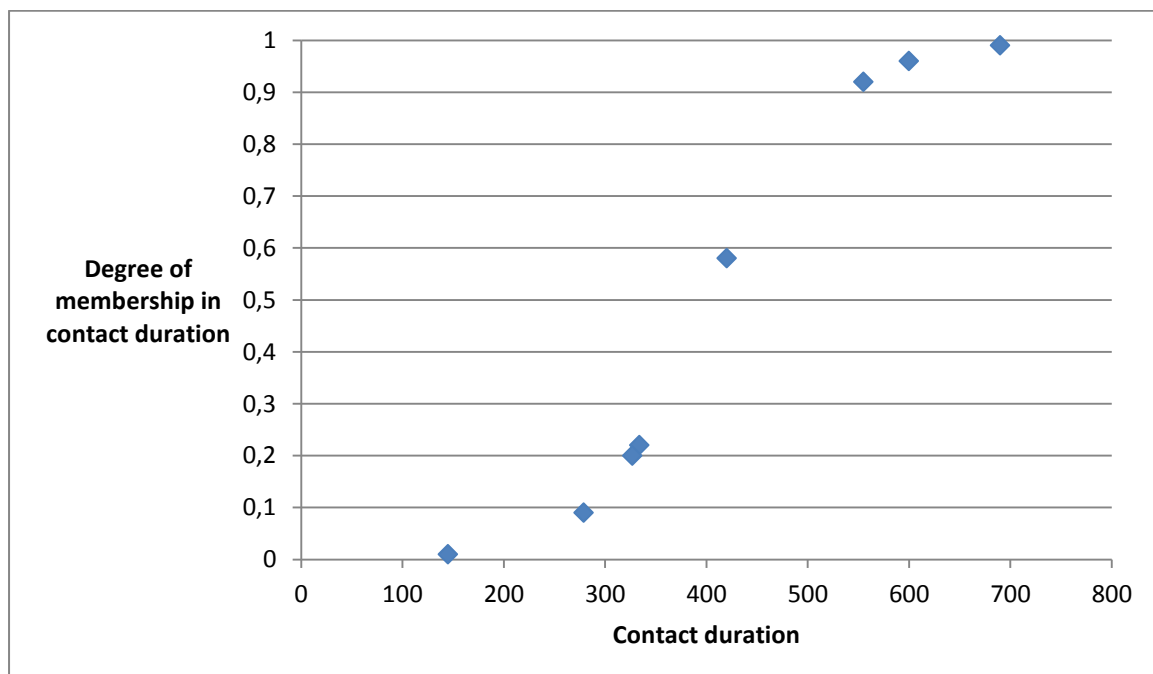
Agents' job variation			
0	0.33	0.67	1
Center5	Center1	Center7	Center2
Center6	Center3	Center8	
	Center4		

## 1B) Duration of contact

Duration of contact refers to the total time spent by agents on the phone with their customers and the average work time on the customer after the call. It was calibrated with the three-value fuzzy set. The contact centers were asked about the average phone call lengths and the average work times after a call during several different months in 2012. Unfortunately, all centers did not have exact data about them. Hence, author of this thesis estimated the time for them. It was decided to use the average of the same months used in the calibration of customer satisfaction in the calibration.

The minimum length of a contact was 145 whereas the maximum was 690. The mean was 418,6 and the median was 377. The cross over point was set to 400. The thresholds for full membership and full nonmembership were set to 245 and 590, respectively.

Below is a xy-plot illustrating the dispersal of the cases in the fuzzy set.

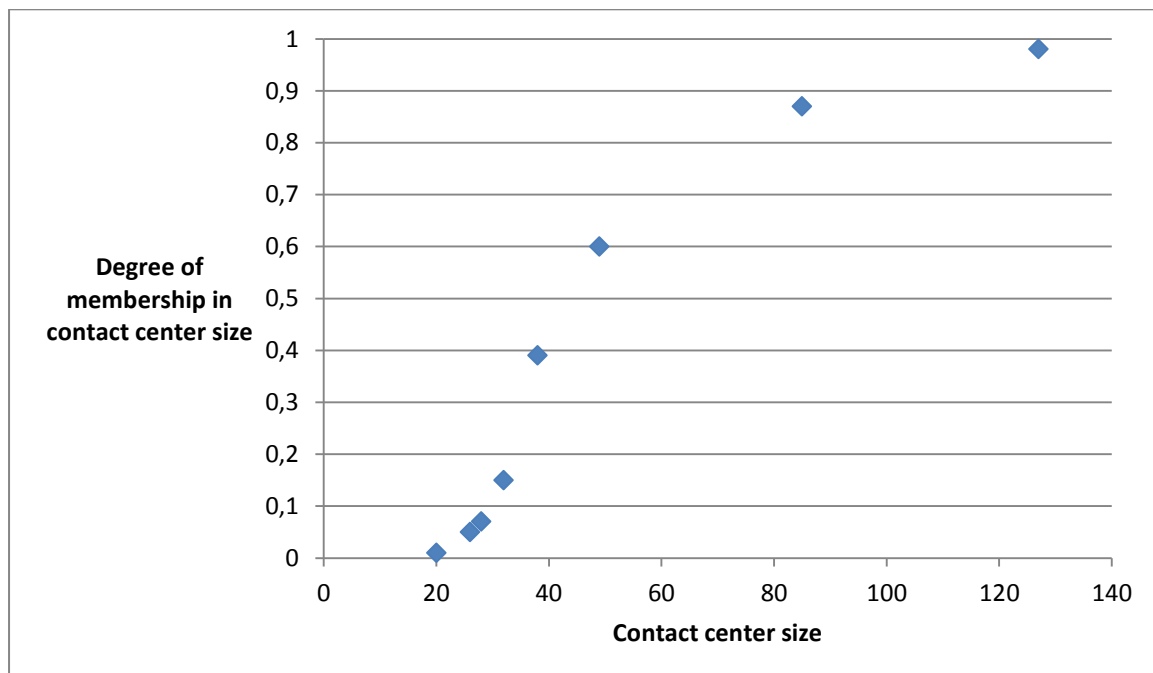


### 1C) Contact center size

Contact center size concentrates on the amount of agents employed in the centers. The three-value fuzzy set was used to calibrate it. The centers were asked about the number of employees they had during several different months in 2012. The number was roughly the same each month. It was decided to use the average of the same months used in the calibration of customer satisfaction in the calibration.

The minimum number of agents in a center was 20 and the maximum number was 127. The mean was 50,6 and the median was 35. The cross over point set to a number between the mean and the median, namely 40. The threshold for full membership was set to the 110 while the threshold for full nonmembership was set to 26.

Below is a xy-plot illustrating the dispersal of the cases in the fuzzy set.



## 1D) Contact center location

Contact center location addresses the characteristics of the contact center locations. It was calibrated with the Boolean method. Below are two tables concerning it. The first illustrates the basis of the calibration whereas the second depicts the membership scores allocated to each case.

<b>Contact center location</b>	Crisp 0/1		Whether the center is located in an area with high number of potential employees and jobs (vs. an area with low number of potential employees and jobs).
	0	Not located	The center is not located in an area with high number of potential employees and jobs
	1	Located	The center is located in an area with high number of potential employees and jobs

Location	0	1
Center1		Center3
Center2		
Center4		
Center5		
Center6		
Center7		
Center8		

## Appendix 2: Truth tables

### 2A) Truth table of analysis with high customer satisfaction as outcome

Edit Truth Table															
File Edit Sort															
qmusic	source	tutor	sales	quali	fcr	rewardf	rewardo	feedba	turno	qtime	number	satisfaction	raw consist. ▾	PRI consist.	SYM consist
0	0	0	0	1	1	0	0	1	0	1	1	1	1.000000	1.000000	0.703704
0	0	0	1	1	1	1	0	1	1	1	1	1	1.000000	1.000000	0.929577
1	0	1	1	1	0	1	0	0	1	0	1	1	1.000000	1.000000	0.917808
1	0	1	1	0	1	1	1	1	1	1	1	1	1.000000	1.000000	0.902174
1	0	1	1	1	1	1	1	0	1	0	1	0	0.702128	0.490909	0.628571
1	1	0	0	0	0	0	1	1	1	0	1	0	0.522388	0.000000	0.500000
1	0	0	0	1	1	0	1	0	0	1	1	0	0.246154	0.000000	0.500000
1	1	1	1	0	0	1	1	0	0	0	1	0	0.015873	0.000000	0.500000

2B) Truth table of analysis with low customer satisfaction as outcome

Edit Truth Table																
File Edit Sort																
qmusic	source	tutor	sal...	quali	fcr	rewardf	rewardo	feedba	turno	qtime	number	~satisfaction	raw consist. ▾	PRI consist.	SYM consist	
1	0	0	0	1	1	0	1	0	0	1	1	1	1.000000	1.000000	0.802469	
1	1	1	1	0	0	1	1	0	0	0	1	1	1.000000	1.000000	0.984375	
1	1	0	0	0	0	0	1	1	1	0	1	1	0.970149	0.937500	0.650000	
1	0	1	1	1	1	1	1	0	1	0	1	0	0.712766	0.509091	0.632075	
0	0	0	0	1	1	0	0	1	0	1	1	0	0.421053	0.000000	0.500000	
1	0	1	1	0	1	1	1	1	1	1	1	0	0.108434	0.000000	0.500000	
1	0	1	1	1	0	1	0	0	1	0	1	0	0.089552	0.000000	0.500000	
0	0	0	1	1	1	1	0	1	1	1	1	0	0.075758	0.000000	0.500000	

2C) Truth table of analysis with high customer satisfaction as outcome: qmusic and tutor excluded

Edit Truth Table														
File Edit Sort														
source	sales	quali	fcr	rewardf	rewardo	feedba	turno	qtime	number	satisfaction	raw consist. ▾	PRI consist.	SYM consist	
0	0	1	1	0	0	1	0	1	1	1	1.000000	1.000000	0.703704	
0	1	1	0	1	0	0	1	0	1	1	1.000000	1.000000	0.917808	
0	1	0	1	1	1	1	1	1	1	1	1.000000	1.000000	0.902174	
0	1	1	1	1	0	1	1	1	1	1	1.000000	1.000000	0.891473	
0	1	1	1	1	1	0	1	0	1	0	0.702128	0.490909	0.628571	
1	0	0	0	0	1	1	1	0	1	0	0.522388	0.000000	0.500000	
0	0	1	1	0	1	0	0	1	1	0	0.500000	0.000000	0.500000	
1	1	0	0	1	1	0	0	0	1	0	0.015873	0.000000	0.500000	

2D) Truth table of analysis with high level of efficiency as outcome

Edit Truth Table																
File Edit Sort																
qmusic	source	tutor	sales	quali	fcr	rewardf	rewardo	feedba	turno	qtime	number	efficiency	raw consist. ▾	PRI consist.	SYM consist	
1	1	1	1	0	0	1	1	0	0	0	1	1	1.000000	1.000000	0.656250	
1	0	1	1	0	1	1	1	1	1	1	1	1	1.000000	1.000000	1.000000	
1	0	0	0	1	1	0	1	0	0	1	1	0	0.507692	0.000000	0.500000	
0	0	0	1	1	1	1	0	1	1	1	1	0	0.500000	0.000000	0.500000	
1	1	0	0	0	0	0	1	1	1	0	1	0	0.492537	0.000000	0.500000	
1	0	1	1	1	1	1	1	0	1	0	1	0	0.000000	0.000000		

## 2E) Truth table of analysis with low level of efficiency as outcome

Edit Truth Table																
File Edit Sort																
qmusic	source	tutor	sales	quali	fcr	rewardf	rewardo	feedba	turno	qtime	number	~efficiency	raw consist.	PRI consist.	SYM consist	
0	0	0	1	1	1	1	0	1	1	1	1	1	1.000000	1.000000	0.666667	
1	0	0	0	1	1	0	1	0	0	1	1	1	1.000000	1.000000	0.663265	
1	1	0	0	0	0	0	1	1	1	0	1	1	1.000000	1.000000	0.670000	
1	0	1	1	1	1	1	1	0	1	0	1	1	1.000000	1.000000	1.000000	
1	1	1	1	0	0	1	1	0	0	0	1	0	0.523809	0.000000	0.500000	
1	0	1	1	0	1	1	1	1	1	1	1	0	0.000000	0.000000		

## Appendix 3: Truth table analyses

### 3A) High customer satisfaction

--- PARSIMONIOUS SOLUTION ---

frequency cutoff: 1.000000

consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
~rewardo	0.534404	0.077982	0.872659
~source*feedba	0.665138	0.000000	0.966667
fcr*feedba	0.678899	0.068807	0.888889
feedba*qtime	0.582569	0.000000	0.878893
solution coverage:	0.821101		
solution consistency:	0.895000		

--- COMPLEX SOLUTION ---

frequency cutoff: 1.000000

consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
~qmusic*~source*~tutor*~sales*quali*fcr*~rewardf*~rewardo*feedba*~turno*qtime	0.217890	0.142202	1.000000
qmusic*~source*tutor*sales*quali*~fcr*rewardf*~rewardo*~feedba*turno*~qtime	0.153670	0.116972	1.000000
~qmusic*~source*~tutor*sales*quali*fcr*rewardf*~rewardo*feedba*turno*qtime	0.151376	0.075688	1.000000
qmusic*~source*tutor*sales*~quali*fcr*rewardf*rewardo*feedba*turno*qtime	0.190367	0.153670	1.000000
solution coverage:	0.600917		
solution consistency:	1.000000		

### 3B) High customer satisfaction without queuing music and tutor system



--- PARSIMONIOUS SOLUTION ---

frequency cutoff: 1.000000

consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
~rewardo	0.534404	0.077982	0.872659
~source*feedba	0.665138	0.000000	0.966667
fcr*feedba	0.678899	0.068807	0.888889
feedba*ptime	0.582569	0.000000	0.878893
solution coverage:	0.821101		
solution consistency:	0.895000		

--- COMPLEX SOLUTION ---

frequency cutoff: 1.000000

consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
~source*sales*quali*~fcr*rewardf*~rewardo*~feedba*turno*~ptime	0.153670	0.116972	1.000000
~source*~sales*quali*fcr*~rewardf*~rewardo*feedba*~turno*ptime	0.217890	0.142202	1.000000
~source*sales*quali*fcr*rewardf*~rewardo*feedba*turno*ptime	0.263761	0.075688	1.000000
~source*sales*~quali*fcr*rewardf*rewardo*feedba*turno*ptime	0.190367	0.077982	1.000000
solution coverage:	0.600917		
solution consistency:	1.000000		

### 3C) Low customer satisfaction

--- PARSIMONIOUS SOLUTION ---

frequency cutoff: 1.000000

consistency cutoff: 0.970149

	raw coverage	unique coverage	consistency
source	0.450549	0.002747	0.820000
~feedba*~turno	0.489011	-0.000000	0.946809
~quali*~ptime	0.508242	-0.000000	0.692884
~quali*~fcr	0.651099	-0.000000	0.890977
qmusic*~turno	0.500000	-0.000000	0.933333
qmusic*~rewardf	0.409341	-0.000000	0.892216
qmusic*~sales	0.387363	-0.000000	0.605150
qmusic*~tutor	0.409341	-0.000000	0.745000
rewardo*~turno	0.519231	-0.000000	0.821739
~rewardf*rewardo	0.513736	-0.000000	0.802575
~fcr*rewardo	0.664835	-0.000000	0.809364
~sales*rewardo	0.491758	-0.000000	0.598662
~tutor*rewardo	0.513736	-0.000000	0.703008
solution coverage:	0.901099		
solution consistency:	0.705376		

```

--- COMPLEX SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 0.970149

raw          unique
coverage     coverage  consistency
-----
qmusic*source*~tutor*~sales*~quali*~fcr*~rewardf*rewardo*feedba*turno*~qtime 0.178571 0.178571 0.970149
qmusic*~source*~tutor*~sales*quali*fcr*~rewardf*rewardo*~feedba*~turno*~qtime 0.178571 0.178571 1.000000
qmusic*source*tutor*sales*~quali*~fcr*rewardf*rewardo*~feedba*~turno*~qtime 0.173077 0.173077 1.000000
solution coverage: 0.530220
solution consistency: 0.989744

```

### 3D) High efficiency

```

--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000

raw          unique
coverage     coverage  consistency
-----
tutor*~quali 0.503759 0.000000 0.802395
sales*~quali 0.627819 0.124060 0.835000
~quali*rewardf 0.627820 0.124060 0.835000
solution coverage: 0.751880
solution consistency: 0.858369

```

```

--- COMPLEX SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000

raw          unique
coverage     coverage  consistency
-----
qmusic*source*tutor*sales*~quali*~fcr*rewardf*rewardo*~feedba*~turno*~qtime 0.236842 0.236842 1.000000
qmusic*~source*tutor*sales*~quali*fcr*rewardf*rewardo*feedba*turno*~qtime 0.251880 0.251880 1.000000
solution coverage: 0.488722
solution consistency: 1.000000

```

### 3E) Low efficiency

```

--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000

```

	raw coverage	unique coverage	consistency
~tutor	0.601796	-0.000000	0.670000
quali	0.700599	0.110778	0.780000
turno*~qtime	0.416168	-0.000000	0.712821
solution coverage: 0.901198			
solution consistency: 0.695150			

```

--- COMPLEX SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000

```

	raw coverage	unique coverage	consistency
qmusic*source*~tutor*~sales*~quali*~fcr*~rewardf*rewardo*feedba*turno*~qtime	0.200599	0.200599	1.000000
qmusic*~source*~tutor*~sales*quali*fcr*~rewardf*rewardo*~feedba*~turno*qtime	0.194611	0.194611	1.000000
~qmusic*~source*~tutor*sales*quali*fcr*rewardf*~rewardo*feedba*turno*qtime	0.197605	0.197605	1.000000
qmusic*~source*tutor*sales*quali*fcr*rewardf*rewardo*~feedba*turno*~qtime	0.182635	0.182635	1.000000
solution coverage: 0.775449			
solution consistency: 1.000000			

## Appendix 4: Interview questions

The appendices 4A-4C contain the interview questions used in the interviews conducted in the contact centers. They are in their original form in Finnish. Three different sets of questions were used for representatives of different organizational levels. That is, different questions were used in interviewing (1) management, (2) team leaders and (3) agents. The questions on the list do not include all questions asked in the interviews as the interviewer made additional questions during the interviews on a need-by-need basis.

### 4A) Questions for management

1. Miten valitsette rekrytoitavat työntekijät?
2. Kierrätetäänkö työntekijöiden työtehtäviä vai onko kaikilla pysyvät, keskitetyt työtehtävät?
3. Onko olemassa eri asiakastyyppejä, joita kohdellaan eri tavoin?
4. Minkälaisia organisaatiotason tavoitteita teillä on?

5. Kuinka hyvin ne ovat toteutuneet?
6. Minkälaisia tavoitteita yrityksessänne on annettu asiakaspalvelijoille?
7. Miten asiakaspalvelijoiden työtä monitoroidaan?
8. Miten heille annetaan palautetta työstään?
9. Minkälaisia toiminnan mittareita yrityksessänne on käytössä? Mitä asioita seuraatte?
10. Miten toimitte mittareiden pohjalta?
11. Minkälaiset palkitsemisjärjestelmiä asiakaspalvelijoille on suunnattu?
  - a. Mitkä mittarit palkkioiden perustana
  - b. Miten palkitaan (rahana, kehuina, työajan joustona tms)
  - c. Voivatko työntekijät itse vaikuttaa niihin?
12. Ovatko palkitsemisjärjestelmät edistäneet tavoitteiden toteutumista?
13. Kumpi seuraavista tavoitteista on tärkeämpi yrityksenne painotuksien mukaan:
  - Laadukas asiakaspalvelu
  - Kustannustehokkuus
14. Mitkä asiat mielestäsi vaikuttavat teillä eniten asiakastyytyväisyyteen?
15. Entä tehokkuuteen?
16. Miten asiakaspalvelun laatua seurataan?
17. Entä miten tehokkuuden toteutumista seurataan?
18. Minkälaiset tavoitteet teillä on seuraaville asioille ja kuinka hyvin olette päässeet tavoitteisiin:
  - a. Päivittäinen/kuukausittain hoidettujen puheluiden määrä per asiakaspalvelija
  - b. Puheluiden kesto?
  - c. Vastaamattomien puheluiden määrä?
  - d. Puheluihin vastaamisen nopeus/jonotusaika? x
  - e. Asiakaspalvelijan käyttämä työaika asiakkaan asiaan puhelun jälkeen?
  - f. Asiakkaan asian kerralla ratkeamisen aste (yleisyys)
  - g. Kuinka usein asiakkaan asia ratkeaa kerralla yhdellä puhelulla?
19. Saako ensinnä soittanut asiakas ensimmäisenä palvelua vai onko muita käytäntöjä? (esim. kanta-asiakkaat ensin)
20. Miten erityisen pitkään jonottaneiden asiakkaiden kanssa toimitaan?
21. Minkälaista koulutusta järjestätte asiakaspalvelijoille?

- a. Kuinka toimiva se on ollut?
- 22. Minkälaisia tukimateriaaleja ja -järjestelmiä asiakaspalvelijoilla on käytössä?
  - a. Kuinka toimivia ne ovat olleet?
- 23. Miten puheluiden ylivuodon kanssa menetellään? (Esim. onko ylivuodon siirtoa)
- 24. Miten toimitaan puheluiden huippujen kanssa (lyhyen ajan sisällä todella runsaasti puheluita)?
- 25. Kuinka yleisiä puhelunsiirrot ovat (eli asiakaspalvelija siirtää asiakkaan toiselle)?

Lisäkysymyksiä:

- 26. Minkälaiset taukokäytännöt asiakaspalvelijoille on? (Ovatko tauot tiettyihin aikoihin, saako ne päättää itse yms)
- 27. Mikä on toimintamalli, jos asiakaspalvelija on kauan pois puhelimesta?
- 28. Onko organisaatiossanne ollut suuria muutoksia tai haasteita viimeisen vuoden aikana? Mitä?
- 29. Millainen vaikutus niillä on ollut?
- 30. Miten työntekijät, erityisesti asiakaspalvelijat ovat reagoineet niihin?

4B) Questions for team leaders

- 1. Kuinka kauan olet ollut tässä tehtävässä? Olitko jo sitä ennen yrityksen palveluksessa muissa tehtävissä?
- 2. Kuinka monta asiakaspalvelijaa tiimissäsi on?
- 3. Millaisia asioita he käsittelevät?
- 4. Poikkeavatko ne muiden tiimien käsittelemistä asioista?
- 5. Miten valitsette rekrytoitavat asiakaspalvelijat?
  - a. Kuka valitsee
  - b. Millä kriteereillä
- 6. Miten asiakaspalvelijoiden työtä seurataan?

7. Miten asiakaspalvelijoille annetaan palautetta työstään?
8. Kuinka hyvin seuranta- ja palautejärjestelmät toimivat?
9. Millaisiksi asiakaspalvelijat kokevat huomioidesi mukaan seuranta- ja palautejärjestelmän?
10. Minkälaiset tavoitteet teillä on seuraaville asioille ja kuinka hyvin olette päässeet niihin?:
  - a. Päivittäin hoidettujen puheluiden määrä per asiakaspalvelija
  - b. Puheluiden kesto?
  - c. Vastaamattomien puheluiden määrä?
  - d. Puheluihin vastaamisen nopeus?
  - e. Asiakaspalvelijan käyttämä työaika asiakkaan asiaan puhelun jälkeen?
  - f. Asiakkaan asian kerralla ratkeamisen aste (yleisyys)?
11. Mitä muita tavoitteita asiakaspalvelijoille on annettu? Kuinka hyvin olette päässeet niihin?
12. Yleisesti asiakaspalvelijoille määritellyistä tavoitteista:
  - a. Laaditaanko ne henkilökohtaisesti jokaiselle vai ovatko ne samat kaikille?
  - b. Voivatko asiakaspalvelijat itse vaikuttaa niihin?
13. Kuinka tavallista on, että asiakkaan asia ratkeaa kerralla yhdellä puhelulla?
14. Minkälaista koulutusta järjestätte asiakaspalvelijoille?
  - a. Kuinka hyödyllisiä ne ovat? Arvosana 1-10
15. Minkälaisia tukimateriaaleja ja -järjestelmiä asiakaspalvelijoilla on käytössä?
  - a. Kuinka toimivia ne ovat? Arvosana 1-10
16. Ratkaisevatko asiakaspalvelijat jokaisen asiakkaan ongelman yksilöllisesti vai noudattavatko he standardoituja prosesseja tai ohjeistuksia?
17. Ohjeistatteko asiakaspalvelijoita ratkaisemaan asiakkaan asian kerralla, yhdellä puhelulla?
18. Millaisia ongelmatilanteita tai haasteita asiakaspalvelutilanteissa esiintyy?  
Kuinka yleisiä ne ovat?
19. Miten asiakaspalvelijat ratkaisevat niitä? Onko olemassa ohjeistuksia?
20. Kumpi seuraavista tavoitteista on tärkeämpi yrityksenne painotuksien mukaan:
  - a. Laadukas asiakaspalvelu
  - b. Kustannustehokkuus

21. Miten niihin on panostettu tai miten niitä on kehitetty?
22. Minkälaiset palkitsemisjärjestelmiä asiakaspalvelijoille on suunnattu?
  - a. Mitkä mittarit palkkioiden perustana
  - b. Miten palkitaan (rahana, kehuina, työajan joustona tms)
  - c. Voivatko asiakaspalvelijat itse vaikuttaa niihin?
23. Ovatko palkitsemisjärjestelmät edistäneet tavoitteiden toteutumista?
24. Minkälaiset taukokäytännöt asiakaspalvelijoille on? (Ovatko tauot tiettyihin aikoihin, saako ne päättää itse yms)
25. Mikä on toimintamalli, jos asiakaspalvelija on kauan pois puhelimesta?

Lisäkysymyksiä:

26. Kuinka yleisiä puhelunsiirrot ovat (eli asiakaspalvelija siirtää puhelun toiselle)?
27. Mitkä asiat vaikuttavat asiakastyytyvyyteen?
28. Entä tehokkuuteen?
29. Miten toimitaan puheluiden huippujen kanssa (lyhyen ajan sisällä todella runsaasti puheluita)?
30. Miten puheluiden ylivuodon kanssa menetellään? (Esim. onko ylivuodon siirtoa)
31. Onko organisaatiossanne ollut suuria muutoksia tai haasteita viimeisen vuoden aikana? Mitä?
32. Millainen vaikutus niillä on ollut?
33. Miten asiakaspalvelijat ovat reagoineet niihin?
34. Minkälaisia asiakkaat ovat? Onko tiettyä yleisintä asiakastyyppeä?

4C) Questions for agents

1. Kauanko olet ollut yrityksessä?
2. Oletko tehnyt samaa työtä muualla?
3. Minkälainen koulutuksesi on?
4. Koetko työn soveltuvan sinun kykyihisi ja mieltymyksiisi? Miten hyvin?
5. Minkälainen ilmapiiri työpaikalla yleisesti on?

6. Miten työkaverisi suhtautuvat työhön? Pitävätkö siitä ja kokevatko sen vastaavan osaamistaan?
7. Minkälaisia tavoitteita teille asiakaspalvelijoille on asetettu?
  - a. Voitteko itse vaikuttaa niihin?
  - b. Miten koet niiden vaikuttavan työhönne?
8. Onko teitä kehoitettu ratkaisemaan asiakkaan asia yhden puhelun aikana tai onko sitä annettu tavoitteeksi?
9. Kumpi on tärkeysjärjestyksessä korkeammalla työssäsi: Asiakaspalvelun laatu vai tehokkuus? Mitä ajattelet itse ja minkä uskot olevan johdon käsitys? Mitä työkaverisi ajattelevat?
10. Minkälaisia haasteita tai ongelmia koette työssänne?
11. Miten selviydytte niistä?
12. Saatteko apua tai tukea niihin työkavereilta, esimieheltä tai ylemmältä johdolta?
13. Minkälainen esimiesten ja johdon tuki ylipäättään on? Arvosana 1-10
14. Ratkaisetteko jokaisen asiakkaan ongelman yksilöllisesti vai noudatatteko standardoituja prosesseja tai ohjeistuksia?
15. Onko teillä asiakaspalvelijoilla riittävästi tietoa tuotteista ja asiakkaiden ongelmista pystyäkseen vastaamaan asiakkaiden kysymyksiin ja tarpeisiin?
16. Miten yrityksen tarjoama koulutus on tukenut osaamistanne? Arvosana 1-10
17. Onko teillä apunanne tukimateriaaleja tai -järjestelmiä? Mitä?
18. Onko koulutus- ja tukijärjestelmissä jotakin kehitettävää?
19. Millaisiksi koette ne? Onko niistä apua työssänne? Arvosana 1-10?
20. Miten saatte palautetta työstänne? Kuinka toimiva systeemi on? Arvosana 1-10
21. Minkälaiset käytännöt teillä on taukojen suhteen? Saako ne pitää milloin haluaa?
22. Miten taukojen pitämistä valvotaan?
23. Minkälaiseksi koet taukokäytännön?

#### Lisäkysymyksiä

24. Oletko tehnyt samaa työtä muissa yrityksissä?
25. Jos kyllä, minkälaiseksi arvioit nykyisen työpaikan verrattuna edelliseen?



26. Minkälaiset palkitsemisjärjestelmät työpaikalla on käytössä teille asiakaspalvelijoille?
27. Kuinka toimivia ne ovat? Arvosana 1-10
28. Minkä asioiden ajattelet vaikuttavan asiakastyytyvyyteen?
29. Entä tehokkuuteen eli siihen kuinka monta puhelua pystytte hoitamaan päivässä?
30. Miten asiakastyytyvyyttä ja tehokkuutta voisi parantaa?

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