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Tackling Shift Planning Challenges in a Multi-channel Contact Center

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Thesis

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The case company of this study has been growing fast and the contact volumes received in the customer service have simultaneously been increasing. Customers have been offered new service channels and the number of employees in the customer service unit has been growing. This has led to a situation, where shift planning has become challenging and time-consuming. At the same time, there has been issues with efficiency of the customer service, which can be seen as missed service level targets.

The purpose of this study was to find ways to tackle the shift planning challenges in the customer service of the case company. As modern workforce management systems offer comprehensive features, the objective was to create a suggestion of possible digital tools for effective organizing of work in versatile customer service.

To identify the challenges and the problem scope, the thesis started with the current state analysis. It consisted of an analysis of the customer service statistics, employee survey results and the manager interview, therefore the research methods used in this study were mainly qualitative. The current state analysis showed that there were versatile challenges with the shift planning in the customer service.

The conceptual framework was built around three main areas of improvement identified in the current state analysis. They were focused on how to increase productivity and flexibility and ensure fairness in work division. Based on the existing knowledge and best practices found in available articles and studies, it was clear that there would be a need to implement a system for workforce management in the customer service.

In the proposal building phase, five systems were chosen for prequalification and thereafter three for the final qualification. Finally, the recommendation to the case company was to implement Teleopti, which met the requirements set for the system. The proposal was validated by the Services Management team, which however rejected Teleopti due to its heavy pricing. As the final outcome, the case company decided to implement Tymeshift, which had lower monthly fees, but could also meet the main requirements.

Keywords	Workforce management, shift planning, service supply chain, contact center

Contents

1 Introduction

Most likely everyone at some point in life has ended up in a customer service queue and knows, how frustrating it sometimes can be to wait for the service. In the business world of today, time is very valuable, and we do not want to spend it on waiting but we want to get the service fast, whenever we need it. In most cases, the customer service unit is the customer's primary contact point to the company, and it can even act as a competitive advantage for the company. Therefore, it is no wonder that regardless of the line of business, companies all over the world are paying attention to the quality and efficiency of their customer service operations and putting an effort to get the satisfaction measures of the service as high as possible.

One popular way to improve customer service is to add as many different service channels as possible. This kind of approach for a multi-channel contact center enhances the customer experience as it gives the opportunity for the customer to freely choose, which contact channel to use and when to use it. In addition to customer experience, offering multi-channel service may also have a positive effect on the employee satisfaction, as the different channels create variability to the content of the working days.

Along with the positive effects, offering service in multiple channels creates also challenges to the company. From the managerial aspect, managing the service operations become more complex as the same performance and service quality should be maintained regardless of the contact channel. The companies tend to have versatile ways and metrics to measure these features of the customer service but usually performance and service quality are connected for example to answering rates, resolution times, customer waiting times and customer satisfaction rates. To reach the levels set for each different metric the company has implemented for its customer service, the managers should be able to allocate available resources to different channels. This means that they should know, what is the right number of employees needed to be ready to serve customers in a specific channel during a certain timeframe and what skills the employees are expected to have.

With an intelligently and well-managed shift planning, the company can have a positive effect on the efficiency of the customer service and this way also improve the quality, as customers usually value the speed of the service. On the other hand, employees have their own requests and preferences related to the shifts assigned to them, as well as

specific skills such as different languages. It should be possible to consider all these factors and dimensions, when planning shifts.

1.1 Case Company

The case company of this study is a Finnish provider of cloud-based financial management software, which operates in Finland, Denmark, Norway and Sweden. The software is used by over 23,000 companies and 800 accounting offices in the four countries. The company is divided into different functions, which, depending on the function, have their different teams for two product lines. The main functions are product development, marketing, sales and services and there are also support functions as HR, business support, strategic partnerships and business development and local partnerships. The services function is responsible for providing support for deployment and usage of the software, which means training, consultation and customer service.

This study focuses on the case company´s customer service, which by the time of writing consists of 21 customer advisors for product line A and 9 customer advisors for product line B. The customer advisors help both companies and accounting offices with questions regarding the use of the software without charge on weekdays from around 8.00 to 17.00 via phone, email and chat. The phone service differs from the other service channels so that it is open from Monday to Thursday from 8.30 to 16 and on Fridays from 8.30 to 12.00 Friday afternoons are mostly dedicated for internal team meetings and trainings.

1.2 Business Challenge and Objective

The aim of this study is to examine the shift planning challenges in a multi-channel contact center and strive to find a suggestion for improvement to tackle the challenges in the case company. The eventual objective therefore is *to create a suggestion of possible digital tools for effective organizing of work in versatile customer service.*

As the number of the customers of the case company has been constantly growing, the contacts received in the customer service have also been rapidly increasing. As a result, the number of staff in the customer service has been growing and the company has

implemented new service channels, such as chat service, to be able to serve the customers better. However, the customer service has been suffering from the lack of sufficient personnel, which can be seen as growing answering times of the email contacts and amount of unanswered phone or chat contacts. These issues are presented and discussed more detailed in thesis Chapter 3.

High customer satisfaction has long been one of the selling points of the case company. One aspect of customer satisfaction is the ability to get help from the customer service fast and reliably. In case the customers have to wait for service longer than before, they easily lower their customer satisfaction ratings, which would degenerate the selling point of the company. Additionally, customer satisfaction has been one of the targets for the yearly bonus payments of the employees and the decrease in it would therefore mean lower bonuses and thus lower employee satisfaction, which in turn is one of the bonus targets of the managers.

With a larger number of staff, employee wishes for shifts and versatile service channels, the shift planning has become challenging and time-consuming. The shift planning of the customer service is currently implemented with a calendar functionality built in to the intranet of the case company. It does not enable reporting or forecasting, which would be essential for improving the efficiency of the customer service. Additionally, the managers of the customer service have been maintaining a backup of the planned shifts in a separate Excel sheet, because some situations have occurred, where the intranet calendar functionality has not been working correctly and the planned shifts have been deleted. In the worst case, this has caused several hours manual work for the service managers. These occurrences also indicate that there is a need for new shift planning ways or tools, which can be relied on.

1.3 Structure of the Thesis

This study will first establish a solid understanding of the challenges in the current shift planning processes of the case company. Based on initial discussion with the customer service personnel, the study will provide the analysis of its challenges in general.

Next step is the literature review. The target here is to create a theoretical basis on the subject and find best practices to resolve challenges. Therefore, in the respective section, the main focus will be on the characteristics of a modern-day contact center as well

as on the challenges in organizing work in that environment, and how to make the service supply chain more efficient.

The literature review is followed by the proposal building phase, which consists of qualifying and evaluating different solution options. This leads to description of the recommendations given to the case company and validation of the proposal, after which the final outcome of the study is presented. The thesis will end with chapter where the study is summarized and briefly evaluated.

1.4 Scope

Term workforce management is often used in different contexts with varying scopes. In this thesis the term is more limited to refer mostly on the shift planning and the processes related to it. For instance, recruitment and the strategic level practices related to workforce, which are often seen as part of workforce management, can be mentioned but are excluded from the scope of this thesis.

This thesis will concentrate only on the Finnish customer service function of the case company and not on other functions of the organization. Moreover, the data analysis section the statistics will concentrate on the customer service team of product line A, as there is better access to its reporting data. Additionally, based on the discussions with the customer service manager of product line B, there has not been similar challenges as with product line A. This has most likely been due to the different nature of customer service operations and the fact that the customer service for product line B has been separately charged, which has lowered the volumes of the received contacts. Although for now the product lines have separate customer service teams, which have for example separate reporting systems, it should be taken into account during the research, that it is very likely that in the future the teams will be united.

It would also have been interesting to be able to include to this thesis an additional step for feedback research, where the impact of possible improvement actions would have been studied. However, this would have required more time between the original research and the feedback research, which was not possible at this point. Therefore, the feedback research is excluded from the scope of this thesis but can act as a recommendation for further study in the future.

2 Method and Material

2.1 Research Design

This study is done in five steps. Figure 1 below shows the research design of this study.

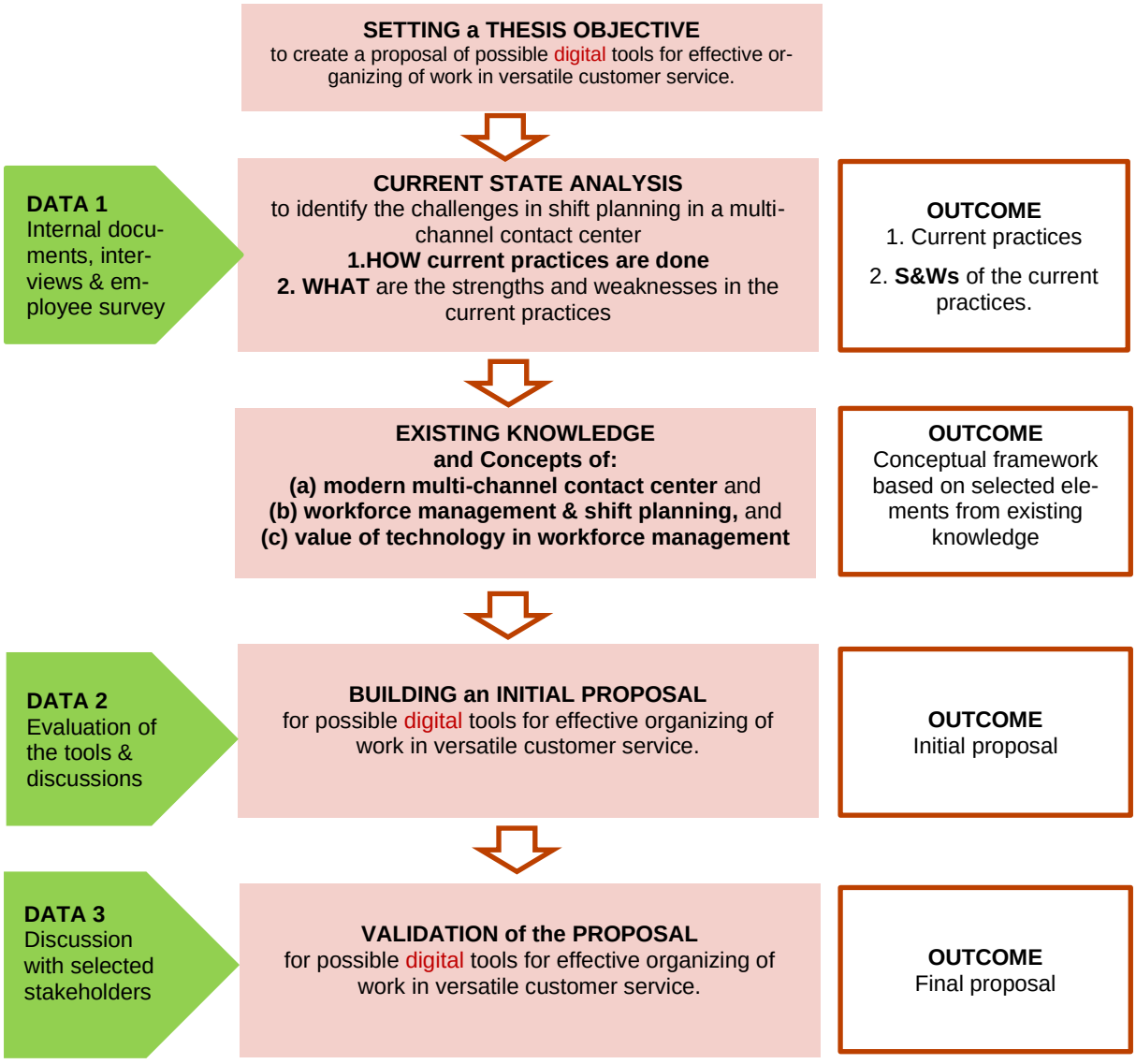

Figure 2.1. Research design of this study.

The study starts with setting the objective. In the case company, there was a clear need felt already for some time to improve the shift planning in the multi-channel contact center, but there was no clear approach how to do it. After setting the objective, the study proceeds to creating a clear view of the challenges and finding out, whether there is a

need for a modern workforce management system. This is done in the current state analysis.

The current state analysis consists of three parts, a calls and tickets analysis, an employee survey, and a manager interview. The purpose of the calls and tickets analysis was to demonstrate the scale of the problem. The employee survey was to find out the challenges the employees are experiencing with the current solution. The interview strived to get the managerial point of view.

Based on this analysis in Section 3, literature and best practice review was done in Section 4. Choices of pain points were informed by the main weaknesses revealed by the current state analysis. The study proceeds then to qualification and evaluation of a suitable system for workforce management, for which purpose requirements for the system were developed and a selection among the three suitable candidates was done from a larger pool of options in Section 5. These candidates were found by the researcher by doing internet searches, reading relevant research papers and by asking for recommendations from colleagues or other professionals.

Finally, the study planned validation of this proposal for possible digital tools for effective organizing of work in versatile customer service with a few key stakeholders.

2.2 Data Collection

The type of the research methods used in this thesis is mostly qualitative, as it involves information, which is not numerical. Figure 2.2 shows main data sources for the thesis.

This study strives to mostly find out opinions and feelings, which is rather typical for qualitative research, such as survey and interview. The data plan is presented below, and its purpose was to validate the business problem of the case company. Data was collected in three separate dimensions, employee aspect, managerial aspect and basic numbers of calls and tickets, as shown in Figure 2.2 below.

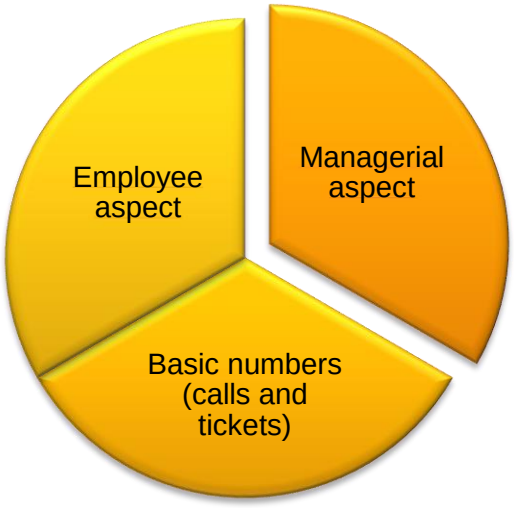

Figure 2.2. Data sources for the thesis.

The research data can be divided into three different steps, which are current state analysis, building the plan for improvement, and the validation stage. Table 2.1 shows the details of the data collection during the three steps.

Data round	**Contents**	**Data source**	**Date & approach**	**Purpose/Outcome**
Current State Analysis, Data 1	Basic numbers of the phone call and email contacts	Zendesk, the ticketing system of the case company	July 2017, statistics gathered from the customer service reports	Understand the scale of the challenges related to the efficiency and performance of the customer service in the case company
	Answers to the employee survey	A survey sent to the employees working in the customer service of the case company	December 2017, a qualitative survey created with Google Forms	Create a comprehensive view on how the employees see the current state and possible issues in workforce management

	Meeting notes validated by the interviewed managers	An interview with two service managers leading the customer service teams	January 2018, discussion about the employee survey results and an interview	Obtain understanding of how the managers see the current state and future of workforce management in the customer service
Building the plan for improvement, Data 2	Qualification of different workforce management tools	WFM providers' online materials, discussions with their salespeople and testing the systems	From March to May 2018	Create a plan for possible digital tools for effective organizing of work in versatile customer service.
Validation with selected stakeholders, Data 3	Discussion with key stakeholders	Discussion with key stakeholders	May 2018	Validating the plan for possible digital tools for effective organizing of work in versatile customer service.

Table 2.1. Details of data collection.

2.3 Data analysis

The case company is using Zendesk ticketing system for processing all the contacts received in the customer service. Zendesk enables comprehensive reporting based on the contacts and also allows building customized reports to meet the reporting needs of the company. The case company has been utilizing the reports efficiently, due to which it was easy to view first reply time and response rate and their development over the longer term from the reports.

The employee survey included in the data round 1 was implemented with Google Forms, which is a free online survey tool. It allows easily creating, editing, and sending the form for the target audience in addition to gathering and viewing the responses either individually or as summaries per question. The responses received to the survey were saved directly inside the form, which made it easy to process them. The tool also provided ready-made visualizations of the response divisions. The survey responses were processed and analyzed by the researcher and additionally the summary of the responses was examined in the interview with the customer service managers.

The manager interview was implemented by a face-to-face meeting with the two customer service managers in the case company premises. The meeting notes were written in a basic Word document, which was shared with the managers after the meeting. Afterwards, the notes were analyzed and summarized by the researcher. The customer service managers were also involved in Data round 2 by testing the different WFM systems and providing opinions on the features and the usability.

3 Current State Analysis of Shift Planning Challenges in the Multi-channel Contact Center

3.1 Overview of the Current State Analysis

In the case company, there was a clear need felt already for some time to improve the shift planning in the multi-channel contact center, but there was no clear approach how to do it. This analysis aims to create a clearer view of the challenges and find out, whether there is a need for a modern workforce management system.

The analysis consists of several parts, a calls and tickets analysis, an employee survey, a manager interview, and a mapping of a suitable system for workforce management. The purpose of the calls and tickets analysis was to demonstrate the scale of the problem. The employee survey was to find out the challenges the employees are experiencing with the current solution. The interview strived to get the managerial point of view.

Based on this analysis in Section 3, the requirements for the system were developed and a selection among the three suitable candidates was done from a larger pool of options in Section 5. These candidates were found by the researcher by doing internet searches, reading relevant research papers and by asking for recommendations from colleagues or other professionals.

3.2 Background for the Analysis

During spring 2017, the case company was facing a merger, where another financial management software was introduced into the company offering and it became clear that the aim is to strengthen the market position and reach strong growth. In March 2017, the management teams of both companies initiated a project, whose aim was to get altogether 100 000 digital end customers by 2020. In September 2017, the management team created a strategy statement for the new common brand for the two separate products. The target of 100 000 digital end customers was very visible in the statement but there were also cornerstones as smart and scalable operating model, which were essential for reaching the target.

For the customer service teams of both product lines A and B, the target presented in the strategy statement meant that the amount of contacts received will grow substantially. The recruitment in the customer service function has always been based on the estimated number of customers, as there is a clear correlation between the customer amount and the number of received contacts. However, from the cost perspective it is unbearable for the company to keep recruiting employees to the customer service at the same pace as before with the current target of 100 000 digital end customers. Therefore, the company should also find ways to increase the performance of the operations and create scalable operating models in every function.

In the customer service teams, the scalable operating model meant that the capacity, which in this case is the amount of customer advisors, should be able to process a growing volume of contacts. As from the cost perspective this cannot be solved by hiring more employees constantly, there should be a way to allocate the current available resources more effectively. The scheduling for different intraday shifts (for example chat, email, and phone) has currently been completely manual.

3.3 Analysis of Calls and Tickets

During spring 2017, the customer service for product line A was facing serious problems. In the past, the response rate of inbound phone calls had largely maintained near 90% but it started to decline since December 2016 and eventually was at its lowest at 73% in March and May 2017. Additionally, the variance of first reply time, which is the amount of time between when a customer submits a support ticket and when a customer advisor provides an initial response, increased from 2 hours to even 23 hours.

These numbers practically mean that customers have not been able to reach the customer service by phone and a customer has had to wait to get a first response to his/her contact this long at the worst-case scenario.

In Figure 3.1. below, the horizontal axis shows the monthly timeline starting from January 2016 to July 2017. The vertical axis on the left side represents the amount of inbound phone calls to the customer service and the vertical axis on the right side represents the response rate in percent.

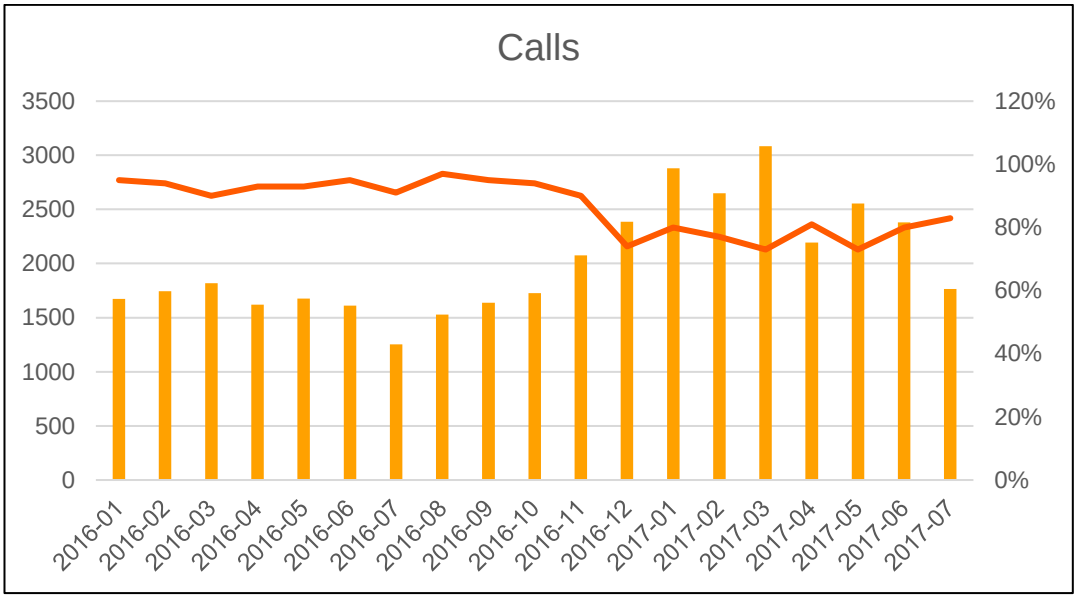

Figure 3.1. Zendesk ticketing system of the case company, 2017.

In Figure 3.2, the horizontal axis shows the monthly timeline starting from January 2016 to July 2017 and the vertical axis shows the number of hours. The green line indicates the median value of first reply time in hours and the blue line indicates the variance, which is the average of how far the values in the data set vary from the average of the data set.

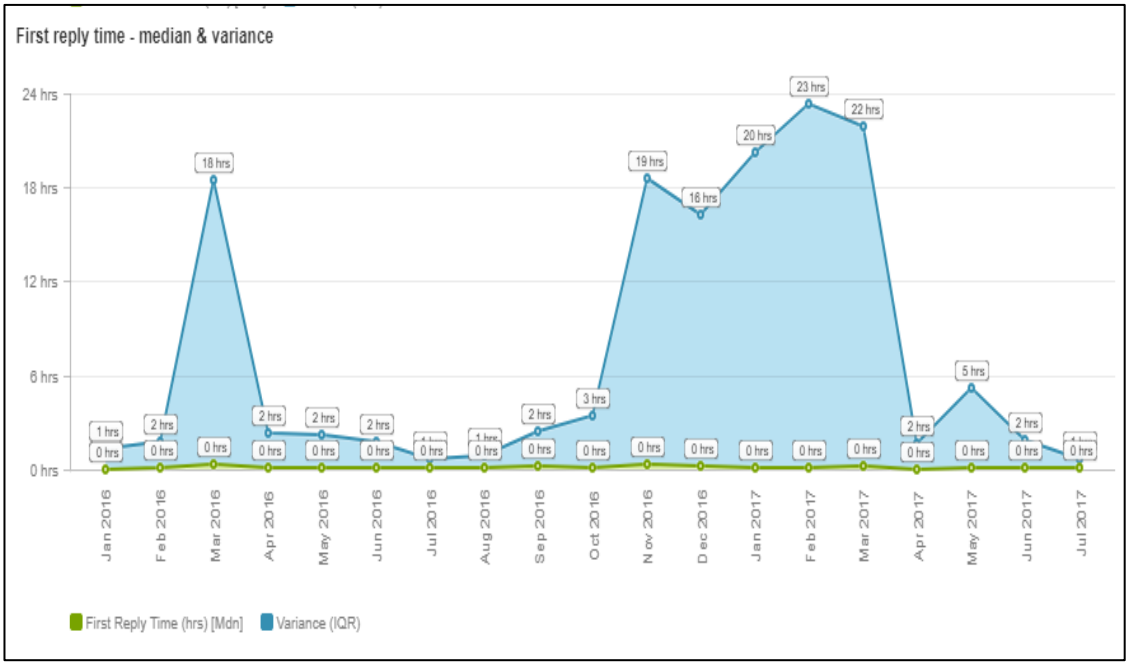

Figure 3.2. Zendesk ticketing system of the case company, 2017.

These statistics shown in Figures 3.1 and 3.2 explicitly show that the demand of the service has exceeded the optimum capacity and waiting time for the customers to get service has grown significantly. This leads to a decrease in customer experience and the staff of the customer service team gets overloaded.

Therefore, at least two important goals of service industry supply chain, minimisation of waiting time for customers and maximisation of experience for customers, have not been met. This means that there has not been efficient matching supply with demand, and something should be done for it.

This data analysis of calls and tickets strongly indicates that there is room for improvement in the efficiency of the customer service operations of the case company. Based on the earlier discussions with the employees and managers, it has also become clear that there are challenges with the workforce management in the customer service unit. Employees have been unsatisfied for example of how the workload is divided between the team members and both managers and employees have been complaining about the usability of the current solution used for work shift planning.

3.4 Analysis of the Employee Survey

In December 2017, a survey regarding the current status of work shift management and possible subjects of improvement was sent via email to the employees working in the customer service teams of both product lines of the case company. The survey, created by the researcher with the free survey tool Google Forms, included altogether 11 multiple-choice questions and one open question. The list of questions is provided in Appendix 1.

Only two of the multiple-choice questions were related to the background of the employees, as there was no need to ask more background details from the subject's point of view. The first background question asked which was the product line the respondent was working for, and another background question was to find out how long the respondent had been working in the customer service of the case company.

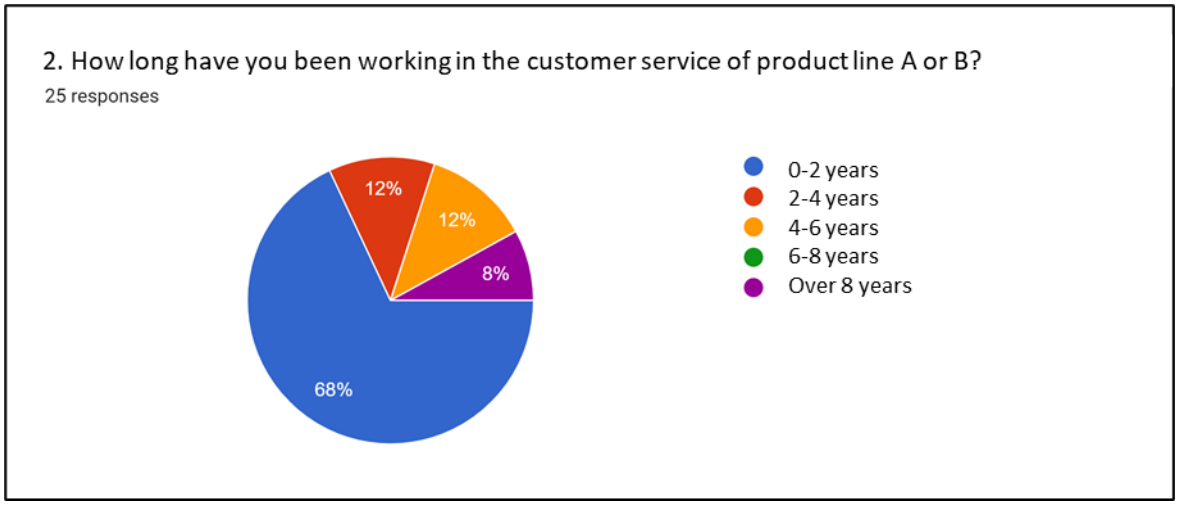

Figure 3.4. Response distribution in survey question number 2.

The survey was sent to 30 employees, including 21 people from the customer service team of product line A and 9 people from product line B. The response was received from altogether 25 people, where 18 was from product line A and 7 from product line B. Eventually, the response rate for the survey was 83,33 %, which can be considered high and indicates that the survey subject was important for the employees in the customer service. All 25 respondents had submitted an answer to the multiple-choice questions 1 to 11 and additionally there were 14 responses to the open question number 12, *"In your own words, share your thoughts on current customer service shift planning and how you think it should be developed".*

It should be noted that all employees in the customer service were Finnish-speaking and therefore the survey was implemented in Finnish, so that the language would not create an obstacle for responding the survey. In this thesis, translation of the survey questions and answers was done by the researcher.

Based on the responses received to the survey, there were following issues, which emerged in particular:

1. Managing exceptional situations (e.g. employee gets ill and needs a replacement)
2. Uncertainty regarding the fairness of the work task cycle
3. Partial ambiguity and difficulties in editing the work shift list
4. The work shift list is not available on mobile devices
5. Lack of flexibility, for example half-day shifts have not been possible.

Next, the analysis goes through these issues in more detail by presenting the distribution of received answers to the respective questions. Additionally, the comments received to the respective open survey questions are analysed.

The survey question number 6 was *"In your opinion, how does managing the exceptional situations related to work shifts (e.g. when colleague gets ill) currently work".*

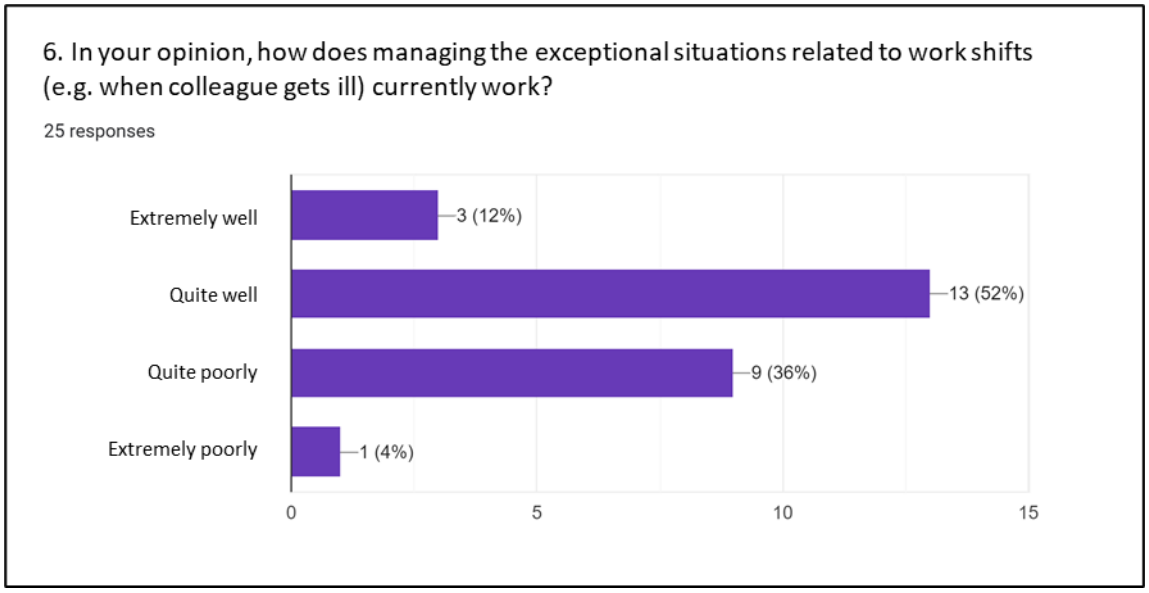

Figure 3.5. Response distribution in survey question number 6.

As seen in Figure 4.2, 9 respondents have answered *"Quite poorly"* and 1 respondent has given an answer *"Extremely poorly".* This means that altogether 40% of the respondents feel there are issues related to exceptional situations. In the open survey question, 4 out of the 14 responses included comments related to these issues. The comments are listed below (my free translation from Finnish):

> *If a colleague falls ill, someone is asked to go to the phone. If no volunteers are found then usually someone is chosen (perhaps in alphabetical order). For example I usually plan my own remote working based on the shift list, so I do not want to suddenly end up in the phone, if I'm working from home. Some phone substitute could be okay.*

> *How well the sick leaves are managed, depends pretty much on how many people there are at work. Nowadays, with more people at work, this has*

improved. It is important to react to absences immediately in the morning and see how the problem can be fixed.

2nd line support and integration support emergency service (during sick leaves, customer meetings, customer events, fairs, trainings, etc.).

The shift planning system should be as "self-guided" as possible. In other words, it would be able to change a few shifts if necessary if telephone lines become congested or the number of e-mails explodes, for example due to an error situation. Also in the event of possible absences, the system should change the daily shift planning so that the quality of service is measured in terms of the number of agents.

These comments show that the respondents are strongly experiencing the issues with managing the exceptional situations. It is obvious that with manual processes related to managing workforce, it is almost impossible to react quickly to sudden absences or other similar situations, where the resourcing should be adapted to quick changes. In the last comment, the respondent has even given examples, how an ideal shift planning system should work. When building the proposal, these issues should be kept in mind and if possible, try to find a solution, which also solves them.

The survey question number 7 was *"Do you consider the current work task cycle as fair?"*

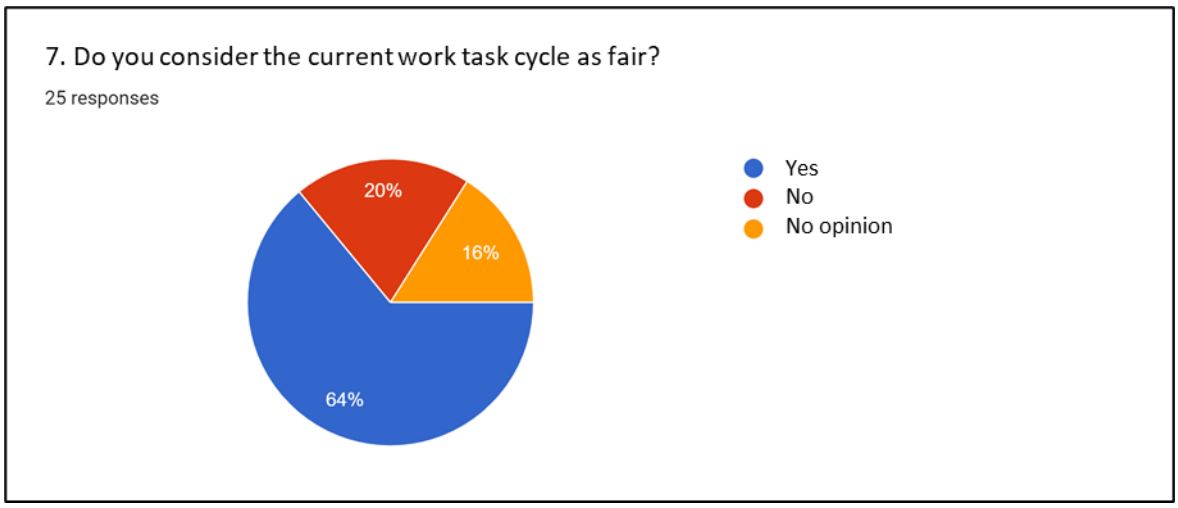

Figure 3.6. Response distribution in survey question number 7

As seen in Figure 4.3, 20% that is 5 respondents answered "No" to survey question 7. There were 16 respondents (64%) who answered "Yes" and 4 respondents (16%) who

had chosen “No opinion”, which raises a question, should it have been explained, what fair means in this context or should the answer choices have been formulated differently. One of the open survey responses included a comment related to this:

> *There is no certainty that telephone, chat and e-mail shifts are evenly distributed for example during the year, so it is difficult to take stand on fairness.*

This comment would indicate that respondents who have chosen option “No opinion” would see that it is not clear, whether they are treated fairly or not in the workplace. There are several recent studies (for example MIT, 2015) showing that the perception of fairness is linked to employee commitment, which in turn influences employee productivity. As the customer service team in the case company has had issues with performance, the fairness should be taken into consideration, when building the proposal.

In survey question number 4, the respondents were asked how they see the current work shift list.

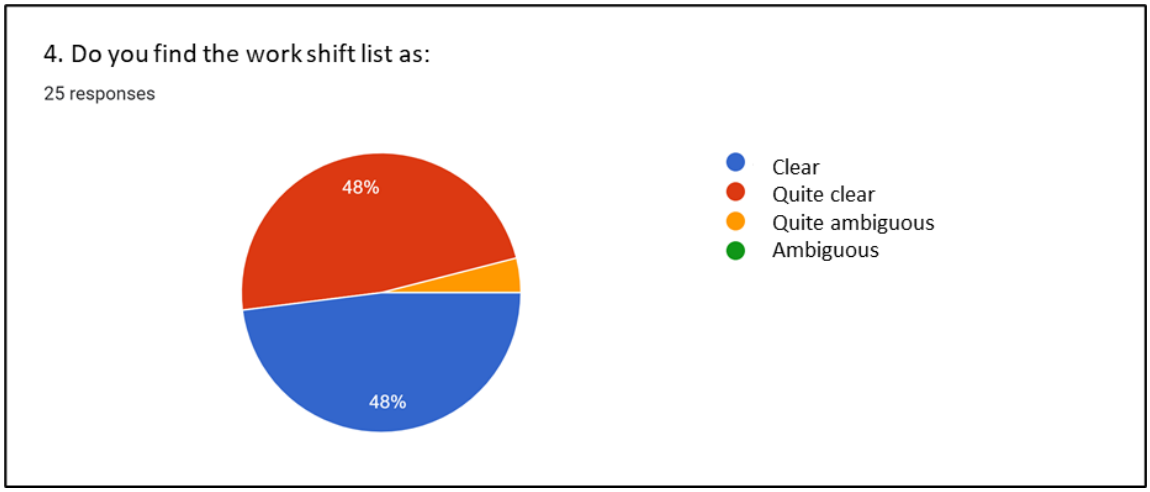

Figure 3.7. Response distribution in survey question number 4.

Here, as Figure 3.7. shows, the answers were divided rather evenly to *“Clear”* and *“Quite clear”*, in both of which the response count was 12, that is 48% per each. Only one person, which is 4%, had answered *“Quite ambiguous”* and none of the respondents had chosen “Ambiguous”. There were comments regarding this in two open survey responses:

> *The weekly work shift list is a bit confusing and it is numbing to constantly look at it due to possible changes. Perhaps it would also be good to think*

that certain lunch breaks would be tied to a specific shift (each shift would have its own number, there can be e.g. 3 telephone shifts), that they would not need to be monitored separately.

The current one is rigid, and the loss of information is a matter of chance. Even if you for example think you are doing the "Working remotely" entry correctly, data may be lost on that same day. Either you dare not to do anything with that, or just go with the risk ;) Lunch breaks also difficult to see.

Both of these responses indicate, that there are issues with the usability of the current work shift list. In the first response, there is also a comment related to the possible shift changes, which have to be monitored. In this case, one way to solve this challenge would be to implement a workforce management system, which would send notifications of the shift changes to the employees concerned.

The survey question number 5 asked *"If you need to change the shift, how is it in your opinion".*

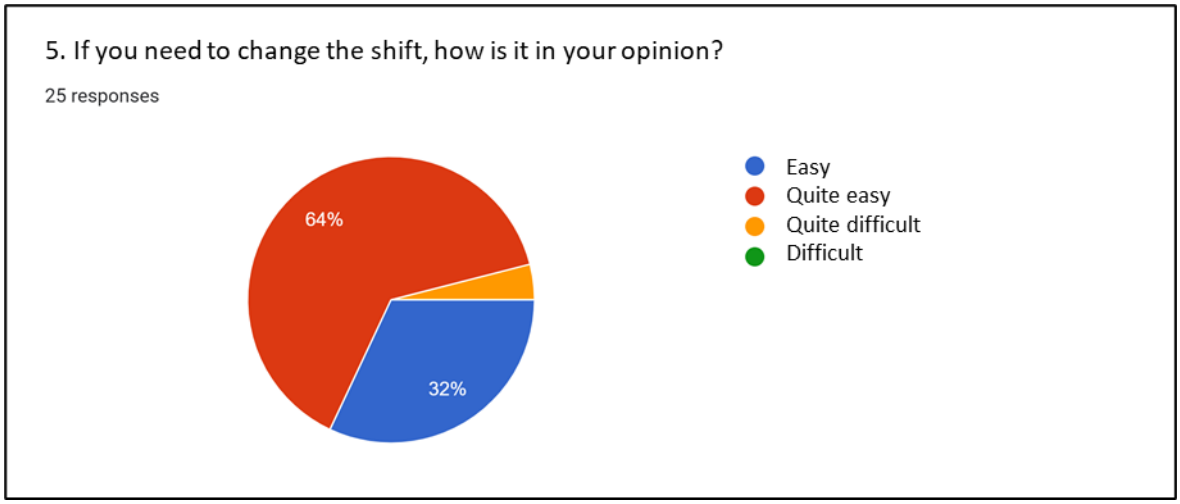

Figure 3.8. Response distribution in survey question number 5.

From the 25 responses, there were 8 *"Easy"* responses (32%), 16 *"Quite easy"* responses (64%), 1 *"Quite difficult"* response (4%) and no "Difficult" responses.

Here, vast majority of the respondents have chosen a positive answer. This indicates that changing the shift has been working well from the employees' perspective. Therefore, this can be left out from the requirements, when building the proposal for the case company.

Survey question 11 asked *"Do you think it would be important to be able to check the work shift list on a mobile device?"*

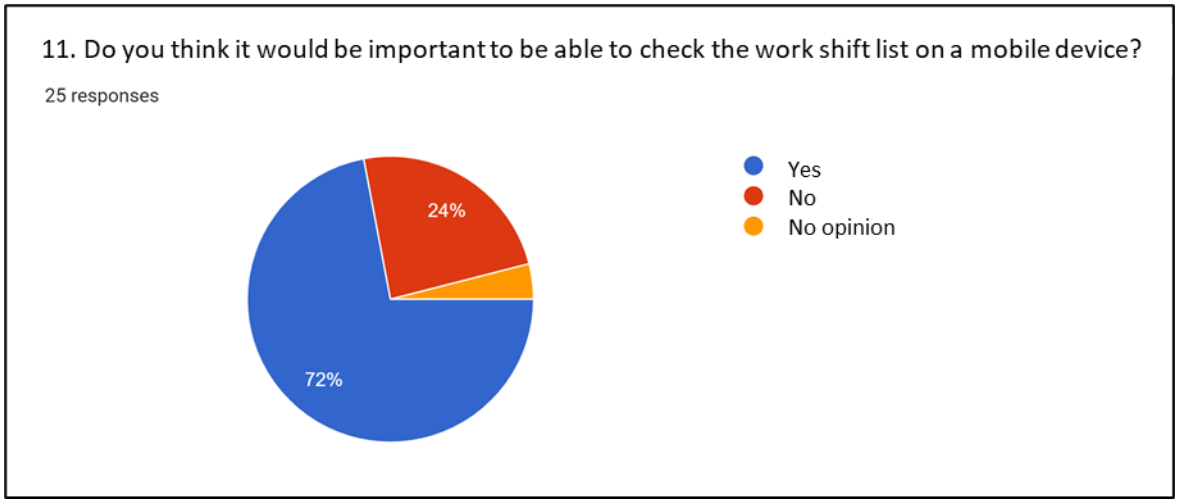

Figure 3.9. Response distribution in survey question number 11.

As Figure 3.9. shows, the responses to survey question 11 were very clear. Here the respondents' opinion was rather strong, as there were 18 *"Yes"* responses, which covers 72% of all responses. There were 6 *"No"* (24%) and 1 *"No opinion"* (4%) response.

It has not been possible to check the work shifts on a mobile device before. The distribution of responses to this question shows that a clear majority of the respondents would consider this feature as important, so this should be considered as a requirement, when building the Proposal for the case company.

One reason behind this need is probably also that remote ways of working have been increasing in the customer service. As the employees are working from other places than the office and moving more around, it would be useful to easily see the allocated shifts on the mobile device.

Survey question number 8 asked *"What kind of work cycle would you think would be the most effective?"*

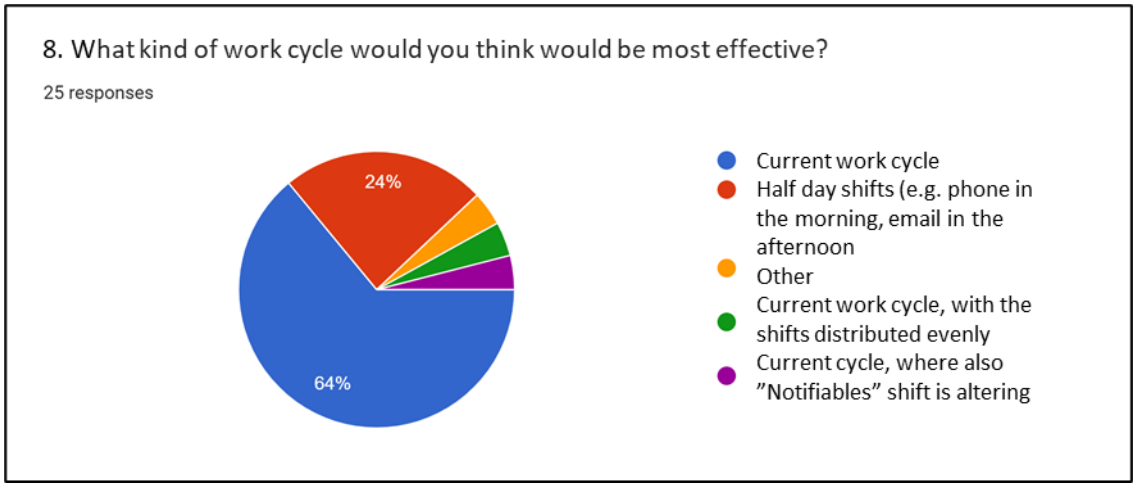

Figure 3.10. Response distribution in survey question number 8.

Here, as seen from Figure 3.10., the answer choices were “Current work cycle”, which means that one shift lasts for one day and “Half day shifts”, which would mean that for example an employee would have phone shift until lunch break, whereafter he or she would have email or chat shift during the afternoon. Half day shifts have not so far been taken into use in the customer service, mostly because the current work shift list would not then be readable and creating the list would take even more supervisors’ time. The question number 8 also had a choice “Other”, where the respondent was able to give his or her own suggestion for a new work cycle.

There were 16 respondents (64 per cent), who were in favor of the current work cycle and 6 respondents (24 per cent) felt that half day shifts would be the most effective. 3 respondents (12 per cent) had answered “Other” and provided own suggestion for the work cycle. I have listed these suggestions below:

> *The current "all day same shift" cycle, but so that the shifts are evenly distributed among all agents (email and phone days per month).*
>
> *The current cycle, in which the “Notifiable” shift also alters so that everyone is obliged to do it, and not so that one person is ordered to do it.*
>
> *In a perfect world, everyone would know how much time is equally calculated for each employee on each shift. Based on these counters, the employee could select the desired shifts, for example, 5 weeks in advance. If no selection is made, shifts would automatically be determined based on a need calculation. In exceptional circumstances (such as illnesses), the system would*

automatically send (immediately after the employee has notified the supervisor that he or she is ill) a request to those who, based on the calculation, could be a substitute in the shift. In these cases, anyone to whom an exchange request has been made would also see the basis on which each has indicated that he or she does not want / is unable to change his or her shift; as someone has to change the shift, anyway. The system would also be able to take into account in real time how many (how many hours) each person has done on each shift, and the hours taken for each shift would be balanced for each, e.g. every three months. In addition, the system would consider that, for example, the opportunity to participate in bi-weekly company meetings is equal for everyone.

The response distribution shows that well over half of the respondents would be in favor of the current, fixed work cycle. In one of the comments the respondent has wished for the current cycle, but so that the shifts are distributed evenly. This indicates that there is the experience of uncertainty with the fair division of work, which was also included in the question number 7 *"Do you consider the currently work task cycle as fair?".* The second suggestion refers to a specific shift or task, where the employee is processing errors with payment and electronic invoices and contacting customers regarding them. The task has currently been manually assigned to a specific person and the suggestion indicates that there is no certainty that all employees have been assigned to it. This comment can therefore also be linked to the uncertainty of fairness. The third suggestion is rather comprehensive and here the respondent's description is close to the features of a modern system capable of workforce optimization. Fair division of work seems to be a recurring theme in these responses.

Finally, the open survey responses also included comments regarding the half day shifts:

From time to time it might be a good idea to try "half day" i.e. half phone and half email. I also think that the current model is really good.

Our current shift list doesn't manage well mid-day meetings or other absences. Although the current work cycle in my opinion is good, too, I would like to try a half-day shift cycle. It would therefore be good if half days could also be placed in the shift system. The work cycle would also be easier to

manage if the system distributed email, telephone and chat shifts equally for all.

That half-day phone, half-day e-mails cycle, etc. could be an option worth considering, at least during some of the days, somehow like there would be one or two whole-day phone shifts and then for example one or two half-day phone shifts. After all, Friday is practically half a day of the phone shift.

There would then be a better opportunity to do investigation and other work after 12 / 15:30 if you do not have time to get things clarified after the calls. That post-call investigation often takes time, at least in this way, and if more than one person is eating and doing after-sales at the same time, congestion peaks may arise. In addition, that would increase variability, and you might not need to make transfers between different activities when people would be better reachable by phone. At the same time, those things could be clarified with a "better conscience" when you would not have to worry about whether the queue is accumulating or not.

The open survey responses clearly indicate, that the employees would expect more flexibility with the fixed shifts, which are currently used. A modern workforce management system would most likely be able to support versatile shift cycles.

To summarize the survey results, it is clear that from the employee aspect, there are multiple issues with workforce management in the customer service. In particular, the employees have experienced that there are challenges related to flexibility with the work shifts and the usability of the current shift list. One recurring theme in the open responses seems to be the uncertainty of fairness. This should be considered as important, since the perceived fairness is linked to employee satisfaction and thereby to employee commitment, which in turn has a correlation with the employee productivity.

3.5 Analysis of the Manager Interviews

After the implementation of the employee survey, in January 2018 the researcher organized an interview with two service managers, who were leading the customer service teams of both product lines. Before the interview, the researcher sent the survey results to the managers in advance so that they could be better prepared for the discussion. During the interview, we went through and discussed the survey results together and the

researcher also asked the managers to give their own views on the current situation of the workforce management and possible challenges related to it. The list of interview questions is provided in Appendix 2.

The managers raised the following issues or needs regarding workforce management:

1. Current way of creating and modifying the work shift list is slow and cumbersome (for example creating the list for the following month takes approximately one working day in total)
2. Current way of managing work shifts does not offer sufficient visibility backwards, so that it would be easy to check the number of employees in different shifts
3. There is currently no possibility of checking the sufficiency of the resources or forecasting customer service peak times (for example version releases or tax and salary reporting dates)
4. It would be ideal to be able to give more responsibility to employees themselves in managing the work shifts (for example exchange of shifts without a separate approval of the manager)
5. Managing part-time employees and occasional absences, such as meetings and trainings
6. Automatic notification of the shift modification to the employee in question

Two citations from the manager interview are presented below:

> *When I look at reports, I would like to see the overall picture easily. Currently it is impossible for me to be certain that there are sufficient resources taking care of the calls, emails and chat contacts.*

> *It would not bother me at all to allow the employees to exchange shifts with each other without me providing an approval for the exchange. On the contrary, this would free up my time for "real" managerial tasks.*

The citations from the interview put an emphasis on the most pressing issues, the customer service managers of the case company currently have. They would need reporting

capabilities, which would allow them to check whether there have been enough employees in specific shifts. There would also be a need for forecasting, which in practice is impossible, when using Excel as a tool for shift planning. Second citation indicates, that the managers would also like to promote autonomous shift planning, which will be discussed in more detail in chapter 4.2. in this thesis.

We also had a short discussion on future prospects, as it would be important that the possible workforce management solution would also be futureproof. At this point, the managers also pointed out that in the future the implementation of two- or even three-shift work could be possible, although currently there are not many contacts received during evenings or weekends and this would probably also require making the customer service chargeable.

As mentioned earlier, currently there are two separate customer service teams for product lines A and B but most likely Additionally, the target is to constantly encourage self-guidance among the employees and try to reduce the dependence on the supervisors. Based on the discussions among other units' managers, there are similar kinds of challenges with managing workforce in the IT operations team, so the same solution would most likely also help another team to improve its operations.

3.6 Summary of the Current State Analysis

The current state analysis of this study shows that there are several challenges with managing workforce in the customer service unit of the case company. Figure 3.11 below summarizes the results of the analysis.

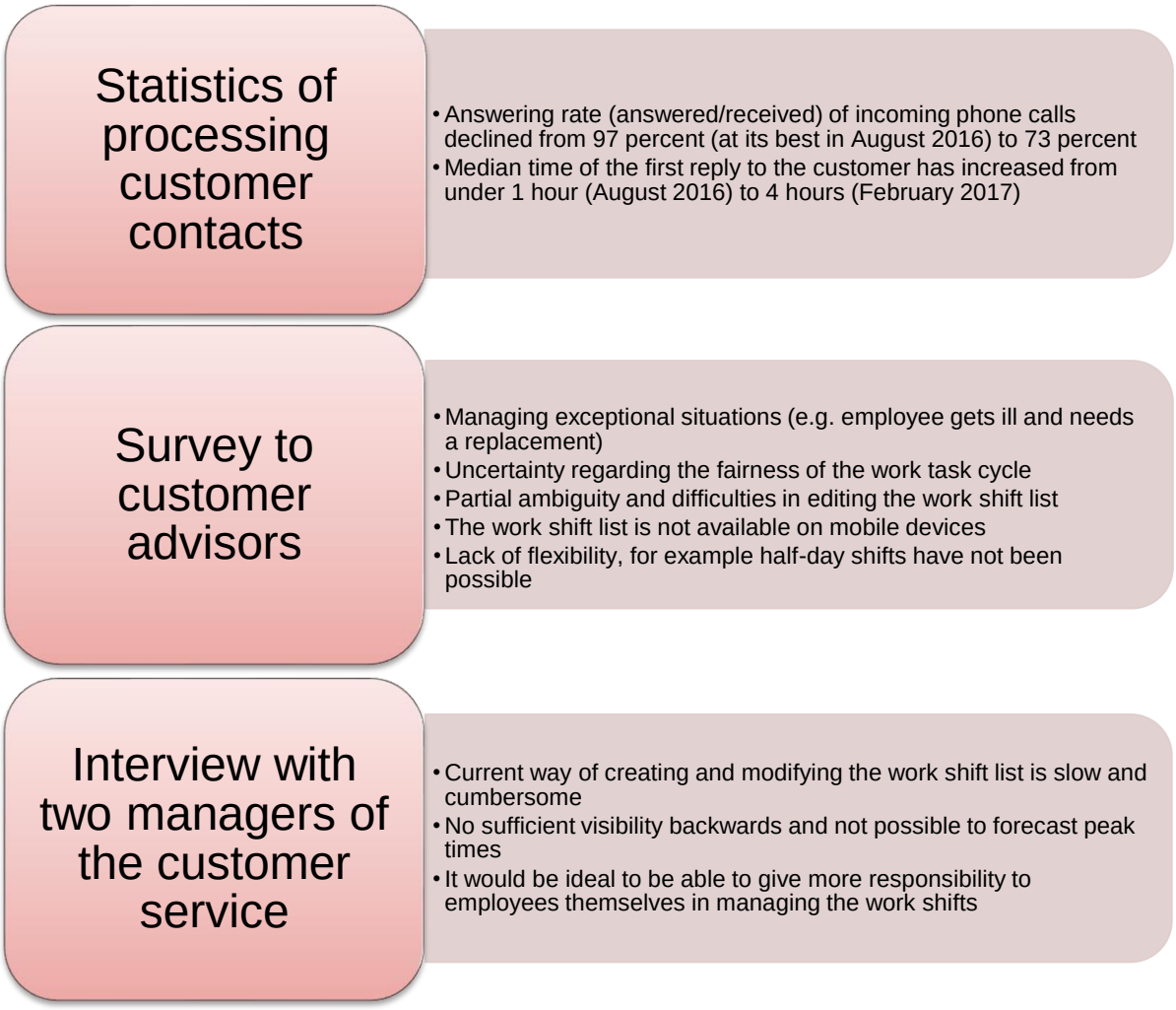

Figure 3.11. Current state analysis results summarized.

In the first phase of the current state analysis, the statistics related to processing the calls and emails were analyzed. This demonstrates well the scale of the problem and here we could clearly see that the service levels have not been met. The answering rate, which is the number of answered compared to received phone calls, had declined from 97 percent (at its best in August 2016) to 73 percent in March and May 2017. Additionally, the median time of the first reply to the customer had increased from under 1 hour (August 2016) to 4 hours (February 2017).

The second phase of the current state analysis was the customer advisor survey, which was created to find out the challenges the employees are experiencing with the current solution. The survey responses showed that there were multiple issues, such as difficul-

ties in reading and editing the work shifts, challenges with managing exceptional situations and uncertainty of the fair division of different tasks. The employees also wanted mobile usability and more flexibility related to the shift rotation.

The third phase of the current state analysis strived to get a managerial point of view with an interview with two managers of the customer service. The managers confirmed the same challenges that emerged from the employee survey results. Additionally, the managers were hoping for an easier way of creating the shift list, more visibility backwards to the shifts and opportunities to involve employees in managing the work shifts.

To prioritize the weaknesses identified in the current state analysis, we should choose the organizational perspective, because the weaknesses are also related to the company-wide targets. For example, reaching the service levels would be essential for retaining the high customer satisfaction rates for the case company. The service levels in turn could most likely be reached, if there would be a possibility to monitor the performance of the team and react to deviances and forecast the peak times based on historic data. Another important target for the case company is to maintain high employee satisfaction, which is connected to the employee productivity. This can often be improved by ensuring that the workload is divided evenly and by enabling flexibility in work schedules and ways of working.

Hereafter, in the next sections focusing on the Conceptual framework and when building the proposal for the case company, this study will concentrate on how to increase the efficiency and performance of the customer service. On a more detailed level, this means focusing primarily on the monitoring and forecasting capabilities. The secondary focus will be on how to ensure fair division of workload and tasks and to increase flexibility. Next, Section 4 will discuss existing knowledge and best practice related to these challenges.

4 Existing Knowledge and Best Practice on Shift Planning in Modern Multi-channel Contact Centers

This section discusses three topics related to creating a proposal for possible digital tools for effectively organizing the work in versatile customer service. The structure of Section 4 is summarized in Table 4.1. below.

Theoretical background	4.1 Nature of a modern multi-channel contact center	Build an understanding on the characteristics of a **modern multi-channel contact center** and how the operations are managed in it
Theoretical background	4.2 Workforce management	Describe what is **workforce management** and what kind of features are included in the **workforce management tools**
Best practice, benchmarks	4.3 Value of technology in workforce management	Create an understanding on what kind of value **automated workforce management** offers to the company

Table 4.1. Structure of Section 4.

4.1 Nature of a Modern Multi-channel Contact Center

The main purpose of a contact center is to act as a centralized primary contact point for the customers of a company. The nature of a single contact center depends on the industry the company is in and the product or service the company is providing to their customers. For instance, a software company can offer their customers user support and advice on using the software. In such a case the customers are usually the main parties to initiate the contacts and therefore the type is inbound contact center, as opposed to outbound contact center, where the contacts are initiated by the employees of the company itself. Depending on the company, it may charge its customers for the services provided by the contact center or the services can also be free of charge. (Nielsen, 2009.)

Compared to a call center, which usually has phone as the only service channel, the term contact center refers to a center, which provides services to the customers via multiple channels, such as phone, email and chat. The customers can then choose the service channel according to their preferences and make the contact, when it is suitable for

them. Nowadays it has become more and more popular to offer the customers self-service solutions, such as portals or knowledge bases, where the customers can search for information on their own or communities, where the customers can ask for help from other customers of the company. (Nielsen, 2009.)

The nature of work in a modern multi-channel contact center can be rather challenging due to several factors. The customer contacts can be related to a wide variety of questions and require complex investigations. The customer behavior can sometimes be negative or even aggressive, despite which the employee processing the contact should remain calm. Especially during peak times, the workload can be very high and the number of individual contacts processed by one employee can be massive. Some of the work tasks in the contact center are also repetitive and monotonous, which can lower employee motivation. Additionally, the work can be very solitary, even though the contact centers usually work in teams. (Eliander, 2014.)

Working in a contact center is demanding also because of the continuous monitoring. Usually there are both qualitative and quantitative indicators, by which the work is being measured. Very often every employee has his or her individual goals in addition to team and unit level targets, which all should be achieved. This can cause heavy pressure on the employees and can thus lead to absences, employee turnover or quality issues. (Eliander, 2014.)

Managing the operations in a contact center is a complex task, which requires versatile skills. The managers of a contact center are constantly balancing with the stakeholder expectations, which may conflict with each other. The main challenge is that in a contact center the degree of labor intensity is high, which in general means that large number of employees is needed and thus the labor costs are also high. While the contact center managers are expected to deliver high quality, at the same time they should maintain low operating costs. The demand for service is uncertain and fluctuating and still the managers should be able to know, what is the right number of required employees in different shifts. This means that managing the operations includes making decisions related to forecasting contacts, recruitment, scheduling and service delivery management. At the same time, the managers should keep in mind the employee experience, which has an effect to the performance of the team and customer satisfaction. (Aksin et al. 2007.)

4.2 Workforce Management

In this section, workforce management, its challenges and current trends are described. Additionally, the basic features of a workforce management system are presented.

Term workforce management is often used in different senses so that it can also refer to a larger whole of activities related to workforce in the company. In this context, the focus will however be on the shift planning and the processes closely related to it. In any case, workforce management workflow typically includes several steps, which are illustrated in Figure 4.1. below.

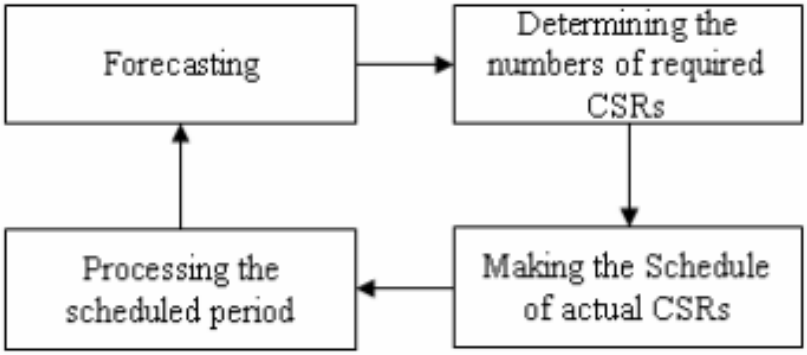

Figure 4.1. Workforce management workflow (Kim et al., 2007)

As seen in Figure 4.1, the first task in the workflow of workforce management is forecasting, which should be done by utilizing historical data related to contacts. Then, future observations can be predicted with different forecasting models, for instance regression models or time series. Next task is to determine the number of required employees or CSRs, which refers to Customer Service Representatives. After that, the schedule is created by assigning the actual CSRs to the specific shifts. The final step is processing the scheduled period, which includes storing the observed data, based on which the forecasting of the next period will then be done. (Kim et al., 2007.)

4.2.1 Typical Challenges in Workforce Management

There is industry-specific variance in the challenges related to workforce management but some general problem areas can be identified. These challenges and problem areas are listed below.

- Employee availability and preferences
- Employee turnover
- Fluctuating demand
- Last minute changes. (Quinyx, 2019.)

The first item on the list above is employee availability and preferences related to the work shifts. For instance, some employees prefer morning shifts while some prefer night shifts. The preferences often arise from the employees' characteristics or personal life and it would be important to be able to fulfil them to promote flexibility and work-life balance. Employee availability causes challenges especially when the shifts take place also during nights or weekends. Additionally, using part-time employees can be challenging, when they can only come to work on same weekdays instead of alternate days. Another challenge is employee turnover, which can be relatively high especially in larger contact centres. Organizing training and onboarding for new employees is time-consuming and different skill levels should be taken into consideration when scheduling the shifts. Fluctuating demand in turn makes it more difficult to determine the numbers of required employees in specific shifts. As a result, overstaffing of shifts quickly becomes expensive for the company and on the other hand understaffing can cause multiple problems, such as high stress for employees and decrease in customer satisfaction. Finally, people's daily lives are also full of surprises, which causes unexpected last-minute changes to the shift schedules. (Quinyx 2019.)

Moreover, when focusing on contact centre shift planning, there are additional challenges due to the requirements and expectations from other stakeholders. The customers are expecting to get good quality service when they need it and the management in turn requires that the human resources are utilized productively and efficiently. When these are brought together with the problem areas mentioned above, the biggest challenge in contact centre workforce management is, how to find a balance between these different factor and dimensions. In best case scenario, the end result can be an excellent customer service with efficient operations and highly motivated employees. (Eliander, 2014.)

4.2.2 Trends in Workforce Management

Alongside other industries, workforce management has been largely affected by the modern technologies. Additionally, the challenges related to workforce management

have been increasing and become more complex, which has also been a driving force for the changes. The challenges have been arisen for instance because of changes in working hours and locations, legislation and employee expectations. In practice, managing workforce with the different dimensions is impossible without the use of technology in some form. (Eliander, 2014.)

Especially in shift planning, the latest development has been focusing on managing changing conditions and employee know-how. Employees have also been able to participate more in planning their own shifts, which will clearly be an increasing trend in the near future. This kind of autonomous scheduling means that it is possible for an employee to choose shifts, which suit his or her life situation in the best possible way. Another similar trend is ergonomic workforce scheduling, which strives to support the well-being, functional capacity and health through suitable rotation of work and rest. Both the autonomous and ergonomic scheduling can be linked to increasing employee commitment, which decreases the employee turnover. (Eliander, 2014.)

4.2.3 Features of a Workforce Management System

Improving contact centre performance has become a rather popular subject especially during the recent ten years. Many articles regarding this subject can be found, and it seems that these articles often have a recurring theme: workforce management system. If we first consider what this kind of system is able to do, Gartner (2020) has described it in their Information Technology Glossary comprehensively as follows:

“A system intended to maximize the use of agent labour by projecting incoming call volumes and scheduling staff to meet needs exactly, by time of the day, day of the week, week of the month, etc. WFM systems use historical calling records, which are collected from the automatic call distribution system, to project future calling patterns and volumes for specified time frames. Features include:

- Call volume forecasting
- Calculation of the required number of agents, based on the desired average speed of answer
- Agent scheduling
- Meeting and vacation planning
- Reporting
- “What if” analysis”. (Gartner 2020.)

When comparing the feature list to Figure 4.1. of the workforce management process, we can see that a WFM system is able to complete the tasks included to the workflow. Such systems are also able to perform the forecasting calculations, which require complex algorithms built in them.

4.3 Value of Technology in Workforce Management

Introduction of modern technological tools has proven to have positive impact on the contact centre performance. Thus, multiple articles have been written and research has been done around this subject, both on a local and global scale. Majority of this kind of research is done by larger technology companies but the subject has also been of interest to more independent consulting and market research companies around the world. For example, technology company Cisco's research report (2012) of 143 contact centres from different industries provides evidence, that current technologies can potentially enable superior performance. According to the report the technologies can for example reduce queue time, increase calls handled per agent per hour and improve customer satisfaction, all of which are related to the most critical goals of service industry supply chains. Cisco's report covers a wider variety of technologies, including also for example CRM systems. (Cisco 2012.)

If we look only at workforce management systems, for example a study from Aberdeen Group (2013) shows strong evidence that workforce optimization has positive effects on for example agent productivity, first contact resolution and contact processing times. Their study of altogether 261 respondents shows rather significant benefits of introducing the system, as shown in Figure 4.1. (Call Centre Helper magazine, 2010):

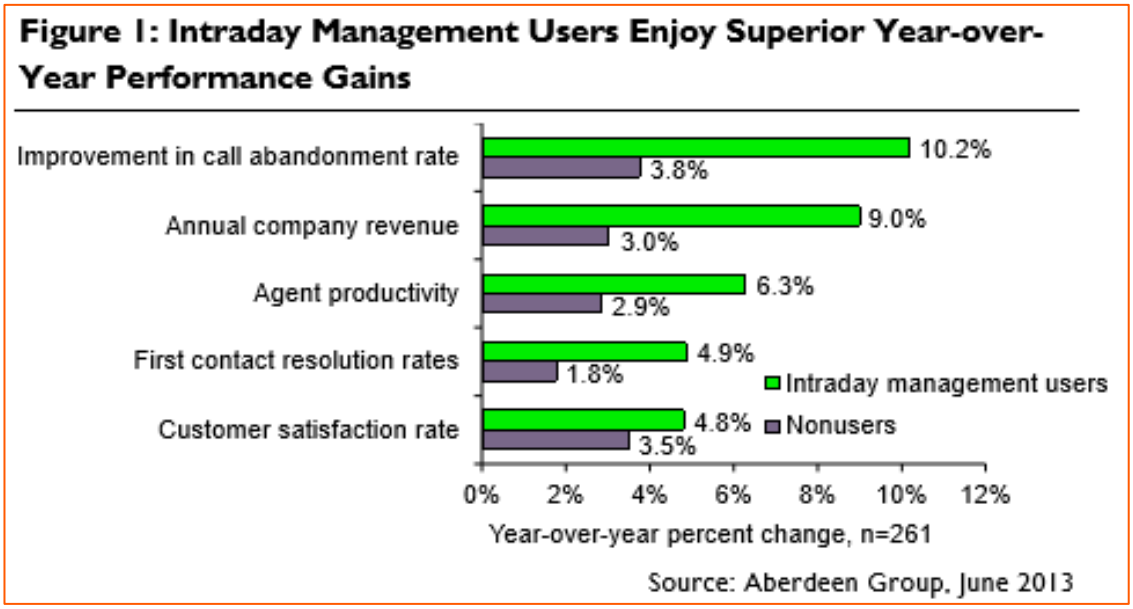

Figure 4.2. Aberdeen Group, June 2013.

Several key workforce management system vendors have also carried out their own case studies of how the system has helped their customers. Call Centre Helper magazine (2010) has collected case studies of six vendors from different industries in one place. In their article, they also have contact centers represented and there are four studies which all indicate that the system has benefits to the organizations, especially when it comes to efficiency and cost savings.

4.3.1 Increased Flexibility and Productivity

One example of the case studies presented in the article by Call Centre Helper magazine is dealing with Ingenico, which is a global provider of products and services related to payments. Ingenico's challenges with workforce management were related to inflexible shift patterns and inefficient utilization of the workforce. Additionally, forecasting, scheduling and intraday management required manual processes, which were very time-consuming. Due to the lack of visibility, the managers of Ingenico's contact center were not able to assess and anticipate the possible peak times in contact volumes, either. After thorough evaluation, at the end of the year 2006 Ingenico implemented a modern WFM solution in their support unit consisting of 54 agents and simultaneously changed their employee working terms, which offered more flexible and longer working hours. (GMT Europe, 2009.)

According to the case study, after the implementation of the WFM solution, there were significant improvement in the productivity of the support unit. Ingenico was able to raise their service level targets for incoming phone calls to an average of over 80 per cent. Additionally, the WFM system removed the manual processes related to intraday management, which eventually reduced the time spent on the resourcing by over 87 per cent. The costs for overtime had also come down with 25 per cent due to the system's ability to route the contacts to more skilled employees, when the call volumes were particularly high. The case study does not reveal numbers of the increased agent satisfaction, but mentions that it had also increased, because they were able to manage their own holiday and leave requests in the WFM system. (GMT Europe, 2009.)

4.3.2 Increased Fairness

There are differences between individuals in how they understand fairness. It is affected by many things, such as the education, culture and previous life experiences of an individual. In the context of shift planning, however, fairness can be achieved by following a few principles. First of them is to plan the shift schedule in such way, that the employees feel that they have been treated equally. In a multi-channel contact center this means, for instance, that the more unpleasant and burdening shifts are divided equally among the employees. Second principle is to take the employee preferences and wishes into account, whenever it is possible and follow the same guidelines and transparency, when accepting leaves and days off. Third, it is fair to offer extra shifts for part-time employees and substitutes, whenever it is possible. In a contact center with for instance dozens of employees following these principles becomes impossible. A modern workforce management system targets the available resources according to the customer flows and takes the employee wishes and fairness of shifts into account. (MaraPlan 2019.)

4.4 Conceptual Framework of This Thesis

The Conceptual framework of this thesis is described in Table 4.2. below. The table includes the key elements, which have been discussed in this section. It also provides the references to the key sources, which have provided the most relevant content related to the specific subject area.

4.1 Nature of a modern multi-channel contact center	Build an understanding on the characteristics of a **modern multi-channel contact center** and how the operations are managed in it	• Work in a contact center is demanding due to several reasons, for instance:
		  ○ High workload
		  ○ Complex issues
		  ○ Monotonous tasks
		  ○ Stakeholder expectations
		(Eliander, 2014).
		• Managing the operations in a contact center includes making decisions related to forecasting contacts, recruitment, scheduling and service delivery management (Aksin et al., 2007).

4.2 Workforce management and its Challenges	Describe what is **workforce managemen**t, its typical challenges and what kind of features are included in the **workforce management tools**	• Workforce management workflow consists of four main steps, which are:
		  ○ Forecasting
		  ○ Determining the number of required employees
		  ○ Creating schedule
		  ○ Processing scheduled period
		(Kim et al., 2007).
		• Using historical records, the WFM tools can predict incoming contact volumes and schedule staff as needed (Gartner Glossary).

4.3 Value of technology in workforce management	Create an understanding on what kind of value **automated workforce management** offers to the company	• There are positive effects on agent productivity, first contact resolution and contact handle times (Aberdeen Group, 2013).

		• Organizations can provenly benefit especially in cost savings and efficiency (Call Centre Helper magazine, 2010).

Table 4.2. Conceptual framework of this thesis.

The conceptual framework of this thesis consists of three main elements. First, the target was to form a basic understanding on the characteristics of a modern contact center and to explore, how the operations are managed in it. The second element is workforce management, which was described along with the workforce management tools in Section 4.2. Third, in Section 4.3. the target was to create an understanding on what kind of value automated workforce management would offer to the company. The same section also included sub-sections, where it was discussed, what kind of effect technology would have on the efficiency and fairness and flexibility related to work in a contact center environment.

In the following Section 5, the results of the current state analysis will be first linked together with the conceptual framework. Thereafter, the process of the proposal building and the actual proposal for the case company will be presented.

5 Building the Proposal

This section merges the results of the current state analysis and the conceptual framework towards the building of the Proposal using Data 2. The recommendations given to the case company are presented at the end of the chapter.

5.1 Overview of the Proposal Building Stage

The current state analysis results show that there are obvious challenges with managing workforce and especially shift planning in the customer service of the case company. Based on the statistics related to processing contacts, it could be seen that the service levels had not been met as there was a decline in the answering rate of the phone calls and increase in the median first reply time of the emails. According to the results of the employee survey and the interview with customer service managers, there were several issues and pain points in the shift planning processes in the case company.

After analyzing the survey and interview results, it became easier to identify the most critical challenges related to the shift planning. Additionally, a picture of how these challenges were linked to the issues with efficiency began to emerge. When the challenges were examined from the organizational perspective, it became clear that, first, increasing efficiency and performance of the customer service should have the primary focus in the study. Second, ensuring fair division of workload and increasing flexibility would be prioritized.

These two focus points created a basis for what kind of literature were chosen for the conceptual framework, which was developed in Section 4 in this study. Based on the existing knowledge and best practice found in the available literature, there was strong evidence, that the proposal for the case company should focus on a recommendation for the introduction of a digital tool for workforce management and more specifically for shift planning. The following Figure 5.1. illustrates the process of how the proposal was built:

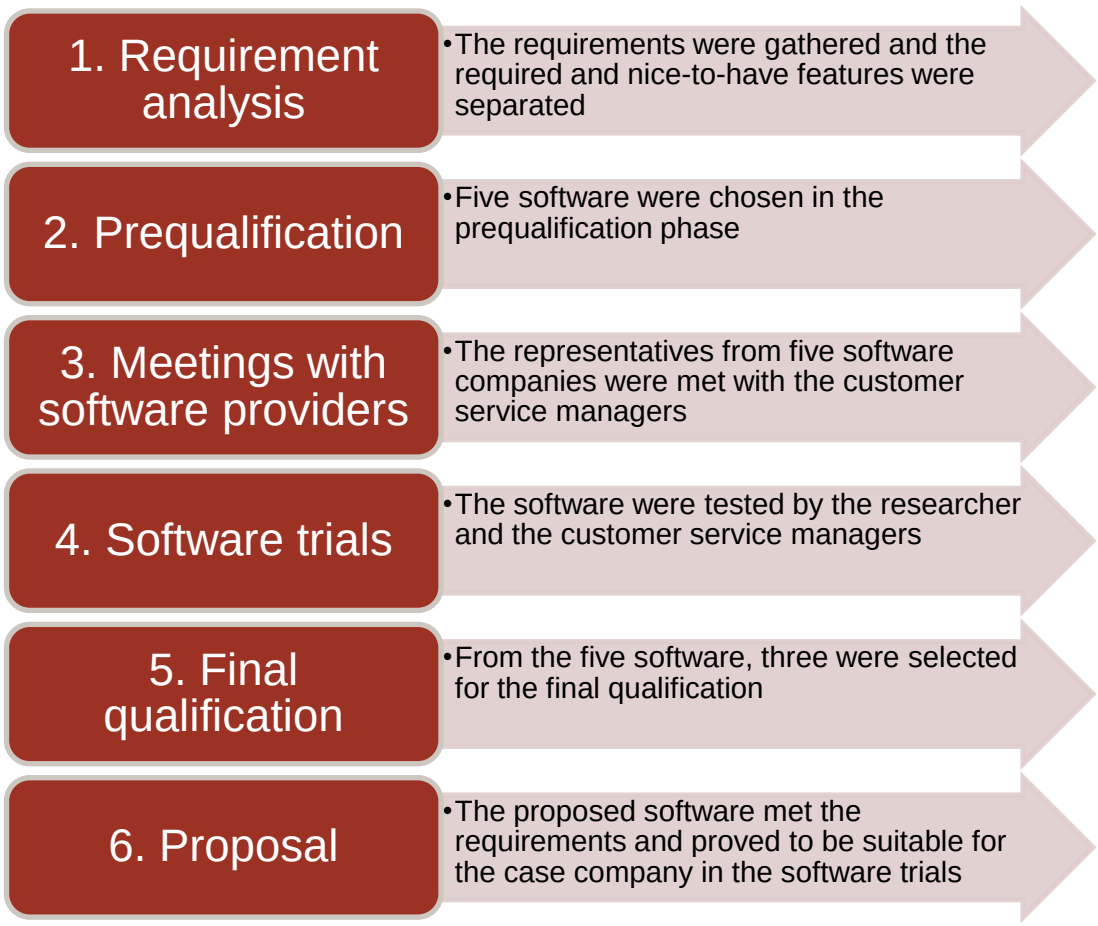

Figure 5.1. Process of the proposal building.

Based on the results from the employee survey and manager interview, the researcher created a requirement analysis for the new workforce management system. The analysis consisted of the required features and those features, which would not be required but would be useful or nice to have. Second phase of the proposal building was prequalification, where five software pieces were chosen. In the third phase, there were meetings arranged with the representatives from the five software companies, thereafter the five software pieces were tested within short trial periods. Fifth phase of the proposal building was final qualification, where three from five initial candidates were selected. Finally, after a careful analysis based on the requirements and results from the software trials, a proposal for the case company could be created.

The stakeholders, which in this context means the customer service managers, were tightly involved in the proposal building. There was an ongoing discussion throughout the proposal building process with the customer service managers, who actively brought up suggestions for the proposal, attended the meetings with the software company representatives and participated in software testing.

5.2 Software Prequalification Phase

The case company belongs to a software division of a larger corporation and therefore the management team had an additional request, that the mapping should include at least one option from the HR software offering of the division. From this offering, two systems, TyövuoroVelho and MaraPlan were chosen for the initial analysis. In addition to them there were three software, Teleopti, Tymeshift and Koho, from which the last one was already used by the consultancy team of the case company for work time management.

At the time of the project, Koho was actually more of a project management system, but the system provider offered a possibility to customize the system so that it would also be suitable for a contact center to use in workforce management. Therefore, altogether five software were chosen for the prequalification phase.

After a short software trial period and a meeting with the consultants from TyövuoroVelho and MaraPlan, it was however found out that either of the software cannot be considered in the final analysis, because they did not match the requirements. The biggest problem with the two software was their dependency with the collective agreement, which seems to be common especially with similar Finnish software. In this specific case, the need would be instead of doing scheduling based on working hours, only to divide intraday tasks among team members.

It was also noticed while using the trial version of TyövuoroVelho, that the dependency with the collective agreement makes it more complicated to divide tasks and decreases the flexibility in planning. Some of the challenges could have been avoided by tailoring the software, but the service managers of the case company saw that this would only cause too many possibilities for errors.

5.3 Final Qualification Candidates

In this section, the three software candidates, Teleopti, Koho and Tymeshift, which were chosen for the final qualification, are briefly presented.

5.3.1 Teleopti

Teleopti WFM (Workforce Management) was originally created and provided by a Swedish workforce management software company Teleopti Inc., which was acquired in 2019 by an American software company Calabrio Inc (Minneapolis/St. Paul Business Journal 2019).

Teleopti WFM is a comprehensive and flexible solution, which is suitable for different companies regardless of the size and industry. It is offered either as on-premises or cloud installation, can be integrated to other platforms used by the company and includes a mobile app, where the users can view and manage their work schedules. The basic setup of the product (Base) includes functions for example for multichannel forecasting based on the historical data of the company, multi-skill scheduling, shift planning and optimization and intraday shift management. The optional, additional modules and packages allow for example vacation planning, trading shifts between employees, calendar synchronization, integrations, and more comprehensive reporting. An important goal for Teleopti WFM is employee involvement, as the employees can check and trade shifts, express wishes for shifts and holidays and mark their availability for example for overtime. (Teleopti 2019.)

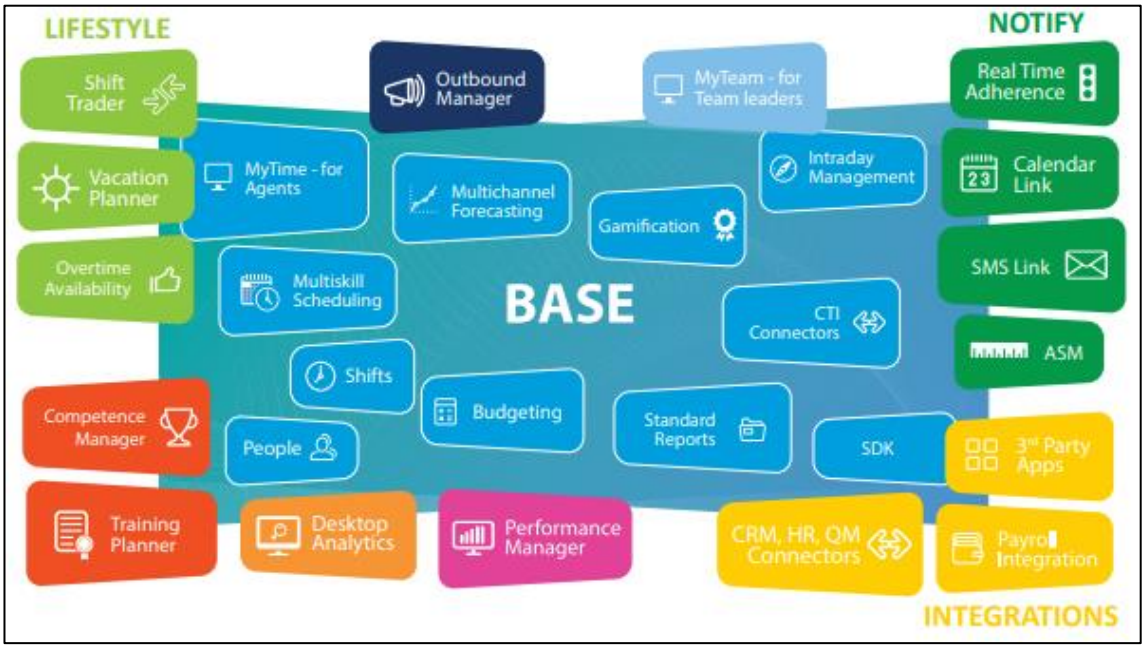

Figure 7.1. Teleopti (2019).

5.3.2 Koho

Koho is a comprehensive, cloud-based ERP (Enterprise Planning) system provided by a Finnish software company Koho Sales Ltd. The main focus of the system is on project management and therefore all of its features are connected to activities related to project management.

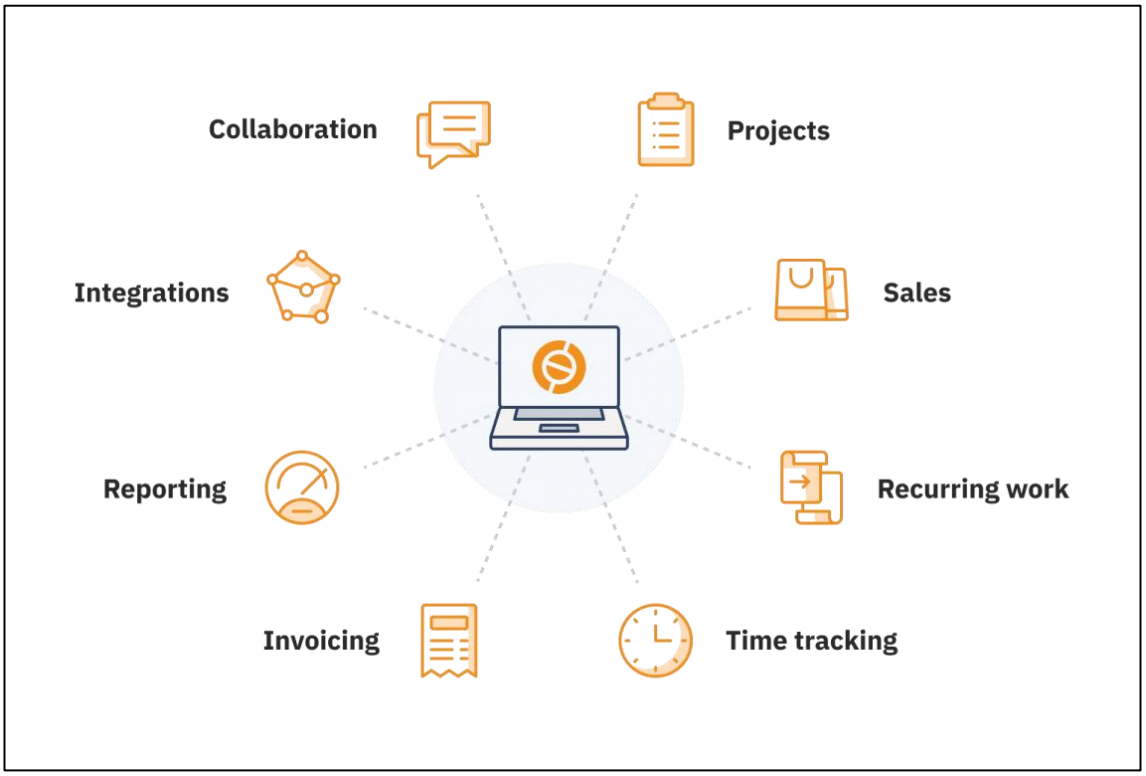

Figure 7.2. Koho (2019).

Koho is already been used in the case company to manage projects related to the financial management system implementations for the customers. Instead, in the customer service unit the need would be only for the features related to time tracking. However, while discussing with the sales person from Koho, it turned out that the time tracking would not be suitable to the case company as such, but it would require both some tailored features to the system and possible changes in the processes related to workforce management in the case company.

5.3.3 Tymeshift

Tymeshift workforce management is an application created and provided by an American software company Tymeshift Ltd. Key features of Tymeshift are listed below (Zendesk Marketplace 2020):

- **"Time & attendance**: automatically track time spent on Zendesk tickets, chats, and calls. Track your agents Zendesk Talk states and create custom AUX states for lunch, breaks, and other activities.
- **Real-time monitoring**: see what your entire team is doing in real time and across all channels.
- **Occupancy & utilization**: understand what percentage of time agents spend working on their core support activities.
- **Scheduling**: fast and easy! Create detailed intraday schedules and view staffing across all channels. Even better - agents can view their schedule without ever leaving Zendesk.
- **Schedule adherence**: understand how well your agents are adhering to their schedules by overlaying their actual activity vs. expected schedule or via a percentage score.
- **Agent scorecards**: transparency boosts productivity! Make custom scorecards for your agents with the metrics that matter to your organization. Agents can check their scorecards inside of Zendesk.
- **Notifications**: configure custom rules and get alerted when things are going awry. Notify team leads at their emails, Chrome, or Slack, when an agent logs in late or if they're in an idle state for too long.
- **Forecasting**: plan by forecasting the number of contacts you can expect across all channels and how many agents you'll need to handle them."

5.4 Summary of the Proposal Building

After the current state analysis, the challenges in the customer service of the case company were confirmed. Increasing efficiency and ensuring fairness and flexibility were chosen for the focus points in this study. The actual proposal building included altogether six phases, of which the first one was to create a requirement analysis for the workforce management software. Second phase was prequalification, where five software candidates were chosen and thereafter there were meetings held with the representatives

from the software companies in question. Fourth phase consisted of short software trial periods, thereafter three candidates were chosen for the final qualification. Finally, a proposal was created based on how well the requirements were met and what were the results from the trials. There was a close collaboration between the researcher and the customer service managers throughout the proposal building and the project as a whole.

5.5 Recommendations for the Case Company

For a service supply chain, it is critical to be able to match the supply with demand efficiently. It can be very difficult and complicated to achieve, as services are intangible and perishable, which does not offer service manager a buffer that is available to manufacturing managers and establishing and measuring suitable capacity levels for a ser-vice operation are often highly subjective and qualitative tasks (Sasser, 1976). In a multi-channel contact center, this can lead to issues as poor resource utilization and therefore long waiting times for the customers and eventually decrease in customer satisfaction.

Modern technological solutions as especially automated workforce management can however improve the contact center performance. Based on historical data and given parameters and with complex mathematical algorithms it is able to for example forecast contact volumes which with it can calculate the required number of agents at given time and make scheduling automatically even in few minutes. In addition to this, it can take holidays and other absences into account and react to exceptional situations or contact volume peaks. With around 30 agents, which the customer service in the case company currently has, it takes almost two days to make the schedule manually for two following months. When a workforce management system can do the same task in few minutes, it significantly saves working time from the service manager. Time savings can also be reached in exceptional situations as with sudden absences as the system can react automatically to them. As discussed in chapter 4.3., first contact resolution rates and agent productivity can be increased compared to manual workforce management which means that resource utilization can be improved and customer waiting time reduced, when also customer experience is improved.

If we look back at the research problem in the customer service of the case company, the issues in the service supply chain are related to resource allocation and utilization and the question was, could automated workforce management be one solution for the

situation. The evidence based on articles and case studies shows that automated workforce management can improve the performance of the service supply chain. Moreover, embracing technology in workforce management has based on the best practices discussed in Section 4, helped other companies to increase efficiency and ensure fairness and flexibility. Therefore, it would be recommended for the company to introduce this kind of system in the near future.

After analyzing the selected software based on the requirements and results from the software trials, Teleopti has clearly the most comprehensive capabilities. It would help the case company to tackle most of the issues brought up in the current state analysis.

As for the focus points for this study, Teleopti would enable multichannel forecasting based on the historical data, which would most likely help in increasing efficiency in the customer service. More comprehensive reporting would also give customer service managers tools for how to ensure that the workload and shifts are divided fairly. Cloud installation of the software and mobile app would offer more flexibility to the employees, as well as the possibility to trade shifts among each other.

Based on the experiences from the trial with Teleopti, it was noticed that the scheduling could be performed fast even for a long period ahead and the shifts were easy to check and modify, if necessary. Teleopti has the basic setup of the product (Base) and it can also be expanded with several additional modules and packages, which could become useful when the customer team keeps growing. Therefore, the secondary recommendation for the case company is to implement Teleopti as a tool for workforce management.

6 Validation of the Proposal

This section provides a report on how the proposal was validated in the case company. The final outcome of the project is presented at the end of this section.

6.1 Overview of the Validation

In the beginning of the project, it was agreed that the validation of the proposal will be done by the Service Management team of the case company. The team consisted of the Service Lead, who was also part of the Management team of the case company and seven Service Managers leading the customer support and consultancy teams. The two customer service managers, who were participating the software representative meetings and software trials, also belong to the Service Management team. The proposal was presented to the team in their monthly meeting. The presentation lasted for half an hour, whereafter the proposal was discussed by the participants for half an hour.

6.2 Feedback Received on the Proposal

The feedback received from the Services Management team was very positive and the team members were especially impressed with the broad spectrum of the features a workforce management system can include. They were also praising the comprehensive research on the system requirements and evaluation on the different system options. Team members also considered the employee input and activity during the project as surprisingly positive.

As the issues, which the customer service team was facing, had already been discussed for a longer time period, the meeting participants agreed that the need for a modern workforce management system would be justified. There was a short discussion on whether the shift planning could be still continued with Excel but it became clear very soon that this would not be possible. The main reasons for this according to the discussion were the lack of forecasting and reporting possibilities and difficulties with the shift planning processes.

From the feature and usability perspective, the Services Management team members agreed that Teleopti would be the most suitable choice for the customer service. However, the price of Teleopti software was relatively high and it became problematic since

there was also an ongoing cost reduction initiative in the case company and the cost could not be accepted by the Services Management team.

6.3 Final Outcome

After the initial proposal for the software was rejected, there was a brief discussion on other software candidates, which were chosen for the final qualification.

Out of the three candidates, Tymeshift WFM was the second to fulfil most of the requirements and it was also preferred by the customer service managers due to its usability and ready-made integration to Zendesk ticketing system, which was used in the customer service for processing contacts received in different channels. The initial setup of Tymeshift would take under a week and the price for the software was five times less than the price for Teleopti. After the meeting, the decision was to implement Tymeshift WFM.

There was also a brief discussion about the future prospects and the Services Management team members saw that Teleopti could be taken into consideration again at some point in the future, when there would be a need for a more robust solution. As the pricing of Teleopti is based on volume, which means that the monthly fee will start to decrease after a specific number of agents, it would be more justified to implement it later in the future also from this perspective.

7 Summary and Conclusions

This section contains a brief summary of this thesis in addition to evaluation on how the initial objective is addressed. The section ends with closing words from the researcher.

7.1 Executive Summary

The aim of this study was to examine the shift planning challenges in a multi-channel contact center and strive to find a suggestion for improvement to tackle the challenges in the case company. The thesis objective was to create a suggestion of possible digital tools for effective organizing of work in versatile customer service.

The case company of this study is a Finnish provider of a cloud-based financial management software. In 2017, the software was used by over 23,000 companies and 800 accounting offices in Finland, Denmark, Norway and Sweden. At that time, the customer service unit consisted of 30 customer advisors helping the customers with questions related to the use of the software.

The target with the current state analysis was to create a comprehensive view of the challenges the case company was facing with the shift planning and to find out, whether there is a need for a modern workforce management system. The first phase of the analysis included examining the statistics related to how efficiently the customer contacts were processed in the customer service unit. The second phase was about finding out the main challenges with shift planning from the employee point of view and here a survey was used. In the third phase, two customer service managers were interviewed to get their view on the challenges.

The results of the current state analysis show that there were versatile challenges with managing workforce in the customer service of the case company. First, according to the customer contact statistics, the service level targets were not met, as the answering rate had been declined and first-reply time had increased especially during the first quarter of 2017. Second, the employee survey showed that there were mostly issues with readability and usability with the shift list, but the employees were also hoping for more flexibility with the shifts. Third, in the interview the customer service managers brought up

also usability issues in addition to the lack of visibility backwards to the shifts and opportunity to involve employees in managing the work shifts. When viewed from the organizational perspective, the most reasonable choice was to focus on how to increase the efficiency and performance of the customer service, which in practice meant concentrating on the monitoring and forecasting capabilities. The secondary focus was on how to ensure fair division of workload and tasks and to increase flexibility in the customer service.

The results of the current state analysis formed a basis for the choice of literature. Thus, the conceptual framework consisted of three main areas, building an understanding on the nature of a modern contact center, describing what is included in workforce management and creating a view on what kind of value automated workforce management offers to the company. Based on the existing knowledge found in available literature, it became clear that the proposal for the case company should focus on a recommendation for the introduction of a digital tool for workforce management and more specifically for shift planning. Thereafter, the initial proposal for the case company was built by examining and qualifying different workforce management systems with input from the customer service managers. The system that best met the requirements was Teleopti, which would help the case company to tackle most of the issues brought up in the current state analysis.

The initial proposal was presented to the Services Management team in their monthly meeting. Feedback received from the team, which also included the Service Lead, was positive, but due to relatively high costs of Teleopti, it was rejected. After further discussion in the meeting, the decision was to implement Tymeshift, which had considerably smaller monthly fees.

7.2 Thesis Evaluation

The thesis objective was to create a suggestion of possible digital tools, which would facilitate organizing of work in a versatile customer service environment. In my opinion, this thesis manages to address the objective in full, as the proposal included a modern workforce management system. The research also consisted of logical steps starting with analyzing the statistics confirming the scope of the issues and continuing with gathering views from both employees and managers of the customer service unit.

However, the main limitation with the research from my point of view is the lack of deeper analysis on the costs of the system. As there was a relatively large difference in the monthly fees of the software candidates, this should have been better taken into account when building the proposal. It could have included for example calculations for the Return of Investment, which is often used when evaluating new system, and reasoning for choosing the option with higher monthly fees. Another limitation is related to the criticism towards inhumanity and misuse of the modern workforce management systems, which seems to have arisen during recent years. It would have been interesting to include argumentation against the systems in the research.

Additionally, the survey questions' answer options could have been improved. For example, some of the questions included "No opinion" option, which did not provide any value to the research. Therefore, those questions could have been formulated in a different way. It would also have been good to ask the survey respondents to mark the priority to each survey question, which would probably have helped with prioritizing the needs and requirements. Finally, it would have been interesting to include a feedback research to find out, whether the workforce management system had improved the situation but due to lack of time this was not possible at this point.

7.3 Closing Words

The process of completing this thesis was unexpectedly long and tough, as I was working full time during the whole thesis process. I had to learn to prioritize my time better and find more efficient ways to relax after long days of working and studying. At the same time, the process was very rewarding, as I got the opportunity to do the research for my former employer and to search for a solution to a concrete problem the company was having at that time. I feel that during the process my skills in analytical reasoning and critical thinking have been clearly improving.

As final words, I want to express my gratitude to my family and closest friends, who have been supporting me with completing the thesis. I am also grateful to my former employer for giving me the opportunity for continuous improvement and my current employer for flexibility, when I was finalizing this thesis.

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Appendix 1

Employee Survey Questions (translated from Finnish)

1. Which product line's customer service do you work for?
    - Product line A
    - Product line B

2. How long have you been working in the customer service of product line A or B?
    - 0-2 years
    - 2-4 years
    - 4-6 years
    - 6-8 years
    - Over 8 years

3. Do you get to know your work shifts early enough?
    - Yes
    - No
    - No opinion

4. Do you find the work shift list as:
    - Clear
    - Quite clear
    - Quite ambiguous
    - Ambiguous

5. If you need to change the shift, how is it in your opinion?

- Easy
- Quite easy
- Quite difficult
- Difficult

6. In your opinion, how does managing the exceptional situations related to work shifts (e.g. when colleague gets ill) currently work?
   - Very well
   - Quite well
   - Quite badly
   - Very badly

7. Do you consider the current work task cycle as fair?
   - Yes
   - No
   - No opinion

8. What kind of work cycle would you think would be most effective?
   - Current cycle
   - Half day shifts (e.g. phone in the morning, email in the afternoon)
   - Other: _____

9. Do you consider it easy to provide wishes related to work shifts?
   - Yes
   - No
   - No opinion

10. Have your own work shift wishes been fulfilled in the way you want?

    - Yes
    - No
    - No opinion

11. Do you think it would be important to be able to check the work shift list on a mobile device?

    - Yes
    - No
    - No opinion

12. Provide your own thoughts related to the current work shift planning in the customer service, and how should it be developed?

Appendix 2

Questions of the Manager Interview (translated from Finnish)

1. What kind of wishes and requirements do you have for the possible WFM system?
2. Which of those wishes and requirements you mentioned above, you would prioritize?
3. What kind of requirements for reporting possibilities do you have?
4. How long does it take for you to create a work shift list currently?
5. What are the future prospects related to customer service operations?
6. What are the service level targets in the customer service?
7. Do you have some other things you would like to bring up?