Thien Le

Developing Service Quality Measurement Approach for the Wholesale Banking Operation Unit of a Bank

Helsinki
Metropolia
University of Applied Sciences

My study journey has been very interesting and challenging. The journey helped me to grow and be more professional by introducing me ideas and ways to plan and do rigorous ground work before the actual execution. I learned how important it is to be very clear of your object before doing any work. The work should be strictly done to achieve the objective and only then it is meaningful.

I want to humbly express my gratitude to Mr. Z who help me by introducing me to the WBO unit of the bank. Thank you, Head of Customer Service, for giving me this opportunity to showcase my skills.

Thank you, teachers, for giving such helpful guidance. It was a long journey to crystalize the objective of this thesis and I want to thank Dr. Thomas Rohweder for sharing his brilliant insights for me to achieve it. My professional English writing skills have improved a lot thanks to Zinaida Grabovskaia and Sonja Holappa and want to specially thank you for the patience you had for me.

Thank you, all the stakeholders for interviews and workshops. The experts in the WBO welcomed me well and helped me to get right information's and contacts. I want to emphasize that this study was done as a co-creation and it would be impossible without the input of the WBO unit.

Thank you, classmates for the support. The class spirit was very high and I think it motivated us all to graduate. Thank you, family members and friends for believing in me.

Thien Le
Helsinki
April 24, 2017

Author Title Number of Pages Date	Thien Le Developing Service Quality Measurement for the Wholesale Banking Operation Unit of a Bank 55 pages + 4 appendices 24 April 2017
Degree	Master of Engineering
Degree Programme	Industrial Management
Instructors	Dr. Thomas Rohweder, Principal Lecturer Zinaida Grabovskaia, PhL, Senior Lecturer Sonja Holappa, Senior Lecturer

This thesis focus on one of the problem area found in the Customer Satisfaction study made for the Wholesale Banking Operation Unit (WBO) of the bank. The selected problem is poor accessibility to phone service. Accessibility to Service is one of the strategic focus points of the bank. It is necessary to measure the problem to manage it. Therefor the objective of this thesis is to develop a set of suitable Key Performance Indicators and a measurement of Service Quality of Phone Accessibility.

This thesis reveals that the WBO unit needs to urgently act to improve Phone Accessibility Service Levels. Phone calls are answered too slow and too many customers are hanging up the phone before accessing to the service.

Good customer service is also about avoiding doing anything that could annoy the customers. Letting customers to wait on the line annoys them. Better Phone Accessibility would improve customer satisfaction and therefore also improve customer loyalty and profitability.

The measurement model can be replicated to other problem areas and introduced to other departments of the bank.

The customers might be annoyed if they are always bothered with survey questions. The measurement model is not based on survey questions and can be repeated periodically without annoying the customers.

Keywords	Service Quality, Key Performance Indicator, Measurement, Accessibility, Banking Industry, Customer Satisfaction

Contents

Helsinki
Metropolia
University of Applied Sciences

List of Figures

List of Tables:

1   Introduction

This thesis explores the use of generic customer satisfaction measurement data to create a more pragmatic Service Quality measurement model that the bank can use to improve its services. The banking industry is heavily regulated and the only way to differentiate is to be more customer centric than competitors. This means providing better services to satisfy the customer. To continuously improve the service level of the bank, the bank needs to have means to measure service quality. In the end, any service improvement should have a positive effect on customer satisfaction levels.

Business practice suggests that satisfied customers are more likely to use the service again and thus generate more revenue. Satisfied customers are more likely to promote the company to their own personal network, which in turn will help the company to attract more customers. It is crucial to the bank to know where in the provided service the customer is not satisfied so that the company would know what to improve. Unsatisfied customers will change to another bank and, in the worst case, spread poor report by word of mouth about the bank to their networks leading to fewer potential customers. As Jim Proebstle, a famous consultant and president of Prodyne Inc. and NAMA knowledge source partner says:

> *''Customer Satisfaction is a proactive, offensive strategy in every business'' (Refermat, 2010)*

As such, the first logical step to improve service should be to measure service quality in a meaningful way that would give crucial information for the next steps.

Following this logic, this Thesis concentrates on developing the service quality measurement model that indicates to improvement areas that would lead to higher customer satisfaction. With this information, the bank can evaluate their service levels effectively and informatively.

1.1   Business Context

The case company of this Thesis is a bank, and the case unit that the study is carried out for is the Wholesale Banking Operation Unit. This unit serves Finnish speaking cus-

tomers in wholesale banking. This unit mostly serves corporate and institutional customers that require services in Foreign Exchange and Money Markets (FXMM) and Custody Services.

1.2   Business Challenge, Objective and Outcome

The case company's strategy is to be customer centric. To implement this strategy in the Customer Service unit the first step is to find a way to measure service quality to manage the service level. The bank has ordered an annual customer satisfaction benchmark study from an external consulting company, and the bank receives the result once a year. The benchmark is used for comparing how their service compares to other banks but it is too generic and is not pragmatic enough to be utilized as a service development tool. This benchmark makes a foundation for developing a more pragmatic Key Performance Indicator (KPI) based measurement approach model that shows where and what to improve.

Accordingly, the objective of this study is to develop a KPI-based measurement approach to perform more detailed service quality measurement using a select problem area as an example for the Wholesale Banking Operation unit in Finland.

The outcome of this study is, thus, a KPI-based measurement approach and a detailed service quality measurement for one case example.

1.3   Thesis Outline

The scope of this study includes developing a set of KPIs for one problem area and the KPI measurement of it. The study uses the problem areas found in the Customer Satisfaction survey to analyse how the Unit could get service quality information independently. One of the problem areas is chosen to find out what kinds of KPIs could be useful in operationalization of the problem.

This thesis is written in seven sections. Section 1 contains the thesis introduction. Section 2 describes the methods and materials used in this thesis. Section 3 contains the current state analysis (CSA). This section gives the understanding of what kind of customer satisfaction data is valuable to the unit and what kind of data is already available.

This understanding is obtained based on interview analysis and process descriptions. Section 4 contains a literature review where existing knowledge about the issues raised in Section 3 are discussed. To address the issues found in Section 3, a conceptual framework is built from the relevant elements of theories and existing knowledge. In Section 5, the conceptual framework is used together with key findings found in the CSA to build an initial proposal; this proposal is built in co-creation with WBO unit. Section 6 discusses the results from testing the initial proposal in a pilot run. Section 7 summarises the findings of the study.

2   Method and Material

This section describes the research approach, research design and data collection and analysis. The goal of this section is to give an overall picture of how this study was conducted.

2.1   Research Approach

The research approach selected for this study is a qualitative case study. Qualitative case study is a research approach that takes a problem or a challenge and thoroughly investigates its environment and root causes or Robert K. Yin says:

> ''A case study is an empirical inquiry that investigates a contemporary phenomenon within its **real-life context**, especially when the boundaries between the phenomenon and the context are not clearly evident. The case study inquiry copes with the **technically distinctive situation** in which there will be **many variables of interest** that data points and as one result relies on **multiple sources of evidence**, with data needing to converge in a **triangulating fashion**, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis." (Yin 2003: 13-14)

Qualitative research uses qualitative data collection methods, such as interviews and workshops. This is especially true for the case study which typically relies on:

> ''Public information, company-internal documentation and implicit/explicit knowledge collection (workshops, interviews) in-house or using benchmarks of competitors, similar units in other fields.''(Huhta 2014)

The data provides a holistic picture of the current state to pin point problem areas that need to be fixed.

In this study, the author acts as an external consultant that focuses on exploring the insights coming from the case company's experts, with the aim to learn about the case and share this learning with the case company. The case company is then left to act upon the learnings and insights from the case.

Helsinki
Metropolia
University of Applied Sciences

This study is a prototype testing to a theory. The theory that is tested is the recommended solution. It is tested on one problem area and it will be reviewed how well it will be replicated to other substances.

2.2   Research Design

Research design is a framework that illustrates how the research is executed. The research design in this study has five steps and three data rounds with four outcomes, as shown in Figure 1 below.

Objective

To develop KPI-based measurement approach to perform a more detailed service quality measurement using a select problem area as an example

Current State Analysis

- Service Descriptions
- Case company's requirements of the approach
- Identifying key problem areas from the mother study
- Identifying existing more detailed data-sources

Data 1
- Interviews
- Process Descriptions
- List of IT Data Sources

Outcome:
Key Findings

Literature

- Best practice of establishing service quality KPI measurement

Outcome:
Conceptual Framework

Building the KPI Proposal

- Define service quality KPIs and measurement model
based on CSA findings and CFW

Data 2
- Workshops with WBO expert

Outcome:
Initial Proposal

Validation of the KPI Proposal

Outcome:
Tested and potentially corrected measurement

Data 3
- Head of Customer Service's and WBO expert's Feedback

Figure 1. Research design of this study.

As seen in Figure 1, the first step was to define the objective. The next step is to conduct the current state analysis (CSA) on Customer Services of WBO unit with Data 1. The CSA is done by gathering and analysing the primary and secondary data. The outcome of this step is the key findings of the CSA. The findings from Data 1 serve as a guideline for what to look for in literature. Therefore, in order to search for valuable input from existing knowledge and literature, the study needs to identify the needs and challenges of the case company. Only then will it be possible to find literature that is valuable to the study. With these key findings, the next step is to use them to find relevant existing knowledge from literature and best practice, in order to build a conceptual framework. The conceptual framework will serve as a tool to build a relevant, knowledge based proposal for the case company. Thus, this study aims for a synthesis of input from relevant theories that support building the solution.

The conceptual framework in this study serves as a draft of elements and methods to build a unique service quality measurement model, tailored for the context of the case company. Then, the conceptual framework and key findings from the CSA are merged into the initial proposal, and introduced to the case company's experts through co-creation. The initial proposal is built in the workshops used as means for co-creation. In these workshops, the experts evaluate the draft and give comments and inputs to improve it. This is a method to confirm that the proposal will be useful and meaningful to the case company. The comments and inputs will serve as input (Data 2) to the initial proposal. In this manner, the Initial proposal for the service quality measurement model is built.

The initial proposal is tested with one of the problem areas. This means extracting service quality measurement data and applying it to the initial proposal approach to analyse the data. The proposed approach is then fine-tuned based on the results, and feedback (Data 3) is analysed to build the final proposal.

2.3   Data Collection and Analysis

This study uses three rounds of data collection, 1-3. The details of data 1-3 collection rounds are summarized in Table 1 below.

The primary data for this study comes from interviews and workshops as well as internal documents from the company. The case company provided Customer Journey Descriptions (Appendix 2 & 3) that help to create Service Descriptions (Table 2). In addition, this study also uses the secondary data.

The secondary data is the annual customer satisfaction benchmark study ordered by the case company from an external consulting company, and the results of which the bank receives once a year. The benchmark is used for comparing how the case company's service compares to other banks' service. This benchmark is used since it makes a foundation for developing a more pragmatic and systematic model to gather service quality data that would show where and what to improve. The current annual customer satisfaction benchmark study is considered too generic and is not pragmatic enough to be utilized as a service development tool.

With both the primary and secondary data, the study provides a holistic view of the business challenge and its immediate environment.

Figure 2 below shows details of data 1-3 collections.

Data collection point	Data Source	Content of data collection	Outcome of data collection	Participants	Date & duration
Current State Analysis					
Data 1a	Documents	Service Descriptions	Understanding of measurement environment	From Head of Customer Service	15.01.2017
Data 1b	Documents	Customer Journey Descriptions	Understanding of customer touch points	From expert 2 and Head of Customer Service	15.01.2017
Data 1c	Interview	Measurement expectations	Understanding of requirements	Head of Customer Service and 3 experts	18-27.01.2017 30min-1h
Data 1d	Interview	Operation systems and measurement points	Understanding of available usable data	2 IT experts	08.02.2017 1h 13.02.2017 1h
Building proposal for KPI's					
Data 2a	Workshop	Inputs to proposal	Initial Proposal	With expert 1	15.03.2017 1h
Validation of Proposal					
Data 3a	Workshop (via email)	First extract of service quality measurement	Initial measurement result	With expert 1	16.03.2017
Data 3b	Workshop	Feedback of measurement	Improvement inputs	Head of Customer Service and expert 1	29.3.2017 46min

Figure 2. Details of data 1-3 collections.

As shown in Figure 2, data collection is done in three rounds.

Data 1, for the current state analysis, collects data to gain an understanding of the case company's operating environment and the current tools for measuring customer satisfaction and the expectations. Data 1 is used to find the gaps in the current practices for measuring customer satisfaction. These identified gaps will later guide the search for useful existing knowledge and best practice from literature. The relevant elements identified from literature are then merged into the conceptual framework that is built based on best practice and theories. After that, the conceptual framework is used to build a proposal for the case company, with the help of experts.

The interviews conducted for Data 1 collection used question templates that were specially designed for them. In Data 1c collection, the Head of the Customer Service and three experts from the WBO unit were interviewed. In Data 1d, two IT experts were interviewed based on the findings from Data 1c. Questions for Data 1 interviews and a summary of the field notes can be found in Appendix 1.

Data 2 collects data to build a proposal for the case company, with the help of the case company experts. These data are collected from the workshops conducted in the case company. Data 2 was constructed with the Expert of the WBO unit, who was appointed to help by the Head of Customer Service. Questions for Data 2 interviews and a summary of the field notes can be found in Appendix 2. The outcome of Data 2b is the initial measurement result.

Data 3, validation of proposal, was gathered from workshop with the WBO unit gives improvement suggestions to the suggested measurement model. A summary of Data 3 field notes can be found in Appendix 3.

Next section is the beginning of the research. As mentioned in research design, it is the current state analysis of the Customer Services of WBO unit.

3   Current State Analysis

This section discusses about the context of the current service of the bank and the current means for evaluating customer satisfaction. The sections starts by describing the service (in Section 3.2) and the analysis of the key issues found with report templates (in Section 3.3). It summarize the issues that are needed to be solved in key findings in current state analysis (in Section 3.4).

3.1   Overview of Current State Analysis Stage

The goal of the CSA is to describe and analyze the current situation and explain what is currently available as the means for measuring customer satisfaction, what is currently possible to measure with these means, and what is not in; as well as to establish what is needed for measuring service quality in a pragmatic and systematic way. To reach this goal, the Current state analysis follows a three-step logic.

The first step aims to understand the operating environment with Data 1 documents 1A (Service Descriptions) and 1B (Customer Journeys) and identify the key issues related to Customer Satisfaction.

The second step uses the key issues to conduct 1C (Requirements and needs analysis) interviews to find out what kind of data elements are needed to further analyze the identified issues.

The third step was done to establish if there are data elements already existing in the systems in use that can be drawn out into the reports. These insights from Data 1 are collected in 1D (Operating System and Measurement Points) interviews, with the help of an IT expert.

Finally, the CSA also gives a summary of issues that needs to be solved and argues why these issues, among many others, were selected. These selected issues will give a foundation for the search for best practice and existing knowledge in the next section, Literature review.

The findings and details of the CSA are described below.

3.2   Background of the Unit, Its Services and Customer Service Descriptions

The case unit of this study is the Wholesale Banking Operation (WBO) unit. This unit is now divided in two functions, the Foreign Exchange (FX) and Money Markets (MM); and the Custody Services.

The WBO unit has recently gone through some structural changes. Before the structural change, they had three product-groups called Fixed Income, Foreign Exchange and Derivate. After the structural change, they now have product groups called Foreign Exchange (FXMM) and Custody Services.

3.2.1   Customer Segmentation

In the current service concept, for providing high quality services, the bank needs to know to which segment the customer seeking certain services belongs to. Typically, companies do segmentation because of resource planning. For the bank, it is also important to prioritize important customer's that bring more revenue to the company compared to the other customers.

Customer Service is not using a segmentation system of their own but, uses the segmentation of the bank as a guideline. Currently, the bank uses a three-tier segmentation as shown in Table 1 below.

Table 1. Customer segmentation in the bank.

Tier #	Company Size
Tier 1	Big
Tier 2	Mid-Size
Tier 3	Small

As seen in Table 1, there are three types of customers: Tier 1, Tier 2 and Tier 3. Tier 1 customers are the most important and they have their own key account managers. Tier 1 customers always have top priority in Customer Service.

Currently, criteria for the segmentation includes Revenue/ Volumes per Today/Yesterday, Revenue/ Volume potential, Cross-Asset, where revenues are sum up from all the

product categories and Service effectiveness where the service value is compared to revenue potential.

In the WBO Unit, the FXMM customers are companies. The customers of Custody Service are Asset Managers. Asset Managers manage their own customers' assets and they represent their customers in front of the bank. All the asset managers are treated equally but revenue and revenue potential have an effect if there is a need in changing of the pricing or/and customer activity has changed from agreements.

From the customer's perspective, the WBO unit in its both functions, i.e. Foreign Exchange (FXMM) and Custody Services, have one point of service entry, namely the Customer Service. In the next Section 3.2.2 the Customer Service is described.

3.2.2   Customer Service in the Unit

The Customer Services are responsible for customer's overall customer satisfaction because they are the customer interface. The main communicating tool with the customer is email and telephone. They have one Microsoft Outlook mailbox and one common Skype telephone service number where the customer can contact the Customer Service. After the initial contact by the customer, a handler from Customer Service will pick up the case and then there might be communication through the handler's own email address or phone number.

FXMM and Custody Services have different kinds of services and the future goal of the Customer Services is that all the handlers would master all of them. The current services of the Unit are summarized in Table 2 below.

Table 2. Service descriptions of FXMM and Custody Services.

FXMM	Custody Services
• Receive and deliver customer's payment instructions and preferences • Modify deal's details • Contact to recall payment • Resending confirmation or payment reset documents • Sending market value report • Contact customer to inform correct FAX or email adress • Correct if there is descrepancy in confirmation • Discuss with local relationship manager about poor return confirmations • Daily dialogue with the customer to confirm amounts, value dates and payment instructions • Problem solving and error handling, the customer service is between customer and the stakeholders	• Providing swift templates • Demonstrating eCustody • Help in sending settlement instructions • Receive and process new open bond • Inform the client if the client's position is insufficient or the account is incorrect • Check and help if tranfers not settled or instructions not processed • Help in cancellations • Inform the customer of the new account and Standard Settlement Instructions • Handle the communication with subcustodians in reconcilliations

As shown in Table 2 above, the main responsibility of Customer Services is to make sure the service is smooth and stress-free for the customer throughout the service process. The similarity in these two services is proactively checking that the needed information is sufficient and correct.

As mentioned before, currently, Customer Service acts as one point of entry for the customer. Table 3 below shows contact preferences of the customer.

Table 3. Contact preferences of the customers (from the Annual customer satisfaction benchmark study, 2016).

All Organisations, %	2016	2015
Preferred way of contact & competence		
One singular contact person, generalist that covers all areas	10	15
Several contact persons, one for each product area, that are product specialists	5	15
A group number to generalists that cover all areas	46	24
Several group numbers, one for each area, to product specialists	18	27
Indifferent/no opinion	21	18

As seen in Table 3, 46% of the customers in 2016 preferred ''A group number to generalists that cover all areas''. These generalists are handlers that work for customer service and they have the capabilities to solve all the issues within customer service area. It seems that it could become a trend if the growth in the preference continues like from

2015 to 2016.This preference matches the WBO's goal to train all the Customer Service handlers to be these kinds of generalists. The next Section 3.2.3 describes how well the Customer Service has performed compared to competition.

3.2.3   Annual Customer Satisfaction Benchmark Study (Secondary Data)

The Wholesale Banking Operation (WBO) orders annually a study from an external consultant to benchmark their services to their competitors. The last benchmark was done before the structural changes so the product groups are representing that time as summarised in Table 4 below.

Table 4. Annual customer satisfaction benchmark study 2016 (overview).

Categories	All Organisations	39 that manage their own back office
Product Segments	Fixed Income	18
	Foreign Exchange	34
	Derivatives	22
Interviewees	Person responsible for the daily administration	
	Head of back office or person referred to	
Method	Telephone interviews by TNS Sifo Prospera's interviewers	
Time Period	May 20th - June 21st, 2016	

In Table 4, the Back office highlighted refers to the Customer Service function. Since this study focuses on the Customer Service function, changes in the product groups are not harmful. The importance is to find similar kinds of problems throughout the product groups in FXMM and Custody Services. The target is to be able to find an approach to address problems in both services, FMXX and Custody Services.

As shown in Table 4, the Annual customer satisfaction benchmark study is based on interviews conducted in 39 different banks by telephone from 20 May 2016 to 21 June 2016.

In 2016, based on the results of the annual study, the performance of the bank compared to the competitors is top class, as shown in Figure 3 below. Still, the problem is that there is little difference with the competition.

Overall Performance

Rank			Score All Organisations	
16	15	16		
1	*1	4,14	Bank	
2	*3	4,08	B	
3	*3	4,07	C	
4	5	4,03	D	
5	*1	3,99	E	

Overall Performance Trend

Bank in Orange | Industry High | Industry Mean | All Organisations

Rank	2	2	4	*1	1
	2012	2013	2014	2015	2016

(values on chart: 4,07 4,11 3,95 4,03 4,14)

Bank's Performance

		All		
		Rank		Score
		16	15	16
a	Accessibility	2	2	4,11
b	Prompt Replies	2	5	4,10
c	Personal Contacts	1	1	3,76
d	Perceptive Demands & Routines	1	3	3,83
e	Product Knowledge	1	3	4,20
f	Knowledge Rules & Standards	*2	2	4,13
g	Register Information	1	1	4,32
h	Clear Confirmations	1	2	4,32
i	Good Contact Details	*1	2	4,00
j	Matches Promptly/Timely Confirmations	2	7	4,31
k	Accurate Confirmations	5	4	4,28
l	Settlement Efficiency	3	1	4,19
m	Error Handling	2	*2	4,18
n	Internal Coordination	1	2	4,07

Support Implementation of Regulatory Changes

Rank			Score All Organisations	
16	15	16		
1	13	3,80		
2	2	3,65	Bank	
3	1	3,59		
4	3	3,57		
*5	12	3,50		
*5	5	3,50		

Figure 3. Performance benchmark (based on the Annual customer satisfaction bench-mark study, 2016).

As seen in Figure 3, the bank has the best overall performance score. The trend is show-ing positive development since a big drop in 2014 in performance. In 2016, the bank is in the first or second place in almost every performance category. In category ''Accurate Confirmation'' the bank is in the fifth place and ''Settlement Efficiency'' in the third place. In these categories, there is room for improvement. In Accessibility the bank was ranked second with the satisfaction score 4,11 on a scale from one to five.

The most valuable information of the benchmark is qualitative and descriptive data that was drawn from the interviews. This data analysed customer experience descriptions and helps to analyze what kind of information is needed to tackle the issues mentioned in the interviews. Based on the results of the interviews there are six statements sum-marized from the interviews into six problem statements. Figure 4 below shows the six problem statements.

- Often have to remind **Bank** regarding Trade Confirmations, they are often late
- A little too slow in their service
- Sometimes rude and slow, need better client service and more effort to improve accessibility. And confirmations are not always correct and complete
- Error handling processes could be quicker
- Should not outsource back office to other countries, far away

1. Trade Confirmations are late
2. Service is slow
3. Service is rude
4. Poor accessibility to service
5. Confirmations are incorrect
6. Error handling process is slow

Figure 4. Customer experience statements: six problem areas (based on the Annual customer satisfaction benchmark study, 2016).

The six problem areas in Figure 4 provide the focus for the interviews conducted in the WBO unit. An interview template was created to find out what kind of data is needed to tackle the problem areas found in Figure 4. The next subsection analyses the findings from these interviews.

3.3 Primary Data Analysis (Current State, Needs and Requirements Interviews)

Four people from the WBO unit were interviewed, including The Head of the unit and three experts. According to the Head of the unit, these people should be able give a sufficient and holistic view of what kind of data is needed to further analyze the problem areas.

Next, the problem statements are analysed in more detail, describing the results of the CSA, needs and requirements interviews.

Problem statement 1, "Trade Confirmations are late"

The statement *"Trade Confirmations are late"* is related only to the FXMM side because the Custody Services do not deal with Trade Confirmations. A data report template was created to analyze the issues mentioned in this statement, as shown in Table 5 below.

Table 5. Report template, Area 1 (Trade Confirmations are late).

Data label	Confirmation sender	Customer ID		Customer type	Deal Reference		Handler	Confirmation Channel	Processing System	Receiving System	Product type
example	Customer	Customer oy		Tier 1	453654764		Mr. X	Email	Swift	Swift	FX
Data label	Type of procedure	Confirmation Received Time	Day of Week		Confirmation send time	Elapsed Time	Error type		Type of insufficient information		
example	Process Confirmation	26.1.2017 11:00	5		26.1.2017 13:00	2:00	Insufficient information		Dealers name		
	Supporting reports:										
	In use:	Audit log	Status log								
	Not in use:	System update log	Average respond time report								

As seen in Table 5, "Confirmation Sender" indicates if the confirmation was sent by the customer or the bank and this enables choosing the point of view. Customer ID indicates the name of the customer company. Customer type indicates to which customer segment this customer belongs. Deal Reference indicates the specific deal number.

'Handler' indicates the customer service worker from the WBO unit that is handling the case. 'Confirmation channel' indicates the channel that sends a confirmation to the customer. Processing channel indicates the system in the bank that processes the confirmation. 'Receiving system' indicates which system receives the confirmation from the processing system. 'Product type' indicates what kind of service is dealt with. 'Type of procedure' indicates the point in the confirmation process. 'Confirmation receive time' indicates the time confirmation was received in the processing system. 'Day of week' indicates the day of week that the confirmation was received. 'Confirmation send time' indicates the time the confirmation was sent from the processing system to the receiving system. 'Error type' indicates an error that slows the process down if there was one. 'Type of insufficient information' indicates what kind of insufficient information was involved if the error type was insufficient information.

In the interviews, the Head of Customer Services stated, as follows:

> ''There are European Market Infrastructure Regulations (EMIR) rules on how fast the confirmation is needed to be sent'' (Head of Customer Services)

As this citation illustrates, the Head of Customer Services points out that this issue is not only related to customer experience but is also heavily regulated.

Among the most important categories for the Unit, this report template in Table 3 points to the 'Elapsed Times' from the time the confirmation is received to the time it is sent forward. This report makes it possible to see what the most common reasons for delayed confirmations were to pin point problem areas. There are also possibilities to see the elapse time statistics per each 'handler', 'customer type', 'confirmation channel', 'processing system', 'receiving system', 'product type', 'type of procedure', 'day of week' and 'error type'.

Finally, the category 'Supporting reports' points to four types of supporting reports. *'Audit log'* and *'Status log'* is already in use. 'Audit log' shows the whole history of the confirmation and 'Status log' shows the time stamps of different statuses that the confirmation has had. However, the results of the interviews indicate that the Unit is currently missing *'System update log'* and *'Average response time report'*. 'System update log' would tell if the reason for the delay was a system update at that time. 'Average response time' would allow comparing different response times to the average.

Importantly, all the data needed for making this report in the report template is currently available as raw data in the FXMM legacy systems.

Problem statement 2, "Service is slow"

The statement *"Service is slow"* can only mean long response times to a customer inquiry/request. The main communicating tools are Skype phone calls and e-mail. In Skype calls, the inquiry/requests are dealt with immediately or the communication is changed into e-mail designed for Outlook, the email platform in use in the unit.

The report template summarized *the categories of customer experience* relevant to Problem area 2, as shown in Table 6 below.

Table 6. Report template, Area 2 (Service is slow).

Data label	Customer ID	Customer type	Handler	Type of procedure	Product type	Request type	Processing System	Case open time	Day of Week	Case close time
example	Customer oy	Tier 1	Mr. X	Process Confirmation	FX	Check Confirmation	Email	26.1.2017 11:00	5	26.1.2017 13:00

Data label	Elapsed Time	Handler's comment								
example	2:00	Waited information from stakeholder								
	Supporting reports:									
	In use:									
	Not in use:	System Perfomance log for all relevant systems, Warning report for next three days if expected to have low performance in any relevant systems,									
		Outlook que log								

As seen in Table 6, the key categories related to the customer experience in problem area 2 often repeat the categories already used for Area 1. In this template, 'Request type' indicates type of service request that the customer asks from the handler. 'Case open' and 'Case close time' indicates when the case was opened to process and closed. 'Elapsed time' indicates the time it took to process the case. 'Handler's comment' indicates to handler's comment if there was any special reason for delay.

> *"It would be valuable to know what the response time is to the received email and who responded in customer service" (Expert in Custody Services)*

As this citation illustrates, Expert in Custody Services points out that to analyze the problem area, the response time is the key. The response time is translated to elapsed time in the report template.

As seen in Table 5 earlier, the main criteria related to customer expectation in Area 2 also include information of 'Elapsed time' from the time when the case is opened to the time the case is closed. There are possibilities to see elapsed time statistics per 'customer type', 'handler', 'type of procedure', 'product type' and 'request type'.

Finally, the category 'Supporting reports' points to three types of supporting reports. All of the three types of supporting reports the Unit is currently missing. First is the *'System performance log for all relevant systems'* that would help to find out if the delay was because of some system malfunction. Second is the *'Warning report for the next three days if expected to have low performance in any relevant systems'*. The third report is the *'Outlook queue log'* that would show how many unread messages there are in the group inbox in a time line.

Importantly, all the data needed for making this report in the report template is currently available as raw data in the FXMM legacy systems.

Problem statement 3, "*Service is rude*"

The statement *"Service is rude"* would need more detailed information of the customer experience (CX). Currently there are no channels to obtain any CX descriptions. To get it, a customer feedback channel is required. The unit would like to have feedback as in Table 7 below.

Table 7. Report template, Area 3 (Service is Rude).

Data label	Handler	Customer ID	Customer type	Product type	Time of Occurrence	Feedback date	Customer experience description
example	Mr. X	Customer oy	Tier 1	FX	26.1.2017	27.1.2017	Mr. X hang up before I was finished with my questions.
	Supporting reports:						
	In use:	Customer profile that has customer interaction log and activity log in different product type and areas (only key account clients)					
	Not in use:	Customer Service daily task list for each handler					

In this template in Table 7, 'Time of occurrence' indicates the time of the experienced service. 'Feedback date' indicates the time the feedback was given. 'Customer experience description' indicates a free text description of customer experience written by the customer. In the interviews, the Head of Customer Services stated, as follows:

"Enough data to see trends'' (Head of Customer Service)

As this citation illustrates, Head of Customer Services points out that a single unpleasant experience does not make a case but a repeated issue does.

The report template in Table 6 would need a systematic way to sort the CX descriptions so that there would be a way to analyze statistics. If there was a systematic way then the statistics of issues found in CX descriptions could be analyzed by per 'handler', 'customer type' and 'product type'. These statistics could have time lines either by 'Time of occurrence' or 'Feedback date'. The WBO unit internal stakeholder the Customer Relation unit has customer profiles of key account customers. These profiles with 'customer interaction logs' and 'activity logs' sorted in different 'product types' and 'areas' would be helpful to the WBO in analyzing the severity of the issues found in the CX descriptions. The unit would also want Customer Service 'daily task list for each handler' to see if the issue is related to overwork related stress.

Problem Statement 4, ''Poor accessibility to the service''

The statement ''Poor accessibility to the service'' can be divided in two per the two main communication tools in use. The report templates were done separately to Skype and Outlook. The Outlook report template is shown below in Table 8.

Table 8. Report template, Area 4 (Poor accessibility to the Outlook service).

Data label	Handler	Customer ID	Customer type		Product type	Query type		Receive Time	Receive Date	Receive Time &Date
example	Mr. X	Customer oy	Tier 1		FX	Check Confirmation		11:00	26.1.2017	26.1.2017 11:00
Data label	Case open time	DOW	Time from receive to opening the case	Respond time		Time from receive to respond	Opening the case to respond	Reaction time	Number of Interactions
example	26.1.2017 12:00	5	1:00	26.1.2017 13:00		2:00	1:00	1:00	4
	Supporting reports:								
	In use:								
	Not in use:	Survey to CRU to find out how to improve customer contact points							

The report template in Table 8 can give statistic information of three kinds of response times. First is the response 'time from receiving the email to the time it was responded'. The second is the response 'time from opening the email to read to the time it was re-sponded'. The third is the difference between the first two to find out what the reaction time was from the 'time the message was received to the time it was opened'. These statistics can be analyzed per 'handler', 'customer type', 'product type', 'query type', 're-ceive time', 'day of week' and 'number of interaction'. The unit would want to conduct a survey to the Customer Relation Unit to find out if they have any suggestion on how to improve customer contact points. The same statement's Skype report template is shown below in Table 9.

Table 9. Report template, Area 4 (Poor accessibility to the Skype service).

Data label	Handler	Customer ID	Customer type	Query type	Time of Call	Call Duration	Phone number that received the call	Amount of call transfer times	Answering Time
example	-	Customer oy	Tier 1	-	26.1.2017 11:00	0:00	*050 111 1111	3	-
	Supporting reports:								
	In use:								
	Not in use:	Skype performance log, Customer experience descriptions, Skype call volume log							

The report template in Table 9 can give statistic information of how many times the calls were transferred and how long did the customer need to wait before the call is answered. These statistics can be analyzed per 'handler', 'customer type', 'query type', 'time of call', 'call duration' and by 'the phone number' that received the calls. In the interviews, the Head of Customer Services stated, as follows:

> *"If the calls are transferred several times, that upsets the customer''*
> *(Head of Customer Service)*

As this citation illustrates, Head of Customer Services points out that a high number of transfer calls indicates to a service level that needs improvement.

The unit would like to have three different kinds of supporting reports. First would be 'Skype performance log' to find out if the poor accessibility is due to Skype performance. Second would be 'CX descriptions of poor accessibility'. This would come from the feedback channel described in Table 5. The third one would be 'Skype call volume log' that would give indications of if poor accessibility is due to congestion on the phone lines.

Problem statement 5, ''Confirmations are incorrect''

The statement "Confirmations are incorrect" are also again only related to FXMM like in the statement "Trade confirmations are late". The data report template for the statement "Confirmations are incorrect" is shown below in Table 10.

Table 10. Report template, Area 5 (Confirmations are late).

Data label	Confirmation sender	Handler	Customer ID	Customer type	Product type	Deal reference	Error type	Error description	Processing system	Receiving system	Day of Occurance
example	Customer	Mr. X	Customer oy	Tier 1	FX	453654764	35354	Missing IBAN	Swift	Swift	26.1.2017
	Supporting reports:										
	In use:		Customer profile, interaction log and audit log of each case								
	Not in use:										

The report template in Table 10 can give statistic information of 'error types'. These error type statistics can be analyzed by 'handler', 'customer type', 'product type', 'processing system' and 'receiving system'. The most common error types can be further investigated by 'error descriptions' and this would pin point problem areas. The customer profile would help as a supporting report in this case too. All the data needed in this report template is available as raw data in FXMM legacy systems.

Problem statement 6, ''Error handling process is slow''

The statement "Error handling process is slow" concerns both FXMM and Custody Services. They both use different legacy systems and have different error handling logic. Data report template for FXMM is shown below in Table 11.

Table 11. Report template, Area 6 (FXMM Error handling process is slow).

Data label	Handler	Customer ID	Customer type	Product type	Type of procedure	Error type	Deal reference	Error description
example	Mr. X	Customer oy	Tier 1	FX	Process Confirmation	Incorrect Information	453654764	Wrong bank account
Data label	Processing system	Receiving system	Error entry time	Case close time	Elapsed Time	Handler's comment		
example	Swift	Swift	26.1.2017 11:00	26.1.2017 12:00	1:00	Receiving bank account inputted wrong in sales phase		

The report template in Table 11 can give statistics information of 'elapsed time' from the time the error was noticed to the time it was solved. These elapsed time statistics can be analyzed by 'handler', 'customer type', 'product type', 'type of procedure', 'error type', 'processing system' and 'receiving system'.

> *"When the issue is IT problem, then it gets slow and difficult'' (Expert of FX)*

As this citation illustrates, Expert of FX points out that IT related problems take more time and it is valuable to analyze if there is a way to prevent the most common types of IT issues.

The same statement's Custody Services report template is shown below Table 12.

Table 12. Report template, Area 6 (Custody Service Error handling process is slow).

Data label	Handler	Customer ID	Customer type	Settlement Instruction #	Status	Settlement date	Current Day	Days pending over	Error Code	Sub-custodian status
example	Mr. X	Customer oy	Tier 1	365345	Pending	25.1.2017	27.1.2017	2	12443	21324

In this template in Table 12, 'Settlement instruction number' indicates specific settlement case. 'Status' indicates the processing status of the settlement. 'Settlement date' indicates the due date of the settlement. 'Days pending over' indicates how many days the current day is over the settlement day. 'Subcustodian status' indicates the status message that the subcustodian has given. This information is helpful to find out why there was a delay from the subcustodian side. The report template in Table 11 can give statistics information of different settlement instruction statuses. The focus should be on settlements that are pending and have passed the settlement date. The status statistics can be analyzed by 'handler', 'customer type', 'days pending over', 'error code' and 'subcustodian status'. Both FXMM and Custody Service would like to have the 'customer profiles' and 'audit logs' to help in finding reasons for slow error handling process, as well. All the raw data needed for data report templates in Table 9 and 10 is available in the legacy systems.

In summary, all the raw data needed to further investigate each statement are available except for the statement ''Service is rude". A feedback channel is needed to get customer experience description to further investigate that statement. The raw data for other reports comes from FXMM legacy systems, Custody Service legacy systems, Skype re-

porting tool and Outlook reporting tool. The legacy systems need a Graphical User Interface (GUI) to be built to extract the data. The unit needs to fill a project template that describes the features and needs of the reports and sends it to the IT-departments to obtain cost estimations. Then the project is introduced to a forum where IT and Business decision makers meet once a month. From the IT and Business joint meeting, the project to extract the data can be approved and the prioritization is set. Outlook and Skype reporting tools give out readymade reports and diagrams that are close to the requirements set in the data report templates. This means that the readymade reports can be used in this study in the developed approach. In Q3 2017, a Case Management system is planned to be implemented in the unit which could be good news. There is a possibility that all the reports mentioned above can be extracted from the system.

3.4   Summary of the Key Findings from the Current State Analysis (Data Collection 1)

The Wholesale Banking Operation (WBO) unit has two functions, FXMM and Custody Services. They both serve to ensure smooth and stress-free customer experience by proactively checking that the needed information is sufficient and correct in both services (discussed in Section 3.1, Background of the Unit, Its Services and Customer Service).

The Unit prioritizes their customers by customer types (discussed in Section 3.2.2, Customer segmentation). Tier 1 customers are the most important and resources should be allocated accordingly.

According to the Annual customer satisfaction study 2016 (discussed in Section 3.2.2, Annual customer satisfaction study), the unit is scoring well compared to its competitors.

There were, however, six dissatisfaction areas found when conducting the interviews in the study. These dissatisfaction areas were, however, too generic and difficult to measure and for draw any conclusions, based solely on them. After internal stakeholder interviews, the study investigated the six areas in detail, from the point of view of *measuring* the customer experience, and found two kinds of reports needed to investigate the dissatisfaction areas.

The first type of report that can help to measure these problem areas is the data analysis reports *from the legacy systems and communication tools*. The study also discovered

that the raw data is already available but it needs resources and investment to extract the data into the pivot form.

The second type of report that can help to measure these problem areas is the Customer Experience description report that has *no sources of data yet*, but these types of data are needed and were found as *missing currently*.

As for the first type of data that can already be found from *the legacy systems and communication tools,* they are summarized in Figure 5. below.
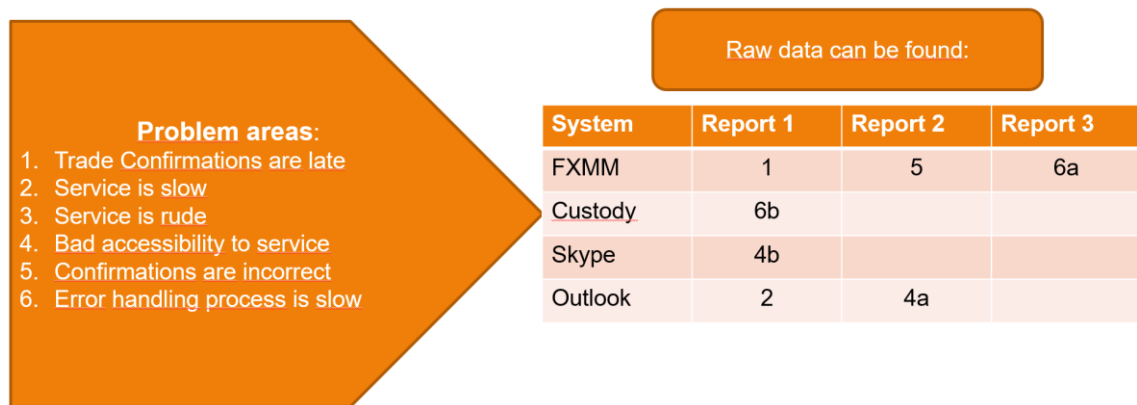
Figure 5. Raw data sources (CSA findings).

As seen in Figure 5, the key categories of customer experience data that can already be measured based on the data *from the legacy systems and communication tools,* they include all the report raw data except for problem area 3, ''Service is rude''.

As for the second type of data that cannot yet be collected, but is needed and missing currently*,* they are summarized in Table 13 below.

Table 13. Missing data (CSA findings).

Problem Area	Missing Data
3	Customer experience description

As seen in Table 13, the key categories of customer experience data that cannot be currently measured but are needed and currently missing is only *Customer experience descriptions.*

As seen in the findings above, both types of categories measuring customer satisfaction are required to be in-built into *the comprehensive feedback channel*. If done, this channel would help to easily extract this data and improve customer experience in the Unit.

This study has chosen to scope down the objective to (a) setting KPI's and (b) measuring Service Quality for one problem area. The chosen problem area for improving Service Quality is 'Poor Accessibility through Skype'. This was chosen because according to the Head of Customer Service there are two areas the unit has chosen to focus on and they are Service Accessibility and Error Handling. Skype raw data was available and in consideration to this study's time schedule, it is the logical choice. In this study Skype calls are treated like phone calls therefor the study investigate 'Poor Phone Accessibility'.

In the next Section 4, this study aims to answer three questions. The first one is how to use this available raw data to measure Service Quality. The second question is what the requirements of Key Performance Indicators (KPI) are and the third question is what kind of KPI's exist for Phone Accessibility.

4   Best Practice of Building Service Quality Measurement

This section's aim is to provide existing knowledge of how to reach the objective of the study, which is to develop a set of suitable KPIs and use them to perform detailed service quality measurement using a select problem area. The chosen problem area is Poor Accessibility through Phone. This section starts with measuring Service Quality. Second section discusses how to build and the requirements of KPIs in the measurement. The third section explains what kinds of KPIs are in use in other call centers that might be useful.

4.1   Measuring Service Quality

Service quality means the comparison of service performance to the customer experience (Parasuraman et al, 1988). Lywood et al (2009: 212) found that the UK call centers customer experience had a "statically significant influence on company profitability centers". Also Carr (1999: 15) found: "Three researchers examined the satisfaction levels and buying behavior of customers At PNC Bank and found clear evidence that companies reap far greater economic rewards from highly satisfied customers than they do from the merely satisfied". Eggert and Ulaga (2002: 116) came to the conclusion that "customer perceived value leads to satisfaction which, in turn, leads to positive behavioral intentions". Hill and Alexander (2000: 2) mention that "Customer Satisfaction is a measure of how an organization's total product performs in a relation to a set of customer expectations". In summary, service performance influences customer experience that influences customer satisfaction and satisfied customers leads to higher profitability.

Measuring Key Performance Indicators help managers to manage their business areas or as Dumond (1994: Abstract) found "results indicate that the performance measurement system determines an individual's decision-making performance. The broader, more effectiveness-oriented measures also tend to make the individuals more confident and satisfied with their operating environment and decisions". The effectiveness-oriented measure emphasizes the selection of what to measure. Frei (2008) recommended to seek understanding of what are the customer's preferences to focus on and the aspects that is needed to be done well and sacrifice on the aspects that are less important in the eyes of the customer. A Commerce Bank chose to focus on the experience of visiting the physical branch and didn't go into price competition or aggressive acquisition strategy. This decision led to significant growth in retail customer base. Watkinson (2012)

discuss that in banking industry brand value is less important. The customer values more effortless experience. To make the customer experience effortless, the company should consider parameters time on task, convenience and simplicity. The bank First Direct executed this logic by taking all the bothersome task of the customer to do them self like admin work in changing accounts.

There are many ways to look at Service Quality to determine the focus. In this study two different ways are introduced. In the first one, Brady and Cronin (2001) explains that customers perceive the service quality in three dimension: outcome, interaction and environmental quality. As mentioned by Watkinson (2013), the banking industry should focus on making their customer experience effortless so in these three dimensions the interaction is the most important for banks. In the second way, Parasuraman et al. (1988) suggest a tool called SERVQUAL. SERVQUAL is a 22-item instrument that tries to find out service quality through five dimensions. Basic idea is to find out through a survey what is the gap between perception and expectation of given services. The survey questions are in scale of seven from strongly disagree to strongly agree. Retail banking was one of the service areas that the SERVQUAL study was based on (Parasuraman, A et al, 1991). The five dimensions are described in Table 14 below.

Table 14. Service Quality Dimensions (Parasuraman et al. 1988: 23).

Service Quality Dimension	Description
Tangibles	Physical facilities, equipment, and appearance of personnel
Reliability	Ability to perform the promised service dependably and accurately
Responsiveness	Willingness to help customers and provide prompt service
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence
Empathy	Caring, Individualized attension the firm provides its customers

As seen from Table 14, the five dimensions are Tangibles, Reliability, Responsiveness, Assurance and Empathy. ''Accessibility to Service'' is a metric for Responsiveness dimension.

Customer surveys are one method to collect customer experience data. The problem in surveys is, they take a lot of time and effort from both company and customers. Mihelis et al. (2001) introduced a customer satisfaction survey that was made for The Commercial Bank of Greece. The survey had three main outcomes. First outcome was to find out weak and the strong points of the bank. Second outcome was performance evaluation

of the bank and third was identification of distinctive critical group of customers. The survey was divided by categories and every category had group of sub-categories. All the sub-categories were weighted and the total satisfaction score represented the head category score. The head category was also weighted and the total score was the "Global Satisfaction" percentage. The survey also made it possible to analyze the results by customer segments. This weighted category system is efficient way to find out from top-down where the problem is by searching categories with low scores and high weight.

Hermann et al. (2000) discussed how important it is to combine internal process excellence focus and external wide understanding of customer needs focus. Grigoroudis et al. (2013: 21) summarized it well:

> "The long-term success of a banking organization is related to its ability to adapt to changing customer preferences and needs. For this reason, a customer orientation and a continuous improvement philosophy is adopted in order to design and provide products and services that meet the customer requirements. This justifies the importance of internal and external service quality assessment and the incorporation of quality measures in the performance evaluation of business organizations. Furthermore, the ability of banking institutions to respond to changing market conditions may provide a significant competitive advantage against competition. Given the range of factors that influence performance of the bank, this dynamic market environment justifies the necessity to improve the service delivery process and the efficiency of the organization. Within this context, banking organizations evaluate their efficiency not only in terms of operational results, but also taking into account service quality and customer satisfaction performance."

Therefor as mentioned in the citation, a well-constructed measurement includes both service performance indicators and customer satisfaction indicators. In the research by Grigoroudis et al. (2013), Data Envelopment Analysis (DEA) was used but the results were just performance comparison between the different branch of the case bank. DEA is for comparing efficiency of different Decision Making Units (DMUs) (Banker et al. 1986). DEA is insufficient measurement tool for Service Quality measurement for a specific unit because it doesn't highlight areas that needs to be improved.

A Proactive Balanced Scorecard is a performance measurement tool introduced by Chytas et al. (2011). The tool has six stages and they are described in Figure 6 below.
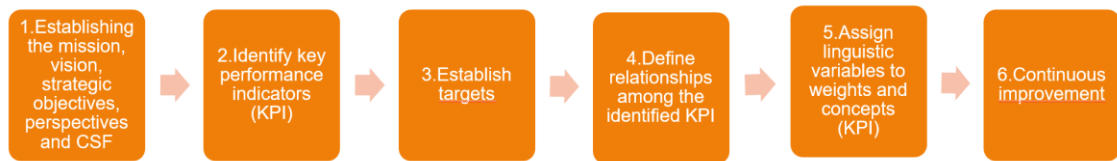
Figure 6. Six Stages of Proactive Balanced Scorecard (Chytas et al. 2011).

As seen from Figure 6, the first stage is setting strategic objectives and Critical Success Factors for the measurement. The Second stage is identifying the KPIs. The Third stage is setting targets for the identified KPIs. Butz and Goodstein (1996) mentioned that there are three levels of Customer Value to be considered when setting up Service Quality KPI targets. The first level is expected value which represent the base service level that the customer expects. The second level is desired value that represent the service level that the customer would like to have and the third level is unanticipated value that represent the service level that exceeds the customers' expectations and desires.

The fourth stage is defining relationships among the identified KPI to see which KPIs affect the other. The fifth stage is to assign linguistic variables to weights and concept. This means that all the different KPIs are translated to one scale and experts evaluate each KPI's importance by weighting them. The sixth stage is continuous improvement where the all the previous stages are updated according to needs in periods of time.

The combination of all the mentioned measurement logic, is summarized in Table 15 below.

Table 15. Suggested Service Quality Measurement.

Category KPI (scaled from 0% to 100%)
= KPI(1) x Weight + KPI(2) x Weight + … KPI(n) x Weight
= Service Quality KPI's + Customer Satisfaction KPI's

As seen from Table 15, the Category KPI is calculated by weighting all the identified KPIs and summing their weighted value. The identified KPI includes both Service Quality and Customer Satisfaction KPIs.

4.2 Building Key Performance Indicators

Modern day digitalization has make it easier to extract data from operational systems. According to Kaskinen (2007) there are Software Solution Providers specialized in developing automated KPI reporting tools. This is viable option if there is no digitalization know-how in-house. First step is to map out what kind of data is necessary to extract. From McKinsey consultancy Markovitch and Willmott (2014: 3) explain how "a European bank is midway through an ambitious program to digitize its top 20 processes" and to do that they need to "define a digital vision for each product and a road map to get there". This method requires resources in planning but the rewards justifies the means.

There are two different useful business performance analysis methods identified by Spiess et al (2014: 9-10). Descriptive analysis "describes the status or the history of the system or the process under investigation". This is for root cause analytics. Predictive analysis "seek to derive a future state of the system under test". For example, comparing error data to usage data to predict churn rate. Best case scenario would be having KPIs for both of the analysis methods.

Key Performance Indicator identification is easier when the requirements for good KPI is known. Staron et al(2016) defined a KPI quality model with 59 quality attributes. These 59 attributes are under five quality dimensions: Data Analysis, Data Preparation, Data Collection, Organizational Reference Context and Standard Reference Model. For this study only Data Analysis dimension is relevant because of the defined objective.
There are 17 quality attributes in Data Analysis dimension and they are under four sub-categories. The four categories are described in the Table 16 below.

Table 16. Data Analysis Sub-Categories (Staron et al 2016: 175).

Sub-Category	Description
Information product	Grouping the quality attributes describing the information product
Interpretation	Grouping the quality attributes related to how the indicators are interpreted , thus capturing the mapping from the mathematical symbols domain to the empirical domain
Indicator	Grouping the quality attributes related to the number and assigned status
Analysis model	Grouping the quality attributes related how the status of the indicator is assessed using the prdefined criteria

As seen from Table 16, the sub-categories are Information Product, Interpretation, Indicator, and Analysis Model. The 17 Quality Attributes under the subcategories are described in Table 17 below.

Table 17. Data Analysis KPI Quality Attributes (Staron et al. 2016: 176).

Sub-category	Attribute	Explanation
Inf. product	Up-to-date	The KPI value is timely, i.e. updated according to the schedule.
Inf. product	Satisfies the assumptions of the information product	The KPI is linked to the business goals of the organization.
Inf. product	Supported by the evidence for the fitness of purpose	There is evidence that the KPI is well fit for the stakeholder's information need.
Inf. product	Appropriate amount	The KPI contains the appropriate amount of information to fulfill the stakeholder's information need
Interpretation	Objective	The KPI objectively quantifies the measured entities
Interpretation	Interpretable	The KPI can be interpreted in the organization based on the data collected and the situational context.
Indicator	Supports...	The KPI can support (after adjustment) more than one information need of the organization.
Indicator	Linked to the stakeholder	The KPI is linked to a specific stakeholder who has the mandate and ability to act upon the information provided by the KPI
Indicator	Concise	The representation of the KPI is concise and does not include unnecessary details.
Indicator	Consistent	The KPIs representation is consistent with the goals of the KPI.
Analysis model	Complete	All steps of the measurement procedure are performed.
Analysis model	Correct	All the steps of the measurement procedure are performed correctly.
Analysis model	Reproducible/ repeatable	The measurement procedure is either documented or automated so that it is possible to reproduce the results.
Analysis model	Transparent	It is clear how the measurement procedure is performed and how the results are obtained.
Analysis model	Privacy protected	The procedure is created in such a way that it protects the privacy of the measured entities.
Analysis model	Secure	The procedure is created in such a way that it is protected from unauthorized tempering.
Analysis model	Accurate	The procedure truly reflects the measured attributes of the measured entities.

The 17 KPI Quality Attributes seen in Table 17, gives hints on how to build up KPIs. First define business goals, then map out information need to reach the goals. With the information need extract relevant data and calculate ''variable assigned a value by applying the analysis model to base and/or derived measures'' (Staron et al. 2016: 170). Then check if the KPI fulfill the other 15 Quality Attributes in Table 17.

4.3 Service Accessibility KPI's in Call Centers

An article by Richard A. Feinberg, Leigh Hokama, Rajesh Kadam, IkSuk Kim, (2002: 175) explain what are the KPIs used in Call Centers for Service Accessibility, quoting from a book by Anton, J et al. on Callcenter Management.

> "One measures the quality of call center service by measuring and tracking average speed of answer (ASA), queue time (amount of time caller is in the line for answer), percentage of callers who have satisfactory resolution on the first call, abandonment rate (the percentage of callers who hang up or disconnect prior to answer), average talk time (total time caller was connected to telephone service representative), adherence (are agents in their seats as scheduled), average work time after call (time needed to finish paper work, do research after the call itself has been completed), percentage calls blocked (percentage of callers who receive a busy signal and could not even get in to the queue), time before abandoning (average time caller held on before giving up in queue), inbound calls per TSR eight hour shift, TSR turnover (the number of telephone service representatives who left in a period of time, usually annually), total calls, and service levels (calls answered in less than x seconds divided by number of total calls)."(Anton 1997. Cited in: Feinberg et al 2002: 175)

As mention in the citation, there are many defined Service Quality KPIs for call centers. Table 18 below summarizes the Service Quality KPI's that are directly related to Accessibility.

Table 18. Phone accessibility: Service Quality KPIs (Anton 1997. Cited in: Feinberg et al 2002: 175).

Title	Measure
Average Speed of Answer	Total Queue Time / # of Calls
Abandonment Rate	# Disconnected Calls / # of Calls
Average Talk Time	Total Call Duration/ # of Calls
Percentage of Call Blocked	# Calls Getting Busy Signal Instead of Getting in Queue/ # of Calls
Time Before Abandoning	Total Queue Time Before Abandoning/ # of Abandoned Calls
Inbound Calls per Handler	# of Calls/ Day/ Handler
Service Level of Total Calls	# of Calls Answered in Less Time than Set Target/ # of Calls

As seen in Table 18, there are seven different KPIs that describe the Service Quality of Phone Accessibility. CA Technologies (2015), was argued that the KPI should have three attributes. First attribute is Consistency by measuring the KPI in set periods, for example monthly every month to see the development of the service level. Second attribute is Communication, where the KPI is communicated to right audience to be useful. The third attribute is Actionable, where the ''inform actions that can improve performance''. The consultancy gave an example of a Service Level target: "A service provider that delivers a help desk may commit to answering 95% of incoming calls within 20 seconds."(CA Technologies 2015: 4)

In conclusion, the KPIs for Service Quality of Phone Accessibility need to have targets to see how well the performance is compared to target.

4.4   Conceptual Framework of Service Quality KPI Measurement of Accessibility by Phone

The conceptual framework (CF) for this study is synthesis of existing knowledge gathered from the literature that was explained earlier in Section 4.

The conceptual framework is divided into three categories that relates to the three sub-headings emphasized previously and discussed in the corresponding sections. The first

category, Measurement of KPI, consists of the key elements identified from theories discussed in Section 4.1. Measuring Service Quality. The second category, Requirements of KPI and the measurement model, consist of consists of the key elements identified from theories discussed in Section 4.2. Building Key Performance Indicators. The third category, Identification of KPI, consists of consists of the key elements identified from theories discussed in Section 4.3. Service Accessibility KPIs in Call Centers. The conceptual framework is illustrated in Figure 7 below.
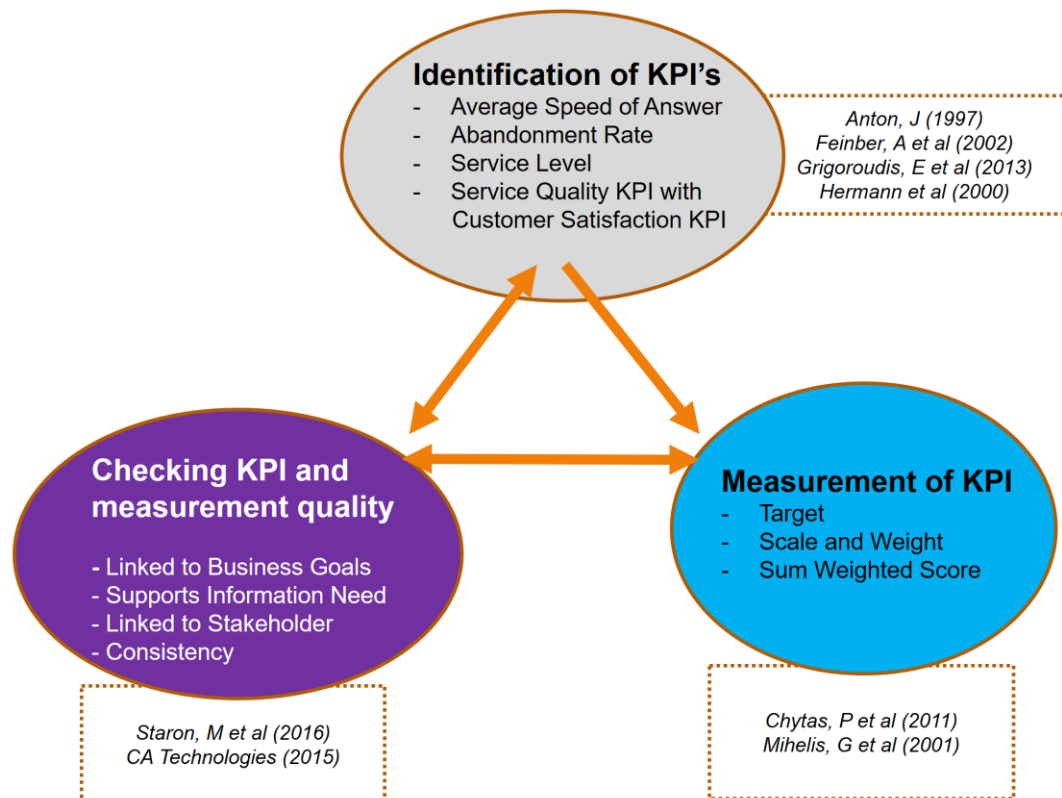
Figure 7. Service Quality KPI Measurement of Accessibility by Phone (Conceptual Framework).

As seen from Figure 7, the conceptual framework is based on eight sources. The arrows in the CF means that Identification of KPI is based on requirements and identified KPI should fulfill the requirements. The same logic goes with Measurement and Requirements. Identification of KPI is one part of Measurement of KPI theories.

In conclusion, KPIs for Service Quality of Accessibility are identified and the Measurement Model suggest that the KPIs are scaled to same scale and weighted. Then the overall score is calculated by summing up the weighted score. The KPIs also include

Customer Satisfaction KPI. The KPIs and the measurement model is checked that they meet the requirements.

Next, Section 5 describes the proposal building phase. The proposal is based on the findings from the conceptual framework and the current state analysis.

5 Building Proposal on Service Quality KPIs for Customer Service Phone Accessibility and Measurement Model for the WBO unit

This section merges the results of the current state analysis and the conceptual framework towards the building of the proposal using data 2.

5.1 Overview of Proposal Building Stage

The proposal is co-created with the WBO unit to develop a set of KPIs for measuring how easily the customer can reach the service of WBO unit by calling them on the phone. Then the Measurement Model is crafted into Initial Proposal that the WBO unit can use to measure Service Quality of Phone Accessibility.

Proposal building is done in several steps. First, proposal building starts with combining the KPIs found from the current state analysis and those identified in Section 5.2 of the literature review.

Second, the data from readymade Skype reports (Data 2) are analyzed by checking if the data from the reports can be used for the selected KPI's in Section 5.3.

Third, the relationship between the KPI's are mapped out to define the importance of each of the KPIs.

Fourth, the result scale is defined that the developed composite KPI would give valuable information.

Fifth, the measurement model is formulated in to mathematical equation that results in the composite KPI. This is the initial proposal. Third to fifth steps are in Section 5.4 Proposal Draft.

5.2 Identified KPIs for Service Quality of Phone Accessibility

The KPIs for Service Quality of Phone Accessibility, as found in literature and the current state analysis, are summarized in Table 19 below.

Table 19. Identified Service Quality KPIs for Phone Accessibility (from literature and the current state analysis).

From Literature		From CSA	
Title	**Measure**	**Title**	**Measure**
Average Speed of Answer	Total Queue Time / # of Calls	Transfer Rate	# of Transfer/ # of Calls
Abandonment Rate	# Disconnected Calls / # of Calls	Accessibility Customer Satisfaction Score	Scale from 1-5
Average Talk Time	Total Call Duration/ # of Calls		
Percentage of Call Blocked	# Calls Getting Busy Signal Instead of Getting in Queue/ # of Calls		
Time Before Abandoning	Total Queue Time Before Abandoning/ # of Abandoned Calls		
Inbound Calls per Handler	# of Calls/ Day/ Handler		
Service Level of Total Calls	# of Calls Answered in Less Time than Set Target/ # of Calls		

As seen from Table 19 most of the KPIs are from Literature (Anton et al. 1997) and only two are from current state analysis. The Accessibility Customer Satisfaction Score is kept from the annual customer satisfaction survey that was used as the mother study of this thesis. The Transfer Rate comes as a suggestion from the interviews made in the current state analysis.

5.3   Skype Raw Data Analysis

The expert of WBO unit extracted the raw data from Skype telephone system. Together with the expert, these data was analyzed to get the data needed for the KPIs. It was agreed to only focus on incoming calls to group number of the WBO unit in January. The findings can be seen in Table 20 below.

Table 20. KPI Analysis (co-creation with WBO unit in workshop).

Title	Ability to get data
Average Speed of Answer	OK
Abandonment Rate	OK
Average Talk Time	OK
Percentage of Call Blocked	No Data
Time Before Abandoning	OK
Inbound Calls per Handler	No Data
Service Level of Total Calls	OK
Transfer Rate	Unreliable Data
Accessibility Customer Satisfaction Score	OK

As seen from Table 20, 'Percentage of Call Blocked', 'Inbound Calls per Handler' and 'Transfer Rate' has no usable data in the raw data. The operational KPIs are then 'Average Speed of Answer', 'Abandonment Rate', 'Average Talk Time', 'Time Before Abandoning', 'Service Level of Total Calls' and 'Accessibility Customer Satisfaction Score'.

5.4   Proposal Draft

As suggested earlier in the conceptual framework, the next steps for building the developed approach are shown in Figure 8 below.

Figure 8. The Measurement Model (as suggested in the conceptual framework).

As seen from Figure 8, the next step is to establish targets. To scale all the KPIs into one scale (from 0 to 100), all the KPIs need to have a target and unacceptable level defined. The target represents the score of 100 and the unacceptable level the score of 0. Also, weighting of the importance of the KPI is done by giving points from 0 to 100.

A set of examples of targets, unacceptable levels and weights were send to the expert of the WBO unit and the expert replied with the ones that are going to be used in the measurement. The relationships among the identified KPIs were defined to make it easier to assign importance weights for the KPIs. The relationship map between identified operational KPIs is shown below in Figure 9.
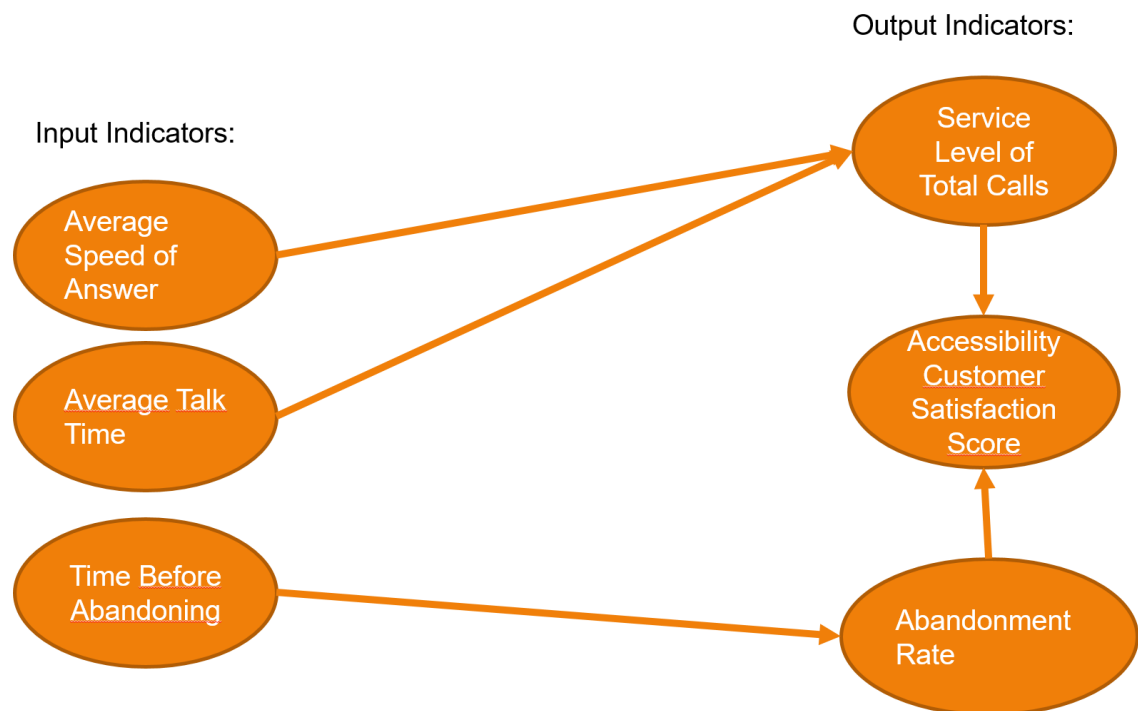
Figure 9. KPI Relationship Map (as defined in co-creation session).

As seen from Figure 9, the Input Indicators 'Average Speed of Answer', 'Average Talk Time' and 'Time Before Abandoning' are KPIs that describe customer behavior and gives reasons to Output Indicators' Service Quality. 'Average Speed of Answer' and 'Average

Talk Time' can give information why 'Service Level of Total Calls' are in the found level. 'Time Before Abandoning' tells how long the customers are willing to queue before abandoning the call so the call abandoning rate is higher if the customers' patience is lower and therefor the 'Service Level' should be higher. Therefor the 'Service Level' and 'Abandonment Rate' affects the 'Accessibility Customer Satisfaction Score'. In this study, it means that Output Indicators are the ones that has importance weight.

The result of the measurement is scaled from 0% to 100%. The 100% score indicates that the service level has reach the target. The 0% score indicates that the service level is in unacceptable level. The linguistic variables were set to all the scores from 1% to 99% as seen in Table 21 below. These were set in the proposal building phase.

Table 21. Result Scale (co-creation with WBO unit in workshop).

Scale	Verdict
100%	Target
80-99%	Good
60-79%	Needs Improvement
1-59%	Needs Urgent Action
0%	Unacceptable Level

As seen from Table 21, there are only three more scale levels added. In the workshop, it was agreed to keep it simple and informative of the urgency degree of the action needed to be done to improve the service level. 80-99% score would be good result and does not need much attention. 60-79% score would need to be improved and the management should motivate the staff to answer the phone quicker. 1-59% score would need urgent action and the management should find the root cause of the low service level and fix it.

The Measurement Model in Figure 8 also need to be formulated in mathematical equations to be operationalized. Therefor the mathematical equations are summarized in Table 22 below.

Table 22. Initial Proposal (developed based on Measurement Model).

KPI	Result	Target	Unacceptable level (UL)	Score	Points	Weight
KPI_1 $T > R > U$	R_1	T_1	UL_1	S_1 $= \dfrac{(R_1 - UL_1)}{(T_1 - UL_1)} * 100$	P_1= Set based on importance from 0 to 100	W_1 $= \dfrac{P_1}{(P_1 + P_2 + \cdots + P_n)}$
KPI_2 $U > R > T$	R_2	T_2	UL_2	S_2 $= \dfrac{(UL_2 - R_2)}{(UL_2 - T_2)} * 100$	P_2= Set based on importance from 0 to 100	W_2 $= \dfrac{P_2}{(P_1 + P_2 + \cdots + P_n)}$
KPI_n $U > R > T$	R_n	T_n	UL_n	S_n $= \dfrac{(UL_n - R_n)}{(UL_n - T_n)} * 100$	P_n= Set based on importance from 0 to 100	W_n $= \dfrac{P_n}{(P_1 + P_2 + \cdots + P_n)}$

$$\textbf{Composite KPI} = S_1 * W_1 + S_2 * W_2 + \ldots + S_n * W_n$$

As seen from Table 22, the Initial Proposal has many variables that has acronyms based on the first letter of the word. Result (R) indicates to the KPI's calculated result like shown in Table 19. Target (T) and Unacceptable level (UL) are set by the unit. Score (S) indicates to the calculated result that is between Target and Unacceptable level. The calculation method depends on which is larger, the Target or the Unacceptable level. Points (P) are given to each KPI from 0 point to 100 points, depending on how important the KPI is to the unit. Weight (W) is the KPI's points divided by all the point summed up. Therefor Weight indicates the KPI's influence percentage on the Composite KPI. The Composite KPI is calculated by summing up the weighted scores.

The initial proposal is used in the next section to get the measurement results of Service Quality of phone accessibility for the WBO unit.

6 Validation of the Proposal

This section describes how the proposal was validated in a workshop with the Head of Customer Service and the expert who helped in the co-creation of the proposal.

6.1 Overview of Validation Stage

Validation has happened in two validation phases. The first validation phase was the actual measurement of Service Quality of Phone Accessibility, and the second phase was a meeting with the Head of the Customer Services and expert of the WBO unit where the KPI initial proposal was discussed and evaluated, and suggestions given where it should be improved. There were no improvement changes needed to be done to the proposal after the validation workshop.

The second validation phase is to make sure that the developed KPIs and the initial proposal of how to measure Service Quality of Phone Accessibility are high quality.
The 17 questions made for the workshop were based on data analysis KPI Quality Attributes (as suggested by Staron et al. 2016) that was described in Table 17.

Validation stage is concluded with Next Steps and Recommendations in Section 6.4 and Managerial Implication in Section 6.5.

6.2 Summary of Final Proposal

In the current state analysis was found that Tier 1 customers has the highest priority and the service should be better for them. Therefore, Tier 1 result are analyzed separately and compared to Total result. The KPI result is shown in Table 23 below.

Table 23. KPI Results (after validation).

KPI	Total result	Tier 1 Result	Target	Unacceptable level	Point (0-100)
Average Speed of Answer	24s	23s			0
Abandonment Rate	24,8%	13,6%	5%	15%	100
Average Talk Time	38,3s	34,4s			0
Time Before Abandoning	56s	40s			0
Service Level of Total Calls (answer within 20s)	42,9%	43,2%	75%	50%	50
Accessibility Customer Satisfaction Score	4,11	(no data)	5	3	100

As seen from Table 21, only 'Abandoment Rate', 'Service Level' and 'Accessibility Customer Satisfaction score' have the points and were calculated in the measurement. 'Service Level' was set to measure all the calls that were answered within 20 seconds per CA Technology Consultancies recommendation to Call Centers.

The measurement is calculated by multiplying the KPI's score with the assigned weight and adding all the KPIs up. The full calculations can be seen in Appendix 4. The results from the measurement are shown in Figure 10 below.

	Target	Unacceptable level	Result	Tier 1	Total Score	Tier 1 score	Weight
Abandonment Rate	5 %	15 %	24,80 %	13,60 %	0,0	14,0	0,4
Service Level	75 %	50 %	42,90 %	43,20 %	0,0	0,0	0,2
Satisfaction Score	5	3	4,11	4,11	55,5	55,5	0,4
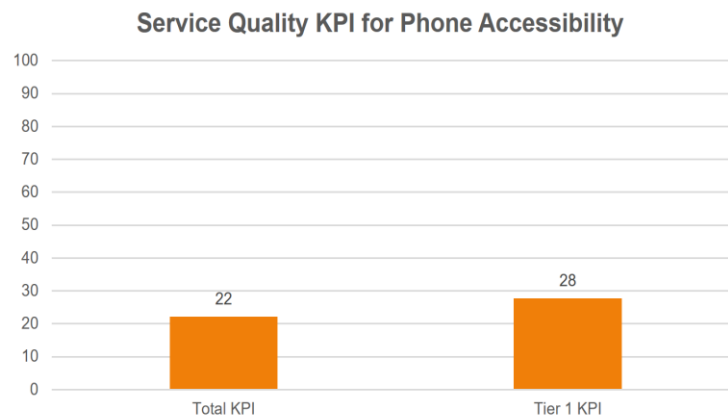
Figure 10. Measurement Result (calculated with initial proposal for validation).

As seen from Figure 10, the Service Quality measurement score for Phone Accessibility was 22% for the Total incoming external calls to the group number in January and 28% for only Tier 1 customer of the external calls to the group number in January. Both scores fall into the category of ''Needs Urgent Action'' as can be seen in Table 21. Both Head of the Customer Service and the expert agrees to the finding.

The average answering time is 24 seconds and as the Head of Customer Service said

> '' it takes already ten seconds for Skype to connect the call to the handler and we hope that this could be improved when we change our phone system from Skype to Genesis.'' (Head of Customer Services)

As this citation explains, there is already improvement initiatives for Phone Accessibility by the WBO unit.

6.3 Quality Attributes of the KPI Measurement

The quality of the KPI measurement is defined by seventeen question shown in Table 24 below.

Table 24. KPI Measurement Quality Attribute Results (answers from validation workshop).

Question	Answer
1. Is it possible to keep this KPI updated?	yes
2. Is this KPI linked to WBO's business goals?	yes
3. Does this KPI give valuable information to WBO?	yes
4. Does this KPI give enough information compared to information need?	no
5. Can this KPI be objectively measured?	yes
6. Is this KPI easily interpretable?	yes
7. Does this KPI support more than one information need of the organization?	no
8. Can the WBO unit affect on this KPI?	yes
9. Does this KPI measurement have any unnecessary elements?	no
10. Would this KPI consistently represent the WBO unit's Phone Accessibility?	yes
11. Is it possible to perform all the steps of the measurement on every update?	yes
12. Is the measurement difficult to execute correctly?	Tier 1 difficult
13. Is it easy to reproduce the results?	yes
14. Is it clear how the measurement procedure is performed and how the result are obtained?	yes
15. Does this KPI measurement put privacy in risk?	no
16. Is there a risk of unauthorized tempering of the result?	no
17. Does this KPI measure accurateraly Service Quality of WBO Phone Accessibility?	yes

As seen in Table 24, the KPI and the KPI measurement is possible to be updated, it is linked to business goals, gives valuable information, it is objective, easy to interpret, linked to the unit, has no unnecessary elements, represents Phone Accessibility consistently, possible to perform periodically, easy to reproduce the result, procedures are clear, no privacy or tempering risk and it measures accurately Service Quality of WBO Phone Accessibility.

In question number 4, '' Does this KPI give enough information compared to information need?'', the answer was ''no'' because the Transfer Rate was not included due to all calls were considered as transferred so the data was unreliable.

> *''We have the goal of First Time Right'' (Head of Customer Services)*

As this citation illustrates, Head of Customer Services points out that it is important to see if the customer get their problem solved with the first handler or is the calls frequently transferred forward.

In question number 7, ''Does this KPI support more than one information need of the organization'', the answer was ''no'' because it is only useful for the WBO unit.

In question number 12, ''Is the measurement difficult to execute correctly?'', the answer was ''only getting correct Tier 1 data is difficult'' because Tier 1 customers are identified by their phone numbers that are given to the WBO unit and if the calls come from other numbers then the result does not give wholesome picture.

Overall, the Head of Customer Service and the expert are satisfied and pleased with the Service Quality KPI measurement of Phone Accessibility.

6.4 Next Steps and Recommendations

Recommended next step is to use the initial proposal (Table 22) to other problem areas. The logical next problem area would be Accessibility to Service via email where email response times are measured as shown in Figure 11 below.
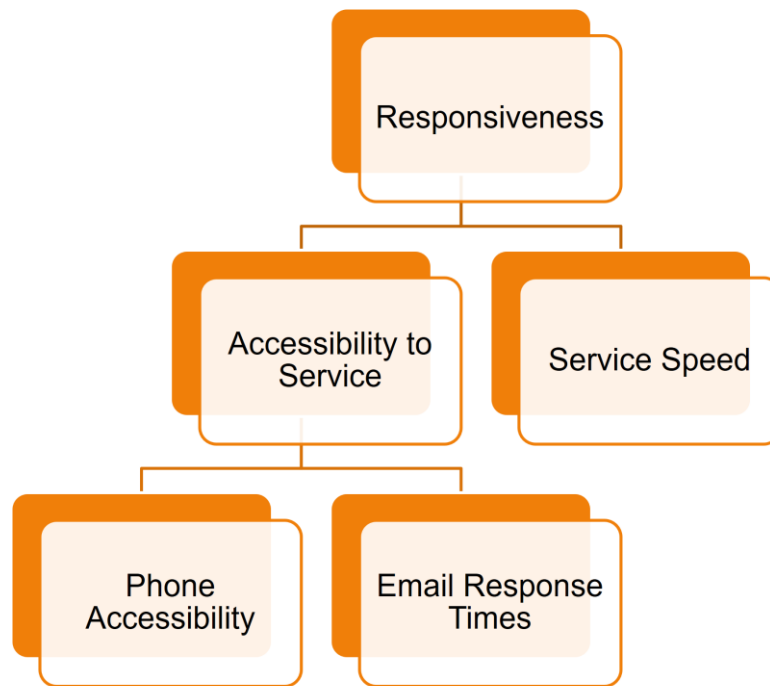
Figure 11. Measurement hierarchy 1 (next step recommendation to the WBO unit).

As seen in Figure 11, Phone Accessibility and Email Response Times are under Accessibility to Service which is calculated by weighting sub-categories and summing up the score like in the measurement model. Accessibility to Service and Service Speed are under Responsiveness that represents one of the five Service Quality Dimensions (Parasuraman, A et al. 1988). All five Dimensions should be considered as shown in Figure 12 below.
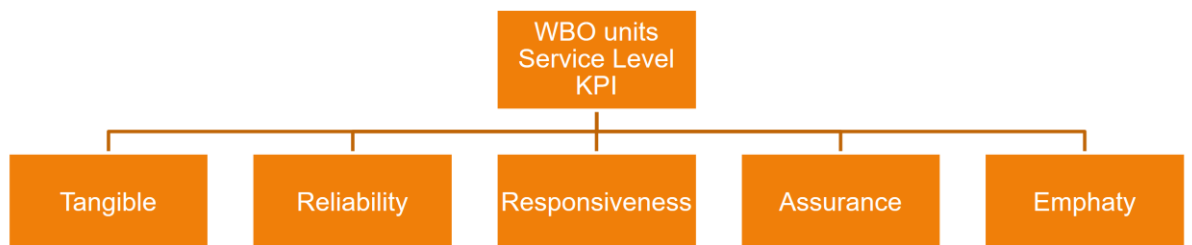
Figure 12. Measurement Hierarchy 2 (next step recommendation to the WBO unit).

As seen in Figure 12, all the five dimensions after weighting and summing up the score would give the total Service Level KPI score of the WBO unit. As a manager, it would be easy to see from the weights and scores which dimension should the unit put focus in and dig deeper to see the KPIs under them. For an example, Responsiveness has heavy weight that indicates its importance and low score that indicates that something must be done there. Then in Responsiveness can be seen that Accessibility to Service is the reason for low score and particularly in Phone Accessibility there is very low score because phones are not answered fast enough and customers hang up because they are tired of waiting on the line.

6.5   Managerial Implications

Use the developed Service Quality of Phone Accessibility measurement approach once a month every month to see trends and possibly see improvement in phone accessibility service quality. By measuring, the problem is acknowledge and in the in the back of the handlers' mind. This gives psychological pressure to the handler to answer the phone calls faster and therefor serve the customer better.

Map the digital process of the most important customer interaction points. The CSA of this study has very good ground work of where and how the necessary data for other problem area's related data can be retrieved. The WBO unit should work closely with the IT support unit to plan data extraction process for retrieving valuable information about the found problem areas. The WBO unit will have a new Case Management System in Quarter 3 in 2017 and the digital process mapping should be done before implementation to possibly be included in the Case Management System and to avoid double work.

Spread the Service Quality measurement approach to other departments of the bank. This approach can be used by any kind of service department. Other call centers of the bank can use the same KPI's developed for Phone Accessibility for WBO unit. The KPI hierarchy system could be copy to any service unit of the bank with minor modifications.

7 Conclusions

This Section contains the executive summary of the thesis and the thesis evaluation.

7.1 Executive Summary

The WBO unit wanted to improve and develop their service. To do that, it is necessary to be able to manage the service well first. To manage the service, the unit needs more information about the current service quality. Therefor the object of the thesis was to develop a KPI-based measurement approach for a more detailed service quality measurement using a select problem area as an example. The selected problem area was ''Poor Accessibility to Service'' and the focus was accessibility to phone service. This problem area was chosen because Service Accessibility is one of the strategic focus points of the company and because the data to execute the measurement was available.

The chosen research method was qualitative case study done by external consultant. The study began with current state analysis where the service of the unit was studied to see what they did and what were the problem areas by stakeholder interviews. Six problem areas were identified and for these six problem areas the study mapped out what kind of more detailed information was needed to address them and where and how to retrieve the data containing the needed information. Theories and ideas were collected from literature to develop Service Quality measurement approach and the initial proposal was designed in co-creation with the WBO unit by workshops. The proposal was validated by the actual measurement and with 17 KPI quality attribute questions.

The developed Service Quality measurement approach in this study has two main parts. First part is the customized KPIs developed for Phone Accessibility. Second part is the measurement model that uses these KPIs to calculate a composite KPI for Service Quality of the unit in Phone Accessibility. From the customized KPIs, six KPIs were chosen. Three of them were input indicators that gave reasons to current service levels and remaining three output indicators that described the service level. In the measurement model the output indicators were weighted according to their importance and scaled from 0% to 100% for calculating the score. In the composite KPI calculation, the weighted scores were sum upped and it gave Phone Accessibility Service Quality score of 22% to total calls. The most valued customers of the bank are called

Tier 1 customers. Tier 1 had separate measurement and it scored 28%, which is higher score than the total calls had but clearly not good enough to distinguish superior service level that the Tier 1 customers deserves. The scale of the score had linguistic variables determined and these scores indicate that the WBO unit needs to take 'urgent actions' to improve their Phone Accessibility. Input indicators tells that the calls are not answered fast enough and therefor 25% of the calls are abandon before they are answered. Total calls got 22% score only because the composite KPI includes 'customer satisfaction score for accessibility' and the customers has score the bank 4.11 from a scale from 1 to 5. The customer satisfaction score is from annual customer satisfaction survey that includes 39 banking organizations that manage their back offices. The 4.11 is the second highest score for 'Accessibility', so benchmarked to other organizations the unit is doing well. Without the customer satisfaction score in the composite KPI, the total calls score would have been 0%. The customer satisfaction score was included to see both internal and external point of views. Internally measured the unit get 0% score but the customers are still satisfied because they get even worse service from other banks. Therefor it is correct that the Service Quality of Phone Accessibility is low instead of 0% and it needs urgent actions.

In the validation workshop, the 17 quality attribute questions helped to understand how successful the developed approach was. Overall the approach reach it object to give more detailed information about service quality and help the unit to manage the service better. The feedback from the unit was very positive and they found the approach useful and plan to use it. The Head of Customer Service plan to introduce the approach to other departments of the bank.

The developed Service Quality measurement approach help the unit to manage their service better by giving detailed information of where in their service they excel and where there is room for improvement. The approach is recommended to be used in a hieratical system of KPIs where 'the unit's service quality' is in the top and it goes down to five service quality dimensions. The 'accessibility to service' is under the 'responsiveness' service quality dimension. This hieratical system allows the unit to prioritize their resources in service development. The unit can analyze with the system which problem area is the most critical by the scores and important weights of each KPI. The developed Service Quality measurement approach and the hieratical system together forms a practical tool to develop the service of the unit.

7.2 Thesis Evaluation

The goal of this study was to conduct research that is both rigorous and relevant, as well as logical, and providing valid and reliable results. The quality of this study is ensured by set of criteria's. The set is: Logic, Relevance, Validity and Reliability.

7.2.1 Logic

Logic as a concept means ''cause-and-effect explanation of an action, decision, event, phenomenon, or solution.'' (Business Dictionary: Logic) In this study, by keeping focus on the objective and only analyzing issues related to the objective, the logic will be logical. A logical Research design is a base for this study. The Research design is introduced in Section 2.2 and objective is closer to be fulfilled by every step of the way. This is also a way to keep the study logical. The logic of this thesis relies on the research design that is constructed in steps, and is followed in a way that the objective was reached in the end of the study.

7.2.2 Relevance

Relevance means ''relation to the matter at hand.''(Merriam-Webster: Relevance) In this study, relevance is ensured by taking these steps. First of all, relevance is ensured by selecting the data (Data 1-3, as field work) and information (literature, best practice, as desk work) that is relevant. In the field work, relevance is ensured by selecting the people for the interviews and workshops that are experts in the field that is studied, and are relevant experts also in the case company context. Data from interviews and secondary data are analyzed. Then relevant conclusions are drawn and checked with the case company experts. In the desk work, relevant information is gathered from literature to help solve the case company challenge. Its relevance is ensured by first identifying the gaps from the current state analysis. Thus, only relevant problems are further treated. This thesis is relevant because the KPI measurement gave valuable information to the WBO unit.

7.2.3 Validity

Validity tests that 'the instrument measures what it is intended to measure.''(Huhta 2014)

In this study, validity is ensured by taking these steps. To ensure validity of data collection and selection of participants, key stakeholders were chosen to collect data for the current state analysis, who are experts from the industry that represents a holistic and objective view of the environment and the problem. In addition, the proposed outcome is validated with a pilot and by interviewing experts, and improved into a feasible solution. Here, the goal is to test the solution and confirm its validity for the problem and the case context. In Section 6.3. the Head of Customer Service and expert of WBO unit both also agreed that the KPI measurement measures what it supposed to measure.

7.2.4   Reliability

Reliability means that the result would be the same even the study is repeated many times. To ensure reliability Yin suggest to ''use case study protocol, develop case study database (collection). '' (Yin 2003:34-39). Reliability is ensured by taking these steps. In this thesis there are multiple interviews, data and literature sources that ensures reliability. To ensure reliability of data collection, the interviews are collected from multiple sources and the result does not only reflect any one person's opinion. Moreover, the interviews are supported by the secondary data from the annual customer satisfaction study.

References

Anton, J. (1997). *Callcenter Management: By the Numbers.* West Lafayette: Purdue University Press.

Banker, R.; Charnes, A.; Cooper, W.(1986). Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis. *Management Science.* Vol. 30 (9), 1078.

Brady, M. (2001). Some New Thoughts on Conceptualizing Perceived Service Quality: A Hierarchical Approach. *Journal of Marketing* Vol. 65 (3), 34-49.

Business Dictionary (2017). Business Dictionary: Logic. Available from: http://www.businessdictionary.com/ (Accessed 21.3.2017)

Butz, H. and Goodstein, L. (1996). Measuring Customer Value: Gaining the Strategic Advantage. *Organizational Dynamics* Vol. 24 (3), 63-77.

Carr, N. (1999). Marketing: The Economics of Customer Satisfaction. *Harvard Business Review* Vol. 77 (2), 15-18.

CA Technologies (2015). Key Performance Indicators, Esthablising the Metrics that Guides Success. Available from: http://www.ca.com/de/~/media/Files/white-papers/key-performance-indicators.PDF (Accessed 21.3.2017)

Chytas, P.; Glykas, M.; Valiris, G. (2011) A Proactive Balanced Scorecard. *International Journal of Information Management* Vol. 31 (5), 460-468.

Dumond, J. (1994). Making Best Use of Performance Measures and Information. *International Journal of Operations & Production Management* Vol. 14 (9), 16-31.

Eggert, A. and Ulaga, W. (2002). Customer Perceived Value: A Substitute for Satisfaction in Business Markets? *The Journal of Business & Industrial Marketing* Vol. 17 (2/3), 107-118.

Feinber, A.; Hokama, L.; Kadam, R.; Kim, I. (2002). Operational Determinants of Caller Satisfaction in the Banking/ Financial Services Call Center. *International Journal of Bank Marketing* Vol. 20 (4), 174-180.

Frei, F. (2008). The Four Things a Service Business Must Get Right. *Harvard Business Review* Vol 86 (4), 70-80.

Grigoroudis, E.; Tsitsiridi, E.; Zopounidis, C. (2013). Linking customer satisfaction, employee appraisal, and business performance: an evaluation methodology in the banking sector. *Annals of Operation Research* Vol. 205 (1), 5-27.

Hermann, A.; Huber, F.; Braunstein, C. (2000). Market-driven Product and Service Design:Bridging the Gap Between Customer Needs, Quality Management, and Customer Satisfaction. *International Journal of Production Economics* Vol. 66 (1), 77-96.

Hill, N. and Alexander, J. (2000). *Handbook of Customer Satisfaction and Loyalty Measurement.* 2nd ed. Gower Publishing Limited

Huhta, M. (2014). Research Skills. Metropolia University of Applied Sciences, MEng Industrial Management program: Lecture, Autumn 2014.

Kaskinen, J. (2007). Creating Best-in-Class KPI Program. *Strategic Finance* Vol. 89 (4), 29.

Lywood, J.; Stone, M.; Ekinci, Y. (2009). Customer Experience and Profitability: An Application of the Emphaty Rating Index (ERIC) in UK Call Centres*. Database Marketing and Customer Strategy Management* Vol. 16 (3), 207-214.

Markovitch, S. and Willmott, P. (2014). Accelerating the Digitalization of Business Processes. *McKinsey Quarterly*. May 2014

Merriam-Webster (2017). Merriam-Webster: Relevance. Available from: www.merriam-webster.com (Accessed 21.3.2017)

Mihelis, G.; Grigoroudis, E.; Siskos, Y.; Politis, Y.; Malandrakis, Y. (2001). Customer Satisfaction Measurement in the Private Bank Sector. *European Journal of Operational Research*

Parasuraman, A.; Zeithaml, V.; Berry, L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing* Vol. 64 (1), 12.

Parasuraman, A.; Zeithaml, V.; Berry, L. (1991). Refinement and Reassessment of the SERVQUAL Scale. *Journal of Retailing* Vol. 67 (4), 420-450.

Refermat, E. (2010). Measure Satisfaction to Retain Customers. *Automatic Merchandiser*. Available from: http://www.vendingmarketwatch.com/article/10256721/measure-satisfaction-to-retain-customers (Accessed 21.03.2017)

Spiess, J.; T'Joens, Y.; Dragnea, R.; Spencer, P.; Philippart, L. (2014). Using Big Data to Improve Customer Experience and Business Performance. *Bell Labs Technical Journal* Vol. 18 (4), 3-17.

Staron, M.; Meding, W.; Niesel, K.; Abran, A. (2016). A Key Performance Indicator Quality Model and It's Industrial Evaluation. Confrence Publishing Services. DOI 10.1109/IWSM-Mensura.2016.9

Watkinson, M. (2013). *The Ten Principles Behind Great Customer Experience*. FT Press

Yin, R.K. (2003). *Case Study Research – Design and Methods*. 3rd ed. Thousand Oaks: Sage Publications.

Measurement Expectation

Expectation Assessment interview 1

Title   Expert in Custody Services   Audio   EA 01
Date   18.1.2017
Start   13:42
End   14:10

What kind of data would you need to have in evidence to take corrective actions:

1. Trade Confirmations are late
Custody Services does not have trade confirmation.
Similar kind of service point could be settlement instructions handled late.
Valuable information for solving the problem would be measuring the time from receiving the settlement until handeled and send to the market.
Also measure the average time for manually handeled cases and investigate futher the cases that exceed drasticly from the average.

2. Service is slow
It would be valuable to know what the respond time is to the received email and who responded in customer service.

3. Service is rude
Anymous information is valuable too but knowing which client is unsatisfied to the service gives more information.
To know what went wrong we need a descriptions of bad service that the customer experienced.
Service person's name who gave bad service but the data should be kept confidental and modify to be anymous if necessary.

4. Bad accessibility to service
Email and phone are the main service communication tools for customer service.
Compare the amount of phone calls received to answered phone calls to see the percentage of customer who did not get immediate respond as wanted.
How many messages was exchanged between customer and customer service before the case is closed would highlight cases that did not go smoothly.

5. Confirmations are incorrect
Not in Custody services

6. Error handling process is slow
How long is the pending settlement instruction pending after settlement date would high light problem cases.
How many settlement we have and how many didn't settled during the settlement date would be a good performance indicator.
Client history profile where there would be information of the market and settlement times.

Expectation Assessment interview 2

Title   Head of Customer Services   Audio   EA 02
Date   18.1.2017
Start   15:13
End   16:04

What kind of data would you need to have in evidence to take corrective actions:

1. Trade Confirmations are late
What time the trade was done and when it was send out.
Product area (FX, MM etc.), confirmation channel(email, fax, mail, swift), Customer type
System update log.

2. Service is slow
System performance log and warning system. Bottleneck mapping tool.
Outlook que log.

3. Service is rude
Description of bad customer experience. Customer type, product area, time of occurance
Enough data to see trends.

4. Bad accessibility to service
Phone (Skype) and email primary communication tools.
Phone: Which number was called, what time, Skype performance log, unanswered call, answering time, amount of call tranfer times,
Email: Customer type, respond time, what time message was received and when case was opened,
When customer reach out for the first time, how to make sure that they have enough information to process the case smoothly. (template)
Instruction video of e-markets for customers that haven't used it before.
5. Confirmations are incorrect
Customer type, product type, handler, what data was incorrect, customer profile and history log from key account managers, amount of incorrect confirmation in a timeline

6. Error handling process is slow
Timeline data of from error entry to solution. Customer type, product type, handler, Customer respond time, what time the error was noticed and who noticed it, what kind of an error. Volume of errors in a timeline.
Error log per error category

Expectation Assessment interview 3

Title   Expert of Custody and FX   Audio   EA 03
Date   27.1.2017
Start   9:21
End   10:29

What kind of data would you need to have in evidence to take corrective actions:

1. Trade Confirmations are late
Confirmation sender , Handler, product type, Type of procedure, processing system, receive confirmation time, sending confirmation time, duration,
Status log (already in use)

2. Service is slow
Handler, product type, type of procedure, processing system, case open time, case close time, duration, case type

3. Service is rude
Handler, Customer experience description, date, day of occurance, product type, customer segmentation , customer ID
 Customer profile --> Customer interaction log, activity in different product types and areas(CRU responsibilities)

4. Bad accessibility to service
Email (Outlook): many address but going to one email address, handler, case open time, respond time, duration, product type, customer segmentation, customer ID, Query type

Skype phone: Handler, customer experience descriptions, query type, time of call, Time of answer, end time, duration, customer segmentation, customer ID

5. Confirmations are incorrect
Handler, confirmation sender, entry log -> high light where went wrong, product type, customer type, customer ID, processing system

6. Error handling process is slow
Handler, confirmation sender, entry log -> high light where went wrong, product type, customer type, customer ID, processing system

Expectation Assessment interview 4

Title   Expert of FX   Audio   EA 04
Date   27.1.2017
Start   10:35
End   11:17

What kind of data would you need to have in evidence to take corrective actions:

1. Trade Confirmations are late
if relate to IT issues: Processing system, receiving system, audit log, time stamps, deal reference, error type,
if relate to missing information: Customer ID, Customer type, type of insufficient information, notice time, solving time (rare)

2. Service is slow
Customer, customer type, request type, case open time, case closing time,
Outlook que log

3. Service is rude
Handler, Customer type, Customer ID, time of occurance,
Handler task list in time of occurance
Description of customer experience

4. Bad accessibility to service
Email: Survey to CRU to find out how to improve customer contact points

Skype: call records, performance report, call volume log
            There is no way to know if the forwarded call was connected

5. Confirmations are incorrect
Processing system, receiving system, audit log, time stamps, deal reference, error type, Detail that the error was found

6. Error handling process is slow
Processing system, receiving system, audit log, time stamps, deal reference, error type, Detail that the error was found, case open time, case close time, duration, type of procedure, handler, handler's comments

Customer Journey (FX)

FX and MM Corporate

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
	Register Customer	**4 eyes principle on Register Customer**	**Input control**	**4 eyes principle on Input control**	**Send Confirmations**	**Confirmation Matching**	**Settlement**	**Investigations/ Error handling**	**Reconciliation/ Error handling**
	- Receive information from Traders - Update in local systems (DK & FI) - Set up customer info and SSI on network share (SE) - Establish cpty - Add TCC-link - WSS (SSI & Confo) - Add shortname to CSS client - Add dispatch registry - Update TOBO / E-Markets - Update Infinity - Monitor group mail - Consent agreement if customer wants agreement - Agree on if customer is netting or not	- Control FSI release - Dispatch registry - CSS MT101 clients	- Monitor WSS queues - Update/ check missing FSI - Manual marked customers - Manage Get Back Funds - Monitor NOP deals - Monitor group mail	- Approve deals from Repair Sight Verify or move back to Waiting for Repair	- Regular Mail - Fax - E-mail - Swift - Resend failed confirmation	- Monitor ProMatch - Monitor Misys - Monitor FX All - Monitor Traiana Harmony FI: Investigate discrepancies and /or missing confirmation - GDW: Matching, monitoring, chasing	- Monitor SRQ and take actions - WSS netting (agree with clients or trader) - CSS netting (DK+NO for MT101) - Manual MT900 (NO) - Manual MT101 (SE all / DK MM / NO FXMM - Man CB postings - NO, FI: Monitor CSS for failed postings + swift and inform others - Monitor PS + Merwa for NAK´ed swifts - NO: Monitor ProPos - SE: INL - FI FX deals: AGIO - FI FX/MM: Manual booking, CUPO, cover check, SITI correction	- Investigate problems regarding payments (pre or on value date) -Investigate problems regarding payments (after value date) - Take needed actions	- Investigate problems regarding postings - Reconciliation of suspence, internals some nostro and error accounts - Make corrections
Customer Service interaction	receiving payment instructions and confirmation preferences from customer, deliver customer Bank's payment instructions		request from dealer or customer to change deal details requires handling of the deal, if deal is cancelled or modified CS might need to contact customer or correspondent bank to recall payment		customer might request resending confirmation or payment reset documents, customer might also request sending of separate market value report, it could happen that sending of customers confirmation fails due to incorrect FAX or e-mail-> CS needs to contact customer to find correct ones.	if customer's and Bank's confirmation do not match it is CS who contacts the customer. If customer notifies the descrepancy first, they call Bank. If there are problems with customer e.g. not returning confirmations in time/not at all it is CS who can bring the issue up with local relationship manager to discuss the issue with customer	CS handles the netting process with customers as this requires daily dialoque confirming the amounts, value dates and payment instructions. It is important that customer gets hold of us and all is confirmed with timely manner as well as professonal.	If any problem with settlement, customer contacts CS or vise versa. CS takes necessary action to get the situation corrected. CS might need to talk to internal stakeholders like Nostro (reconciliation unit) or Relationship manager.	
Waiting time:	0-30 min	0-10 min	1-15 min	1-15 min	1-5 min	N.A.	*	*	
Touch time:	10-25 min	1-5 min	1-15min	1-3 min	1-10 min	1-4 min	1 min - 30 min	2-30 min	1 min - 4 hours
Cycle time:	1-1,5 hour	5-15 min	1-30 min	1-3 min	1-25 min	1 min - 15 days	1 min - 2 days	2min - 1 month	1 min - 1 week

* W: 7-->9 up to 1 day
* W: 7-->8 up to 1 day

Customer Journey (Custody Services)

					Legal								
					Compliance								
Customer need	Bank proposal	Static Data & agreements	Custody client trades in the exchange	Custody client buys from their client	Custody client sells (buys) to(from) their client	Instruction processing	Instruction processing	Instruction settlement	Final beneficiary receives shares (buy)	Safekeeping	Reporting (Client & regulatory)	Reconciliation between Bank & subcustodians/CSDs	Corporate Action
Customer sends RFP to CRU, who KYCs the client	Custody Sales sends proposal to customer	Client is setup in all relevant systems (Asteri, AP-Hoito, eCustody, Calypso, Kase, Ulko & relevant FO systems). Client data flows through to most relevant systems automatically when certain criterias are met.	Custody client buys shares from Bank Markets. Customer receives confirmation from Markets		Custody client sends us instructions	Bank receives & checks instruction. If instruction meets STP requirements, it will be automatically processed. If instruction is non-stp, instruction will be handled manually by TR Services	Bank sends instruction (mt540-543) to market and sends feedback from market back (mt548) to our custody client	Markets trade settles. Settlement instruction settles in market, Bank sends custody client settlement confirmation (mt544-547)	Our Global Custody client sends us an instruction from their commission account to their client's account (final beneficiary).	The shares will be booked to our account with our sub-custodian, where the shares are actually held by Bank. The booking will be reflected to customers safekeeping account by Bank's safekeeping system.	TR Services report the trade by regulatory requirements (for Bank Markets trades). Asset Services & Support sends out monthly statements of transaction & holdings.	NOC units reconcile most of Bank's Global positions in Corona. Position differences are investigated locally. Some manual reconciliations are handled locally.	Asset Services receives information about a corporate action from the market and takes necessary actions within Bank.

Customer
anager Rich Man Plc

					Customer Services								
CRU	Custody Sales	Asset Services & Support	Transaction Services	Transaction Services	Transaction Services	Transaction Services	Transaction Services	Transaction Services	Transaction Services	Transaction Services	TR Services	NOC	NOC
Custody Sales	Client Relations	Transaction Services									Asset Services & Support	Transaction Services	Asset Services
		Custody Sales										Safekeeping & Settlement FI & NO (IT)	Issuer Services/Client Relations
		Client Relations											
	Customer Services may be involved at this stage already, eg. Providing swift templates and/or demonstrating eCustody	Client may require help with sending settlement instructions either via eCustody or swift. Customer services may demonstrate eCustody in person or over the phone, or alternatively provide clit with swift templates for settlement instructions. This stage often involves advising and checking clients' swift messages in order to check the instruction has come through.	Customers contact us if they are issuing a new global bond which is not yet open in the system for the security to be opened before sending thir instrucions	Custody client will sell their clients' securities and will transfer them to their own account first. The client is informed if their client does not have the sufficient position or the account is incorrect. Alternatively the client may contact customer services and wonder why the transfer and/or market instruction have not settled/processed.	Clients are advised on incorrect instruction which do not even come through the system (customer services need to check failed swift messages) or clients contact us to check if instructions have come through	Clients are being advised on potential incorrect instructions informed by the settlement team. If transfer instructions do not go through (from the client's client) the client will be contacted, as this often results the market instruction not going through either	Should the subcustodian inform of any incorrect instructions/reject an instruction, customer services will contact the client and advise on how to proceed and how an instruction needs to be corrected, clients may contact Customer Services if they have any reasons to wonder why certain instructions have not settled, (eg. the counterparty may insist the instruction having settled in which case we will contact the subcustodian in the market) or they have sent an instruction late and wish the instruction to be processed asap. Client may have questions regarding any cancellations and receiving their money back (or paying back in case of a cancelled sell instruction)	A trade may have settled, however, the client wants it to be cancelled (ie reversed as settled instructions can not be cancelled) and will require assistance. In some markets the client may be stamp duty liable or other extra fees any have occurred and customer services will inform the client proactively when the fees are known	Clients are advised on incorrect transfer instructions	Occationally subcustodians and/or subcustody accounts may be changed, and the clients need to be informed of the new account and SSI's (Standard Settlement Instructions) so that their counterparties know how to instruct correctly			For the time being customer services handle the communication with subcustodians

Helsinki
Metropolia
University of Applied Sciences

Measurement Calculations

- $KPI_1 = Abandoment\ Rate$

Total Score > U => 0

Tier 1:

$$S = \frac{(15 - 13,6)}{(15 - 5)} * 100 = 14$$

W= 100/250= 0,4

- $KPI_2 = Service\ Level$

Total and Tier 1, U > R =>0

- $KPI_3 = Satisfaction\ Score$

Total and Tier 1 has the same score

$$S = \frac{(4,11 - 3)}{(5 - 3)} * 100 = 55,5$$

W= 100/250= 0,4

- Total KPI:

$$55,5 * 0,4 = 22,2$$

- Tier 1 KPI:

$$14 * 0,4 + 55,5 * 0,4 = 27,8$$

Helsinki
Metropolia
University of Applied Sciences