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Improving Customer Service with Intelligent Virtual Assistants

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The objective of this thesis was to propose the implementation of Intelligent Virtual Assistants in the customer center of the case company. The case company is a Nordic insurance company. Customer experience and the case company's customer service resources are vital for succeeding as an insurance company.

The research approach is applied action research and uses qualitative research methods. This study included four stages. First, the current process of contacting customer service by phone was analyzed with subject matter experts. The first stage resulted in identifying strengths and weaknesses in the current process, including current automation levels, wasted calls, and the complex process of reaching the correct department. The second stage consisted of reviewing available literature and best practices on the subject matter to improve the current process. The conceptual framework of the thesis focused on the topics of IVAs, chatbots, and their comparison.

As the outcome of the thesis, the proposal for the improved process and its map were created with the help of input from key stakeholders within the company. The proposal includes implementing IVAs as a first contact point, having them solve simple customer issues independently, and identifying if a human service advisor is needed. This proposal was discussed and reviewed with the key stakeholders, and the final proposal was created based on their feedback.

The improved process helps the case company implement Intelligent Virtual Assistants in its customer center. The implementation provides the opportunity to improve the customer experience and enable the case company to utilize human customer service agents in more complex tasks that require human attention.

Keywords	Intelligent Virtual Assistants, Automation, and Customer Service Experience

Contents

1 Introduction

In today's digital age, businesses increasingly adopt intelligent virtual assistants (IVAs) to enhance customer service and engagement. IVAs are computer programs that use natural language processing and machine learning to simulate human-like conversation and assist customers in real-time. IVAs in customer service have proven to be effective, as they can handle multiple customer requests simultaneously, provide 24/7 support, and improve response times. According to a recent survey by Gartner, "By 2025, customer service organizations that embed AI in their multichannel customer engagement platform elevates operational efficiency by 25%." This thesis explores the potential of IVAs in enhancing customer service and the factors that contribute to their success.

1.1 Case Company

The case company of this Thesis is one of the largest insurance companies in the Nordics. The case company was founded in 1999 through the merger of Norwegian and Swedish insurance companies' property and casualty insurance operations. The case company is also the leading insurer for property and casualty customers in the Nordics, with over 3 million customers within the Nordic and Baltic countries. The case company has divided its operations into Nordic Business areas by customer segments, with the Baltic countries as their separate business area. (The case company’s website, 2020.)

The case company has an entire range of property and casualty insurers offering insurance to a large base of customers, from individuals to large corporate customers. The case company’s strategic theme is focused on underwriting by being better than competitors in risk, the right pricing, and offering the best insurance products and services.

Customer experience and digitalization are at the core of the case company’s business values. As the insurance industry is rapidly evolving to a more digitalized world, the case company has started a project which aims to automate various tasks currently done by customer service representatives in the customer center, primarily focused on utilizing chatbots and messages sent from the case company’s web services. To get an

advantage over its competitors, the company aims to continue the project and expand automation into incoming phone calls to customer service.

1.2 Business Challenge, Objective, and Outcome

As the case company handles thousands of customer contacts daily, a business problem exists related to wasted calls. Customer service agents currently handle too many calls that could be automated using conversational intelligent virtual assistants to allow customer service agents to focus on the tasks that require human contact and cannot be automated. On a larger scale, the company cannot keep its pricing and risk management competitive when there are people who are doing work that can be automated.

The company would like to have 24/7 customer service, which could be possible with this technology. Most insurance companies in Finland are developing this technology, and they want to be the first to look desirable to customers and keep an excellent retention rate.

This study is part of a large development project to automate the case company's customer service, focusing on voice channels. This study aims to support the decision-making in the process by *creating a proposal for the improved process for the case company's customer service to benefit from using intelligent virtual assistants in phone calls.*

The outcome of this thesis is *a proposal on improving the case company's customer service process in phone calls using intelligent virtual assistants.*

Accordingly, one of the key terms used in this thesis is **Intelligent Virtual Assistants (IVA),** which refers to an AI-based solution used to automate various tasks in customer service.

1.3 Thesis Outline

The scope of this thesis focuses on improving the customer service of the case company's customer center for private customers in Finland and building a proposal for improving customer service with intelligent virtual assistants.

Interviews with internal stakeholders were held to gain an understanding and information about the existing customer service situation, and internal documents were studied. The theory of automation in customer service, chatbots, and intelligent virtual assistants was studied from the literature.

This study is written in seven sections. Section 1 consists of the introduction, a description of the background for the study, and an overview of the thesis. Section 2 shows how the study was designed and what research methods were selected. Section 3 describes the results of the current state analysis and analyzes the pain-points of the current level of service. Section 4 explores the best practice from Automation in customer service, Chatbots, and Intelligent Virtual Assistants and results in a conceptual framework for Improving Customer Service with Intelligent Virtual Assistants. Section 5 focuses on building the initial proposal, and Section 6 validates the proposal, discusses the results, and validates the proposed process improvement and concept. Section 7 concludes and summarizes this Thesis and provides a proposal for Improving Customer Service with Intelligent Virtual Assistants for the case company.

2 Research Design

This section describes the research approach, research design, data collection, and analysis methods used in this study, along with visuals explaining the methods.

2.1 Research Approach

This sub-section describes this study's research approach and shows why these research approaches and methods were selected for this study.

Saunders (2019) describes two leading *research families*: quantitative and qualitative. Quantitative research implies collecting numerical data and drawing conclusions based on this data. On the other hand, qualitative research involves collecting non-numerical data and drawing conclusions based on behavioral or descriptive data. Qualitative research suits studies with undefined metrics and results, behavioral studies, and individual cases and their impressions. Quantitative research, on the other hand, is suitable for studies with measurable metrics and how those metrics are utilized for the research's purpose.

Furthermore, a research study can be conducted as a field or desk study. A field study involves conducting research and gathering information outside the target company, while a desk study involves conducting research within the case company using existing information (Saunders, 2019). Also, research families can be divided into basic, fundamental, and applied research. *Fundamental* research is concerned with exploring and developing scientific knowledge and theories. Applied research solves practical and specific issues affecting individuals or groups (Communications for Research, 2019). The applied research family is well suited for business research and can apply both qualitative and quantitative research methods, i.e., mixed.

In business research, the most common *research strategies* are case studies and action research, less often used narrative inquiries, archival research, experiments, and others. Action research is used to solve a particular problem related to change in the organizational context. A case study uses qualitative and quantitative research methods to understand a specific case in the real world. One of the modern research strategies is Applied action research (Kananen 2013), which uses the advantages of more traditional

approaches, but aims at smaller-scale research projects (such as thesis research) and targets, not massive changes in organizations but designing solutions and improvements to the better (Kananen 2013, 19-21). Typical research methods and techniques used in applied business research are questionnaires, surveys, document analysis, interviews, and various interactions with the business community (e.g., workshops, focus groups, and others). Sometimes, business research also employs ethnographic methods (e.g., used in participant observations, such as observing and following participants to better understand how business process work) and tests (small-scale experiments carefully designed in advance).

This study uses Applied action research and qualitative research methods, as the research focuses on improving a particular part of a company with the help of new and improved processes for a specific purpose. Applied action research was selected as this study does not test theories or hypotheses but examines collected data and available knowledge by focusing on specific selected themes and models related to the business challenge. The research is conducted as a field study. The analysis utilizes new and self-gathered data.

The research was conducted using the 7-Gate model (Metropolia). The research is mainly conducted with quantitative methods but includes some elements of qualitative data. Qualitative research methods were beneficial for the thesis as the scope is limited to only a specific part of the case company. The study ends with a development proposal.

2.2 Research Design

This study used five steps in its research design. Figure 1 below shows the research design of this study.

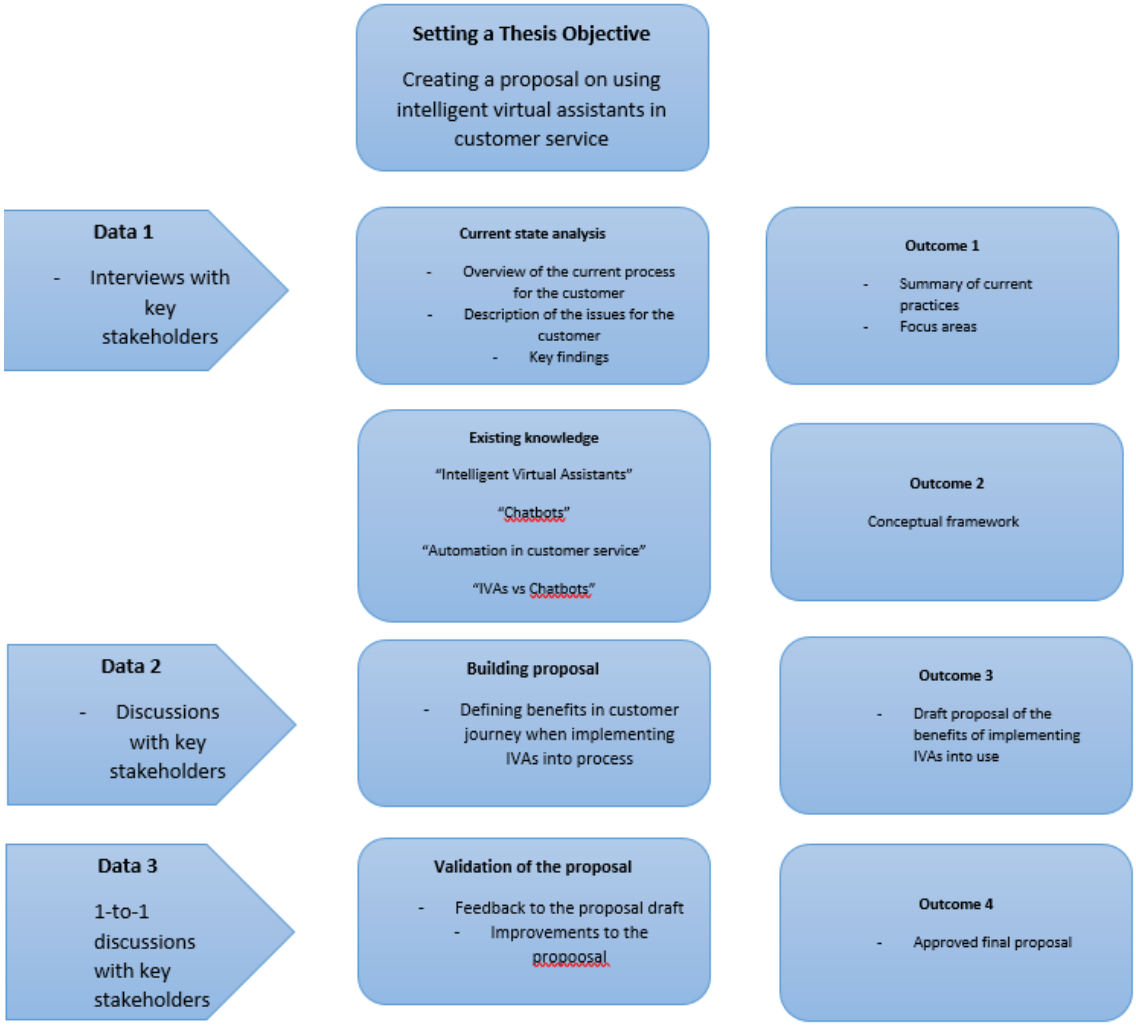

Figure 1. The research design of this thesis.

As shown in Figure 1, in the first stage of the thesis, the objective is to create a proposal on using intelligent virtual assistants in customer service. In the second phase, the thesis study includes the current state analysis of Customer service done to define the current processes, find its problems, and define the focus areas for further study. The current state analysis includes several interviews with stakeholders in various positions within the case company. These sources form the Data 1 collection for the thesis.

When the pain points are identified from the current state analysis, the study focused on exploring and gathering relevant existing knowledge and industry best practices to develop a practical, reliable solution. The topics of available knowledge search are focused on such themes as intelligent virtual assistants, chatbots, automation in customer service, and IVAs vs. chatbots. Best practices were explored to understand how other companies have used intelligent virtual assistants in their customer service

experience. Based on the selected, most relevant elements of existing knowledge and best practices, the conceptual framework is created for guiding the building of intelligent virtual assistants in the next stage of the study.

Equipped with this knowledge, the proposal for building intelligent virtual assistants for the case company was developed at the study's nest stage. The proposal development is done by co-creating with the case company's key stakeholders. In the final stage of the study, the proposal is validated by the key stakeholders and management of the case company.

2.3 Data Collection

This thesis study uses data collected from various sources within the case company, as shown in Table 1 below. Data is collected in three steps, first, for examining the current state, finding out its problems, and defining the focus areas for the study; second, for building the proposal; and last, for validating the proposal for using intelligent virtual assistants in the case company's Customer service.

Table 1. Details of Data collections 1-3 used in this study.

	Participants/role	**Data type**	**Topic, description**	**Date, length**	**Documented as**
	Data 1, for the Current state analysis (Section 3 or 4)				
1	Respondent 1: Head of Business Development	Teams meeting	Exploring the topic and the company's goals.	Mar 2022, 60min	Field notes
2	Respondent 2: Claims service representative	Face-to-face Interview	Experiences in wasted calls	Mar 2022, 30min	Field notes
3	Respondent 3: Customer service representative	Face-to-face Interview	Interview about the current process based on the respondent's experiences as a customer service representative	Apr 2022, 45min	Field notes
4	Respondent 4: Business Developer	Teams meeting	Interview about the current state of automation	May, 2022 60min	Field notes and recording
5	Respondent 5: Business Developer	Teams meeting	Interview about business requirements of automating calls	May, 2022 60min	Field notes and recording

6	Respondent 6: Sales representative	Face-to-face discussion	Discussion about the sales point of view of the subject.	Jun, 2022 30min	Field notes
7	Respondent 7: Head of customer center	Face-to-face discussion	Discussion about tasks of customer reps to be automated	Jun, 2022 45min	Field notes
	Data 2, for Proposal building (Section 5)				
8	Respondent 1: Head of Business Development	Teams meeting	Proposal building	Sep, 2022 60min	Field notes
9	Respondent 7: Head of customer center	Teams meeting	Proposal building	Sep, 2022 60min	Field notes
	Data 3, from Validation (Section 6)				
9	Respondent 1: Head of Business Development	Workshop (Teams meeting)	Validation and evaluation of the Proposal	Jan, 2023 60min	Field notes and recording

As seen in Table 1, the data for this study were collected in three rounds. The first round of Data 1 collection was conducted for the current state analysis to determine the business requirements from various points of view. Data 1 was collected through internal interviews with seven key stakeholders to gain insight on the subject matter from various points of view.

Second, the round of Data 2 collection was conducted for the proposal building and co-creating it with the key stakeholders. The discussions were held with the stakeholders in two Teams meetings, and the stakeholders were also involved in Data 1 collection. The following key stakeholders were selected to gain more insight and dig deeper: the Head of Business Development and the Head of Customer Center.

Third, the round of Data 3 collection was conducted for the validation of the proposal with the key stakeholder 1, the Head of Business Development, to validate the proposal and make final adjustments.

Thus, in this study, the interviews with various stakeholders were the primary data collection method. The interviews were held either face-to-face or via Teams calls, depending on the availability of the interviewees. The interviews were conducted as

semi-structured interviews, with the discussion with the interviewees allowing for open questions and sharing opinions, and brainstorming various suggestions related to the main theme of the interviews.

The interviewees were from different positions within the case company. The interviewees were selected as they provided different perspectives on the thesis topic and were of different levels of hierarchy within the case company. Some interviewees were directly involved in the transformation project, and others were indirectly involved but knew the challenges on the hands-on, practical level, such as the Customer service representatives and sales people.

The textual data was analyzed using Thematic analysis, finding out the common themes that stood out and were repeated by different stakeholders. Additionally, the thesis used one piece of available numerical data (used as secondary data), shown in Table 2 below.

Table 2. Internal document used in the current state analysis, Data 1.

	Name of the document	**Number of pages/other content**	**Description**
A	Case company's data of customer calls, in percentages	1 diagram	Diagram of percentage analyzing the reasons for customer calls

As seen in Table 2, this study also analyzed a report which analyzed the main reason a customer calls the company. This was done to determine what percentage of calls could be classified as wasted calls that could be automated completely.

Thus, the largest amount of data was analyzed for the current state analysis to establish the current state of the issues and the level of automation in Customer service. The findings from the current state analysis are discussed in Section 3 below.

3 Current State Analysis of Customer Service Calls

This section discusses the current state of customer service and processes implemented at the case company to deal with customer calls. First, this section goes through the channels that customers can use to contact the customer service of the case company and how they are automated. Next, this section explores how contact is handled when the customer calls customer service. Finally, the section points out the problems that the current system creates.

3.1 Overview of the Current State Analysis

The current state analysis aimed to determine how the customer service system works, how customers can contact the case company, and what kinds of problems the system creates. The current state analysis focused on the current state of contacting the insurance company by phone.

As for Data 1, the current state analysis was conducted using several data sources: First, *interviews and discussions* were held with 7 case company employees and developers responsible for the automation in customer service. Second, *internal documen*ts were analyzed (as shown in Table 2) and also other documents, which? Third, the thesis utilized *participant observations* in customer service and how the colleagues handled the phone calls. In the course of participant observations, field notes were created. In addition, the current state analysis included several test calls done by the thesis researcher to determine how the current process works when the customer contacts the insurance company by phone. To this end, the thesis researcher made several calls and selected different options in the pre-recorded menu at different times of the day. In the course of test calls, field notes were created.

The analysis resulted in a list of strengths, weaknesses, and development areas by compiling the issues that came up the most frequently from different parties. This allowed the study to discover the leading customer service issues.

3.2 Description of the Channels for Customer Contacts to the Customer Service

The company keeps a wide variety of channels for customer contacts. They are described below and then analyzed in the next section.

3.2.1 Channels for Customer Contacts

Currently, a customer has three main ways to contact the case company. First, there is *a chat platform* for a customer to send messages to customer service, which are then fully automated and handled by a chatbot with an option to escalate the contact to a live person. Second, there is *a messaging system* through a customer's pages when logged in to the company's internet service, which was the second part of the automation project. Simple tasks such as fixing invoices are fully automated by robotics process automation. Third, a customer can contact customer service by *calling the company's customer service number* and selecting a service through a menu they need, for example, claims services or customer service.

Currently, the process of contacting the customer center with a voice call is designed so that a single phone number for the company is available for customers during the opening hours of customer service. When calling the number, the customer is presented with a pre-recorded greeting and thank you for contacting the company. The customer is then presented with a selection of several sections of the company, which are pre-recorded voice lines, and the customer has to select from several options to advance to the part of the customer service they are looking for.

3.2.2 Roles and Responsibilities in the Customer Service

In the case company's customer service, the roles and responsibilities of customer service representatives are essential for maintaining high levels of customer satisfaction and retention. The customer service department is often the first point of contact for customers seeking assistance with their policies or making claims. Customer service representatives must possess various skills and knowledge to serve customers effectively.

Customer service representatives are responsible for answering phone calls and responding to emails and online chat inquiries professionally and on time. They must effectively communicate with customers and provide accurate information and guidance on insurance policies, claims, and other related matters. This requires high product knowledge, good communication skills, and the ability to manage customer expectations. Customer service representatives are responsible for adhering to the company's policies and procedures while providing customer service. They must maintain a high level of

professionalism at all times and work within the company's guidelines to ensure consistency and quality of service. This includes ensuring they know the company's policies, processes, and products.

Customer service representatives are responsible for staying up-to-date with the latest information about the company's products and services. They should participate in the company's training programs and continuously improve their knowledge and skills. This enables them to provide accurate and up-to-date information to customers and handle queries effectively.

In conclusion, customer service representatives are crucial in the case company's call center. A well-trained and knowledgeable customer service team is critical for maintaining high customer satisfaction and retention levels, which is essential for the company's success.

3.2.3 The current level of customers services and automation

Key findings of the current state analysis show that implementing automation in customer service has started well. The case company has implemented robotic process automation (RPA) to automate simple tasks that customers frequently perform, such as updating their personal information or checking the status of their claims. RPA can save significant time and effort for both the customer and the customer service representative. By automating these routine tasks, customer service representatives can focus on more complex and urgent issues that require their attention. Additionally, RPA can improve the accuracy and speed of data processing, leading to faster resolution times and higher customer satisfaction rates. RPA also reduces the chances of human errors during manual data entry or processing.

According to the case company, this process works smoothly, and the company is happy with the current levels of automation:

> *"We are delighted with our current automation, which has proven to be very useful in reducing wasted calls and minimal tasks for a customer service representative to do during a call. As we aim to be a digital-first insurance company, the natural next step for us is to implement a robot for our phone calls as well as it is the only major part of our customer service that is not*

> *using one already. We have very talented people working in our customer service, but I feel their expertise could be used for much more than fixing simple invoices, for example."* (Internal stakeholder 7).

However, a more detailed analysis reported below revealed several issues that need improvement in customer service, especially digging into customer phone calls.

3.3 Analysis of the Current Process of Contacting the Customer Service

The current process of contacting the service was made into a process diagram based on the interviews and the results of the test calls to customer service. The current process diagram of a customer calling the case company is shown below.

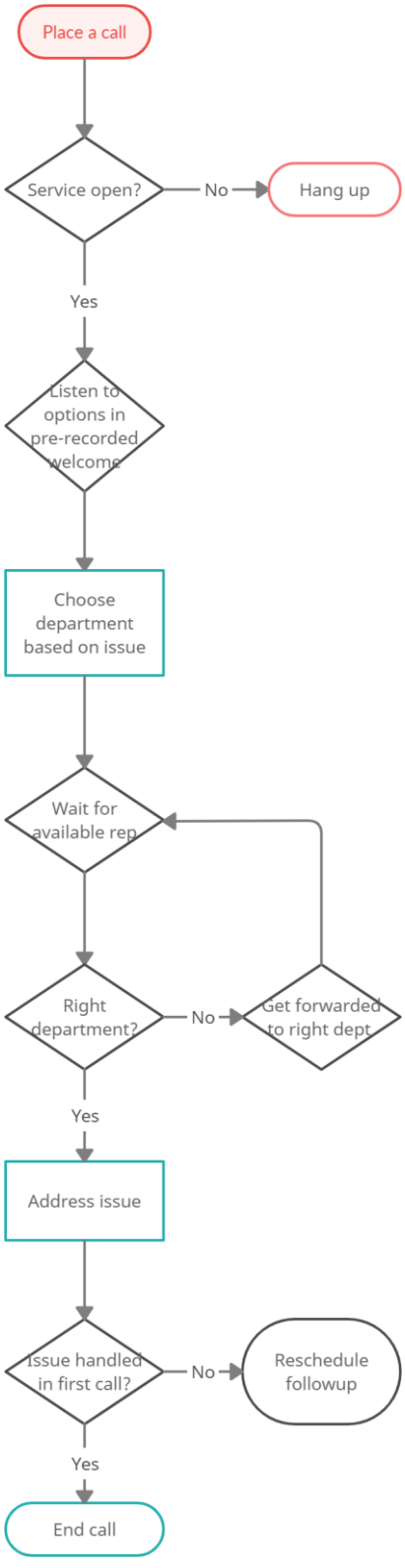

Figure 2. The current process of contacting customer service.

The process starts with a customer placing a call to the customer service number of the insurance company. The call starts with an automated voice thanking for the call, explaining two options for the customer, and asking if the call is related to claims services or another customer service (purchasing insurance, invoicing, and others). Suppose the caller selects either option outside the company's business hours. In that case, a pre-recorded voice tells the caller which are the opening hours of either service and then terminates the call without offering any solution for the problem and not offering an option for requesting an automated callback service after the service opens up again.

The first significant problem about the current state of the service is found in the interview with Internal Stakeholder 1, which is in the limited opening hours of the service, which is pictured in the service process map here:

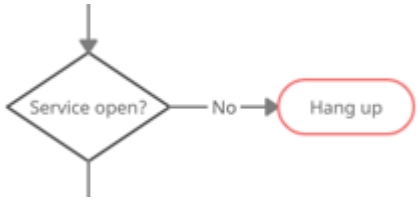

Figure 3. The first major problem in the current process.

This creates a challenge in customer service. Currently, the phone service cannot be open outside of the opening hours, even though the company would like to be available 24/7 using all available channels. As the phone service does not offer a possibility to request a callback, customer experience might be affected negatively as the customer has placed a call, and their issue does not go forward at all. The customer has to take the initiative to be in contact at another time.

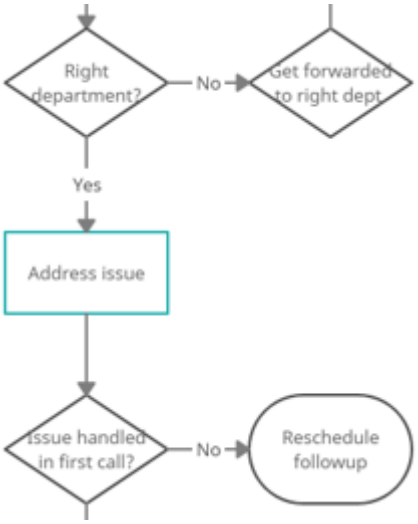

Figure 4. Selecting the correct department.

As the current process of selecting the correct department for the customer's inquiry relies on the customer knowing exactly where to navigate through the menu, it creates a challenge for the customer and the company as the customer might not be entirely sure which department is the one that handles their task. For example, a customer might have a claim about their liability insurance; as the liability insurance is a part of home insurance, the customer likely selects home insurance claims from the menu, and they have to wait to be forwarded to the correct department in this case.

Below are the percentages of calls retrieved from an internal document shared by Internal Stakeholder 1 during their interview.

Issue	%
Changing due date on invoice	2,3
Fixing invoice	3,5
Changing invoicing frequency	0,5
Forwarding call	9,5
Insurance certificates	1,5
Total	17,3

Figure 5. Percentages of calls classified as waste.

Based on the data sheet shown in Figure 6, the results show that approximately 17,3% of calls made to the company's customer service are classified as wasted calls. 2,3% of calls are related to customers requesting an extension to their invoice. 3,5% are related

to fixing something in their invoice, 0,5% are looking to change how often they receive invoices from the company, 9,5% of customers have placed a call in the wrong department of the customer service, and 1,5% of calls are customers requesting certificates of insurance validity.

As seen in Figure 6, the proportion of forwarded calls is high. Approximately 1 in 10 customers place a call in the wrong customer service department, making it challenging for customer service as it requires too much input from human customer service representatives.

3.3.1 Issues related to customers

The first issue related to the customers identified in the current state of customer service is *the complexity* of the current process and availability of customer service at the company. This creates an issue for the customer, as there are so many departments that the selection process presents them, and the customer might not be fully aware of which department is the right one for their issue. For example, the customer might have an issue related to liability claims services, and they might not know that the claims service itself has many more options with different claims services representatives specializing in different types of claims.

> *"The current selection tool during the call is not clear enough, as I get several calls per day that are not related to my claims department at all, and I have to reroute the call to the right department, which takes time from my actual work."* (Internal stakeholder 2 from the case company).

Second, the current customer service process is also limited by the company's opening hours, as the customer cannot call the company or leave a callback request if the service is not open. Opening hours is a minor issue, though, as it is currently addressed by allowing the customer to leave a message through the company's web pages or a chatbot. Still, customer service is currently limited by the company's opening hours, and the customer cannot contact the company with a phone call outside of these hours.

> *"We want to be open 24/7 for our customers, as we have always wanted to be the first insurance company to adopt new working processes in automation, and are looking to not limit our phone service by opening hours*

> *of the customer service center to be truly by our customer's side around the clock."* (Internal stakeholder 1.)

Third, even though the case company has a low average wait time when calling, the customer might have *to wait in line* before receiving service. The customer experience might be negatively affected when selecting the wrong customer service department. For example, a customer might have an issue they need help with regarding liability claims, and they call the case company's customer service. After selecting the home insurance claims department as the liability insurance is a part of home insurance, they need to be redirected to the liability claims department while waiting in a queue twice.

Fourth, the customer calls are *not sorted out* properly. Suppose the customer has an issue and wants to talk to a customer service representative instead of using Internet services. In that case, they have to place a call to the case company's phone service and wait for the next available customer service representative. In case of a minor manual issue, for example, getting the customer's invoice fixed, it takes too much time from both the customer and the service representative, as automation could fully handle the issue.

3.3.2 Issues related to the company

First, wasted calls in the case company's customer service can be a significant issue that results in loss of time and a decline in customer experience. When customers have to wait on hold for a long time, get transferred from one agent to another, or repeat their issues multiple times, it can cause frustration and dissatisfaction. This can ultimately lead to a decline in customer loyalty and retention rates. Additionally, suppose customer service representatives spend excessive time dealing with minor or routine inquiries. In that case, it can hinder their ability to focus on more complex and essential tasks that require human interaction. Therefore, the company needs to find a way to minimize wasted calls and prioritize their agents' time so they can provide better support and higher-quality service to their customers.

Second, there is no automation in the voice channel of customer service, which leads to having customer service representatives handling all tasks that come through *without any filtering.*

Third, wasted calls, also known as unnecessary or avoidable calls, are a significant issue for the case company regarding customer service. Wasted calls occur when customers have to contact the company multiple times for the same issue due to a lack of resolution or satisfaction in their initial interaction with customer service representatives. This increases call volumes and long wait times, causing customer frustration and negatively perceiving the company's service. Inefficient call handling can also lead to increased costs for the company, requiring additional resources to manage the call volume.

3.3.3 Case Company's Needs Concerning the Customer Service Automation

As identified in discussions and workshops with Key Stakeholder 1 and Key Stakeholder 7, a need to further automate their customer service and improve efficiency exists. The case company may need to automate its voice channels. Automating simple tasks through RPA has helped the company to reduce the workload of customer service representatives and free up their time for more complex tasks that require human interaction. However, there is still room for improvement in automating voice channels. The company could provide customers with quick and convenient self-service options by implementing AI-powered chatbots or virtual assistants, reducing the need to wait on hold for a representative. Additionally, automating voice channels could also help improve the accuracy and consistency of customer service interactions, as AI-powered systems can provide standardized responses and follow predefined protocols. Automating voice channels could lead to a more streamlined and efficient customer service experience for the company's customers.

The next step of automating voice calls is vital for the company to reduce the number of wasted calls, expand its customer service opening times, and stay ahead of the competition by providing this service.

3.4 Key Findings from the Current State Analysis

Summing up, currently, there are many painful issues related to customer calls, and there is no automation in the voice channel of customer service, which leads to having customer service representatives handle all tasks without any filtering. Even the simplest tasks – such as fixing a due date on an invoice or placing a callback request for a specific customer service representative – must be done by real humans. If these kinds of tasks

are automated, customer service representatives can use their time for tasks that require real humans.

The current state of the service includes confusion for the customer as they might not know which department of customer service to choose from the menu when calling the company, and the customer is limited by the company's opening hours.

3.4.1 Strengths and Weaknesses of the current customer service

This part shows the identified strengths and weaknesses of the current level of customer service for the case company, as shown below

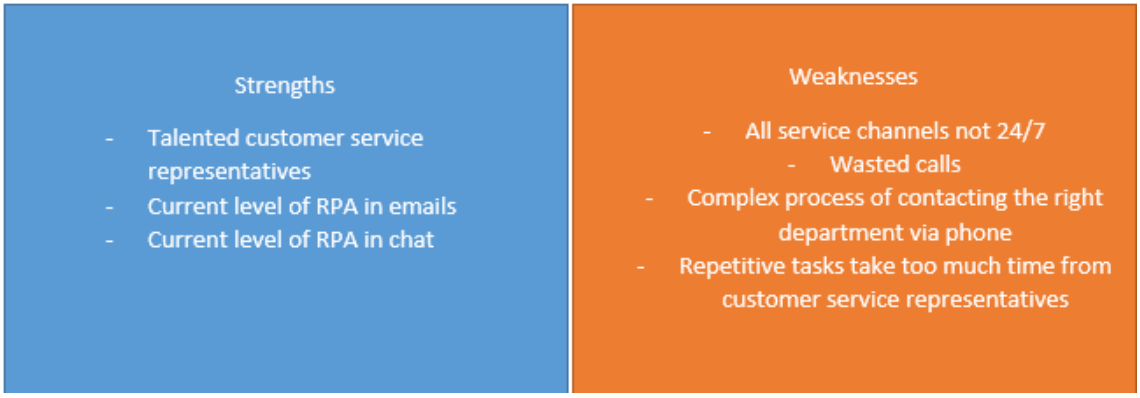

Figure 6. Key findings of the current state analysis concerning its Customer service and, more specifically, phone calls.

3.4.2 Strengths

The case company's first strength is its talented customer service representatives. Having skilled employees trained in customer service is essential for delivering high-quality customer experience. Customers appreciate interacting with competent, helpful agents who can quickly address their concerns and resolve issues.

The company's current Robotic Process Automation (RPA) level in emails is another strength. RPA can automate simple and repetitive tasks, freeing customer service reps' time to focus on more complex queries requiring human interaction. This automation can enhance efficiency and help the company respond faster to customers.

The case company's current level of RPA in the chat is also a strength. RPA in the chat is used to automate simple tasks, such as providing instant answers to frequently asked questions, which can help reduce customer wait times and improve customer satisfaction.

3.4.3 Weaknesses

The weaknesses recognized based on the interviews were first that all service channels are not open 24/7 as the company would like them to be, as the customer service using a phone call is limited by the company's opening hours.

Second, as identified during the interview with Internal Stakeholder 1 and the percentages of wasted calls provided by the stakeholder, the repetitive tasks take too much time from the customer service representatives, and the calls are classified as wasted as the customer service representatives could be using their expertise in more complex tasks.

Third, the process for calling the company was also identified as not being as clear enough as many calls come through which should have been made to another customer service department. This weakness was identified in several interviews with internal stakeholders and is also a regular topic of discussion in the customer center environment.

3.4.4 Selected Focus Areas

Key findings of the current state analysis show that implementing automation to customer service has started well, with two out of three ways to contact the company already first handled by a robot. The next step identified in the Data 1 collection is that automating voice calls is vital for the company to reduce the number of wasted calls, expand its customer service opening times, and stay ahead of the competition by providing this service.

The selected focus areas have been identified by analyzing the current state analysis, strengths, weaknesses, and other findings by recognizing and analyzing the processes. Three elements have been identified.

1. Intelligent Virtual Assistants

2. Chatbots

3. The channels must be selected by comparing IVAs vs. chatbots.

In the next section, this thesis explores the best practices currently being done by other companies in the subject.

4 Existing Knowledge and Best Practice on Using Intelligent Virtual Assistants, Chatbots and Automation in Customer Service Calls

Existing knowledge first looks at the theory behind intelligent virtual assistants, chatbots, and automation in customer service and summarizes the differences between IVAs and chatbots.

4.1 Automation of Customer Service

Automation has been in use during the last few years, especially in chatbots in customer service, where they have become the industry standard. According to Davenport et al. (2019), customer service will be more automated using robotic automation in the future. In a study by Merkle (2019: 1402), customers were not significantly happier when comparing conventional customer service to customer service that utilizes robotics. It was also mentioned that customers are more likely to put up with errors when made by a chatbot instead of a human customer service representative. Davenport et al. (2019: 2) pointed out that dealing with an automated service might seem unpleasant to customers.

According to Bolton et al. (2018: 800), services and related studies are moving forward to a period where a comprehensive customer experience consists of digital, physical, and social dimensions. Artificial intelligence and robotics will become a natural part of the customer service experience, and the future customer experience will rely on customer preferences and the organization's ability to customize its services for its customers. Schneider (2017) expects that in the future, over 85% of customer interactions will be done by automation and robotics. Using automation and robotics, an insurance company can improve its service, have longer opening hours, and reduce costs.

The usage of robotics and automation in customer service has become much more widespread as companies look for ways of improving customer experience while also being efficient in cost reduction. According to Schneider (2017), automation can help companies improve their customer service by providing 24/7 service while reducing the time a customer needs to wait for a response and minimizing human user errors. As customers value excellent customer service, automation could lead to better customer satisfaction and loyalty.

However, there are also potential drawbacks to using automation in customer service. As noted by Davenport et al. (2019), customers may perceive automated services as impersonal or unpleasant. Additionally, there is the risk that automation may not be able to handle complex or unique customer inquiries, leading to customer frustration and dissatisfaction.

To address these concerns, organizations must be careful to balance the benefits of automation with the needs and preferences of their customers. As suggested by Bolton et al. (2018), a comprehensive customer experience should consist of digital, physical, and social dimensions, with artificial intelligence and robotics serving as one part of this experience. This requires a customer-centric approach, with organizations taking the time to understand their customers' needs and preferences and tailoring their services accordingly.

Merkle's (2019) study suggests that customers are willing to accept errors made by robots but are not necessarily happier with automated customer service than traditional customer service. This highlights the importance of providing a seamless customer experience, whether the interaction is with a human customer service agent or a machine.

As automation and robotics become more common in customer service, organizations must continue to prioritize the customer experience and strive to strike a balance between the benefits of automation and their customers' preferences. This requires ongoing monitoring and evaluation of customer satisfaction and a willingness to adapt and evolve as customer needs and preferences change over time.

Organizations must understand the potential benefits and challenges that come with these technologies. One benefit is the ability to scale customer service operations rapidly, particularly during periods of high demand. According to a study by Walker (2021), 73% of customers report that their experience with a company is an essential factor in their purchasing decisions, and automation can help organizations meet these expectations by providing faster and more efficient service.

However, implementing automation and robotics in customer service also raises concerns regarding job displacement and the quality of customer service. In a survey by Deloitte (2020), 33% of customers reported a preference for human interaction over automation. Additionally, using automation and AI may result in losing jobs previously performed by humans. Companies must proactively address these concerns and mitigate any adverse impacts of automation.

To ensure the successful integration of automation into customer service, companies must prioritize the development of effective AI systems. As McKinsey (2019) noted, AI systems must be trained on large amounts of data to provide accurate and reliable customer service. This data should include customer interactions, feedback, and preferences. AI systems must be able to interpret complex language and understand customer intent to provide adequate responses and solutions.

Integrating automation and robotics in customer service also requires a careful balance between efficiency and personalization. According to Accenture (2018), while customers appreciate the speed and convenience of automated customer service, they also expect a personalized experience. This requires using AI systems to recognize customer behaviour and provide tailored recommendations and solutions.

Overall, using automation and robotics in customer service presents opportunities and challenges. To ensure success, companies must prioritize the development of effective AI systems that balance efficiency and personalization while addressing concerns about job displacement and the quality of customer service. As customer expectations continue to grow, organizations must be willing to adapt and evolve their customer service strategies to meet these changing needs.

4.2 Intelligent Virtual Assistants

Intelligent virtual assistants (or IVAs) are AI-powered software used to engage with a company's customers in a conversational manner within customer service. IVAs could be described as more advanced versions of conventional chatbots, which emulate human interaction to perform specific tasks, which are usually simple and repetitive.

Chatbots were introduced in the late 1960s, during which the chatbots were programmed with straightforward capabilities consisting of fully scripted responses based on user inquiries for specific text and keyword matching. These chatbots started to face limitations as conversational flows became more complex. These chatbots cannot remember past conversations or understand relevant customer information in different sessions.

IVAs are utilized in customer service to automate tasks such as email and chat conversations with the company's customers by providing the first contact with a customer when they contact the company. IVAs can handle simple tasks independently and understand if the problem is complex enough and must be escalated to a human customer service representative. IVAs can address routine, high-volume issues that could otherwise flood the customer service that uses only human customer service representatives.

According to Madrinan (2022), IVAs not only reduce costs, but they also have been proven to improve job satisfaction among live customer service representatives, as IVAs lighten their workload, and they can focus on tasks requiring more of their expertise and leave repetitive tasks for IVAs. For some, it is possible to become a specialist in the subject matter and task themselves in bot and IVA training, reducing employee churn.

Intelligent Virtual Assistant is an AI-enabled system that can emulate human interaction to carry out and optimize tasks in customer service. IVAs are gaining attention in the insurance industry, utilizing many technological advancements such as machine learning (ML) and deep neural networks. IVAs differ from conventional chatbots as they help customer service representatives to solve problems in three key elements: learning, understanding, and reasoning. IVAs differ from traditional chatbots, as conversational AI has evolved with two technologies: machine learning and natural language understanding (NLU). NLU allows the virtual assistant to understand and interpret inputs from customers and workers in a natural language, enabling the bot to have a natural conversation. With the help of machine learning, virtual assistants can train themselves based on data such as observing live customer interactions and customer service interaction transcripts.

The advantages in technology provided by these techs facilitated the gradual evolution from chatbots to intelligent virtual assistants with the in-depth knowledge they can use

to understand customers' intents and preferences, fulfill their needs, and enhance their performance. As Walimbe (2020) said, "ML allows the bots to self-train based on data such as previous customer service interaction transcripts or by observing live customer-agent interactions. This helps the IVAs to cater to customer needs more efficiently and seamlessly."

According to Walimbe (2020), companies are utilizing the vital capacity of IVA technology to engage actively with customers and optimize their customer service.

The main benefit the IVA solves is improved customer service. The IVA technology reduces the number of calls to human service agents. With IVA, it's possible to automate the business flow of interacting with customers, which allows customer service agents to put their focus on more complex tasks that require human interaction and not waste time on requests that can be fully automated. The IVAs also adapt to the needs of each user over time, providing the customer with a high level of personalization. As they can remember the user's preferences from previous encounters, the IVA helps to increase customer engagement and improve customer satisfaction and loyalty. According to Landsberg (2021): "IVA tools appeal to organizations' ongoing desire to eliminate manual, everyday tasks, such as transcribing meetings, pulling action items, entering data, and scheduling meetings, which can become distracting and time-consuming. Several business leaders, encouraged by how IVAs free employees to focus on more creative, bigger-picture work, now relegate routine tasks entirely to an IVA."

Below is an example of an IVA helping a customer while remembering their past interactions with the company and thus lowering the time to solve the customer's issue.

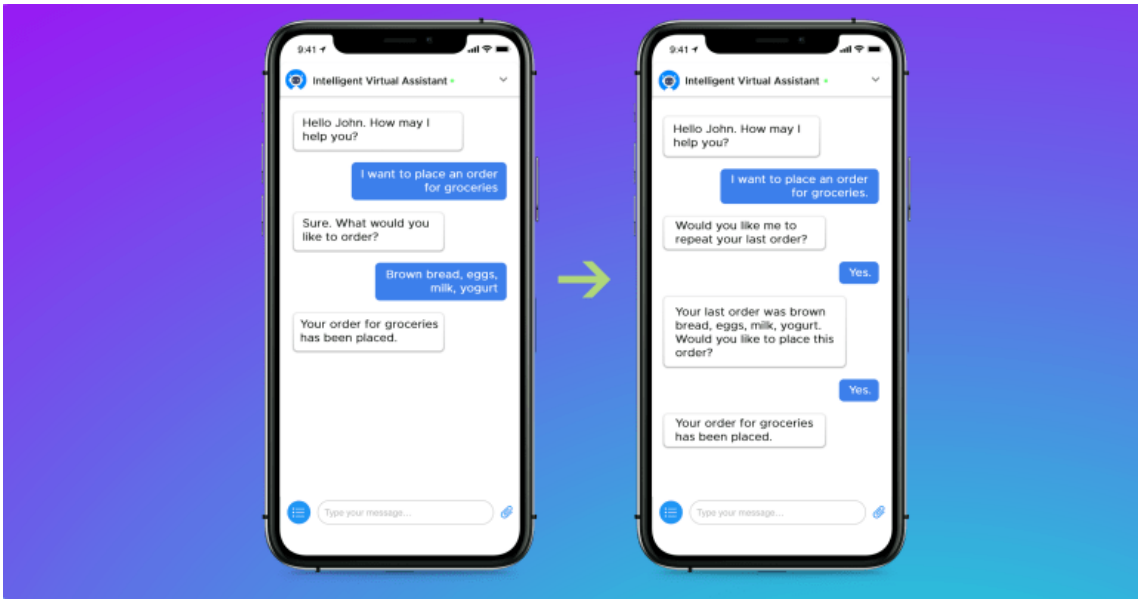

Figure 7. Snapshot of an IVA helping a customer place an order (Source: Haptik, 2019).

As seen from the snapshot above of an IVA helping a customer place an order, if there exists a past encounter with a specific customer, the IVA remembers what the customer was looking for during the past encounter and can suggest the same order to make the customer's experience more accessible.

Scalability makes the IVA an interesting option for enterprise use as the IVA can take a role of a sales agent or a customer service agent. Companies usually implement IVAs as an asset to improve efficiency, enhance the return on investment, optimize business processes, and help reduce workloads.

As Walimbe (2020) said, "As the industrial space grows increasingly more competitive, customer engagement has emerged as one of the most significant assets for a successful brand. Studies have shown that almost 96% of customers across the globe believe that customer service is a significant factor contributing to their loyalty to a brand."

Companies are improving their customer experience with the help of IVAs in many different ways, such as IVA solving customer issues with in the channels that the customers prefer to use, making the contact convenient and fast for the customer. IVAs can also be integrated into different systems and databases and offer tailored packages for specific customers based on data available to the IVA.

4.3 Chatbots

The definition of a chatbot is a computer program that simulates a conversation with a human. Chatbot is coined from the words “chat” and “robot.” The purpose of a chatbot is to simulate a conversation between two counterparts, with the other part being a robot.

A chatbot can be defined as a computer program aimed at simulating the conversation of a human being. The term is a contraction of “chat” and “robot.” A chatbot's purpose is to mimic a discussion between two parties, but one is a human and the other a machine. Chatbots are an instance of HCI (Human Computer Interaction), which is also used to refer to an interdisciplinary field that studies how humans communicate with machines and how the machines need to be designed to provide the best possible customer experience. (Kim, 2015)

It is essential to know that there are different kinds of chatbots and that they can run differently depending on the extent to which they are powered by artificial intelligence.

First, rule-based chatbots (scripted chatbots) are dictated by pre-defined rules, meaning specific keywords are associated with a specific outcome. When the user’s request contains particular keywords, it activates a given action that generates the output. The before mentioned is the most basic form a chatbot can take, but it is constrained because it does not understand the request; its imply consists of “keyword matching” (Atwell & Shawar, 2007, p. 37) and is therefore deprived of any form of AI. Scripted chatbots are inflexible since they cannot answer a question with a keyword not included in the script. The system classifies information to understand the user's wants; it selects a few keywords from the request and sorts them into distinct categories. Below is an example of a rule-based chatbot that can converse with the customer.

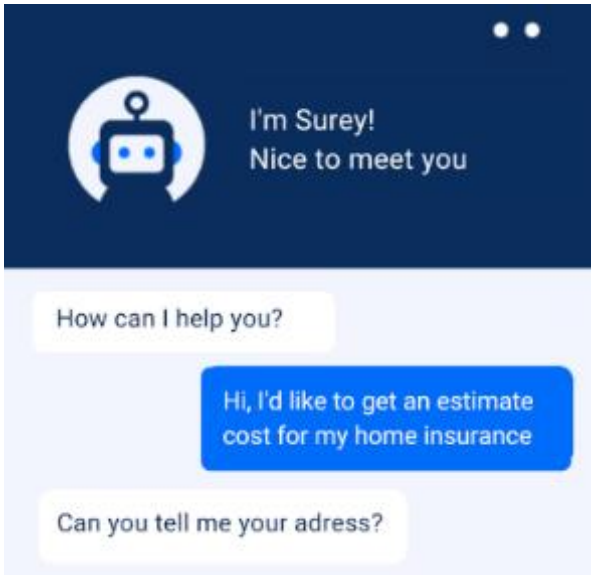

Figure 8. Snapshot of an insurance company's chatbot discussion (Source: Inbenta, 2021).

As shown in Figure 8, a chatbot converses with a customer, recognizing the keyword "home insurance" and replying as taught before.

Another type of chatbot is singled out to receive a more dynamic response: the similarity-based chatbot, which selects all the potential responses to the user's request in its semantic database and chooses the best one as the output. When the answer to the request is found, the software translates it back into natural language and conveys it to the user via the interface chosen beforehand. AI chatbots represent a different category of chatbots that Artificial Intelligence powers. Such bots can process natural language and extract a formal representation of the input or start from such a representation to generate natural language, aiming to communicate efficiently and hold an entire and consistent conversation, just like human beings would do. Some can even learn from previous interactions to improve their performance using machine learning.

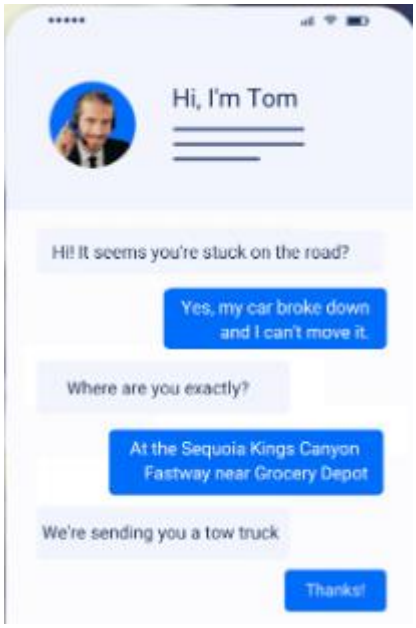

Figure 9. Snapshot of an insurance company's chatbot discussion (Source: Inbenta, 2021).

An example of a conversation by an AI-powered similarity-based chatbot is shown above, in which the chatbot remembers a previous discussion with the customer and can identify their existing insurance policies and go straight to solving their issue.

Compared to traditional options, using chatbots in customer service has many benefits. Being able to offer assistance to all customers around the clock is one of the most significant benefits chatbots provide while also giving the answers immediately. Cancel & Gerhardt (2019) agree with this, stating that when asked from consumers these benefits rose the most when asked how chatbots can improve the experience of website visitors.

Chatbots improve efficiency and help reduce company costs while allowing convenience and support to employees and customers. Chatbots enable companies to handle simple tasks and inquiries by customers independently.

With the help of chatbots, a company can scale up its customer service operations while also being able to personalize the service and be proactive with customers at the same time. As an example, when utilizing only human service agents, a company's resources are limited to a certain number of customers at any one time, which might affect the amount of time and resources available for personalization capabilities and might not be

able to be as proactive towards customers. With chatbots, companies can assist an unlimited amount of customers in a personalized manner and be scalable when required.

Research on consumers indicates that instant messaging applications have become the preferred channel to contact companies for specific inquiries. Chatbots in instant message platforms provide a high level of convenient service that exceeds what human service agents can provide in many cases. Adamopoulou (2020) said: “For example, banking chatbots save an average of four minutes per inquiry compared to traditional call centers. The same capabilities that help businesses achieve greater efficiency and cost reductions also deliver benefits to customers in the form of an improved customer experience.” Showcasing the efficiency of automating simple tasks.

The most common area automatized in a customer contact center with chatbots is the inbound contacts by customers, including redirecting the customer to the appropriate department for further assistance. Chatbots are also frequently used in internal channels, such as helping new employees with onboarding and self-service activities. (Adamopoulou, Moussiades, 2020.)

4.4 Chatbots vs. IVAs

IVAs and chatbots differ in three main ways: how they speak to customers, provide their answers, and learn new solutions. (Madrinan, 2022.)

Conventional chatbots are question-and-answer bots. A question containing an exact keyword or sentence taught to the bot provides a pre-defined response to that exact query. If the bot cannot answer, it can escalate the query to a live customer service representative. Chatbots are rule-based systems, so first, they have to be taught by a human by creating more rules, and they cannot learn new answers independently.

IVAs are more sophisticated than chatbots, as a given script does not limit them but can engage in context-related conversations. IVAs use neural networks and algorithms based on machine learning (ML) to determine the customer’s inquiry and response. As IVAs rely on natural language processing (NLP), they are better in both input and output. IVAs can recognize synonyms, misspelled words, plurals, and informal language, and

chatbots are not. When IVAs respond to a customer, they can give precise answers, even if the IVA has not been taught the inquiry beforehand. The communication of an IVA also differs from conventional chatbots, as the IVAs use a combination of NLP, ML, and AI to help them understand the customer's intentions and decide how to respond to the customer's query. IVAs are usually integrated into a customer service organization's backend systems, meaning that they can use a customer's existing data or data based on previous interactions with a certain customer to provide better customer service to the customer they are interacting with. As chatbots are learning only from human input, IVAs are using deep learning models and can learn from examples, meaning that more data the IVA has, the better it gets at knowing what the customer is looking for and can respond accordingly. (Madrinan, 2022.)

Chatbots have a minimal scope regarding understanding queries as they respond from pre-defined scripts. IVAs can learn over time and adapt to context for free-flowing chats. Moreover, chatbots that are not trained to understand complex sentences with industry or brand-specific queries use open-source NLP. This leads to other bot breaks and a heavier load on customer service representatives, possibly negatively affecting the customer experience.

Chatbots can only identify return users in the journey of contextual conversations. However, IVAs go much further by remembering information derived from past user behavior and actions. It then uses this information for more context in future conversations. In free-flowing conversations, spelling errors, slang, negative sentences, or "negations" are common. However, chatbots do not have the AI models that IVAs have to understand specific intents and precisely answer user queries. Shown below is a snapshot of a comparison of a customer having a conversation with both a chatbot and an IVA, showcasing the understanding of spelling errors.

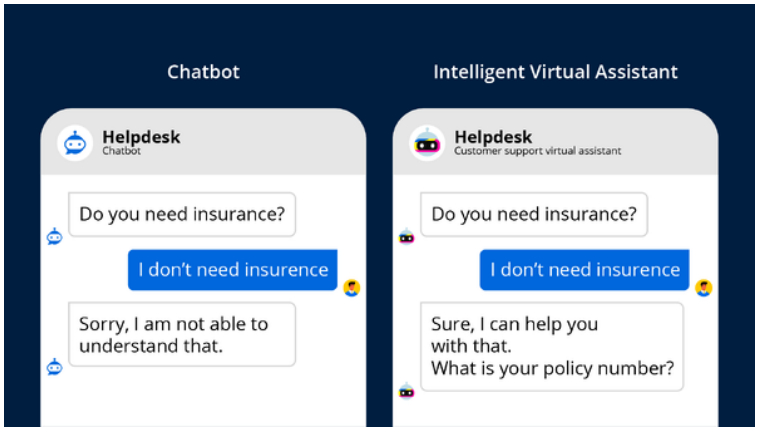

Figure 10. Snapshot of a comparison of a conversation with a customer between a chatbot and IVA.

As seen from the conversations above, when a regular chatbot encounters a spelling error, they have no other reply than saying they do not understand the question as it has not been previously taught to them this way. The IVA, on the other hand, can understand what the customer is asking even though there is a spelling error and can continue the conversation.

Shown below is a comparison of key differences between chatbots and IVAs.

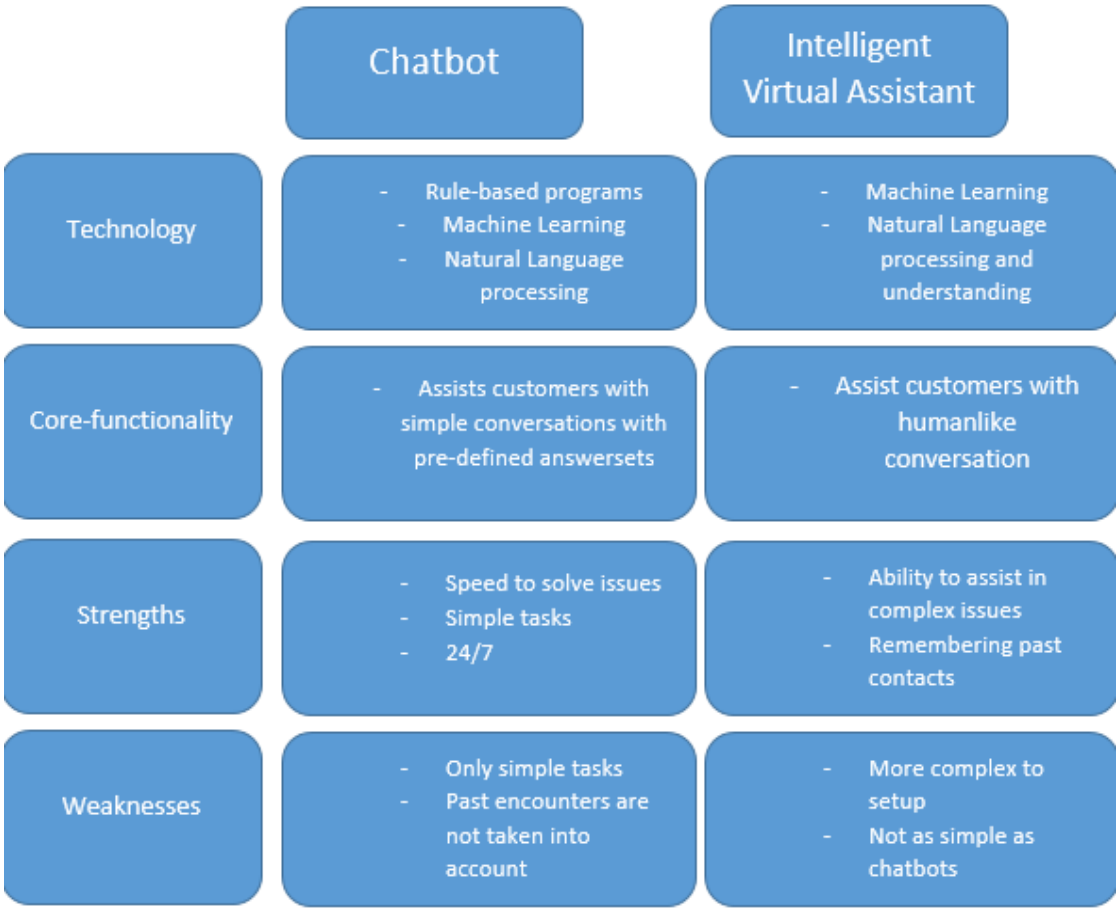

Figure 11. Comparison of key differences between Chatbots and IVAs (Madrinan, 2020, Landsberg, 2021 & Walimbe, 2020).

As shown in Figure 11, chatbots work well for simple tasks such as fixing invoices or receiving and booking callbacks from customer service representatives, as they offer quick solves to their problems if a human has taught them to solve particular problems. However, simplicity is also the chatbots' weakness, as they can assist only in the simple tasks they have been taught beforehand. IVAs, on the other hand, can assist customers with more complex tasks and remember past encounters with a customer to provide a more personalized customer experience.

Next, section 4.5 presents the study's conceptual framework of the benefits of using intelligent virtual assistants in the case company’s customer service.

4.5 Conceptual Framework

This section of the thesis presents the conceptual framework of this study (Figure 7). The first element of the conceptual framework, *Intelligent Virtual Assistants*, was explored by finding out what intelligent virtual assistants are, their role in transforming customer experiences, and how they can be used.

The second element, *Chatbots*, the concept of chatbots, their usage, and limitations were explored to recognize what the chatbots lack for this study.

The third and last element, *IVAs vs. Chatbots*, pointed out the differences between intelligent virtual assistants and chatbots to build a proposal for this study.

Figure 12 below shows the selected relevant elements compiled into the conceptual framework.

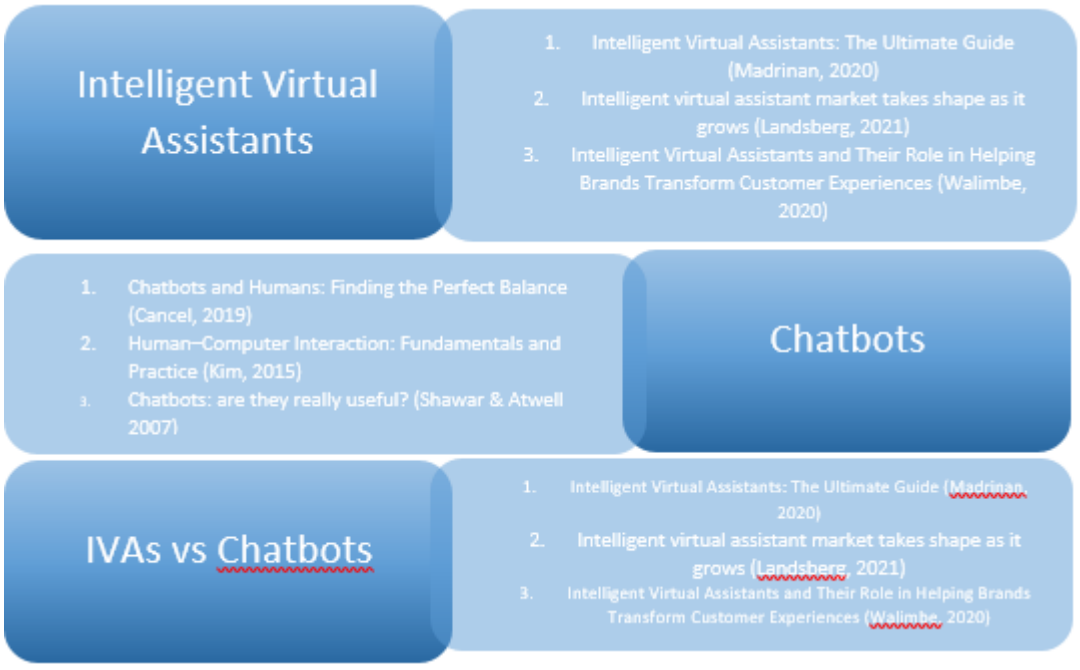

Figure 12. A conceptual framework for using intelligent voice assistants in customer service.

The conceptual framework provides the basis for building a proposal to use intelligent virtual assistants in the customer service of the case company.

5 Building the Proposal for the Process of Using Intelligent Virtual Assistants at the Customer Service of the Case Company

This section merges the results of the current state analysis and the conceptual framework. It describes how the initial proposal was built for improving customer service with intelligent virtual assistants in co-operation with applicable stakeholders in the case company.

5.1 Overview of the Proposal Building Stage

As stated at the beginning of this study, the outcome was to produce a proposal on improving customer service with intelligent virtual assistants in the case company. The aim was to reduce wasted calls and improve the customer service experience. The customer service representatives would focus more on complex tasks that require human interaction, while an intelligent virtual assistant would handle the simple manual tasks. As the current state analysis revealed, 17,3% of calls are classified as wasted calls that could be automated and thus allocate more time for customer service representatives for more complex tasks and reduce customer dissatisfaction of having to wait before reaching the department that can help them solve their problem. Based on findings from the current state analysis, the focus areas for improvement were selected as follows:

1. Reduce wasted calls to the customer service

2. Improve the customer service experience.

The proposal also relies on selected suggestions from the literature and best practice described in Section 4 of this study. To keep the proposal building focused, it relies on the conceptual framework based on the main findings of Section 4, which is presented in Section 4.4.

In addition, the Data 2 data collection was conducted. Data 2 was gathered in a workshop and stakeholder interviews, presented in Section 5.2.

5.2 Inputs for the Proposal Building and Stakeholder Suggestions

As described earlier, the case company is currently evaluating options to improve elements of the customer service experience further to eliminate wasted calls and improve customer service. The case company wants to streamline the customer journey of contacting the company and allocate more customer service representatives' time on tasks that cannot be automated.

The objective of the proposal building stage was to develop a proposal for improving the case company’s customer service by using intelligent virtual assistants, which uses existing knowledge and best practices established in Section 4 and takes note of the strengths and weaknesses found in Section 3.

The initial proposal began with a workshop with the case company's subject matter experts in a Teams meeting. The objective of the discussion was to focus on the strengths and weaknesses identified in the current state analysis, shown in Figure 6. During the meeting, an agreement was achieved that the proposal would help the company with the issues found in Section 3.

Data Collection 2 concentrates on identifying suggestions from the key stakeholders. The strengths and weaknesses of the current process were discussed in Data 1. In Data 2, stakeholders were involved in getting suggestions and ideas about solutions, suggestions about eliminating wasted calls in customer service, and improving the customer service experience. Data 2 also includes suggestions from literature and best practice for using intelligent voice assistants.

Table 3. Key stakeholder suggestions (findings of Data 2) for Proposal building in relation to findings from the CSA (Data 1) and the Conceptual framework.

	*Key focus area from **CSA** (from **Data 1**)*	*Input from literature (**CF**)*	*Suggestions from stakeholders for the Proposal, summary (from **Data 2**)*	*Description of their suggestion (in detail)*
1	Reducing wasted calls to the customer service	IVAs are utilized in customer service to automate tasks such as email and chat conversations with the company's customers by providing the first contact with a customer when they contact the company. (Madrinan, 2022)	Automate first contact with customers to reduce wasted calls and help customer service representatives to allocate their time to more complex tasks.	Automation in every channel available to the customer should always handle the first contact. Using an IVA to handle the first contact can interact with the customer and decide if there is a need for human interaction.
2	Improve the customer service experience.	With IVA, it's possible to automate the business flow of interacting with customers, which allows customer service representatives to focus on more complex tasks that require human interaction and not waste time on requests that can be fully automated. (Landsberg, 2021)	Improve the customer service experience by making the service 24/7, reducing wait times for customers, and streamlining the experience by interacting with automation that can identify the customer from previous encounters and disregard grammatical errors.	Rule-based chatbots are not working as great as they should, as they cannot distinguish grammatical errors, and the customer's experience can be negatively affected if they have to start over every time they are in contact with a chatbot. Using an IVA instead of a rule-based chatbot makes the experience smoother and more accessible for the customer.

As seen from Table 3, the case company's vision is to have automation for first contact in each of the channels available to the customer, which would reduce calls classified as wasted and allocate more time for customer service representatives to do tasks that require human attention. This would improve customer experience and satisfaction and, thus, customer retention.

The Proposal is pulled together as the next section's initial draft.

5.3 Initial Proposal

As stated at the beginning of this study, the outcome was to produce a proposal on improving customer service with intelligent virtual assistants in the case company. The aim was to reduce wasted calls and improve the customer service experience. Based on Figure 6, the initial proposal focuses on concrete ways the case company would benefit from using intelligent virtual assistants in their customer service.

In the following two subsections, the creation of the initial improvement proposal is described in detail.

5.3.1 Improvement Proposal for Reducing Wasted Calls to the Customer Service

Based on the data sheet in Figure 6, the results show that approximately 17,3% of calls made to the company's customer service are classified as wasted calls. 2,3% of calls are related to customers requesting an extension to their invoice. 3,5% are related to fixing something in their invoice, 0,5% are looking to change how often they receive invoices from the company, 9,5% of customers have placed a call in the wrong department of the customer service, and 1,5% of calls are customers requesting certificates of insurance validity.

As seen in Figure 6, the proportion of forwarded calls is high. Approximately 1 in 10 customers place a call in the wrong customer service department, making it challenging for customer service as it requires too much input from human customer service representatives.

Based on the findings in 4.1, IVAs are an automated chatbot solution that uses machine learning and natural language processing to produce humanlike customer conversations. For the case company, this means that the IVA would handle the first contact with a customer in every channel available for the customer. The IVA can answer phone calls and chat messages, handle simple tasks by themselves and escalate the situation to a live customer service representative when required.

As the current process of contacting the company is limited by the opening hours, the customer might not get the assistance they are looking for exactly when they need it. For example, suppose a customer would need to make adjustments to insurances or fix their

invoice outside of the company's opening hours. In that case, the customer needs to wait until a live customer service representative can help them. Currently, a chatbot can receive the customer's message and forward it to the first available customer service representative who can handle their request at the first available opportunity. However, this opportunity can be hours later or even the next day. An IVA would handle the issue instantaneously, utterly unaffected by the service's opening hours, and forward the message in case there is a need for a live customer service representative. The current process could generate a backlog of unanswered messages and calls from customers, which lead to dissatisfaction and worse retention for the customer, and negative feelings about the job for the customer service representatives if they have to feel too busy doing repetitive tasks for a long time.

As the case company currently employs various robotics process automation for specific processes and is using chatbots in their chat channels, they are still very limited in their capabilities, as rule-based chatbots are limited by what human teachers have taught them. As mentioned, chatbots are used only in chat channels, but some customers are used to handling matters on the phone exclusively, and the voice channel is not automated. A rule-based chatbot is not enough, as it cannot handle many tasks that an IVA could handle independently. Therefore, this was added to the improvement proposal.

There have been many requests by customer service representatives for efforts to eliminate wasted calls, as they are regarded as unfavorable amongst those working as customer service representatives. The case company and its workers in customer service value themselves as experts in the subject matter and find it a waste of their talents to handle manual, repetitive tasks every day.

It was also discussed that even though RPA handles the fundamental repetitive tasks, there still is a need for a human customer service representative to initialize the task to be handled by automation in most cases. The IVA would be able to identify the need correctly without human supervision and take the necessary steps to allow RPA to make the actual change.

5.3.2 Improvement proposal for improving the customer service experience

In the insurance industry in Finland, the competing companies are very much focusing on the customer experience to stand out as the major insurance companies in Finland

are all providing the same insurance portfolio with the most significant differences in insurance details rather than in the portfolio. For example, all the major insurance companies have personal, home, and vehicle insurance available for their customers. However, there might be a slight difference in the details, such as one insurance might not offer insurance for certain types of motor vehicles or differences in the terms and conditions of personal insurance. Customer experience is a primary focus for all insurance companies to differentiate themselves from the competition. Annual research ranks all the insurance companies in Finland by customer satisfaction. These rankings usually attract the customers of insurance companies, as they can give insights on which company would be the easiest to communicate with when there is a need for it.

For the case company, customer experience has been a crucial strategy focus. The case company is transitioning to a digital insurance company, with no offices available for the customers to come into and talk to a live person about their insurance needs, but rather focus on channels such as the internet and phone. As a digital-first insurance company, the case company must be able to provide the best available customer experience on the internet, as a more significant number of customers and potential customers are native users of digital channels in the modern world. In this vision, a rule-based chatbot is a good start, but also in this case is not enough and should be changed to an intelligent virtual assistant. The case company is marketing itself as being by the customer's side and helping a lot. However, it is not currently able to do that with the limitations of current practices in the customer service experience. The company's opening hours are limited, and the customer might not receive the assistance they need when they need it. Since the aim is to provide 24/7 service for the customer, instead of the first available option, which in the ideal case is the next day, the case company would use intelligent virtual assistants in their customer service channels.

As the current process of contacting the company leads to too many wasted calls and is limited by the opening hours of the company, the customer experience is negatively affected as the customer might need to be forwarded to a different person on the phone or have to wait for too long without a response. By using IVAs, the number of wasted calls would be reduced, and the IVA is not limited by the company's opening hours. The solution of implementing an IVA would benefit the customer experience for the case company.

5.4 Summary of the Initial Proposal for Improving Customer Service with Intelligent Virtual Assistants

The proposal building started in September with workshops and interviews. The initial improvement proposal was created based on feedback and suggestions from relevant internal stakeholders in the case company. Figure 13 below shows the initial proposal for improving customer service with intelligent virtual assistants, with the proposed improvement areas highlighted in green.

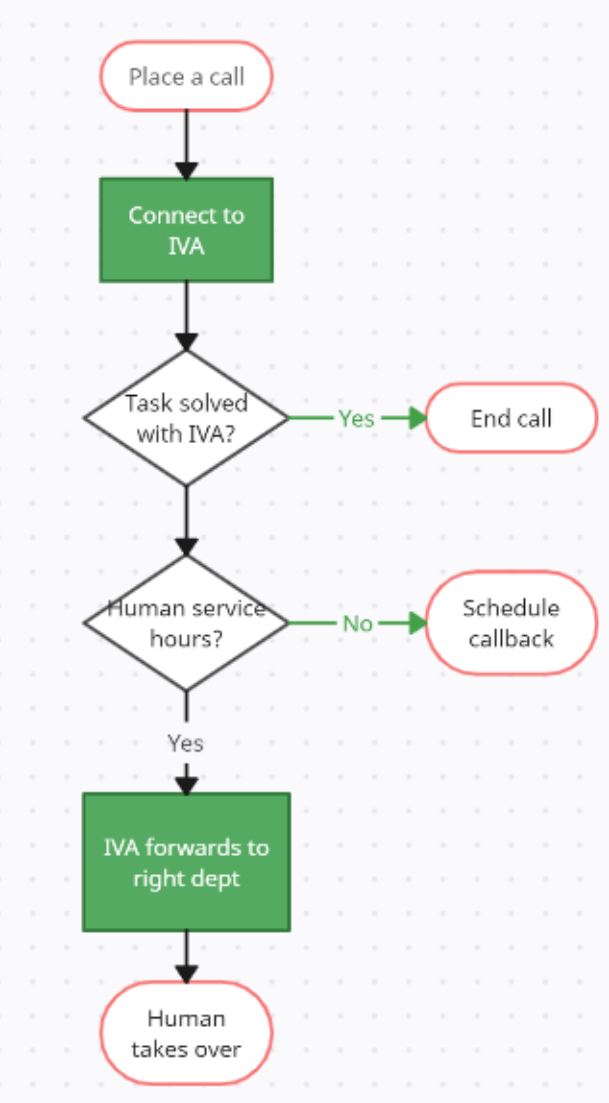

Figure 13. Proposed improvements of an IVA in the process of contacting the company.

The proposed improved process starts with a customer placing a call on the customer service number of the case company. The first proposed improvement is that the call is answered by an IVA, regardless of the service's opening hours, thanking the customer

for a call and offering assistance. The IVA can greet the customer and ask for their reason for calling. It can then use voice recognition technology to understand the customer's responses and provide relevant information or assistance. Suppose the customer's question or issue is too complex for the IVA. In that case, it can transfer the call to a human customer service representative while providing relevant context and information to ensure a smooth transition. Overall, an IVA can provide a convenient and efficient way for customers to receive assistance without navigating complex phone menus or waiting on hold for extended periods.

If the IVA cannot fully resolve the customer's call, it can check for the availability of human service hours. If the customer service center is closed, the IVA can offer to schedule a callback for a convenient time. The IVA can ask for the customer's preferred callback time and date and confirm the scheduling details before closing the call.

The IVA can forward the call to a live service agent if the customer service center is open. Before transferring the call, the IVA can provide the agent with any relevant information collected during the call, such as the customer's name, account number, and reason for calling. This can help ensure a smooth and efficient transition, and reduce the time the customer spends on hold or waiting to speak with an agent.

In contrast to the current process, the IVA could take more customer calls and handle simple tasks by itself, thus freeing resources for human customer service agents to focus on the tasks that require their attention.

Below in Table 4 are key changes proposed to contacting the company’s customer service.

Table 4. Proposed improvements to the process of contacting customer service.

	Proposed improvements	*Description of the proposed improvement*

1	Connect to IVA when a customer places a call.	The first element of the proposal is that the IVA would be the first point of contact for the customer, regardless of date or time.
2	Handle the initial request with IVA.	The second element of the proposal has the IVA handling the initial request from the customer. If the IVA cannot handle it entirely on its own, the IVA proceeds to forward the call to a human service representative.
3	Callback scheduling	The third element of the proposal is callback scheduling done by the IVA in case the call is outside human service hours.
4	Forwarding to the correct department	The fourth element of the proposal is the IVA forwarding to the correct department if it is during human service hours.

Next, the Thesis proceeds to validate the initial proposal. Key stakeholders evaluated the proposed elements.

6 Validation of the Proposal

This section reports on the results of feedback and validation of the initial proposal, presented in Section 5. First, this section overviews the validation stage to display the logic of its creation. Second, the section discusses findings from Data 3. Third, the section reports on the development of the initial proposal with subsequent presentation of the final proposal.

6.1 Overview of the Validation Stage

The purpose of this stage was to evaluate the solution proposed in Section 5 for eliminating the weaknesses identified in the current state analysis. The key weaknesses related to (a) all channels not being 24/7, (b) wasted calls to customer service leading to (c) repetitive tasks taking too much time from customer service representatives. During the initial proposal building, the stakeholder's suggestions were mentioned during the Data collection rounds 1 and 2, and the best practice found from the literature was utilized with a focus on the three findings. This section aimed to build a final proposal for improving customer service with intelligent virtual assistants in the case company.

The validation of the proposal was done in two steps. First, the initial proposal was presented to the two main stakeholders (Stakeholder 1 and Stakeholder 7 from Data Collection 1). Both stakeholders are involved in the development of the customer center in the case company. The discussions were held in a virtual meeting, and it was focused on evaluating the initial proposal and whether or not improvements were required.

Second, based on the comments and recommendations, the final proposal was created and presented to the main stakeholders to validate the proposal and assess the possibility of its implementation.

6.2 Findings of Data Collection 3

Findings from the third data collection round guided the building of the final proposal. Data 3 consists of the initial proposal's key internal stakeholders' feedback. The findings from the Data 3 collection round are discussed below.

6.2.1 Reducing wasted calls to the customer service

The first key focus is *reducing wasted calls to customer service.* The proposed process map was presented to key stakeholders during a workshop. The proposed improved process map was checked with the key stakeholders in the workshop. Shown below is the feedback from the key stakeholders.

Table 5. Key stakeholder feedback to the initial proposal (Data 3) in reducing wasted customer service calls.

	Element 1 of the Initial Proposal	*Feedback*	*Description)*
1	Reducing wasted calls to customer service.	a) Understandable process map with clearly defined improvements to the process using IVA.	According to the key internal stakeholders, the proposed process description is reliable and in line with the company's initial plans as well.
		b) Clearly defined responsibilities for the IVA after implementation.	According to the key internal stakeholders, the activities the IVA would be responsible for are clearly defined, and the limitations are also evident.
		b) Key attention is paid to the capabilities and limitations of the IVA.	According to the key internal stakeholders, attention is based on what the IVA can do and what still needs to be done by a human in the initial proposal.

As seen in Table 5, several key internal stakeholders have provided crucial feedback on the proposed use of IVA. Their comments have provided a broad perspective on how IVA can be optimized to yield the most desirable outcomes in the customer service process.

Firstly, the stakeholders have expressed appreciation for the process map. It has been recognized as an understandable schematic delineating the improvements achieved by implementing the IVA. The stakeholders noted that the proposed process description aligns with the company's initial plans and found it reliable.

The stakeholders have noted the clarity with which these responsibilities have been defined, which can reduce ambiguity and promote efficient operation after the IVA is implemented. At the same time, the limitations of the IVA are also clearly defined. This is critical because it sets realistic expectations for what the IVA can and cannot do, which is a key factor in managing internal and customer expectations.

The stakeholders have appreciated the balanced approach to understanding the capabilities and limitations of the IVA. This is a pivotal aspect of the proposal that ensures a pragmatic and realistic understanding of what the technology can deliver. Attention is placed not just on the capabilities of the IVA—what it can do to streamline the customer service process—but also on its limitations. This dual focus is designed to prevent an over-reliance on the IVA and to ensure that there is still a significant human component in the customer service process. This understanding underscores that the IVA is a tool designed to enhance human effort, not replace it entirely.

The key internal stakeholders' feedback reaffirms that the proposed IVA implementation plan is robust, clear, and aligned with the company's strategic direction. The precise definition of the IVA's responsibilities post-implementation, coupled with a realistic understanding of its capabilities and limitations, ensures that the company is well-prepared to leverage this technology to its fullest potential while maintaining a human touch in its customer service process. This balanced approach is the company's key to reducing wasted calls to customer service and enhancing customer satisfaction.

6.2.2 Improve the customer service experience.

The second key focus is *improving the customer experience.* The proposed process map was presented to key stakeholders during a workshop. The proposed improved process map was checked with the key stakeholders in the workshop. Shown below is the feedback from the key stakeholders.

Table 6. Expert suggestions (findings of Data 3) for the Initial proposal.

	Element 1 of the Initial Proposal	*Feedback*	*Description)*
1	Improve the customer service experience	a) Assign the IVA to be the first contact when placing a phone call to customer service.	The experts had nothing to revise on Element 1, as this was the intended outcome.
		b) Checking for human service hours and wait times for human customer service advisors.	The experts suggested broadening the check for human service hours to include checking for wait times for the customer should the call be forwarded to the human service.
		b) Key attention is paid to forwarding to the correct department.	The experts suggest paying attention to the IVA's ability to identify the correct department the customer is trying to reach.

As seen in Table 6, the initial comment emphasizes the IVA's role as the first point of contact when customers initiate a call to customer service. This decision aligns with the original plan, with no revisions suggested by the experts. By making the IVA the first contact, customer service is set to handle a large volume of calls efficiently, promptly address simple queries, and ensure that human agents are reserved for more complex or specialized customer needs. This proactive approach ensures that customers receive immediate attention, thus enhancing the overall customer service experience.

The second comment highlights the importance of managing the customer's expectations regarding wait times for human customer service agents. The experts suggest broadening the IVA's role to include checking for human service hours and estimating wait times if a call needs to be forwarded to a human agent. This added function would be invaluable in managing customer expectations and satisfaction. By informing customers about the estimated wait times, it provides transparency. It lets

customers decide whether to wait, call back later, or seek help through other channels. This could significantly improve the customer's perception of the company's service, even when wait times are unavoidable.

Finally, the third comment underscores the importance of the IVA's ability to identify and route the customer to the appropriate department correctly. The experts suggest paying particular attention to this capability, which is crucial for a smooth and efficient customer service process. Misrouting or unnecessary transfers can lead to customer frustration and dissatisfaction. Therefore, ensuring that the IVA is well-equipped to understand and accurately route customer calls is key to improving the customer service experience.

6.3 Developments to the Proposal Based on Findings of Data Collection 3

After the feedback on the initial proposal was collected and discussed in the proposal areas, the necessary immediate developments were identified, as presented in Table 7 below.

Table 7. Expert suggestions (findings of Data 3) for the Initial proposal.

	Proposal area	*Development*
1	Checking for human service hours.	Broaden the check for human service hours to include checking for wait times for the customer should the call be forwarded to customer service.

As seen from Table 7, the key internal stakeholders suggested that IVA check the availability of human customer service agents based on service hours and estimate wait times should the call be forwarded to a human agent. This means that the IVA would inform the customer of the expected wait time before transferring the call, providing customers with a transparent overview of the service situation. This proactive approach lets customers decide whether to wait, call back later, or seek help through other channels. The suggestion focuses on customer-centric service and aims to improve customer satisfaction by managing their expectations more effectively.

6.4 Final Proposal

Based on the findings from the CSA and utilizing the conceptual framework, stakeholders' suggestions, and feedback on the initial proposal, the final proposal for improving customer service with intelligent virtual assistants was built. Shown below in Figure 14 is the final proposal for improving customer service with intelligent virtual assistants. The proposed elements from the initial proposal are highlighted in green, and the added key stakeholder suggestions are highlighted in blue.

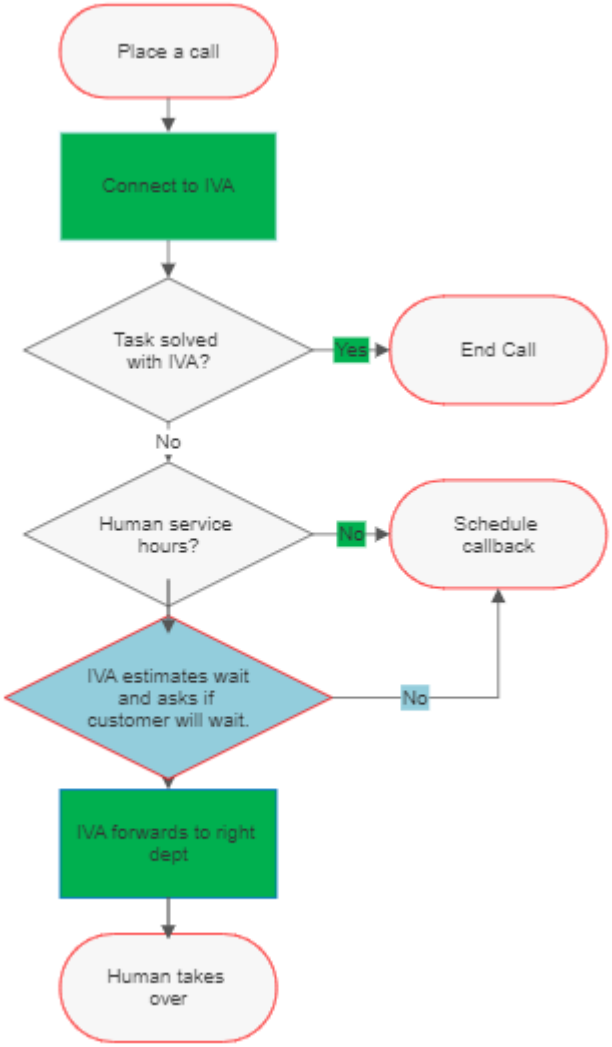

Figure 14. Proposed improvements of an IVA in the process of contacting the company.

The final proposed improved process starts with a customer placing a call on the customer service number of the case company. The first proposed improvement is that the call is answered by an IVA, regardless of the service's opening hours, thanking the

customer for a call and offering assistance. The IVA can greet the customer and ask for their reason for calling. It can then use voice recognition technology to understand the customer's responses and provide relevant information or assistance. Suppose the customer's question or issue is too complex for the IVA. In that case, it can transfer the call to a human customer service representative while providing relevant context and information to ensure a smooth transition. Overall, an IVA can provide a convenient and efficient way for customers to receive assistance without navigating complex phone menus or waiting on hold for extended periods.

If the IVA cannot fully resolve the customer's call, it can check for the availability of human service hours. If the customer service center is closed, the IVA can offer to schedule a callback at a convenient time for the customer. The IVA can ask for the customer's preferred callback time and date and confirm the scheduling details before closing the call.

Suppose the customer service center is currently open. In that case, the IVA checks for an estimation of how long the customer needs to wait for their call to be picked up by a human service representative and communicates the wait time to the customer, and ask them if the customer wants to wait on the line for a human, or should the IVA schedule a callback for a later time of the customers choosing. The IVA can forward the call to a live service agent if the customer wishes to wait for a human service representative. Before transferring the call, the IVA can provide the agent with any relevant information collected during the call, such as the customer's name, account number, and reason for calling. This can help ensure a smooth and efficient transition, and reduce the time the customer spends on hold or waiting to speak with an agent.

In contrast to the current process, the IVA could take more customer calls and handle simple tasks by itself, thus freeing resources for human customer service agents to focus on the tasks that require their attention.

7 Conclusion

This section summarizes the key findings of this study and suggests further steps for the case company. Subsequently, the section proceeds with an evaluation of the Thesis.

7.1 Executive Summary

For large insurance companies going through an era of digitalization, the superiority of the customer service experience and automation has become an integral part of their business. To address this need and optimize its customer service experience, the case company has started a project to automate parts of its customer service. With the first parts of the project already done, such as automating electronic messages and using chatbots for chat channels, the case company is ready to take its next step in the project, which is automating voice channels. The objective of this Master's Thesis was to improve customer service by proposing an improved process for using intelligent virtual assistants.

The research design of this thesis relied on the use of applied action research and qualitative research methods, as the thesis focused on improving customer service with the help of new and improved processes for this specific purpose. The applied action research was selected as this study does not test hypotheses or build theories but focuses on improvement in specific practical outcomes and models related to the business challenge. The thesis was conducted as a field study, using three rounds of data collection and examining available knowledge and best practice. The data was collected within the case company and from another company of the case organization by utilizing workshops, interviews, participant observations, and document reviews.

Based on the current state analysis results, strengths and weaknesses were identified in the current customer service process when contacting the case company. They are related to current automation levels, wasted calls, and the complex process of reaching the correct department Based on the identified strengths and weaknesses, the literature review focused on finding the best practices for achieving the thesis objective. The theoretical framework of the thesis focused on the topics of IVAs, chatbots, and their comparison. Utilizing the identified best practice and literature, inputs from key

stakeholders for the proposal building, and the identified strengths and weaknesses identified in the current state analysis, the initial proposal for improving customer service using intelligent virtual assistants was built. The proposal contained implementing IVAs as a first contact point, having them solve simple customer issues independently, and identifying if a human service advisor is needed. The proposal was discussed and co-created with the key stakeholders. The proposed process for using virtual assistants in customer service was validated with the key stakeholders, with the proposed process map presented and discussed first and then updated per the key stakeholder's suggestions.

Once the proposed improvements are implemented, they result in an improved process. Implementing the use of IVAs help should improve the overall customer experience. It should ensure that human customer service representatives can allocate more time for complex tasks.

7.2 Next steps and recommendations

For the company to implement IVAs in its customer service, several sequential steps must be considered to ensure a smooth transition and optimize

First, a comprehensive understanding of the current customer service landscape is vital. This involves an in-depth analysis of call volumes, the nature of queries, peak hours, and customer demographics. This information can help tailor the IVA's capabilities to address the most common customer needs efficiently and effectively.

Second, identifying the tasks that the IVA can handle is crucial. An optimal balance between automation and human intervention can be achieved by clearly defining the responsibilities of the IVA and distinguishing between those tasks best suited for human agents. This ensures that the IVA is leveraged for its strengths while human agents are preserved for tasks that require a personal touch.

Third, investing time in training the IVA is of great importance. This involves feeding the IVA with relevant data, teaching it about the company's products or services, and continually updating its knowledge base. This step is crucial for the IVA to provide accurate and helpful responses to customer queries.

Fourth, an iterative approach to testing and refinement should be adopted. This means first launching the IVA in a controlled environment, gathering feedback, and making necessary adjustments before full implementation. It is crucial to ensure that the IVA is performing as expected and that any issues are ironed out before it is rolled out on a larger scale.

Fifth, it is essential to communicate clearly with customers about introducing the IVA. Customers should know what the IVA can do, how to interact with it, and what to do if they need to speak with a human agent. Clear communication can help set customer expectations and improve their experience with the new system.

Finally, a process for continuous learning and improvement should be in place. This involves monitoring the performance of the IVA, gathering customer feedback, and making necessary tweaks and updates to improve its functionality. It's crucial to remember that implementing an IVA is not a one-time event but a continuous process of learning and improving.

Following these steps can help ensure a successful implementation of an IVA in the customer service process, ultimately leading to improved efficiency, enhanced customer satisfaction, and a better overall customer service experience.

7.3 Thesis Evaluation

This thesis aims to improve the current process of contacting the case company by phone and propose how IVAs can improve the current process. As an outcome of this thesis, several improvements were suggested, and an improved process map was created.

It can be discussed if all weaknesses of the current process were identified and if all applicable best practices were recognized from the available literature. The literature was limited to publications in English, so there may be a risk that topics related to e.g. laws and practices of the case company’s country of origin were missed.

This thesis focus on conducting the research accurately, honestly, and objectively by following the principles of Responsible Conduct of Research (RCR) and ensuring the

integrity of the research. Standard research evaluation criteria apply to this study to confirm reliability, validity, logic and relevance, and other research quality criteria.

7.4 Closing Words

In conclusion of this thesis, it is clear that utilizing technology in customer service, specifically through the utilization of Intelligent Virtual Assistants (IVAs), offers vast opportunities for enhancing customer experience and operational efficiency. The journey of exploring the implementation of IVAs has been both challenging and enlightening, and it has provided invaluable insights into how technology can be leveraged to create a more customer-centric business environment.

In the future, as IVAs continue to evolve and become even more sophisticated, they will undoubtedly play an increasingly significant role in customer service. This thesis is a foundation for understanding how IVAs can be implemented effectively, considering their capabilities, limitations, and human elements that remain essential in customer service.

With a solid commitment to the customer experience and a willingness to embrace innovation, the possibilities are boundless.

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