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AI TOOLS AS SUPPORT IN B2B CUSTOMER SERVICE TOUCHPOINTS

Master of Science Thesis
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ABSTRACT

Marianna Kallio: AI tools as support in B2B customer service touchpoints
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This thesis investigates artificial intelligence tools as support of customer service touchpoints during business-to-business customer journeys. A lot of research has been published related to business-to-customer customer journeys and usage of artificial intelligence in business-to-customer markets, but there is less research related to customer journeys in business-to-business markets and usage of artificial intelligence in business-to-business markets. However, in research done related to customer journeys in business-to-business markets it has been noticed that customer journey thinking could support formation of long-term buyer-supplier relationships and increase the number of rebuys. In addition, researchers have noticed that artificial intelligence could increase the quality of customer journey touchpoints and lead to better customer satisfaction, which will also strengthen the customer-buyer relationship. Therefore, both subjects should be further explored.

The objective of the thesis is to investigate how could supplier utilize artificial intelligence in their customer service function to improve the customer journey experiences of their customers. The objective of the thesis combines exploration of the important touchpoints of business-to-business customer journeys and the benefits of artificial intelligence tools to customer journeys.

This thesis begins with literature review on concepts of customer journeys in business-to-business markets and artificial intelligence tools. The literature review begins with exploration of customer journey concept and what is special in business-to-business customer journeys, then proceeds to exploring the basis of artificial intelligence functions. At the end of the literature review, aforementioned concepts are combined to form a framework for how artificial intelligence could be used in the customer service touchpoints of business-to-business customer journeys, and how a supplier could select the tools of artificial intelligence to be used in their customer service touchpoints.

To support the theory formation, this thesis explores the concept of business-to-business customer service touchpoints also in practice with theme interviews in the case organization. The aim of the interviews is to produce further knowledge about business-to-business customer service touchpoints and artificial intelligence possibilities of those. In addition, the case company wanted to investigate their customers service touchpoints and the attitudes of their customer service personnel towards artificial intelligence and artificial intelligence implementation. The interviews highlight important touchpoints and potential uses of artificial intelligence in business-to-business customer service. Furthermore, interviews reveal that customer service employees are interested in using artificial intelligence in their work.

The empirical findings support the findings of the literature review. The customer service touchpoints of the customer journeys are important for building relationships between supplier and the buyer, and those important touchpoints could be supported and made more successful with implementation of suitable applications of artificial intelligence. For choosing the suitable applications of artificial intelligence for customer journey touchpoints, this thesis has created a preliminary model. In addition, based on the results of the thesis further research subjects are proposed.

Keywords: business-to-business, customer journey, artificial intelligence

The originality of this thesis has been checked using the Turnitin Originality Check service.

TIIVISTELMÄ

Marianna Kallio: Tekoälytyökalut B2B asiakaspalvelutilanteiden tukena
Diplomityö
Tampereen yliopisto
Tuotantotalouden diplomi-insinöörin tutkinto-ohjelma
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Työ tutkii tekoälytyökalujen käyttöä asiakaspalvelun tukena business-to-business asiakasmatkan aikana. Business-to-customer asiakasmatkoista ja tekoälyn käytöstä business-to-customer markkinoilla on julkaistu runsaasti tutkimusta, mutta business-to-business asiakasmatkoista ja tekoälyn käytöstä business-to-business markkinoilla on olemassa vähemmän tutkimustietoa. Asiakasmatkoja business-to-business markkinoilla käsittelevissä tutkimuksissa on kuitenkin huomattu, että asiakasmatka-ajattelu voisi tukea pitkäaikaisten asiakastoimittajasuhteiden syntymistä ja lisätä uudelleen ostojen määrää. Tutkimuksissa on myös todettu, että tekoälyn käytöllä voitaisiin parantaa asiakasmatkan asiakaskohtaamisten laatua, joka johtaisi parempaan asiakasyytyväisyyteen ja siten myös vahvistaisi asiakastoimittajasuhdetta. Näistä syistä molempia aihealueita olisi hyvä tutkia enemmän.

Tutkimuksen tavoitteena on selvittää kuinka toimittaja voisi asiakaspalvelussaan käyttää tekoälyä parantaakseen asiakkaidensa kokemusta asiakasmatkasta. Tutkimus yhdistää business-to-business asiakasmatkojen tärkeiden asiakaskohtaamisten tutkimisen ja tekoälytyökalujen hyötyjen asiakasmatkalle tutkimisen.

Ensin työssä esitellään kirjallisuuskatsaus business-to-business asiakasmatkoista ja tekoälytyökaluista. Kirjallisuuskatsauksen aluksi tutustutaan käsitteeseen asiakasmatka ja mitkä piirteet ovat erityisiä business-to-business asiakasmatkoille, jonka jälkeen kirjallisuuskatsaus siirtyy tutkimaan tekoälyn perusteita. Kirjallisuuskatsauksen lopussa asiakasmatkoista ja tekoälystä opittu yhdistetään teoriaksi siitä miten tekoälyä voitaisiin käyttää business-to-business asiakasmatkojen asiakaspalvelu kohtaamisissa, ja kuinka toimittajan on mahdollista valita tekoälytyökalut asiakaspalvelukohtaamisissaan käytettäväksi.

Teorian tueksi työ tutkii business-to-business asiakaspalvelukohtaamisia myös case-organisaatiossa suoritettujen teemahaastattelujen avulla käytännössä. Haastattelujen tavoitteena on syventää ymmärrystä business-to-business asiakaskohtaamisista ja tekoälyn käytön mahdollisuuksista asiakaspalvelun asiakaskohtaamisissa. Case-organisaatio halusi myös alustavasti tutkia henkilöstönsä suhtautumista tekoälyyn ja tekoälyn käyttöönottoon. Haastatteluista käy ilmi tärkeitä asiakaskohtaamisia ja tekoälyn mahdollisia käyttökohteita asiakaspalvelutyössä. Haastattelut myös paljastavat, että case-organisaation asiakaspalvelutyöntekijät olisivat kiinnostuneita käyttämään tekoälyä työnsä tukena.

Empiirisen tutkimuksen tulokset tukevat kirjallisuuskatsauksen tuloksia. Asiakaspalvelun kautta tapahtuvat asiakaskohtaamiset ovat tärkeitä asiakastoimittajasuhteen muodostamisessa ja hoitamisessa, ja asiakaspalvelussa tapahtuvia asiakaskohtaamisia voitaisiin tukea ja parantaa ottamalla käyttöön sopivia tekoälytyökaluja. Tutkimuksessa on rakennettu alustava malli tekoälytyökalujen valintaan asiakaskohtaamisiin. Työssä ehdotetaan myös tulevaisuuden tutkimuskohteita työn teemoihin liittyen.

Avainsanat: B2B liiketoiminta, asiakaspolku, tekoäly

Tämän julkaisun alkuperäisyys on tarkastettu Turnitin Originality Check -ohjelmalla

USE OF AI IN THESIS

I have utilised AI tools in my thesis:

- No
- Yes

The AI tools utilised in my thesis and their purposes are described below:

Names and versions of AI tools:

Microsoft 365 Copilot October 2024 version

Purpose of using AI tools:

Copilot was tested in translating interview transcriptions from Finnish to English. Interviews were performed and transcribed in Finnish first and then the transcriptions were given to Copilot with prompt to translate the interviews into English. The task was originally given to Copilot to reduce the impact of the researcher on interview results. However, Copilot did not translate the transcriptions accurately enough and therefore, the final translations of the interviews were written by me by combining Finnish transcription and Copilot translation.

Sections where AI tools were used: [List all the steps and sections of your thesis where AI has been applied during your thesis process]

Annex A: Interview of Interviewee A

Annex B: Interview of Interviewee B

I acknowledge that I am fully responsible for the entire content of my thesis, including the parts generated by AI, and accept accountability for any violations of ethical standards in publications.

PREFACE

With this thesis a long period of studying in different universities and even longer period of studying as a whole comes to an end for me, at least for now. These years have included a lot and I have learned a lot, not only about the fields of my studies, but also about the world and myself. And hopefully learning new things will continue even after this thesis has been accepted.

During this time, I have had a lot to be thankful for. Thanks to family and friends who with their support have made all this possible. Thanks to my employer and colleagues who originally gave me a chance and have given me new challenges time and time again during these years. One of those challenges was the subject of the thesis. From the side of Tampere University, I would like to thank everyone who has been willing to share their wisdom with me. And special thanks to Dr. Jouni Lyly-Yrjänäinen who offered me academic challenges and kindly also agreed to guide this thesis.

In Lempäälä 13.1.2025

With kind regards,

Marianna Kallio

TABLE OF CONTENTS

USE OF AI IN THESIS	III
1.INTRODUCTION	1
1.1 Background	1
1.2 Research Objectives and Questions	3
2.RESEARCH APPROACH AND METHODOLOGY	7
3.CUSTOMER JOURNEY	11
3.1 Background	11
3.2 Customer Journey	12
3.3 Touchpoints	15
3.4 B2B Customer Journeys	18
4.AI TOOLS IN BUSINESS	23
4.1 Artificial Intelligence in Business	23
4.2 AI Tools	25
4.3 Weaknesses of AI Tools	28
5.CUSTOMER JOURNEY AND ARTIFICIAL INTELLIGENCE	30
5.1 AI Tools during B2B Customer Journey	30
5.2 AI Tools and B2B Customer Service	31
5.3 Model for AI Tools in B2B Customer Service	33
5.4 More Traditional Forms of Sales Automation Tools	36
6.THE CASE COMPANY	38
6.1 The Case Company	38
6.2 The Offering of the Case Company	39
6.3 Typical Customer Service Process in the Case Company	40
7.POSSIBLE USAGE OF AI TOOLS IN THE CASE COMPANY	43
7.1 Interview Set Up	43
7.2 Interview Findings Regarding the Role of the Customer Service	46
7.3 Interview Findings Regarding the Tasks of the Customer Service	48
7.4 Interview Findings Regarding the Preparedness of the Customer Service	
52	
8.DISCUSSION	55
8.1 Literature Review Findings	55
8.2 Results of the Interviews	56
8.3 Intervention Findings	58
8.4 Quality of the Interview Results	60
8.5 Research Limitations	62

8.6 Further Research.....	63
9. CONCLUSIONS.....	66
REFERENCES.....	69
ANNEX A: INTERVIEW OF INTERVIEWEE A.....	72
ANNEX B: INTERVIEW OF INTERVIEWEE B.....	75
ANNEX C: INTERVIEW OF INTERVIEWEE C.....	77
ANNEX D: INTERVIEW OF INTERVIEWEE D.....	79

LIST OF FIGURES

Figure 1.	<i>Background literature for this thesis.</i>	2
Figure 2.	<i>The Structure of the thesis.</i>	3
Figure 3.	<i>The timeline of this thesis.</i>	5
Figure 4.	<i>Customer journey has been described as series of touchpoints.</i>	13
Figure 5.	<i>Customer journey can be divided into three stages.</i>	13
Figure 6.	<i>Positive experience of the customer journey can result new customer journeys, and negative experience of the customer journey can end cooperation.</i>	14
Figure 7.	<i>Experiences during different touchpoints of the customer journey affect to success of the customer journey and the customer relationship.</i>	18
Figure 8.	<i>Input-process-output model of AI system.</i>	24
Figure 9.	<i>Recognizing touchpoints during the phases of customer journey.</i>	34
Figure 10.	<i>Review of artificial intelligence functions.</i>	35
Figure 11.	<i>Cross tabulation of AI tool for customer journey touchpoint.</i>	36
Figure 12.	<i>Examples of the products of the case company and end products in which the products of the case company are used in.</i>	39
Figure 13.	<i>Summary of the customer service tasks in regular rebuy situation in the case company.</i>	41
Figure 14.	<i>Interview results.</i>	57
Figure 15.	<i>Possible artificial intelligence tools that customer service could use during the customer journey touchpoints of the case company.</i>	59
Figure 16.	<i>Cycle of AI tool implementation based on Kot and Leszczyński (2022).</i>	65

LIST OF TABLES

Table 1.	<i>The structure of this thesis.</i>	5
Table 2.	<i>The methodological choices of this research.</i>	8
Table 3.	<i>Stages of the interventionist research applied to this thesis.</i>	9
Table 4.	<i>Seven stages of B2B sales funnel (Paschen et al. 2020; Sheth and Sharma 2008; Syam and Sharma 2018).</i>	11
Table 5.	<i>Review of possible touchpoints by type.</i>	16
Table 6.	<i>B2B market characteristics (Lyly-Yrjänäinen et al. 2018, pp. 13-36).</i>	19
Table 7.	<i>Improving B2B customer journey touchpoints in literature and in practice.</i>	21
Table 8.	<i>Different definitions for AI systems in business literature.</i>	23
Table 9.	<i>How AI could be used to improve customer service.</i>	32
Table 10.	<i>Themed interview questions.</i>	44

LIST OF SYMBOLS AND ABBREVIATIONS

AI	Artificial Intelligence
B2B	Business to business
B2C	Business to consumer
CA	Conversational agents
CRM	Customer relationship management
ML	Machine learning
NLG	Natural language generation
NLP	Natural language processing
NLU	Natural language understanding
RFQ	Request for quotation
R&D	Research and development
SFA	Sales force automation
ST	Sales technologies
BVA	Business virtual assistant

1. INTRODUCTION

In the first chapter of this thesis the background and themes connected to the subject of the thesis are described to introduce the reader to the subject. After describing the background of the subject, the goal and research questions are outlined. Describing and outlining the subject of the thesis creates the framework for execution of the research.

1.1 Background

In B2B markets constant material flow is needed, and therefore, the customer-supplier relationships in B2B markets are often long term relationships (Witell et al. 2020). Multiple scientific models have been created to systematically improve these long term customer-supplier relationships (Steward et al. 2019). One of these theoretical models is the concept of customer journey which has been created to describe the complicated process in which both supplier and customer are active participants in (Steward et al. 2019). Concept of customer journey is a customer centralized way to understand the purchasing and usage experience of the customer (Purmonen et al. 2023). The term “customer journey” was taken into use in 1990s (Steward et al. 2019), meaning that it is a relatively new term in business research, and because of that, there are multiple overlapping definitions which try to explain the meaning of “customer journey”. Part of research literature views customer journey as a journey from purchasing decision to delivery, and others view customer journey as a series of relational interactions between customer, supplier, and third party representatives (Steward et al. 2019; Purmonen et al. 2023).

During the customer journey, both direct and indirect interactions, called touchpoints, affect to the customer journey of the customer (Purmonen et al. 2023). According to Purmonen et al. (2023), supplier can affect to the customer journey in direct touchpoints in which customer and supplier are in direct contact with each other. Aforementioned means that the customer service experience the customer receives is important to the success of the customer journey. To improve experiences during customer journeys Rustholkarhu et al. (2022) and Paschen et al. (2021) suggest usage of artificial intelligence tools (*AI tools*) in some interactions during the customer journey. According to Kot and Leszczyński (2022) and Rustholkarhu et al. (2022), it is expected that implementation of artificial intelligence, and tools based on artificial intelligence, will change business. The capabilities of AI tools to recognize patterns, machine learn, and predict future

are hoped to create value to both supplier and customer organizations by reducing time consuming and recurring tasks in sales and customer service (Kot and Leszczyński 2022; Paschen et al. 2019). AI can also be used to create and collect data, and transform data into information to support customer service process (Paschen et al. 2019).

In their article Rusthollkarhu et al. (2022) discussed on taking advantage of AI empowered tools in managing customer journeys. Especially this article from Rusthollkarhu et al. (2022) has inspired the research of this thesis. Before Rusthollkarhu et al. (2022), article from Paschen et al. (2020) has explored the possibilities to use AI to create value along the B2B sales funnel. In addition, both Purmonen et al. (2023) and Homburg & Thischer (2021) have also explored the possibility of using the concept of customer journey in B2B markets, instead of traditional use of the concept in B2C markets. In addition to Rusthollkarhu et al. (2022) and Paschen et al. (2020, 2021, 2019), Kot and Leszczynski (2022) have also investigated using AI-based tools in B2B markets. Connections of the previous research literature to this thesis are pictured in Figure 1.

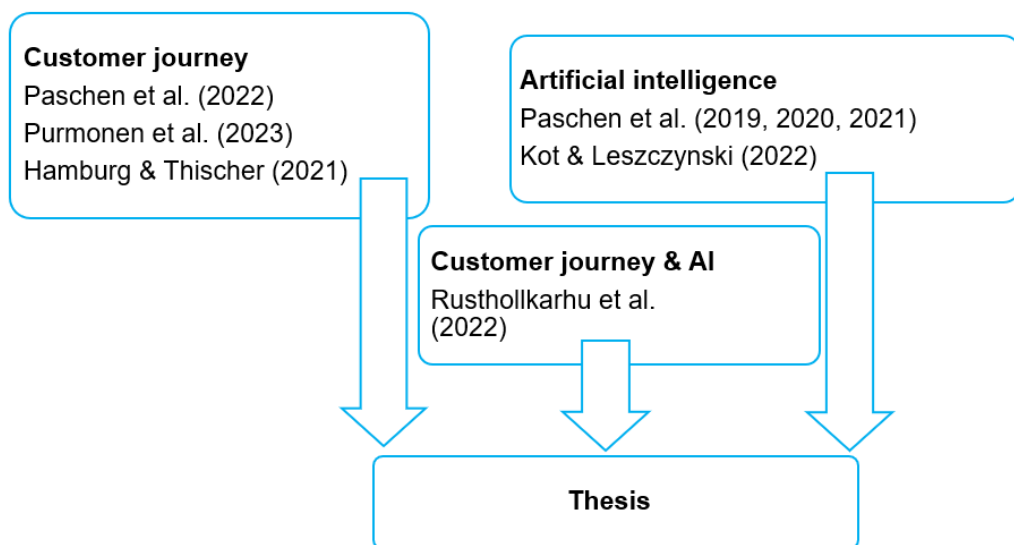


Figure 1. Background literature for this thesis.

In addition to articles mentioned above, important motivator for this thesis has also been the case organization which ordered the work. The case organization is international group specialized in conversion of advanced materials for packaging and built environments. The international group has operations in 17 different production plants in 8 different countries and employs 1,700 employees. The turnover for year 2022 has been 705 million Euros. The case company has been, and it still is, in the middle of a big software change project, and to support, and to continue the project, the company has

started to map out other information technology systems which would support operative work in the future. Therefore, the case organization of the thesis is interested to investigate how they could use AI-based solutions in their supply chain processes, especially, in their customer service processes.

1.2 Research Objectives and Questions

This thesis starts by diving deeper into B2B customer journeys and important touchpoints of B2B customer journeys after purchase decision. Then this thesis intends to investigate usage of AI and tools that use AI during B2B market concept. Finally, thesis combines aforementioned concepts together to map out what kind of tools of AI could be used during B2B customer journeys, and how they could, from the perspective of the supplier, be beneficial during B2B customer journeys. Finally, this thesis demonstrates the theory framework created by applying it to the case organization of the thesis. Relations of the background theory, this thesis, and the case company can be seen in Figure 2.

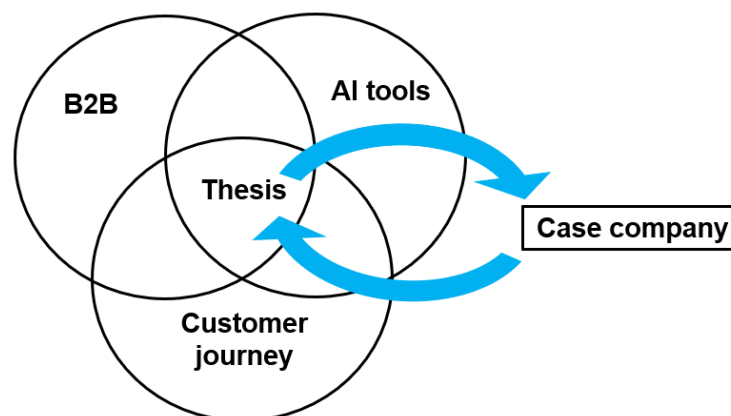


Figure 2. *The structure of the thesis.*

As explained, the aim of the thesis is to investigate, how a B2B supplier organization could utilize AI and AI-based tools during customer journeys of their customers. By utilizing this thesis refers to creating additional value, or decreasing waste in their own processes, or in the processes of their customer. The research especially focuses on investigating the customer journeys and touchpoints of the existing customers in rebuy situations. This thesis investigates how supplier can with AI affect to the customer journey between the stages of purchase and delivery. In the stages between the purchase and delivery, the supplier mostly affects to the customer journey of their customer via their own customer service. Based on this, the main research question of the thesis is:

- How can the supplier utilize AI tools to improve their customer service during B2B customer journey?

In addition to main research question, the research also tries to find solution to questions:

- What are the important B2B customer journey touchpoints between purchase and delivery?
- How AI tools can be useful during B2B customer journey?

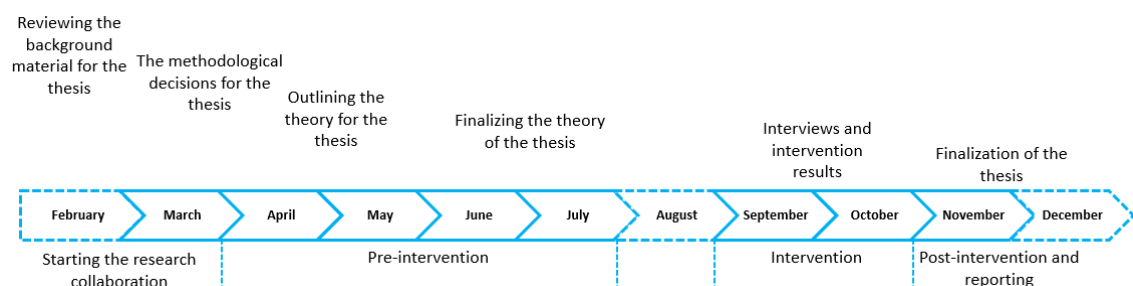
This thesis includes both theoretical and empirical research. The purpose of the theoretical part is to highlight the current knowledge of B2B customer journeys and use of AI in B2B business. The theoretical part is concluded as a literature review which investigates theory on customer journey, especially on B2B customer journey, AI, and AI-based tools. With B2B customer journeys, the concentration is in the customer journeys of the existing customers and how to ensure rebuy decisions and build customer relationships. For AI part, the theoretical research investigates different AI-based tools which could be utilized during B2B customer journey to streamline the journey and create value. In business and management literature, AI-tools are usually viewed through function and results, rather than technology, and therefore, this research also does the same.

The empirical part of the thesis provides empirical dimension to the subjects discussed in the theoretical part of the thesis. The empirical part of the research starts with description of the case organization and continues with interviews carried out in the case organization. With the interviews this research tries to recognize how and in where the case company could implement and benefit from AI-tools recognized in the theoretical part of the research to improve their customer service. This, for example, means investigating which parts of the customer service tasks are repeating and time-consuming, to be able to suggest automation of those processes with suitable AI-tools. The empirical part concentrates in processes that are important when serving the existing customers during their rebuy-purchases. Findings of the empirical part of the research are then compared to the findings of the theoretical part of the research. In summary, the structure of the research is described in Table 1.

Table 1. *The structure of this thesis.*

Chapter	Subject	Content
1	Introduction	Background and summary of the previous research Research problems The timetable of the research
2	Research approach and process	Research approach and methods
3 & 4	Theoretical literature review	What are concepts B2B customer journey and B2B customer journey touchpoints? How does the artificial intelligence work?
5	Synthesis of the theory based on the literature review	How could artificial intelligence be used during B2B customer journey touchpoints?
6	Case company	Description of the case company and their customer journey
7	Empirical research in the case company	Interviews in the case company
8	Discussion	Research findings Analysis of the interviews Research limitations Ideas for future research
9	Conclusions	Summary

The research process was started in February 2024 by reviewing background material, and the original goal was to finish this thesis during November 2024. This means that the time-estimate for the project was 10 months. The final timeline of this thesis can be seen in Figure 3.

**Figure 3.** *The timeline of this thesis.*

The methodological decisions for the study were done mostly during March 2024. In the research process the basic theory framework for the study was formed during April and May of 2024, and the final theoretical part of the study was outlined between June and July of 2024. Interviews for the empirical part of the research were held in September

and October of 2024, and during the same time frame for the results of the empirical part of the research were concluded. Finally, this thesis was finalized during November and December of 2024.

2. RESEARCH APPROACH AND METHODOLOGY

Chapter 2 describes how the research of the thesis has been conducted, and what are the research methodological choices of the research. First, the chapter explains how this research has been made. The rest of the chapter explains the methodological choices of the research.

This thesis consists of theoretical research conducted as literary review, and empirical research conducted in the case organization. The theoretical literature review is conducted first to produce theoretical knowledge of the subject of the research, and to form the theoretical framework of the thesis. The research literature used in this thesis has been collected mostly from research literature databases Scopus and Web of Science. The search of research literature for the literature review was begun with search terms such as “customer journey”, “ai tool*”, “customer experience”, “customer service”, and “b2b”. More background literature was found from the reference literature of the original articles. After theoretical review, the empirical part of research is conducted to apply the knowledge produced in the theoretical part to practice. Empirical part is performed as interventionist case research, and the aim of the empirical part is to verify the findings of the theoretical part, and to conclude how the findings of the theoretical part could be utilized in the case organization of the research.

According to Saunders et al. (2019), when concluding research, it is important that the methodological choices such as research philosophy, approach to theory development, methodology selection, research strategy, and time horizon of the research, and research techniques and procedures are described in the research. In this thesis, the research philosophy used is pragmatism; the theory is developed through abduction, and the research strategy is interventionist case study with literature review and theme interviews. Thus, the methodology of the thesis is multi-method qualitative research with cross-sectional time horizon. The research approach and the methodology choices of the thesis are gathered in Table 2 and explained on the next paragraph.

Table 2. *The methodological choices of this research.*

Research philosophy	Pragmatism
Theory development	Abduction
Research strategy	Interventionist case study with literature review and theme interviews
Research methodology	Multi-method qualitative research
Time horizon	Cross-sectional time horizon

Pragmatism has been chosen as the research philosophy of the thesis because, according to Saunders et al. (2019), pragmatism is usually chosen as research philosophy for research which aims to apply abstract theories and ideas in practice. According to Saunders et al. (2019), it is common for pragmatism that the researcher tries to find practical solutions to the research problems, and in addition, in pragmatism it is recognized that other solutions than the ones found in the research might exist. This thesis uses abductive theory development because in abductive approach to theory development it is typical that theory and research data alternate in research (Saunders et al. 2019). Similarly, in this thesis, the theoretical framework for usage of AI tools in B2B customer service during customer journey is created first, and then afterwards applied to practice in the case organization. Additionally, according to Van Maane et al. (2007), abductive approach to theory development can be used to test possible theories. This thesis uses both theoretical literature review and empirical interviews, which means that this thesis is multi-method qualitative research. Qualitative research means that the results are non-numeric, and multi-method refers to that the data for research is collected with multiple methods (Saunders et al. 2019). The time horizon of the research is cross-sectional, because research only investigates the situation of the case organization in one particular moment of time by performing the interviews only once, and the theory parts of the research are currently in quick evolution. The interviews are performed as semi-structured theme interviews. In semi-structured theme interviews the theme of the interviews has been decided, but the questions are not fully outlined beforehand, which means that the direction of the interviews can also be changed by the interviewer or interviewee during the interviews (Saunders et al. 2019). According to Saunders et al. (2019) and Eskola and Suoranta (1998), the qualitative data gathered from semi-structured interviews can be analyzed with thematic analysis, in which reoccurring themes are acknowledged beforehand or afterwards with abductive theory development.

This research aims to produce theoretical knowledge, but also to test the theoretical knowledge in action, and in addition, the researcher works as a part of the case organization, which according to Lyly-Yrjänäinen et al. (2017), means that the suitable research

strategy for this research is interventionist case-study. In interventionist study, the researcher acts as part of the organization to produce simultaneously knowledge to the case organization, and to their own study (Lyly-Yrjänäinen et al. 2017; Jönsson and Lukka 2006). In interventionist case study it is common that the researcher tries to find theory-based solutions to real world problems (Van De Ven and Johnson 2006; Saunders et al. 2019) and also tries to affect to the operation of the case organization (Suomala and Lyly-Yrjänäinen 2012). Although, because this research is a case study, it is important to acknowledge that the results may not fit perfectly to other organizations than to the case-organization of the research (Saunders et al. 2019). According to Jönsson and Lukka (2006), interventionist research (IVR) has five stages which are called starting the research collaboration, pre-intervention, intervention, post-intervention, and reporting. In Table 3 the phases of interventionist research can be seen connected to the stages of the research of the thesis.

Table 3. *Stages of the interventionist research applied to this thesis.*

1. Starting the research collaboration	Outlining the topic and the goals of this thesis with the case company.
2. Pre-intervention	Literature review, and forming the basic theory of this thesis.
3. Intervention	Interviews in the case organization.
4. Post-intervention	Analyzing the interview results, comparing the interview results to the formed theory of the thesis, and presenting the interview results and the analysis of them to the case company.
5. Reporting	This thesis, and presenting the results of the thesis to the case organization.

Firstly, according to Jönsson and Lukka (2006), interventionist research begins with starting the research collaboration with the case company by analyzing the current state of the case company. In this research, the researcher has worked for the case company for a while already, hence the case company and situation of it is already familiar to the researcher. The goal of the research was still agreed together with the case company. Secondly, ideas for change are designed during pre-intervention (Jönsson and Lukka 2006). In this research this is done with literature review which produces theoretical background for discussion on use of AI in B2B customer service during customer journeys. Thirdly, the ideas for change are tested in the case company during the intervention stage (Jönsson and Lukka 2006). In this research it is done by interviewing representatives of the case organization to investigate their ideas and opinions of the subject of the thesis. Fourthly, the results of the intervention are reflected during the post-intervention stage (Jönsson and Lukka 2006). This research does it by analyzing the interview results

and comparing them to the theory formed in the pre-intervention stage, and presenting interview results analysis to the representatives of the case company. Finally, according to Jönssön and Lukka (2006), in the reporting stage the results of the research are reported. In the case of this research, the reporting is done by writing this thesis, and by presenting this thesis to the case organization after this thesis has been published.

3. CUSTOMER JOURNEY

In this chapter the concept of customer journey is introduced. The chapter begins with discussion on the background of the concept, and then explains the defining features of customer journeys. Afterwards, the concept of customer journey is considered in B2B business context.

3.1 Background

The model of the B2B sales process has traditionally been referred to as the sales funnel (Paschen et al. 2020). This seven-step sales process that includes both marketing and sales tasks is described stage by stage in Table 4, and it includes the full sales process from lead generation to negotiating the sale and to follow up stage of the sale.

Table 4. Seven stages of B2B sales funnel (Paschen et al. 2020; Sheth and Sharma 2008; Syam and Sharma 2018).

(1) Prospecting	Lead generation: Finding potential customers. Lead qualification: Evaluating the propensity of the prospects to buy.
(2) Pre approach and (3) Approach	Lead nurturing: Acquiring more information about leads and making contact.
(4) Presentation	Communicating the problem-solving characteristics of the offering (e.g., prototype, use cases, simulation).
(5) Overcoming objections and (6) Closing	Negotiating sale and overcoming objections.
(7) Follow-up	Fulfilling the current order. Follow up beyond the current order. Upsell, cross-sell.

Sales funnel principle considers every sale as a new sale (Sheth and Sharma 2008), but according to Purmonen et al. (2023), the situation differs bit based on whether the purchase is a new task, rebuy, or modified rebuy. According to Porter et al. (2003), in the new task purchase situation, the customer organization is buying the item from the supplier organization for the first time. In the new task purchase situation customer organization can have very little experience on the supplier and the product (Porter et al. 2003), and therefore, the sales process mostly follows the sales funnel process (Syam and Sharma 2018). In the straight rebuy situation the customer has purchased the product from the supplier previously, and the transaction is almost routine (Porter et al. 2003). Finally, in the modified rebuy situation the customer has bought similar products from

the supplier in the past, but some aspects of the purchase or the purchasable products are changing (Porter et al. 2003). Nowadays, the academic and the practical perspective in sales research have been generally moving towards more service-centered logic (Sheth and Sharma 2008), and to support this more service centered logic customer journey term has been created (Rusthollkarhu et al. 2022). On the other hand, customer journey can also be seen as the follow-up stage of the sales funnel (Purmonen et al. 2023).

While the academic and practical perspectives on sales in B2B markets have changed, the market has also changed. In the new markets, procurement process has become more complex because digitalization has increased interactions between supplier and buyer (Jaakkola and Terho 2021). Scattered interactions between different channels and processes have also created need for new kind of understanding for supplier customer relationship (Lemon and Verhoef 2016). To conceptualize this new relationship, term customer journey was created during the 1990s in academic literature, and then applied to practice (Jaakkola and Terho 2021; Steward et al. 2019). By creating the concept of customer journey, the consideration of good customer experience has moved from transactional procurement process to process of customer experience with multiple stages called touchpoints (Steward et al. 2019). Customer journey is customer centralized term for understanding the purchase and usage experience of the customer (Purmonen et al. 2023; Lemon and Verhoef 2016). According to Purmonen et al. (2023), customer journey thinking also differs from traditional way of analyzing the purchasing process of the customer in following ways: (1) Customer journey thinking considers both purchasing stage and usage stage equally, (2) In customer journey thinking both direct and indirect touchpoints are considered, (3) Customer journey thinking takes into account the experiences of individuals taking part in purchasing process.

3.2 Customer Journey

Traditionally customer journey has been defined as series of touchpoints, in which customer and supplier meet and interact in procurement process (Jaakkola and Terho 2021), as described in Figure 4.

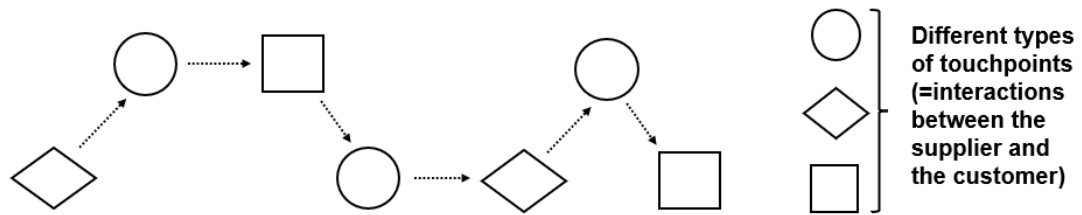


Figure 4. Customer journey has been described as series of touchpoints.

As a “newer” concept the definition of term “customer journey” has not fully been outlined yet. According to Rustoholkarhu et al. (2022) and Følstad and Kvale (2018), sometimes customer journey is defined from beginning of the procurement process to delivery, but in other journals, the customer journey has been defined as the journey from lead to permanent customer. Although, it is clear that customer journey concept is used to understand the experience of the customer of the performance of the supplier (Rustoholkarhu et al. 2022; Følstad and Kvale 2018). By analyzing customer journey, the supplier tries to describe the customer journey of their customer and how the customer acts during the touchpoints of the customer journey (Lemon and Verhoef 2016). With customer journey analysis, the supplier tries to understand the options and choices the customer faces during the purchasing process (Lemon and Verhoef 2016).

Purmonen et al. (2023), Lemon and Verhoef (2016), and Lunding and Kindström (2023) divide customer journey into three stages called pre-purchase, purchase, and post-purchase. All these stages are affected by whether the purchase is new buy, rebuy, or modified rebuy, meaning that customer journey differs bit based on what kind of purchasing process is considered (Purmonen et al. 2023) The stages of the customer journey are reviewed in Figure 5.

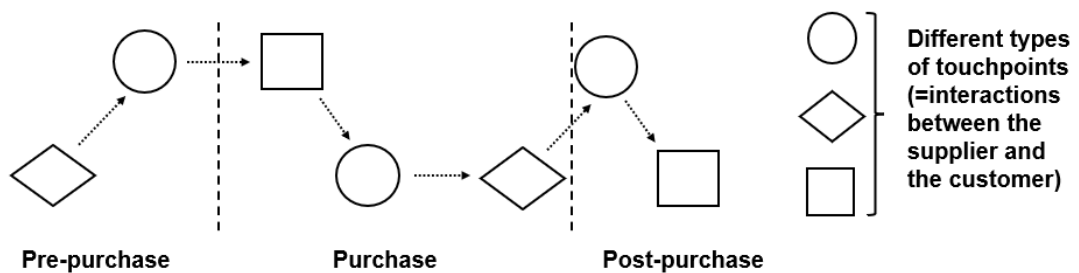


Figure 5. Customer journey can be divided into three stages.

Firstly, prepurchase stage includes the contact of the customer to the brand of the supplier, product category, and business environment before the actual purchase (Lemon

and Verhoef 2016). According to Lemon and Verhoef (2016), this includes recognizing the need and searching and estimating possible options to fulfill the need. In summary, pre-purchase includes everything that happens in the procurement process before the purchase (Lemon and Verhoef 2016). Secondly, according to Lemon and Verhoef (2016), the next stage of customer journey is the purchase stage which includes the interactions of the customer to their surroundings during the actual purchase. In other words, this means selection, ordering, and payment processes. At this point, the amount of the touchpoints between the customer and the chosen supplier can be expected to be at its highest. Lastly, the final stage of the customer journey is post-purchase which covers interactions between the customer and the supplier after the actual purchase has been made (Lemon and Verhoef 2016). According to Lemon and Verhoef (2016), the post-purchase stage includes usage and consumption of the goods bought, post-purchase engagement with supplier, and requests for maintenance and care. Based on the type of product, the post-purchase phases can differ by length, or ways. Successful post-purchase phase can lead to loyalty loop, in which the customer renews their purchase (Lemon and Verhoef 2016), as described in Figure 6 .

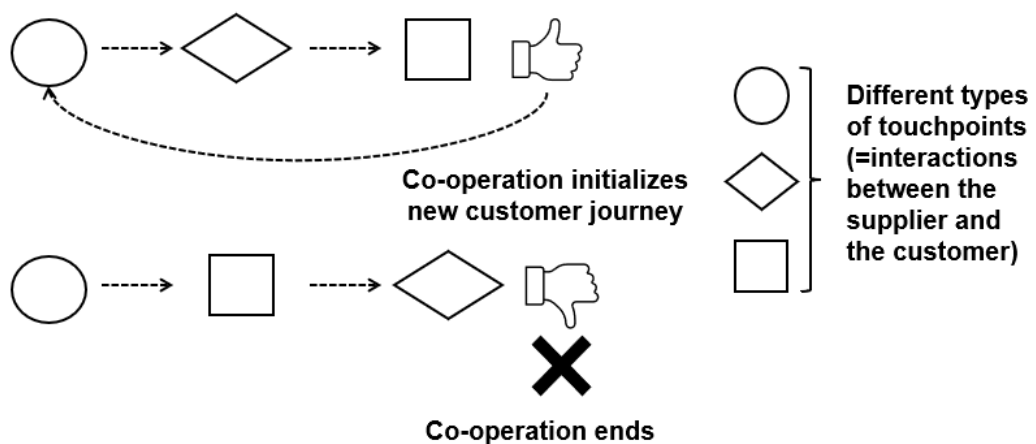


Figure 6. Positive experience of the customer journey can result new customer journeys, and negative experience of the customer journey can end cooperation.

Furthermore, customer journeys considered successful may turn into recurring purchasing cycles called loyalty loops, in which new customer journey is initialized after another (Purmonen et al. 2023; Lemon and Verhoef 2016), as seen in Figure 6. Therefore, to increase customer longevity and rebuys, it is important that the supplier understand customer point of views during the customer journey (Lemon and Verhoef 2016). Hence,

investigation of customer journeys needs to be done to understand customer experiences (Følstad and Kvale 2018). This means that, although every customer journey is different, there is need for investigation of average customer journey, and need for standardizing customer journeys to systematically improve them (Lemon and Verhoef 2016; Følstad and Kvale 2018). To increase sales and customer satisfaction, it is important to understand what is relevant for customer experience in every touchpoint (Lemon and Verhoef 2016).

Contradictory to successful customer journeys, according to Witell et al. (2020), failures in the customer journey are called mismatches. Mismatches can appear in touchpoints, or in wider sense during the customer journey, or even in customer relationships (Witell et al. 2020), and can cause the end of customer journey, or even end of the whole customer relationship, as seen in Figure 6. According to Witell et al. (2020), mismatches in touchpoints often are caused by misplaced control at the touchpoint, which can be due to that the supplier cannot enough control the touchpoint, because it is through the third party, or touchpoint has not been actively controlled. Similarly, mismatches during customer journey can be due to presence of multiple operators during the customer journey (Witell et al. 2020). Mismatch during the customer journey can also happen due to changing expectations and needs, for example, it can be that at the some point co-operators notice that customer needs have been misunderstood (Witell et al. 2020). These mismatches to customer journey and touchpoints can be even due to mismatches in the whole customer relationships (Witell et al. 2020). Maybe the supplier and the customer do not see eye to eye, when it comes to the nature of the customer-supplier relationship. It can also be that the standardization of the touchpoints and the customer journey has gone so far that individual customer needs have accidentally been disregarded.

3.3 Touchpoints

Customer journey is built from multiple touchpoints. More in depth, customer journey means relationship of multiple touchpoints between customer and supplier (Rustholkarhu et al. 2022). Touchpoints are interactions, or contact points, between the customer and the supplier, which result customer experiences for the customer journey (Lundin and Kindström 2023). Some examples of the customer journey touchpoints can be seen in Table 5.

Table 5. *Review of possible touchpoints by type.*

	Physical touchpoints	Digital touchpoints
Direct touchpoints	Project meetings, site visits	www-site and marketing videos of the supplier, emails between supplier and the customer
Indirect touchpoints	Distributor showrooms	Marketing campaigns built by marketing agencies, third party reviews on the Internet

Touchpoints can be interactions, such as project meetings, or contact points, such as phone calls, or information that the customer comes across on the supplier, such as website or marketing material (Purmonen et al. 2023). In addition, touchpoints can be physical touchpoints, i.e., audits or digital touchpoints, i.e., marketing video (Purmonen et al. 2023). According to Purmonen et al. (2023), in addition to physical or digital, touchpoints can also be direct or indirect touchpoints. In direct touchpoints the supplier and the customer are in direct contact with each other, while in indirect touchpoints, there is no direct contact between the supplier and the customer, but contact can be formed, for example, through third party partner (Purmonen et al. 2023). Accordingly, in direct touchpoints the supplier controls the touchpoint and the environment of the touchpoint, while in indirect touchpoints the environment and the touchpoint are controlled by the organizer of the touchpoint (Purmonen et al. 2023).

Lemon and Verhoef (2016) suggest that there would be four types of touchpoints which can appear in any stage of the customer journey:

- Brand-owned touchpoints
- Partner-owned touchpoints
- Customer owned touchpoints
- Social/external touchpoints

Firstly, brand-owned touchpoints are managed by the supplier, meaning that the supplier mostly controls the touchpoints (Lemon and Verhoef 2016). This can mean brand owned media, like advertising, websites or loyalty programs, or brand controlled elements like attributes of product, packaging, service, and price. These touchpoints are almost fully in control of the supplier, and therefore, these touchpoints are important if the supplier wants to affect to the success of the customer journey (Lemon and Verhoef 2016).

Secondly, partner-owned touchpoints that are jointly designated, managed, and controlled by the supplier and one or more of their partners (Lemon and Verhoef 2016).

These partners can, for example, be marketing agencies or distributors. Touchpoints that are meetings with the distributor or advertising campaigns created by marketing agencies affect to the customer journey of the customer also, but according to Lemon and Verhoef (2016), it is still bit unclear how and how much. It can also be sometimes hard to determine whether the touchpoint is brand-owned or partner-owned (Lemon and Verhoef 2016).

Thirdly, customer-owned touchpoints are customer experiences connected to the supplier, product, or the brand of the supplier that customer experiences, but to which the supplier or the partner of the supplier cannot affect to (Lemon and Verhoef 2016), for example, how the customer determines their needs at the prepurchase stage. According to Lemon and Verhoef (2016), from all of the touchpoints, the touchpoints of post-purchase stage, where the customer actually uses the product, or the service, have been noticed to have the most influence on the customer journey.

Lastly, during the whole customer journey, external touchpoints, such as other customers, customers of the customer, and independent information sources surround customers, and affect to their cooperation with the supplier (Lemon and Verhoef 2016). According to Lemon and Verhoef (2016), these touchpoints are also important to success of the customer journey, but they can be hard to affect to.

The customers evaluate their satisfaction and experience continuously during and after every touchpoint (Tueanrat et al. 2021), and customer satisfaction usually is measured by the difference between customers expectation and received service at the touchpoint (Tueanrat et al. 2021). According to Purmonen et al. (2023) and Tuearat et al. (2021), touchpoints considered as positive experiences increase the customer satisfaction, while touchpoints considered as negative experiences decrease customer satisfaction. The success of the touchpoints then affects to the opinion of the customer on the success of the whole customer journey (Purmonen et al. 2023; Tueanrat et al. 2021). Meaning that customer experiences in touchpoints of customer journey are cumulative during the customer journey (Purmonen et al. 2023; Tueanrat et al. 2021), which can be seen in Figure 7. Exactly for this reason, controlling touchpoints is important to the success of the touchpoint and further on to the success of the whole customer journey, and forming of loyalty loop. Fundamentally, controlling and managing the direct touchpoints is easier than indirect ones because the supplier can better affect to the success of the touchpoint in the direct touchpoints.

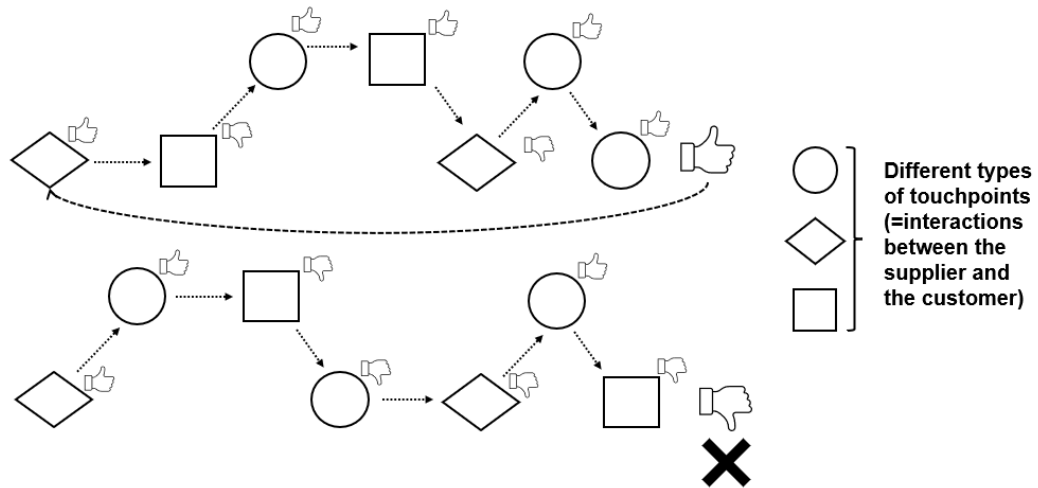


Figure 7. Experiences during different touchpoints of the customer journey affect to success of the customer journey and the customer relationship.

Similar to customer journeys, occurred touchpoints are customer and purchase specific (Purmonen et al. 2023), but the systematic development of the customer journeys and the customer experience increase the possibility of rebuys from the customer, and therefore, firms need to aim to control and plan touchpoints (Witell et al. 2020). In controlled touchpoint improvement process, it is important that firms analyze their customers actions during the touchpoints when moving from the prepurchase to the purchase and to the post-purchase stage of procurement process (Lemon and Verhoef 2016). To understand the decision-making process of the customer, it is important to understand the features of the touchpoints that trigger the movement from one stage to the next. This kind of analysis is called customer journey analysis, and the aim of the analysis is to describe the customer journey, and to understand the options and the choices of the customer during the customer journey (Lemon and Verhoef 2016).

3.4 B2B Customer Journeys

While customer journey concept has been developed to be applied to B2C markets (Følstad and Kvale 2018), in later years it has also been applied to B2B markets, for example, on articles of Rusthollkarhu et al. (2022), Purmonen et al. (2023), and Homburg and Tischer (2023). Understandably, B2B market characteristics differ from B2C market characteristics, so the B2B customer journey characteristics also differ from B2C customer journey characteristics. In Table 6 the B2B market characteristics can be reviewed.

Table 6. *B2B market characteristics (Lyly-Yrjänäinen et al. 2018, pp. 13-36).*

Customer value	Market structure	Product specifications	Purchase behavior	Sales and distribution
Most often customer value can be financially measured.	Typical market structure includes few large operators. Markets can be geographically concentrated, and demand is derived.	Products typically require deep technical knowledge. To customers delivery and availability on the right time are essential.	The (new) purchase process usually is rational multistep process, to which, however, personal relationships can sometimes affect.	Market specific trades and fairs are important for new leads. Price negotiating is continuous part of process.

Broadly speaking, because of the market characteristics listed in Table 6, customer relationships in B2B markets usually are long lasting, which has its effect on customer journeys. In B2B market customer journeys there is usually some level of mutual dependency existing, which means that these long-term buyer-supplier relationships often are contractually regulated due to high monetary or non-monetary investments, for example, high switching costs or contractual conditions (Homburg and Tischer 2023). The biggest factor in continuous cooperation relationships in B2B markets is the fact that companies often are dependent of constant material flow, and therefore, continuous relationships are mutually beneficial. This means that touchpoints and customer journeys cumulate more often in B2B markets than in B2C markets.

According to Purmonen et al. (2023), cumulative touchpoints can have a positive or negative effect on customer relationship. Positive touchpoints in customer journeys improve and prolong the customer relationships, and negative touchpoints might weaken customer relationships (Purmonen et al. 2023). In B2B markets, a new customer journey can also start when customer starts a straight rebuy or a modified rebuy (Purmonen et al. 2023), because customer journeys in B2B markets are often long running supplier-customer relationships, and are repetitive (Homburg and Tischer 2023). In straight rebuy and modified rebuy situations, the customer journey differs from new buy situation. According to Purmonen et al. (2023), complexity of the customer journey is greater in new buys compared to rebuys.

Similar to B2C customer journeys, B2B customer journeys do not exist in vacuums. In B2B customer journeys, third party operators also can have an effect on customer journeys (Purmonen et al. 2023). In addition, it is also important to consider that, especially in B2B markets suppliers and customers exist as parts of wider business ecosystem, in which external factors might also affect to the customer journey (Lundin and Kindström 2023). Purmonen et al. (2023) remind that in these cases, it is important to remember

that organization can only affect on the customer journey while it is in direct contact with its customer, thus in direct touchpoints during customer journey.

As mentioned, B2B customer journeys have direct and indirect touchpoints. Direct touchpoints are the ones the supplier controls, such as websites, sales personnel, and marketing. Indirect touchpoints are touchpoints that supplier cannot control, like third party maintenance, customer reviews, and distributors (Purmonen et al. 2023; Lundin and Kindström 2023). In B2B touchpoints there can also be different stakeholders present (Witell et al. 2020; Lundin and Kindström 2023), which can mean representatives of different level of supplier or customer organizations, or third party operators. Homburg and Tischer (2023) call this multi personality of interactions. In addition, because in the B2B markets customer journeys often happen in supplier-customer relationships, there might be multiple overlapping customer journeys ongoing in the same time (Purmonen et al. 2023). This also means that, in B2B customer journey, there might be many levels of both organizations involved during customer journeys with differing expectations (Witell et al. 2020; Homburg and Tischer 2023). The operators of the customer journey in the B2B markets can be more active or unactive, and activeness of operators can differ from one touchpoint to another (Lundin and Kindström 2023). If the supplier wishes to alter the customer journey to improve it, it is important that all the touchpoints of the customer journey are coherently and actively handled, which is suggested to provide the best results for cooperation and customer satisfaction (Lundin and Kindström 2023).

Although customer journeys are somewhat unique between customers and even between different customer journeys (Følstad and Kvale 2018) according to Purmonen et al. (2023), they share similar attributes. This means that standardizing customer journeys, and organized improvement of customer journey management is possible. Meaning that, for example, business management can try to map different customer journeys to recognize the important touchpoints in customer journeys (Lemon and Verhoef 2016), and when the important touchpoints have been recognized, they can be analyzed for improvement. On contrary, Homburg and Tischer (2023) remind that due to complexity of interactions in B2B market touchpoints, often individual solutions and co-created solutions are required by the customer and therefore, fully-standardized touchpoints cannot be reached.

In B2B customer journeys physical touchpoints, such as project meetings, consultation meetings, and product or service provisions between the supplier and the customer are more common than in B2C markets (Lundin and Kindström 2023). Lundin and Kindström (2023) have also noticed that amount digital interactions are on the rise in the B2B markets. Lundin and Kindström (2023) speculate that this is due to new digital applications

like IoT and AI. Increase in use of digital touchpoints has probably partly been caused due to that some previously physical interactions are now happening as digital touchpoints, and it is actually possible to more physical touchpoints to become digital (Lundin and Kindström 2023). This can mean that increased digital support and customer service to customer can lead to better customer experience.

Aforementioned importance of customer journey to success of customer relationship means, that it is important that companies use resources to manage and develop customer journeys of their customers. Homburg and Tischer (2023) suggest that there are four aspects to consider when trying to improve B2B customer touchpoints: anchoring value of touchpoints, consistency of touchpoints, internal integration of touchpoints, and individual control of touchpoints. These four aspects and what they could mean in practice can also be seen in Table 7.

Table 7. *Improving B2B customer journey touchpoints in literature and in practice.*

Ways to improve touchpoints according to Homburg & Tischer (2023)	In practice
Value anchoring of touchpoints	Communicating the value of the touchpoints to the customer in value proposition.
Consistency of touchpoints	Homogenizing the touchpoints to support the value proposition.
Internal integration of touchpoints	Ensuring the internal information flow between the touchpoints during the customer journey.
Individual control of touchpoints	Monitoring the success of individual touchpoints to improve them.

Firstly, value anchoring of touchpoints refers to making touchpoints part of the value proposition of the customer journey (Homburg and Tischer 2023). This means comprehensively and straightly communicating to customer the aim of every touchpoint to conduct to economic value creation, because in B2B markets the market is highly focused to value that can be monetarily proven (Lyly-Yrjänäinen et al. 2017). Secondly, consistency of touchpoints means that supplier needs to deliver uniform service, for example communication, marketing, and information during the customer journey touchpoints (Homburg and Tischer 2023). This can, for example, mean standardized customer service, such as standardized response times, standardized communication, and documentation. Thirdly, internal integration of touchpoints means that direct and indirect touchpoints and physical and digital touchpoints are functionally integrated, as well as that transition from touchpoint to another is seamless (Homburg and Tischer 2023). Lastly, individual control of touchpoints in turn means that touchpoints need to be somewhat tailored to customer and their individual needs (Homburg and Tischer 2023). This, for

example, can mean recognizing touchpoint related groups, and analyzing and optimizing their functions for current and future needs of the customer.

Customer service touchpoints in B2B customer journey are mostly direct touchpoints between the supplier and the customer, which take place after the original purchase decision. Most of them happen in rebuy and modified rebuy purchases, and during the purchase process stage of the customer journey (Purmonen et al. 2023). These B2B customer service touchpoints are usually some kind of direct communication between the supplier and the customer, for example, responding to request for quotations (RFQs), receiving and confirming orders to customer, and communicating regarding order lead times to the customer. According to Purmonen et al. (2023), the number of the touchpoints and the type of the touchpoints are connected to how complex the purchasing process is, but on the other hand, according to Homburg and Tischer (2023), important for the touchpoints is that the touchpoints will generate some type of economic value to B2B customers.

In customer service touchpoints simultaneous B2B customer journeys can also interlink. Organizations may have overlapping customer journeys ongoing, so it might be hard to separate one customer journey from another, because existing customer journeys can use the same customer service touchpoints, or have an effect on each other (Purmonen et al. 2023). In addition, the post purchase usage stage may also cause new customer journeys (Purmonen et al. 2023). This is partly why long relationships are formed in the B2B markets. To form these long-term relationships in B2B markets good customer service experience is vital according to Lundin and Kindström (2023).

4. AI TOOLS IN BUSINESS

This chapter discusses the use of AI tools in business environment. First, the chapter introduces basic information regarding use of AI in business context. Thus, the chapter introduces tools of AI that have been repeatedly mentioned as beneficial to business in research literature.

4.1 Artificial Intelligence in Business

Today B2B markets work highly through the digital world, and therefore, it is expected that AI technology will change the ways of working (Rustholkarhu et al. 2022). AI-based technologies are data systems which can, based on the information given to them, work rationally and solve problems on their own (Paschen et al. 2020). AI-based technologies have qualities which make it possible for them to monitor their environment, recognize patterns, rationalize, adapt to their environment, or affect to their environment (Rustholkarhu et al. 2022). Usually, the aim of AI is to mimic thought and problem solving process of human intelligence (Rustholkarhu et al. 2022; Syam and Sharma 2018). Sometimes the a problem-solving result of an AI system can also be execution of a task assigned to the AI system (Rustholkarhu et al. 2022). Different definitions for AI have been gathered in Table 8.

Table 8. *Different definitions for AI systems in business literature.*

Business literature articles	Definition for artificial intelligence
Rustholkarhu et al. 2022	Artificial intelligence is a term for computational agents equipped with properties that enable them to interact with their surroundings, and based on recognized patterns in data, are able to reason, or modify their behavior or surroundings in a goal-oriented way.
Paschen et al. 2021	AI encompasses information technologies that act rationally based on the information they have. AI solves problems to achieve the best outcome, or in the case of uncertainty, the best expected outcome.
Kot & Leszczynski 2022	AI concerns any device that perceives its environment, and takes actions that maximize its chance to successfully achieve its goals
Syam & Sharma 2018	AI refers to the ability of machines to mimic intelligent human behavior, and specifically refers to “cognitive” functions that we associate with the human mind, including problem solving and learning.

The data that AI-based technologies use and produce in their processes can be structured or unstructured data (Paschen et al. 2020). Structured data is quantitative data or data which can be standardized, while unstructured data means qualitative data which has not been, and cannot not be, standardized. In practice, structured data can, for example, be economic figures, survey answers, or sales figures, while unstandardized data can be pictures, customer comments, or phone conversations. The high impact of AI tools is especially relevant when handling large amounts of unstructured data to produce value with insights from data (Paschen et al. 2020).

As aforementioned, AI-based technologies are rational systems that aim to do the tasks assigned to them to reach the best possible outcome (Russell and Norvig 2022 p. 52). According to Paschen et al. (2019), AI-based technologies use so called input-process-output model. Hence, AI-based technologies take data as inputs from system surrounding the technologies, then manipulate the data with their data processing functions, and at the end of the process report the outputs of the processes back to the surrounding environment (Paschen et al. 2019; Russell and Norvig 2022 pp. 54-78; Poole and Mackworth 2023 pp.3-76). The input-process-output model is pictured in Figure 8.

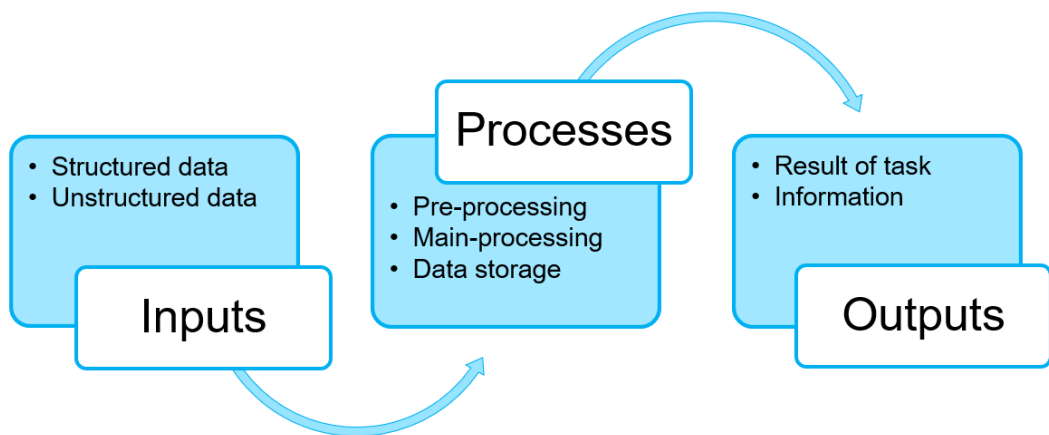


Figure 8. *Input-process-output model of AI system.*

Inputs can be either structured data which can, for example, be knowingly input in to the system, or unstructured data that was, for example, collected by the AI system (Paschen et al. 2019; Poole and Mackworth 2023 pp. 3-76). When AI moves to processing stage, unstructured data first needs to be pre-processed, so that the data can be used for value creation (Paschen et al. 2019). According to Paschen et al. (2019), pre-processing can, for example, be normalization, standardization, or iteration of the data collected in mul-

multiple forms, and from multiple sources. After pre-processing, system can begin main processes of data handling (Paschen et al. 2019). According to Paschen et al. (2019) and Poole and Mackworth (2023), in main processes AI system solves problems by logic and machine learning, so that the results of the main processes are new knowledge or changes to existing knowledge. Main process of AI system can also store data in structured way, which is an important function of AI systems according to Paschen et al. (2019). As a result of processes, AI system produces outputs to the surrounding environment (Paschen et al. 2019; Russell and Norvig 2022 pp. 54-78), and these outputs can be analyzed, used in business, or stored. Output of the main processes can also be a complementation of the task the AI system was assigned to perform (Paschen et al. 2019; Russell and Norvig 2022 pp. 54-78).

In business connections, AI can be applied either in direct or indirect ways to produce value with its capabilities to collect, process, and output data and results (Kot and Leszczyński 2022). Direct use of AI means that AI works directly with creating value in business by being part of the business value chain and performing tasks in the business process of the company (Kot and Leszczyński 2022). This can, for example, mean performing repeating basic tasks in production or in customer communication. AI can also indirectly produce value to a company by collecting or analyzing data to support human tasks (Kot and Leszczyński 2022). By data collection and analysis executed by AI the company can form strategies, and make decisions, which are also indirect ways to use AI in value production (Kot and Leszczyński 2022; Paschen et al. 2019).

4.2 AI Tools

AI tool can be either narrow or strong operator (Paschen et al. 2019; Russell and Norvig 2022 pp. 54-78). According to Paschen et al. (2019), narrow operators are AI systems that are optimized to perform certain well described tasks, and strong operators are designed for solving wider tasks, or almost any intellectual task, independently. To create a working AI system, a company usually needs to use more than one tool simultaneously (Paschen et al. 2019). However, this thesis describes the basic information regarding different AI functions to which different AI tools are based on. The AI functions this thesis describes are:

- Machine learning (ML)
- Natural language understanding (NLU)
- Natural language generation (NLG)
- Big Data analytics

- Conversational agents (CAs)

Firstly, machine learning (ML) is AI-based tool, in which the AI system uses existing data, information and previous experiences to self-improve the AI system (Paschen et al. 2020, 2019; Russell and Norvig 2022 p.671). With machine learning AI system can learn from examples of previous situations and tasks it faces, and results of those (Paschen et al. 2020; Rustholkarhu et al. 2022), and improve its performance accordingly (Paschen et al. 2020; Russell and Norvig 2022 p. 671). ML capabilities to learn from existing data sets and past “experiences” mean that the need for constant need for re-programming of the AI system can be smaller in systems with ML capabilities than in AI systems without ML functionalities (Paschen et al. 2020). ML uses different types of algorithms to learn and make decisions based on data (Paschen et al. 2019; Syam and Sharma 2018). ML can happen as supervised machine learning, as unsupervised machine learning or as reinforcement machine learning (Paschen et al. 2020; Syam and Sharma 2018; Russell and Norvig 2022 p.671). In supervised machine learning AI system has been given training data sets which include inputs and corresponding outputs, and based on these inputs and outputs the AI system recognizes intended patterns, and develops rules to be applied in the future (Syam and Sharma 2018; Paschen et al. 2020; Russell and Norvig 2022 p. 671). On the contrary, according to Paschen et al. (2020), Russell and Norvig (2022), and Syam and Sharma (2018), in unsupervised machine learning training data given to AI system includes inputs and outputs, but inputs are not connected to corresponding outputs. In unsupervised machine learning the AI operator then independently identifies patterns and rules between unlabeled datapoints (Paschen et al. 2020; Syam and Sharma 2018). Finally, in reinforcement machine learning the AI system leans fully to its own experiences (Paschen et al. 2019; Russell and Norvig 2022 p. 671). In reinforcement learning no pre-existing datapoints are given to the AI system, but AI system learns to operate in action (Syam and Sharma 2018). ML is in widely used already, for example, as common function as computer vision is based on ML. On the other hand, ML is also prerequisite to other AI tools, such as natural language generation (NLG) and conversational agents (CAs) (Syam and Sharma 2018).

Secondly, natural language understanding (NLU) analyses spoken or written human language, for example, customer emails and meetings, or marketing material (Paschen et al. 2020). In NLU, the AI operator works by searching themes and keywords from written text or spoken speech that could be turned to usable data (Paschen et al. 2020). The first step of NLU is to transcribe spoken language, or free form text to standard form (Paschen et al. 2019; Syam and Sharma 2018). Then NLU needs to be able to assign

meaning to this written standard from text, meaning that it needs to find semantic representation to contextual circumstances, linguistic styles, and dialogical history (Paschen et al. 2019). This means that NLU analyses sentence structures, phrases, symbols, and relationships between words, and the context that the words are used to create most accurate description of the natural language used (Syam and Sharma 2018). AI operators that use NLU can create automatic text summaries, topic extractions, and sentiment analysis, but NLU applications can also be more advanced, meaning they can create customer profiles or model customer behaviors and needs (Paschen et al. 2019, 2020; Rusthollkarhu et al. 2022). By combining NLU and computer vision, AI operator can also process still images, and thus, analyze gestures and facial cues to recognize context and semantics of the situations (Paschen et al. 2020, 2019).

Thirdly, compared to NLU, natural language generation (NLG) performs complimentary task, meaning that it can produce text or audio which are based on the data given to the AI operator to process (Paschen et al. 2019; Syam and Sharma 2018). NLG can turn data sets given to it into context suitable and organic seeming reports, insights, and other texts (Paschen et al. 2019) With natural language generation AI systems can create documents, reports, and newsletters, which include information regarding the organization, or the customers of the organization (Paschen et al. 2019). NLG is also in a big role in chatbots and conversational agents that work in customer communication (Rusthollkarhu et al. 2022). Together NLU and NLG are called natural language processing (NLP) (Paschen et al. 2019).

Fourthly, AI systems can collect large amount of data by collecting and combining data to be utilized in the processes of the organization and customer communication (Paschen et al. 2020). These large heterogenous and complex masses of collected unstructured and structured data are called big data (Paschen et al. 2020; Hallikainen et al. 2020). In addition to big data collection, AI systems can also analyze collected big data to produce usable information and knowledge to business processes, and gain insights from various sources of data (Paschen et al. 2020; Hallikainen et al. 2020). According to Hallikainen et al. (2020), big data analytics can enhance company performance in multiple ways, for example, by recognizing previously unnoticed opportunities, and gathering and collecting customer data to profile the customers. Results of big data analytics can, for example, support decision making and strategy formation in business (Hallikainen et al. 2020; Paschen et al. 2020). Hallikainen et al. (2020) suggest that all competitive advantage of big data analytics might not lay in the results of the data analysis, but also in the speed of generating the knowledge based on the gathered data.

Lastly, AI tools that could directly affect to the customer relationships, customer touchpoints, and journeys are conversational agents (CAs) (Kot and Leszczyński 2022). While chatbots are widely used in customer ecommerce nowadays, according to Rustholkarhu et al. (2022), CAs would be more efficient in B2B context. Operation of CAs bases on NLU, NLG, and ML, which together can, for example, simulate human like conversation between customer and customer service either through text or voice interaction (Kot and Leszczyński 2022). CAs are more civilized versions of chatbots, because in addition to providing information to user, those can also perform practical tasks on behalf of users, and learn from their past experiences (Rustholkarhu et al. 2022; Kot and Leszczyński 2022). This can mean answering to customer questions or receiving and entering customer orders to IT systems of the company, or on the other hand, CAs can arrange customer meetings or upsell. Business virtual assistants (BVA) are AI applications that are closely related to CAs, and work in interfaces of the supplier and the customer by scheduling meetings and tasks through email services (Kot and Leszczyński 2020). The primary value of CAs can be seen as utilizing them as to help, or as instead of human employees, to achieve instant, always available, and standardized customer service experience to the customer (Kot and Leszczyński 2022). According to Kot and Leszczyński (2022), CAs can also help to achieve better understanding of the processes of the company and customer behavior. In addition to using CAs with the external shareholders of the organization, those can also be used in the inside of the organization (Rustholkarhu et al. 2022). CAs can also be seen as help to traditional human customer service in gathering information for customer service, or helping in repeating customer service tasks. Paschen et al. (2021), for example, state that AI tool should never fully replace human actor in B2B processes, but work alongside of the human operator.

4.3 Weaknesses of AI Tools

It is still up for discussion how much AI systems could take places of human operators (Paschen et al. 2021). It is known, that AI cannot fully replace a human worker because the capabilities of AI to be empathetic and recognize contextualities are limited (Kot and Leszczyński 2022). Human worker can also be more creative and communicate better than an AI tool (Paschen et al. 2021). Often, AI tools require human actor to monitor the outputs of the AI tool, because human actor has different sets of analytical skills compared to AI (Paschen et al. 2021).

Also, the resistance against the change and implementing AI tools can be significant in both supplier and customer organizations (Paschen et al. 2020). Rustholkarhu et al. (2022) speculate whether implementation of AI system can lead to problems like failures

and unhappy customers while human operator can sometimes be considered more trustworthy, or whether it makes business processes more complicated (Paschen et al. 2020; Grewal et al. 2021). Customers often need help in familiarizing themselves with AI-based customer service tools, because AI tools will change the customer experience (Paschen et al. 2020). Usually, customers also feel that the human worker is more reliable than AI tool (Paschen et al. 2021; Grewal et al. 2021).

In addition, implementation and organizational use of AI systems are long processes, which need constant reviewing, and continuous improvement, to which all organizations are not ready or capable for (Kot and Leszczyński 2022). Configuration of AI tools requires great resources and inputs from the suppliers organization, and it may also take many rounds of configuration, testing, and reconfiguration (Kot and Leszczyński 2022; Paschen et al. 2020). After the AI tools have been configured, the human actors are still continuously required to monitor and develop AI tools. Workers need to enter inputs specific enough for AI, and monitor outputs to make sure that the outputs make sense and are correct (Paschen et al. 2020).

Another big question is ethical aspect of AI systems (Rustholkarhu et al. 2022; Russell and Norvig 2022 p. 53); for example, ownership of the material created through AI can be up to debate. Usually the material created with AI needs to go through human review to assure its truthfulness, and suitability to the specific business context of the company (Paschen et al. 2021). One source of concern with the AI tools is also the data safety (Paschen et al. 2020; Russell and Norvig 2022 pp. 49-51). AI tools often store and interpret large amounts of company and customer data, so it is essential that data is properly crypted, anonymized, and secured.

5. CUSTOMER JOURNEY AND ARTIFICIAL INTELLIGENCE

In this chapter, concepts of customer journey and its touchpoints are connected to the use of AI and the tools of AI. The goal of the chapter is to investigate how to take advantage of AI and AI tools during B2B customer journey and touchpoints of customer journey. As the result of this chapter, a model for the selection of AI tools for B2B customer service use is formed.

5.1 AI Tools during B2B Customer Journey

Fast development of AI has made it possible to utilize AI and AI-based tools in managing customer journeys and in the touchpoints of the customer journey (Rusthollkarhu et al. 2022). During customer journey, AI can either be a curator which collects and structures data and information from environment, or an actor which produces data and information to environment. In addition, AI can be used as narrow operator which has been optimized to a certain task, or strong operator which can investigate, plan, and problem solve independently (Paschen et al. 2019). Paschen et al. (2019) however remind that strong operators are uncommon, but a task optimized narrow operators are becoming popular.

Based on literature on B2B markets and customer journeys, Rusthollkarhu et al. (2022) have been able to recognize four main activities for AI tools during B2B customer journey:

- Analyzing
- Designing
- Engaging
- Guiding

Firstly, AI tools can be used to gather, structure, and analyze available market information to support marketing decisions (Paschen et al. 2019). According to Rusthollkarhu et al. (2022) and Grewal et al. (2021), AI tools can be used to analyze customer attributes and actions of the customer to create data and understanding of customer and their actions, and furthermore, Paschen et al. (2019) adds that with AI tools supplier can even create customer profiles of current and potential customers. This data and understanding of customer and their actions, can according to Paschen et al. (2020), be used to predict customer actions, and to develop customer journey to improve customer satisfaction

during the customer journey. According to Paschen et al. (2020), the ability of AI to analyze and create great amounts of information is expected to become a competitive advantage in the B2B markets in the future. With automated big data analytics, AI can also further help by making mapping of customer journeys easier and more accurate (Steward et al. 2019).

According to Rustholkarhu et al. (2022), AI tools can also be used to engage with the potential customers to generate customer lead, and to initiate new customer journeys with existing customers. This can, for example, mean that AI tools can create customer prospects (Paschen et al. 2019), or to urge customers to rebuys (Rustholkarhu et al. 2022). In addition, AI tools can also be automatized to do routine tasks, such as to follow up marketing leads, to schedule meetings with customers, and to send marketing material and questionnaires to customers (Paschen et al. 2019). AI tools can design and create digital materials for customer journey, and even design customer journeys for customers (Rustholkarhu et al. 2022; Paschen et al. 2019). This can according to Rustholkarhu et al. (2022) and Grewal et al. (2021), for example, mean that suppliers can create marketing and customer materials with AI tools.

AI tools can guide customer in their customer journey from touchpoint to another, or in use of supplier systems and products (Rustholkarhu et al. 2022). Paschen et al. (2019, 2020) suggest that AI can be used to automatize order handling, for example, with conversational agents that work to support and guide customers during their journey (Rustholkarhu et al. 2022; Paschen et al. 2020). As mentioned in analyzing part, AI tools can use big data to quite accurately map customer journeys (Steward et al. 2019), and therefore, it could be expected that AI could also quite easily offer possible next step choices to take during the customer journey to the customer.

To efficiently use AI during B2B customer journey, the supplier may need to use multiple AI tools simultaneously to receive aimed value adding results (Rustholkarhu et al. 2022; Syam and Sharma 2018). Usually, AI tools, like conversational agents, use multiple AI functions, such as natural language processing and machine learning, together to achieve the aimed result, but also to self-improve the processes of the AI tools.

5.2 AI Tools and B2B Customer Service

In B2B markets, customer service has vast responsibility over customer journey touchpoints. According to Homburg and Tischer (2023) customer touchpoints can be improved

in four ways. These four ways are value anchoring of touchpoints, consistency of touchpoints, integral integration of touchpoints and individual control of touchpoints, as seen in Table 9.

Table 9. *How AI could be used to improve customer service.*

Ways to improve touchpoints (Homburg and Tischer, 2023)	Possible uses for AI in customer service
Value anchoring of touchpoints	Customizing the customer journey touchpoints based on AI created customer profiles
Consistency of touchpoints	Using AI in customer communication
Integral integration of touchpoints	Using AI in order follow up tasks
Individual control of touchpoints	Using AI to monitor the success of individual touchpoints

According to Paschen et al. (2019) and Kot and Leszczyński (2022), AI, such as big data analytics and natural language understanding, can be used to gather information on customers based on available market information, the suppliers experience with the customer, and ongoing communication with the customer. Furthermore, the gathered information can be further analyzed with AI tools using big data analytics to create customer profiles which can predict customer behavior (Paschen et al. 2019; Kot and Leszczyński 2022). This kind of customer analyzing and customer profiling can be used to improve and customize the customer service offered to the customer (Paschen et al. 2020; Grewal et al. 2021). By analyzing the communication and actions of the customers, the supplier can better understand their potential value proposition to each of their customers, and find the correct value anchoring points for each customer. This, according to Homburg and Tischer (2023), in turn increases customer engagement in touchpoints, and therefore, leads to better success of customer journeys. Especially, in B2B customer service AI-based big data analytics tools can be used to analyze the internal information of the company, like product details and also external data like customer communication, to provide information to use of the customer service.

Similarly, the individual touchpoints between B2B customer service and the customer can be analyzed with AI-based tools to monitor the success of them to increase the control of the individual touchpoint. Information gathering regarding the customer can be continuous because AI tools using natural language understanding and big data analytics can be automated to constantly follow up the processes and collect data (Rusthollkarhu et al. 2022). Tools using AI can also be used to retrieve information from internal systems of the supplier; for example, big data analytics combined with conversational agents can be used to efficiently fetch order and production data needed in customer service process (Paschen et al. 2020). This data fetched via AI operator can be

even more accurate than the information human operator could gather and analyze (Kot and Leszczyński 2022). By this way, AI-based conversational agents can also be used to guide the customer journey forward, also increases internal integration of the touchpoints, and therefore, according to Homburg and Tischer (2023), improves the customer experience during the customer journey.

AI can be used to automate routine tasks of customer service. According to Paschen et al. (2019), AI tools such as natural language understanding can be used for receiving and entering orders from customers to information systems. Another example given by Paschen et al. (2021) is that the help of AI can also mean automated order forms. According to Paschen et al. (2019), AI can also be used to help in follow up tasks after order entry. This can mean that conversational agents respond to customer requests, or other NLP- and NLC-based AI tools communicate with customer via email (Paschen et al. 2019). As aforementioned, AI tools that use big data analytics can be used to also gather information from the internal systems of the supplier (Paschen et al. 2020), and this can be, for example, used to create automatic stock amount updates to the customer with natural language creation. According to Rusthollkarhu et al. (2022), AI tools can also be used to create other documents connected to order process. This can, for example, mean delivery notes, invoices and other official documents, customs documents, certificates of authenticity, and quality analysis certificates. One big aspect where AI tools can provide a lot of help is automating of data gathering to different customer relationship management (CRM) systems (Rusthollkarhu et al. 2022), because AI tools are efficient in gathering, analyzing, and organizing data and information (Paschen et al. 2021). In addition to aforementioned, AI tools can also be used for internal work management inside the supplier (Rusthollkarhu et al. 2022), for example, by automatically scheduling internal meetings, or balancing workload of individual worker or wider team, or as a business virtual assistant. The help of AI most likely will increase the efficiency of the customer service (Grewal et al. 2021), and also increase the consistency of the touchpoints, which according to Homburg and Tischer (2023), increases the customer satisfaction during the customer journey.

5.3 Model for AI Tools in B2B Customer Service

According to Følstad and Kvale (2018), existing customer journeys can be analyzed with customer journey mapping. In customer journey mapping service processes and data from service processes is analyzed to form visualization of customer journey of the customer (Følstad and Kvale 2018). According to Følstad and Kvale (2018), customer journey mapping can provide insightful and important knowledge regarding the touchpoints

of the customer journey and the success factors of those customer journey touchpoints. Therefore, to find suitable AI tools for the customer service process of the company, it is first good to map customer journeys. To start the analysis of the customer journey, it is first useful to divide the customer journey to three stages Purmonen et al. (2023) describe; pre-purchase, purchase, and post-purchase. In dividing customer journey to the stages, it is important to map out involved participants during the stage, and how they interact during the stage. By analyzing the stages of the customer journey, different touchpoints, and different types of touchpoints of the customer journey can be recognized, as it has been done in Figure 9. After the touchpoints have been recognized, it is important to determine the important aspects of the touchpoints, and what affects to the success of those touchpoints. It is important to recognize both potential success factors and problem points of the touchpoints.

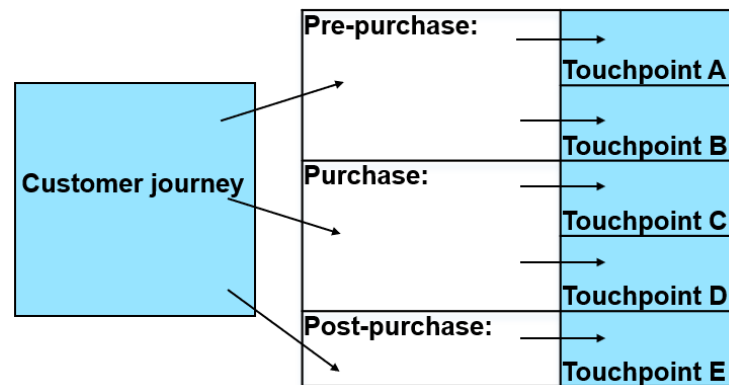


Figure 9. Recognizing touchpoints during the phases of customer journey.

After recognizing the touchpoints of each stage and the success factors of those touchpoints, the company must consider how it could benefit from using different AI-based functions to assure success in the recognized touchpoints. Good starting point to identifying suitable AI tools is exploring what type of artificial tools are available to the company, how they work, and what are the artificial tools capable of doing. In Figure 10 there is review of AI functions discussed in this thesis.

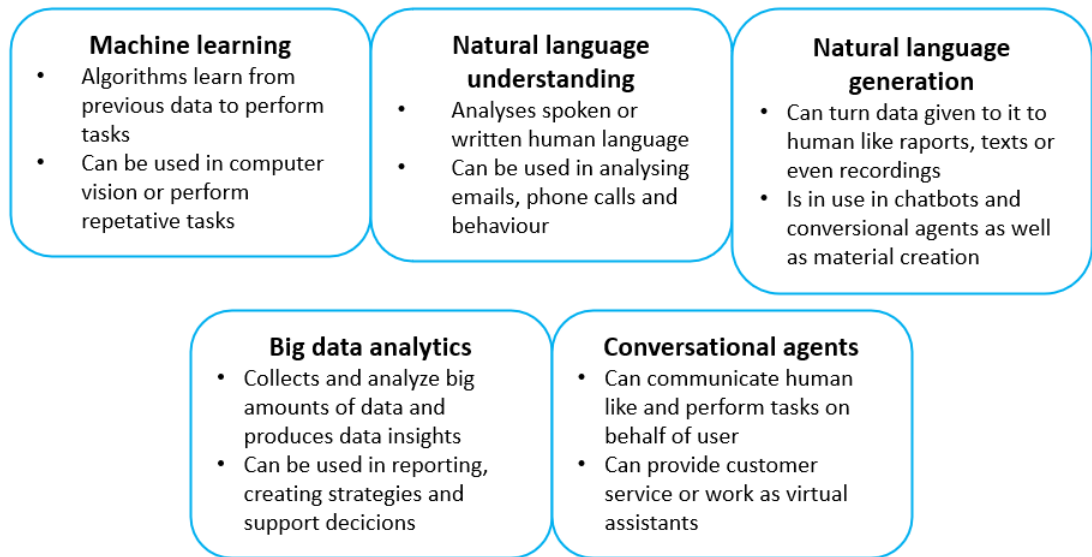


Figure 10. *Review of artificial intelligence functions.*

The next step is to estimate whether the artificial tools available could be used to solve the problems of the customer journey touchpoints, or to support the success factors of the customer journey touchpoints. By combining information from phase one of mapping the customer journey touchpoints and from phase two of identifying available AI tools and their functions, it is possible to form cross tabulation of the phase one and phase two, as done in Figure 11. In cross tabulation, touchpoints have been sorted by the stage of the purchase to rows, and AI tools have been set to the columns of the cross tabulation. This set up makes it easy to systematically go through touchpoints by stage of the purchase, and then systematically go through artificial tools available for the touchpoint.

		Machine Learning	Natural Language Understanding	Natural Language Generation	Big Data Analytics	Conversational Agents
Pre-purchase:	Touchpoint A			How NLG can be used in Touchpoint A		How CA can be used in Touchpoint A
	Touchpoint B	How ML can be used in Touchpoint B				
Purchase:	Touchpoint C				How BDA can be used in Touchpoint C	
	Touchpoint D		How NLU can be used in Touchpoint D	How NLG can be used in Touchpoint D		
Post-purchase:	Touchpoint E	How ML can be used in Touchpoint E				How CA can be used in touchpoint E

Figure 11. Cross tabulation of AI tool for customer journey touchpoint.

By cross tabulation of recognized customer journey touchpoints and available artificial tools, company can recognize what type of AI tool could be used in each touchpoint, and how the tool could be used. One touchpoint can benefit from usage of multiple AI tools combined together, or it can be that in some touchpoints AI just cannot be used at all. Figure 10 can be used for support in the evaluation of the AI tools. In addition to analysis of which AI tool can be used in which touchpoint, it is also important to analyze, can the use of AI tool be supported and utilized in the way that it really is beneficial in the touchpoint.

5.4 More Traditional Forms of Sales Automation Tools

This thesis has mainly explored AI tools as support of customer service, but it is important to remember that more traditional type of sales automation tools also exists. Sales automation technologies, such as sales technologies (ST), sales force automation (SFA), and CRM tools without AI are widely used (Agnihotri et al. 2009; Hunter 2019). With sales automation technologies automation of sales and customer service tasks is possible without highly developed AI features. ST tools are able to access, analyze, and communicate information during customer journey (Hunter and Perreault 2007). SFA tools manage leads, accounts, orders, and documents, track communication with customers, and schedule follow-ups (Hunter and Perreault 2007; Buttle et al. 2006). CRM tools already produce and manage customer insights, profiles, and customer understanding (Xu and Walton 2005). Therefore, many B2B customer service tasks this thesis has suggested to be supported by AI tools, can also be performed with alternative technological

solutions. According to Mikalef et al. (2023), however, many business-to-business situations and environments often benefit from AI-based solutions because they are informatively complex and require quick actions. Tools equipped with AI features would provide pros, such as learning from previous experiences to be able to dynamically develop outputs (Mikalef et al. 2023), to being better able to personalize results of automation, and improved results of the automation and analysis compared to traditional sales automation tools (Rodriguez and Peterson 2024; Saura et al. 2021).

6. THE CASE COMPANY

In this chapter thesis moves from theoretical literature review to closer to the empirical research. This chapter introduces the case company in which the intervention and the theme interviews of the empirical part of the thesis have been performed. The chapter also describes the offering of the case company and the customer service process of the case company on basic level.

6.1 The Case Company

Case company is Finnish mid-sized company which specializes in conversion of sustainable advanced materials for packaging and built environments. In addition to main office and five production plants in Finland, the company has operations in 11 different countries and 12 production plants in seven countries. Currently the company employs 1,700 employees, both white-collar and blue-collar workers. Specialty products of the case company are fiber-based, intelligent, multilaminate products for diverse set of B2B customers. Big competitive edge and important goal for the case company is being sustainable in its processes by using mostly bio-based and recycled raw materials, recovering the waste of its processes, and inventing long lasting or recyclable solutions.

The case company mostly operates in clear business to business markets. The market areas are located mainly in Europe, but the company serves also many non-European customers all around the world. One of the production plants of the case company is located in Asia. Due to the nature of the conversion business, and as well as the raw materials and produced goods, many long-term business relationships have been formed with the suppliers of the case company as well as with the customers of the case company. From supplier side market is somewhat controlled by big raw paper suppliers and availability of raw aluminum from international aluminum markets. From customer side the case company has wide portfolio of different size customers in different industries. Fundamentally, due to nature of the business being constant demand, the markets of big industrial operators, and high-level specifications of the products, most of the sales are straight or modified rebuys. One restricting factor in the markets for case company is also the availability of the logistics due to size of the goods and minimum order amounts set.

Important factor for subject of this thesis to understand is that almost all of the sales of the case company happen in B2B markets. In context of this thesis, it can be considered

that all of the customers of the case company are other companies who will forward process the materials the case company provides to them. Firstly, the demand from the customers for the products of the case company is derived. Secondly, the case company produces highly complex industrial products that demand a lot of experience to produce. Product development usually is made in cooperation between the case company and its customers. Furthermore, operating in the field of business of the case company requires vast investments on production technology, facilities, and personnel due to nature of the business and the products. Together highly complex products and constant demand for product on the B2B markets lead to most of the orders that the case company receives to be rebuys or modified rebuys.

6.2 The Offering of the Case Company

The business of the case company is mostly organized in three business areas; consumer packaging, engineered materials, and packaging materials. These three business areas include quite wide business portfolio including products with broad scale of end-users including companies, professionals, and even consumers. Figure 12 demonstrates some examples of the products of the case company and products that can be manufactured using the products of the case company.

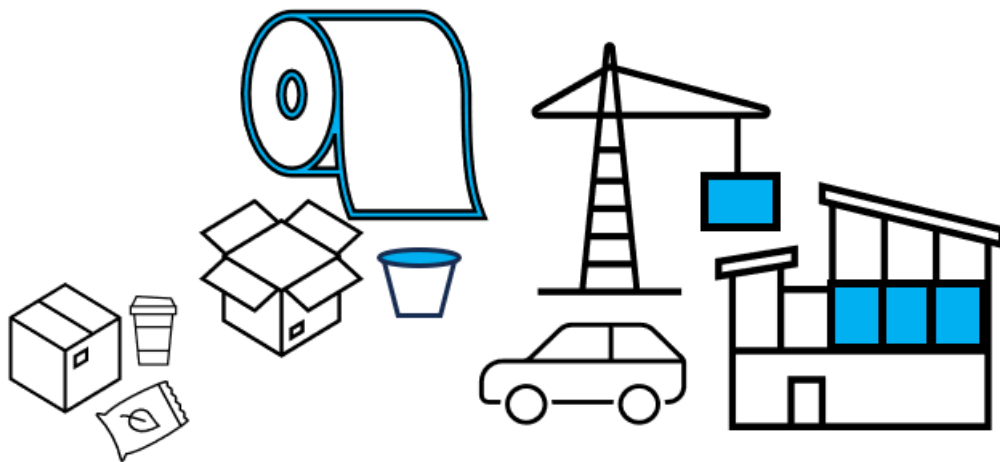


Figure 12. *Examples of the products of the case company and end products in which the products of the case company are used in.*

Consumer packaging business line includes linings and flexible packaging materials that are purchased by companies producing the actual packaging products for consumer use. Products of this business line vary from frozen food and to go food packaging materials

to household and packaging materials of personal care goods. The other packaging business line, industrial packaging, includes barrier boards, flexible materials, reel and industrial packaging, and ream wrappings for use of heavy use industry. The customers and products in this business line are big, such as steel manufacturers and their raw steel reels that need to be packaged for storing and delivery. The third business area, engineered materials, includes membranes, and facings mostly for use of construction material manufacturers and automotive industry. This business line includes more complex end products, such as paper-based construction facings, construction membranes, and other type of industrial linings and membranes.

Wide product portfolio and wide range of customers from different fields sometimes complicate the order to cash process of the case company. This is a challenge for the research and development (R&D) department, production planning, production, and customer service departments of the case company. because, for example, not all products cannot be produced simultaneously, nor directly after each other. Customers from different industries have different types of requirements for customer service, and the different industries also follow different market trends. In addition, wide product portfolio requires customer service to efficiently handle great amounts of information regarding different types of products and production. Customer service also needs to have knowledge on different types of customers and order processes. Wide product portfolio also increases the amount of data and information that is handled in the day to day operations of the case company.

6.3 Typical Customer Service Process in the Case Company

Generating new customer prospects and leads is always important, but as aforementioned, most of the sales of the case company are straight or modified rebuys. Standard customer service process of straight or modified rebuy order in the case company usually follows process described below in Figure 13.

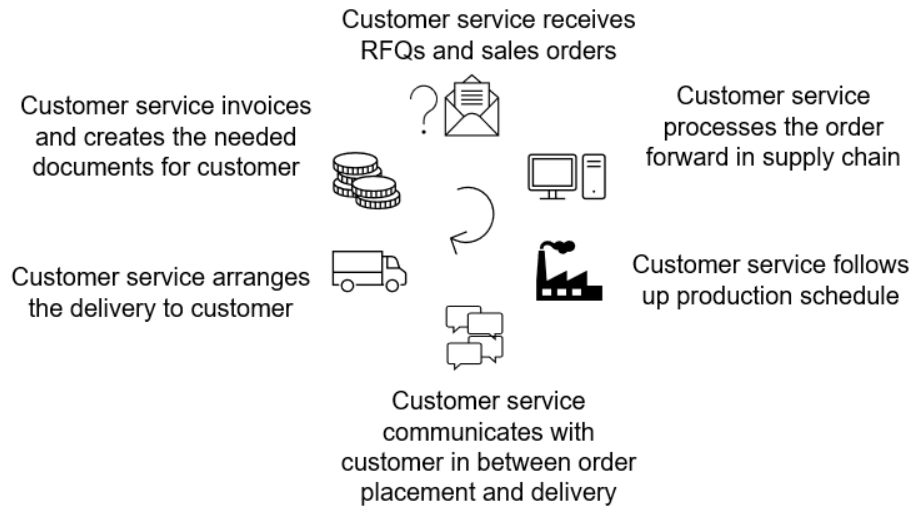


Figure 13. *Summary of the customer service tasks in regular rebuy situation in the case company.*

Order process often starts when a customer asks lead time for their standard product or possibility for straight rebuy or modified rebuy of their previous order. The customer service usually investigates the situation in cooperation with the rest of the supply chain and responds to the possible questions the customer has regarding the lead time for their order requests. If the customer is satisfied to the lead time, order amounts, and price offered, the customer will place a new rebuy order to customer service of the case company. After receiving the order, the customer service processes the order to the ERP system of the case company, in which the order moves forward in the supply chain. After the order has been processed in the planning and purchasing of the case company, the customer service officially confirms the order to the customer. In the case company confirming order usually means confirming the order amount and the delivery time of the requested order amount to the customer. Between placing the order and delivery of the order, while the customer order is being produced by the case company, the customer service follows up the production of the order, and informs customer regarding possible changes in the production schedule, and in addition, answers possible customer questions concerning the order. When the production of the customer order is close to be finished by the case company, the customer service arranges transportation for the customer order from the production facilities of the case company to the facilities of the customer according to the delivery schedule agreed with the customer. After the order has been shipped to the customer from the factory of the case company, the customer service creates the invoice for the shipped goods (the customer order), and sends the invoice and possible other delivery documents connected to the order to the customer.

In the case company the customer service handles also other tasks related to the order to cash process of the case company, for example, customer service can be responsible of managing the customer information in the IT systems of the case company, managing the list of the products that the customer usually orders, and initiating possible changes in both customer and product data. The customer service is also responsible for creating and delivering different type of documentation that customer may require for their order, such as certificate of authenticity, quality certificates, and customs documents. In addition, customer service is often responsible for archiving aforementioned documents and other order and customer documents to the CRM system of the case company. Furthermore, the customer service is part of the claim handling in the case company. The customer service is usually the first contact of the customer, meaning that the customer service receives the claim from the customer, registers the claim in the case company, and oversees on other actions connected to the claim inside of the case company.

7. POSSIBLE USAGE OF AI TOOLS IN THE CASE COMPANY

Currently the use of AI tools is quite uncommon in the case organization. Mostly the use of AI-based tools includes only using predictive text and number input of office programs. Fortunately, in the spring 2024 the case company launched a pilot program which aims to test use of Copilot AI tool created by Microsoft throughout the whole company. During the writing process of the thesis the Copilot pilot program is still on-going, and the results have not been released yet.

7.1 Interview Set Up

This thesis wanted to interview parts of the case organization to form a view how AI tools could be used as a support in the customer service of the case company. In this thesis, this is done with semi-structured interviews which, according to Saunders et al. (2019), can be set up based on certain theme, such as AI, and have some predetermined list of key questions connected to the theme of the interview. According to Saunders et al. (2019), the themes of the interviews can be derived from existing theory gathered in the research previously. Likewise, in this thesis the theory was formed on utilizing AI tools during customer journey. In the interviews the themes and the key questions need to be consistently used in each interview to produce comparable and valid data for the research (Saunders et al. 2019). According to Saunders et al. (2019), the data gathered with semi-structured interviews can be used to abductive theory formation to support the existing theory. To support the theory formation of the thesis, it is important that accurate and valid data is gathered with interviews, which according to Saunders et al. (2019), can be obtained with semi-structured interviews with open discussion.

The main themes of the theory built in this thesis concern customer journey touchpoints and AI, thus those can be considered as the basic themes for interviews also. In turn, the main questions that the case company wants to find answers to are 1) In which touchpoints the customer service of the case company could use AI tools, and what kind of AI tools should then be used? 2) Do the interviewees recognize attitudes and capabilities that would make AI tool implementation possible in the customer service of the case company? Based on the themes of the thesis and the goals of the case company questions in Table 10 were chosen. The first part of the questions aim to investigate the role of the customer service in the case company, and what are the most important respon-

sibilities of the customer service during the customer journey. The second part of questions tries to map out in what kind of tasks AI could be useful in the customer service of the case company. The last part of the questions was chosen to form a picture how the customer service would respond to adding AI tools to their toolbox.

Table 10. *Themed interview questions.*

1. Role of customer service	<p>How would you describe the role of customer service in the company's supply chain function?</p> <p>What do you think are the most important responsibilities of customer service?</p> <p>What are the most important things in customer service's contact to customers?</p>
2. Customer service tasks	<p>What are the most common tasks in the customer service function?</p> <p>Do you think that there are lot of repetitive tasks in customer service?</p> <p>What are the common problem topics in customer service?</p> <p>Do you see that there are tasks in the customer service that could be automated?</p> <p>Do you see that artificial intelligence could be used in that automatization?</p>
3. Preparedness of customer service	<p>How does the customer service usually take in possible IT changes?</p> <p>How do you think that the customer service would feel about implementation artificial intelligence?</p> <p>Do you see that using artificial intelligence could be helpful in the customer service?</p> <p>Has the customer service already been testing artificial intelligence?</p> <p>Do you think the customer service would have resources for artificial intelligence implementation?</p>

From the organization, people who have wider understanding of the customer journeys of the customers of the case company need to be selected to be interview. Selected interviewees need to have deeper knowledge on the touchpoints of the customer journeys and relevance of the customer service to those touchpoints. It would be also good if the interviewees had knowledge regarding the customer journeys of multiple customers. In addition, it is important that interviewees also understand the basics of developing the customer service process and possibilities of AI. According to Saunders et al. (2019), because this thesis has clear required qualifications for possible interviewees, the choice of interviewees can be done consciously with purposive sampling. On the other hand, already the fact that the research will be conducted as qualitative research, according to Saunders et al. (2019), suggest that the selection of interviewees should be done by purposive sampling. To meet the needs mentioned above, it has been decided that it would be good to select the customer service team leaders and supply chain managers

from multiple business areas of the case company to be interviewed. The customer service team leaders and supply chain managers have wide understanding of different customer journeys and relevance of different touchpoints to them, and understand how the customer service process needs to be developed. In addition, when choosing the supply chain managers and the customer service team leaders from multiple business areas of the case company, the variation in the sample increases, because it is estimated that the customer service has different needs and ways of working in different business areas. Four supply chain managers or customer service team leaders were interviewed for this thesis.

The interviews were conducted as pre-scheduled 30-60 minutes long telephone interviews through Microsoft Teams. These telephone interviews were recorded to be able to transcript the interviews for the thesis, which was also explained to the interviewees. The interviews were performed both in English and in Finnish, and then transcribed as accurate as possible in English. In transcription phase, the data gathered was anonymized by removing all the recognizable features of the interviewees from the transcription. The actual interview situations were started with short introduction to this thesis project and the subject of the thesis, because the interviewees and the interviewer were already familiar to each other. To familiarize the interviewees with the topic of AI, the interviewer started the interviews by giving a short summary on the topic, which was based on the theory part of the thesis. Transcription of this short introduction to the topic of the thesis and AI tools can be seen below.

“Use of artificial intelligence applications in everyday life and in business has rapidly increased in last years, and that is why the case company has now also started mapping their possibilities to use artificial intelligence. The goal of using artificial intelligence is not to replace anyone, but rather to support working and the process. The artificial intelligence tools this thesis is discussing about are machine learning, natural language processing, big data analytics, and conversational agents. Of these, machine learning basically means that the tool uses previously gathered data and experience in performing tasks. Natural language processing means that the system can analyze human written texts, and also, produce texts that are similar to human written texts. In turn, big data analytics refers to the skill of artificial intelligence to gather and process large amounts of data, and find trends and insights of data automatically. Finally, conversational agents are a bit like chatbots, but in addition that they can perform tasks on behalf of users. In business concept, artificial intelligence tools can be used to either to perform selected tasks, or as an independent operator. The tasks that artificial intelligence can be used for are, for example, to analyze customer behavior, or data gathered about the customer,

to automatize communication with customers, to use AI-based business assistance, to create materials like reports, and to perform simple repetitive tasks.”

7.2 Interview Findings Regarding the Role of the Customer Service

Interviewee A said that while the customer service is the face of the company for the customers, it also has very central role inside of the company. According to Interviewee A, this is because the customer service gathers knowledge from the outside and the inside of the company, and relays the information to the other departments of the company and to the customers. That is why good communication skills and understanding of the importance of the communication are important skills for customer service employees. Interviewee B stated that the customer service is the department where everything inside of the company starts from and ends to, because the customer service receives the customer requests, follows the production of the sales orders, and then at the end of the order process sends delivery documents to the customer. Interviewee C told that in the case company the role of the customer service is quite broad. In the case company, customer service is involved in all types of non-typical customer service tasks, such as, registering claims, providing technical data, creating item requests, and debt collection. Interviewee C also explained that the main goal of the customer service is to offer the best service experience for the customers and satisfy the customers in cooperation with the other departments of the case company. According to Interviewee D, the customer service is the first contact point in inside of the case company for the customer. Interviewee D stated that every inquiry and request from the customer first arrives to the customer service, and it is a job of the customer service to convey those inquiries and requests inside of the case company, and of course, provide the answers back to the customer.

“I think the role of the customer service is central, and actually, very central, because the customer service is the face of the company to the customers. I have sometimes described it (the role of the customer service) as having tentacles in everywhere and in every department. The customer service gathers information and relays it to the customers and other departments.” —Interviewee A

According to Interviewee A, the most important customer service tasks are to actively inform the customer regarding the situation of their orders as well as processing orders in the ERP system of the company effectively. Interviewee A also described that communication with the customers, needs to be clear and prompt, while simultaneously professional. According to Interviewee A, the customer service has integral role in intra-company communication also, meaning that they are responsible of relaying customer wishes to the production planning and production departments. In addition, the customer service must be able to problem solve and offer alternative solutions to the customers, while also be able to prioritize the customer orders and their own tasks. Interviewee B thought that the most important tasks of the customer service in the case company are communicating updates regarding the progress of the customer order to the customer and communicating customer requirements to the production department of the case company. According to Interviewee B, to the success of the customer communication, it is important that the customer service is familiar with their customers. This is because some customers require quick and detailed answers to their questions and other customers appreciate keeping communication in the level of minimum needed information.

“The most important part is to provide an answer to the customers. Whenever there is a question, the customer service needs to come back to the customer with an answer and not to ignore them. Even if we provide bad news, it is always important to provide news and not to ignore the customers. I think this is like in the normal life, it is always better to get the answer and not to be ignored.”—Interviewee C

Interviewee C also told that communication with the customer is the most important task of the customer service. In addition, Interviewee C stated, that in customer communication, it is important that the customer service can quickly answer to the customer inquiries, even if the possible answer is not positive. Interviewee C said that it is always better to give some type of answer to the customer than make the customer feel like they are ignored. According to Interviewee D, the main responsibilities of the customer service at their site are order entry, order deviation handling, and inquiry handling. Interviewee D agreed with Interviewee C, that, for customer communication, it is important that the customer gets answers fast. Similar to Interviewee C, Interviewee D thought that it is important to give the customer the feeling that someone has received their email and is immediately taking care of their order. Interviewee D also admitted that because the

customer communication needs to be reliable, the customer service cannot always give a direct answer to the customer.

7.3 Interview Findings Regarding the Tasks of the Customer Service

Interviewee A told, that in addition to communicating with the customers, the daily tasks of the customer service include entering different types of sales orders to the ERP system of the case company and gathering different types of information from the IT systems of the case company. The customer service personnel needs to be very aware of data correctness when performing their daily tasks. Interviewee B confirmed that the daily basics tasks of the customer service are the same as described in the introduction of the customer service process of the case company in this thesis. Interviewee B thought that the biggest number of repeating tasks in customer service is connected to re-entering sales order lines after order changes, and the time consuming sub-contracting process that the company has in place. As a site-specific, repeating, and time-consuming task for customer service, Interviewee B mentioned a large amount of logistics reservation changes the customer service is responsible for. In turn, Interviewee C told that, in their site, the biggest tasks of the customer service are the internal and external communication, and information flow that the customer service handles through email. Interviewee C clarified that the customer service also performs daily tasks such as order entry and invoicing, but that most of their time goes to communication with the customers or with other departments of the case company. Maybe because the customer service work in the site of Interviewee C is so much more communication centralized, Interviewee C stated that the problems they are facing and the solutions for those are changing case by case. Interviewee C told that the customer service work differs from day to day, and stated, that it is a good way to keep the team members interested in their work. Interviewee D concluded the routine tasks of the customer service to quotation handling, item request handling, customer request handling, order entry, invoicing, and to order deviation handling. Interviewee D told that tasks like order entry and invoicing are usually the same, only with a little differences between the customers, which means they are easy to learn and perform.

“The order entry is always more or less the same, something that even I can learn, and I have also learned, so it is not a huge task. Many things are some kind of repetition and of course there is some differences from customer to customer, but it is very much the same.” —Interviewee D

“I think that we currently spend a significant amount of extra time because we don’t have adequate system in place. Rather than using the system, a lot of time is spent in creating our own supportive tools, like excels, to tasks such as following up orders. Updating and following up on things take a lot of time because the current system is outdated and it is not used correctly, which leads to repetitive daily tasks” —Interviewee A

The daily customer service tasks are currently slowed down by ineffectiveness of the current IT systems, which according to Interviewee A, causes need for supportive extra tools and lot of manual work for customer service. Interviewee A told that it is sometimes challenging to maintain adequate resources in the team. Supporting the flow of knowledge and know-how on processes and IT systems needed in the customer service is also sometimes challenging. According to Interviewee A, responsibilities of the customer service can sometimes be unclear. Interviewee B also thought that implementations of new IT systems are currently causing problems for the customer service, but also stated that those are only current issues. In addition, resourcing has previously been a problem, but for the resourcing problem, Interviewee B did not see any quick and easy solutions. Constantly changing production schedules sometimes cause issues to the customer service, but Interviewee B thought that those as more of a part of the daily job of the customer service, and that the customer service and the whole supply chain department exist because things do not always go as planned in business. Interviewee C told that sometimes the fact that the customer service is reliant on the information provided by the other departments causes problems because the customer service also needs a lot of technical information and data which is not always available to them straight away. As an example, Interviewee C told that, because there has not been dedicated support person for the task of item creation, the customer service currently needs to gather information for item creation from multiple sources, which is time consuming and frustrating. On contrary to the other interviewees, Interviewee D did not think that they have repeating problems in the customer service. Interviewee D admitted that sometimes order deviations cause problems, but they are handling them as they appear and see those more as a part of the job.

“We are quite much reliant on the information provided by the other departments and that is something that is sometimes holding up our work.” —Interviewee C

“Of course we could always improve the customer service, but that would require more working time so that the customer service can overview situations and trigger changes. Previously our resources have been tight, but it is always up to consideration if you can hire more resources and to where. And if you have time to onboard someone new or does it make the situation worse.” —Interviewee B

Interviewee A thought that some customer service tasks could absolutely be automated, and as an example, Interviewee A mentioned forming reports, such as list of open customer orders and stocks to the customers and internally to the sales function. Other examples Interviewee A mentioned are automatic invoicing and logistics booking. Interviewee A also mentioned that customer service could automate the entry of repeating rebuy orders to the ERP system of the company. Interviewee A thought that AI, for example a conversational agent, could be used in automation of the processes previously mentioned. According to Interviewee A, conversational agents could also help with checking logistics prices and in translating, creating, and proofreading different types of emails and documents. Interviewee B thought that communication to the customers could be automated in some extent. The customer could, for example, get customized automatic replies to their emails. Similar to Interviewee A, Interviewee B wondered whether invoicing function and price checking, which are currently done manually by the customer service, could be automated. Furthermore, Interviewee B, like Interviewee A, speculated with the possibility of chatbots that could response to the sales department regarding timelines and details of the customer orders. In addition, Interviewee B speculated on possibility to enhance email processing in customer service. Interviewee B highlighted possibilities of AI to do advanced searches in email, summarize long emails and email chains, and highlight important email discussions. AI could also help the users by reminding them what has been discussed regarding the subject before, and by drafting up emails.

“For example, in creating different reports we could use artificial intelligence. Furthermore, we do not always speak the same language with the customer, like German, so I wonder if we could use artificial intelligence to support communication. There are all types of translating apps nowadays.” —Interviewee A

“Sales people could use chatbots to figure out when a certain customer gets their next order. – Customers sometimes send questions about the same things with multiple title

lines and then the email's search tool cannot find all the connected emails. Artificial intelligence could combine emails into a short brief, because there is no time to read long email chains and long emails. Artificial intelligence could make processing emails faster and tell the user which emails actually need their attention.” —Interviewee B

When it comes to possibilities of automating customer service tasks, Interviewee C thought that some basic customer service tasks such as confirming orders, report creation, credit limit checks, and invoicing could be automated at least partly. Interviewee C pointed out that it might not be considered a good thing by the customer if the company automates communication with the customer, and the customer notices that they are discussing with AI agent instead of an actual person. Interviewee C stated that it means that emails to the customers should not be automated fully. In essence, Interviewee C thought that AI could be used to pre-prepare customer emails by fetching data from the systems and proofreading the email before sending it. In addition, Interviewee C suggested that maybe the customer could enter sales orders straight to a customer portal, or that customer service could better transfer technical or order data from the customer to the IT system of the case company. Interviewee D pointed out that, in the customer service, at least, invoicing could be automated. Interviewee D also speculated on the possibility of implementing AI powered virtual assistants to help the customer service in archiving emails, sending documents to customer, and checking prices and delivery times. In addition, Interviewee D thought that the customer service could use the help of AI when drafting emails to the customer, which would make writing emails easier and faster. Interviewee D also suggested that AI could be used in the whole supply chain function in data validation, i.e., AI could compare the dates of the purchase order confirmation to the production plan of the case company and to the order confirmation the customer service has sent to the customers.

“Of course, we could use artificial intelligence to create emails, but I don't think it would be well liked if recognized by the customer that they are in contact with a computer and not a human person. So fully writing emails definitely not. – Maybe the reports creation, because now it is quite hard. We have some power BIs, and we use some basic reports for the customer, like stocks, open orders and these kind of things. Now we need to spend time to re-doing the tables before sending them to the customer, but that could be automated (with AI).” —Interviewee C

“I think we for sure can automate with artificial intelligence. If you can always tell the system to please do this and this, please send this and please ask delivery time, whatever, I think that would save a lot of time during the day.” —Interviewee D

7.4 Interview Findings Regarding the Preparedness of the Customer Service

When it comes to the preparedness of the customer service to implementing AI into their work, Interviewee A stated that personally they do not see issues with it. Interviewee A thought that, if the help of the new systems provide is easily recognizable to the users, and the new systems enable concentrating into the more important parts of the work, the users are receptive to the changes. As a general rule, Interviewee A reminded that change management is very important when introducing new IT systems. Interviewee A stated that based on their experience the stance to IT system changes varies among individual workers, meaning that some like new challenges and others get bit anxious. Interviewee A thought AI as a positive opportunity, and believed that AI tools will be useful in the future.

“I believe that it (AI) could be useful and will be useful. If we could automate simple routine tasks and give them to artificial intelligence to perform, I see it as positive change. I think that we cannot slow down the development of artificial intelligence or that we will lose jobs to it.” —Interviewee A

Interviewee B told that previous challenges with big IT changes have affected on the attitudes towards IT changes inside of the customer service team, but that usually new IT tools are not a problem, if the tools are easy to use and do not cause extra work. Based on this, Interviewee B thought that the customer service would have positive attitude towards implementing AI if the tools would be easy to use and would provide help for the customer service. Interviewee B highlighted that, even if AI would be implemented, customer service would still need to be in control of the process because the customer service personnel know the customers the best. Similarly to Interviewee A, Interviewee B admitted that the approach to new IT systems is highly dependable on person, meaning that some are more open to use of new systems than others. When regarding their whole team, Interviewee B did not see that AI would be opposed, even though, it has not yet been tested at their team. Interviewee B told that they personally

would like to use AI as a supporting tool in analysis tasks. Regarding actually implementing new AI tools to the customer service in their team, Interviewee B stated that right now is not the right time. This is because they have already had a lot of changes in short time, and the team does not have sufficient resources, nor cannot easily increase the resources in short term.

“Of course it also depends on the person, because some people rather take new tools into use than others. But as a whole I don’t see that it would be opposed.” —Interviewee B

Regarding the preparedness of their team for AI implementation, Interviewee C told that some parts of their customer service team have already been testing AI in their work. According to Interviewee C, their team is quite young and open to new helpful tools for their work, but also reminded that new tools should always make working easier, and not just be an additional step the customer service needs to add to their process. Interviewee C told that they see that AI could be helpful in customer service work, and that their team is interested in use of AI as a new tool. Regarding the resources available for AI implementation Interviewee C told that it is highly dependable on the fluctuations of the business, and how much time their team would need to have to prepare and plan the implementation.

“If we create an additional task with new tools to them, well then it is maybe not very well welcomed. But if we would have tools that would help in current work then it is good.” —Interviewee C

Interviewee D told that they are not aware that anyone in their customer service team would have tested AI in their job yet, but like Interviewee C, they also thought that their team is receptive to new tools. Interviewee D admitted that, on person level, background and experience affect on how able a person is to implement new tools to their work. Interviewee D still thought that, if the benefits of the new tools are well recognizable and the usage of the new tool would be well trained, the tools will be well received. Generally, Interviewee D thought that usage of AI would make working easier and faster, and that AI could also support work by supporting the worker. Regarding this, Interviewee D said that the customer service has lots of simultaneous tasks, and therefore, Interviewee

speculated that AI could help the users organize themselves better, so that they could be more aware and quicker to act. When it comes to implementing AI, Interviewee D told that it is hard to estimate how much resources could be used for AI implementation because the business is continuously changing, which is also what Interviewee C answered when asked about resources for AI implementation. Similarly, Interviewee D also told that, when planning AI implementation in the case company, the case company should clearly map how much resources are needed, so that the sites could plan out their resourcing for implementation.

“In general, for sure, because like said, if it (AI) makes life easier and faster, and you have support in organizing yourself in better way, it is really beneficial. The customer service has a lot on their table and many things to think about and many things to remember and consider about, that I am sure that it (AI) would help in organizing themselves.” —Interviewee D

8. DISCUSSION

8.1 Literature Review Findings

In B2B markets, demand is usually derived due to constant need for materials, and therefore, for successful B2B company, it is important to increase rebuys from customers, and to build long customer-supplier relationships with their customers. To reach this, Rusthollkarhu et al. (2022) and Purmonen et al. (2023) suggest that B2B companies would apply concept of customer journey to their sales funnel. According to Lemon and Verhoef (2016) and Purmonen et al. (2023), if a customer journey is considered successful by the customer, it will most likely lead to new customer journeys, i.e., to new purchases from the same supplier. Researchers, such as Rusthollkarhu et al. (2022) and Homburg and Tischer (2023), have suggested that B2B companies could use AI to improve the quality of their customer journey touchpoints, which would then lead to higher customer satisfaction during customer journeys. The use of AI-based tools could improve the success of the touchpoints in the ways that Homburg and Tischer (2023) described by increasing value anchoring, consistency, internal integration, and individual control of touchpoints of the customer journey.

In business-to-business context it has been theorized that AI and its humanlike problem-solving and task processing capabilities could be used in different tasks of analyzing, designing, engaging, and guiding during the B2B customer journey (Rusthollkarhu et al. 2022), and therefore, AI could be especially helpful in customer service touchpoints of B2B customer journeys. AI can be used to map customer journeys and support customers during them (Steward et al. 2019; Følstad and Kvale 2018). According to Grewal et al. (2021), during the customer journeys, AI tools can analyze customer actions and needs, and in addition, according to Rusthollkarhu et al. (2022), even guide customers in use of the products of the supplier. With AI tools, data from customer, supplier, business environment, and different IT systems can be automatically gathered, analyzed and stored (Kot and Leszczyński 2022), and even communication between the customer and customer service can be automated (Rusthollkarhu et al. 2022; Paschen et al. 2019). Even though it may seem that the biggest benefits of AI could be in automation of tasks, the actual improvements of AI compared to traditional sales automation are better capabilities to analyze and customize during execution of the task assigned to it.

To get to know in which customer service touchpoints, and what type of artificial tools B2B companies could benefit from, this thesis suggests that the companies use cross

tabulation of their recognized customer service touchpoints and AI tools available to them. This thesis suggest that companies first map out their customer journeys by recognizing their customer service touchpoints during prepurchase, purchase, and post-purchase stages of the journeys. After the customer service touchpoints have been mapped, the companies need to investigate what are the important success factors of the touchpoints. Then the companies need to discover what types of AI tools are available to them, and what types of opportunities those AI tools offer. Finally, the companies should analyze how the tools could be utilized in the customer service touchpoints recognized on the earlier stage of customer journey mapping.

8.2 Results of the Interviews

To test the ideas of the literature review in practice, interviews in the case organization were performed. In the interviews it was investigated what are the tasks of customer service in the case company, what are the common problems that the customer service of the case company faces, how could the customer service of the case company use AI, and what are the attitudes towards AI in the customer service of the case company.

Based on interviews, it was concluded that in the customer service of the case company has an important role in order handling, internal communication between the departments of the case company, and external communication with the customers. In these tasks, AI could benefit the customer service in importing data to and exporting data from the IT systems of the company with a chatbot, a conversational agent, or a business virtual assistant. Natural language processing agents of AI could help the customer service in communication with the customers and the other departments of the case company. By using AI in these tasks, the customer service could free their working time to be able to better concentrate in serving the customers, which would as a result increase the customer satisfaction. The interviewees stated that implementing AI is something that the case company should investigate in the future, and that it is something that the customer service teams are interested in. Results of the interviews are also gathered in Figure 14.

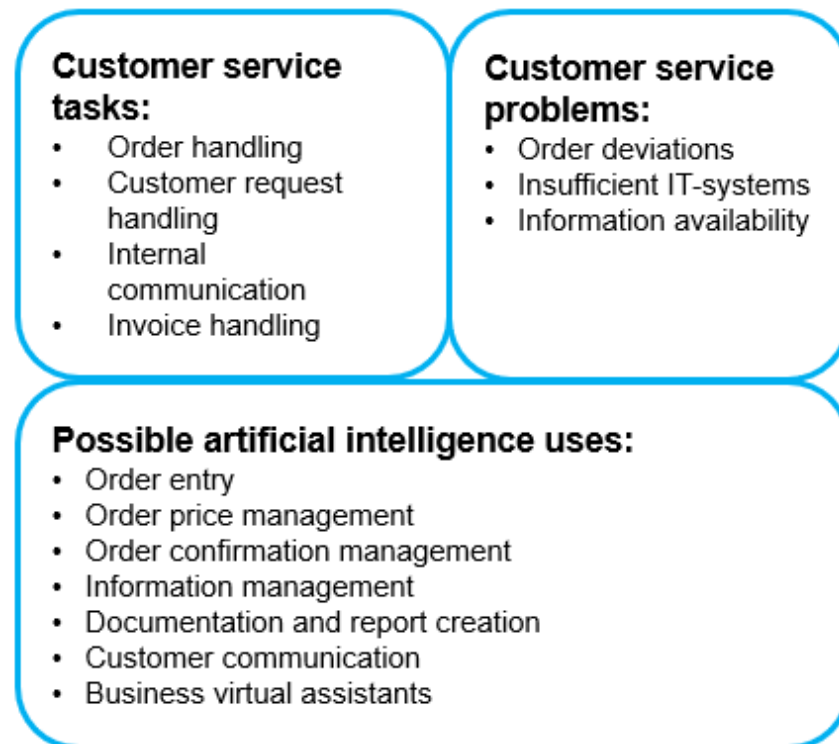


Figure 14. Interview results.

Regarding the role of the customer service, both Interviewees A and C stated that the role of the customer service in the case company is broader than corresponding customer service roles may be in other organizations. Interviewees B and D stated that the customer service is the first contact point between the customer and the supplier, but all the interviewees highlighted that the customer service has important role in external communication to the customers, but also in internal communication inside the company. The customer service plays important role on relaying customer needs to the production and production needs to the customer. One part of this communication is also fetching information and data from the IT systems of the case company to the customers and to the sales function of the case company. Regarding the most important tasks of the customer service, Interviewees A and D stated that it would be order handling, while C and B stated that one of the most important customer service tasks is the communication to the customers. All Interviewees A, C, and D said that the communication the customer service has with their customers needs to be prompt, so that the customer gets the feeling that their messages are noticed, and that somebody is handling their requests. In essence, the interviewees also stated that it is important that the communication is professional and exact, to build the trust between the case company and the customer.

Regarding the problem areas in the customer service, both Interviewees A and B told that sometimes inefficient IT systems slow down the customer service work. In addition, resourcing of the customer service team has been problem for Interviewees A and B. Interviewee C told that in their customer service team common problems are usually connected to customer service being dependent on information from the other departments, which may make situations difficult. In contrast, Interviewee D stated that they do not have repeating problems in customer service.

All the interviewees thought some repetitive customer service tasks, like order entry and invoicing, could be partly automated with the help of AI. All the interviewees also agreed that AI could be used in communication with the customers. On the other hand, the interviewees warned that the customer communication cannot fully be given in the hands of AI because it is important to the customers that they are in contact with an actual person. In the interviews, Interviewees A, D, and B also suggest that customer service and sales could search information from the IT systems of the company with the help of AI-based chatbot or virtual assistant in the future.

Overall, all the interviewees stated that they believe that AI could be beneficial to the customer service of the case company. Similarly, all the interviewees also thought that their teams would not be against implementing AI and AI tools in their customer service job. The interviewees rather thought, that the attitudes of the customer service employees towards AI implementation would be positive if the change management of the implementation is properly handled. The interviewees also stated that their teams would be more eager to implement AI if the benefits of it would be easy to recognize. Both Interviewee A and B reminded however, that often attitude of a person towards possible changes is dependable on the person. Interviewees C and D hoped, that if there ever were be AI implementation project in the case company, they would be informed well in ahead of time, so that they could reserve the required resources for the implementation.

8.3 Intervention Findings

The findings of the literature review were supported by the results of the interviews done in the case company. Based on interviews some touchpoints of the customer journey in the case company were recognized. In addition, the suggestions for AI use in the customer service of the case company were cross tabulated based on stage of customer journey, touchpoint, and AI tool to be used. The results of cross-tabulation can also be seen in Figure 15.

		Machine Learning	Natural Language Processing	Big Data Analytics	Conversational Agents
Pre-purchase:	Customer inquiry		Summarizing customer's request and responding to customer	Analytics of customer's previous orders	Virtual business assistants
Purchase:	Order	Entering customer order to the IT-systems	Summarizing customer order and thanking customer for the order		Supporting sales order entry Order price management
	Order monitoring		Outlining emails to the customer Proofreading emails to customers	Order monitoring	Reminding customer service about the order situation
Post-purchase:	Invoicing	Automatic invoicing	Creating documentation and reports	Order price monitoring	Order price management Creating order documents

Figure 15. Possible artificial intelligence tools that customer service could use during the customer journey touchpoints of the case company.

With interviews it was found that the customer service team leads and the supply chain managers have positive outlook to the possibilities of AI, and that they think that their customer service teams would be interested in testing and using AI in their work. The interviewees thought that AI could benefit the customer service function of the case company by making it more effective, by decreasing the workload of the customer service, and by improving the customer experience of the customers. In the interviews, it was discussed that part of the basic routine tasks, such as sales order entry, pricing, order deviation monitoring, and invoicing could be at least partly automated with AI. In addition to this, interviewees agreed that AI could with natural language processing support communication to the customer, which is also an integral part of the customer service work. According to the interviewees, AI could, first of all, produce summaries of previous communication with customers and data from the IT systems of the company, secondly write first drafts of emails, and thirdly proofread written emails. Finally, in the interviews the possibility of using conversational agents or business virtual assistants to support customer service work inside of the case company also came up. The interviewees speculated on the possibility of fetching data from the IT systems and perform order relating tasks with conversational agent.

Participant observation data gathered by the researcher while working in the case company supports the interview findings. Very potential tasks for AI usage in the customer service are simple and repeating tasks, such as order entry, documentation creation, and invoicing. With AI, the time needed from the customer service to performing those repeating tasks could be minimized. It is worth of noting that tasks such as order entry,

documentation creation, and invoicing could be also automated without AI, but automation with AI could be more successful. Natural language processing of AI could also be used for analyzing and summarizing emails from customer to the customer service, and also, used for outlining or proofreading emails from the customer service to the customers. If AI would analyze and summarize customer emails, the time of the customer service would again be saved, but also AI could help the customer service to find important details from long chain of communication with ease. AI could also improve customer relationships by suggesting more professional phrases to use in emails. In addition, the idea of fetching data from the IT systems of the company with AI-based conversational agents or business virtual assistants could be something that the case company should investigate. Conversational agents or business virtual assistants could fetch sales order details, historic customer information, product data, and sales order prices, schedule meetings, or just help the users with use of the IT systems of the case company. The help of conversational agents and business virtual assistants would overall improve the working in customer service.

The interview results were also presented to a managerial level representative of the case company. In the discussion it was revealed that the wish for automating certain customer service tasks has been recognized also before. It is still up to consideration whether the automation could be done with traditional sales automation tools, or whether AI should be utilized in task automation to achieve better customer personalization and analysis results. Another topic of discussion was the willingness of the interviewees to use AI as internal tool in data and work management. The interview results already provided some aspects that could be easily implemented, such as using AI with email applications because that is something that the case company is already testing with their Microsoft Copilot project. In conclusion, this research provided techniques that the case company could use in customer service touchpoints, but the importance of different touchpoints would still need be investigated more in the future, so that the development could be prioritized.

8.4 Quality of the Interview Results

Qualitative data, such as interview transcriptions, collected in natural settings, such as with semi-structured interviews, according to Saunders et al. (2019), is full of rich contextual details. For that reason, the quality of the interview data of study needs to be estimated. According to Saunders et al. (2019), to ensure the quality of interview data the researcher needs to consider dependability of the data, forms of bias in the data,

results of the cultural differences in the data, transferability of the data, and credibility of the data.

Firstly, from forms of bias point of view, at least the possibility of the interviewer bias in this case needs to be considered because the interviewer works as a part of the case organization. The interviewer might have chosen leading interview questions, or the interviewer might have presented too much of their own opinions on subject in the interviews. Ironically, the interviewees might not want to reveal all of their opinions to the researcher or to the research because they know that the researcher works as part of the organization, or they might dislike the researcher and their ways of working (Saunders et al. 2019). Interviewer bias can also be visible on the analysis of the interviews, because the interviewer might have highlighted ideas supporting their own opinions from the interviews. This might be because the interviewer has done both the background work for the thesis and to the interviews and the analysis of the interviews. In addition, when making summaries and conclusions based on interview data, the researcher has made assumptions based on their own knowledge and experience.

Secondly, when it comes to creditability of the interview data, the relevance of the information gathered with the interviews for this thesis must be considered (Saunders et al. 2019). When comparing the research questions of the thesis to the interview questions, it can be noticed that the goal of the interviewee questions has been to investigate how AI tools could be used to improve the customer service in the case company. In addition to this, the interview questions have tried to solve how AI tools could be used during customer journey. On the contrary, when it comes to mapping out touchpoints between the supplier and the customer, the interviews may have concentrated more to the individual situation of the customer service of the case company, compared to what this research of the thesis might have required. In addition, the interviewees brought up that they do not know a lot about AI. This might have affected to the credibility of this research, meaning whether the interviews reached the knowledge intended (Saunders et al. 2019). To solve this problem the interviews were started with short informative statement on the subject of AI, but if the knowledge of the interviewee was fully based on the informative statement, it might affect to the results of the interviews.

Thirdly, cultural differences in cross cultural firm and interviews can affect to the creditability of the interviews (Saunders et al. 2019), but because European culture can be considered quite coherent, in this research the effect of cross cultural differences can be estimated to be quite small. Instead, it needs to be considered that some of the interviews were performed in Finnish, and for this thesis translated to English, which might have

affected to the tone of the interviews. Different tones and phrases might not always transfer right when transcribing and translating interview data. Contrary to this, other interviews were performed in English and directly transcribed.

Finally, transferability and generalizability of the interview results to the other organizations also needs to be evaluated (Saunders et al. 2019). Generalization of the results to other organizations can be difficult because the interview results are directly connected to the process of the case company. Equally, unique stance of the researcher affects to the transferability of the interview results because, to re-do the intervention, the researcher would need to spend a long time in multiple roles of corresponding organization. In addition, the small sample size of the interviews also affects to the generalizability of the interview results. Even so, to ensure the dependability of the interview data, meaning that whether the data gathering process has been described with enough detail (Saunders et al. 2019), the interview process has been described in detail, which should make it possible to repeat the interviews in other organizations.

8.5 Research Limitations

According to Saunders et al. (2019), because qualitative research is often based on assumptions and socially constructed, to evaluate quality of the research alternative criteria may need to be applied. Saunders et al. (2019) and Shenton (2004) suggest that quality of the qualitative research should be evaluated based on dependability, credibility, transferability, and confirmability. Firstly dependability requires that the research has been described in such detail that it could be repeated if needed (Shenton 2004; Saunders et al. 2019). Secondly, credibility refers to ensuring that the research indeed measures things intended (Shenton 2004; Saunders et al. 2019). Thirdly, transferability means that it needs to be considered, whether the results of the study can be applied to other organizations or wider population as whole (Shenton 2004; Saunders et al. 2019). Lastly, confirmability implies that the effect of the researcher on the results of the study needs to be minimized (Shenton 2004; Saunders et al. 2019).

Firstly, to ensure the dependability of the research process, the participants, the data gathering methods, the possible research limitations, and the timeline of the research need to be accurately described on the research report (Shenton 2004). In this thesis research process, data gathering methods, and possible research limitations have been described in detail. In this research both the participants and timeline have affected to the results of the study. In this study, the researcher had a unique standing on the case, and answers that the interviewees have given are their individual opinions. Equally, as a qualitative research, the study is highly dependable on the moment in time (Saunders et

al. 2019). Focus of the study had been kept as close as the original as possible, which according to Saunders et al. (2019), improves the dependability of the study.

Secondly, creditability of the study is dependable on how well the study describes intended things (Shenton 2004). This thesis includes multiple methods of data collection, such as literature review, qualitative interviews, and participant observation data, which according to Shenton (2004), helps in accurate description of the research situation. The researcher also knows the case-organization well, but the topic of the thesis and the topic of AI were not familiar to the researcher beforehand. On the other hand, the qualitative data, and especially qualitative interview data, is always somewhat dependable on interpretation, which according to Saunders et al. (2019), may decrease the creditability of this research. Another factor affecting the creditability of the research is the small sample size of the interviews.

Thirdly, according to Saunders et al. (2019), to evaluate the transferability of the study, researcher needs to provide insight how well can the findings of the study can be applied in wider context. While the results of the theoretical part of the thesis, which are based on the literature review, can most likely be applied to wider population, the situation differs bit with the results of the empirical part of the research. The literature review has not been performed the case organization in mind, but the intervention is highly based on the case organization and its processes, thus the intervention results may not match to the processes of the general population in similar areas. In view of this, the researcher has tried to describe the situation of the study as well as possible because, according to Shenton (2004), that increases understanding regarding the transferability of the research findings.

Lastly, for the sake of the confirmability, the researcher needs to try to minimize their own effect to the research results, meaning that the researcher needs to be as objective as possible (Shenton 2004). Because the empirical research has been done as interventionist research, that might affect to the confirmability of this research, as well as the personal relationships between the researcher and the interviewees. All things considered, during the literature review part in the theory development of the thesis, the researcher has tried to be as objective as a human operator can be.

8.6 Further Research

As aforementioned, literature on customer journeys in B2C markets exist already, but literature on customer journeys in B2B markets is not as common. Researches Purmonen et al. (2023) and Lundin and Kindström (2023) have already started looking into

customer journeys in B2B markets, and on those researches it has been noticed that the concept can be applied to B2B markets also. Details of customer journeys in B2B markets, and how they differ from customer journeys in B2C markets still needs to be investigated. As well as more research on B2B customer journeys, more research could be done regarding touchpoints of B2B customer journeys also. Especially, what kind of touchpoints exist during B2B customer journeys, what are the important factors for success in those B2B customer journey touchpoints, and how they differ from B2C customer journey touchpoints need to be investigated more.

In addition to research on customer journeys, AI and AI tools could also be further investigated. Research on AI and uses of it are currently quite prevalent fields of research, but the target of the business research on AI has mostly been in B2C markets. This means that more research on use and implementation of AI and AI tools in B2B markets and B2B companies could be done in the future. A subject that especially could be studied is implementation part of AI tools, which could be interesting field of research for the business markets. This is because, according to Kot and Leszczyński (2022), AI tool implementation projects might be long and, therefore, costly. Thus, it would be beneficial if business research could outline and suggest implementation models for AI implementation in businesses. As an example, model below in Figure 16 has been constructed based on Kot and Leszczyński (2022), but subject would need to be further investigated in research and in practice.

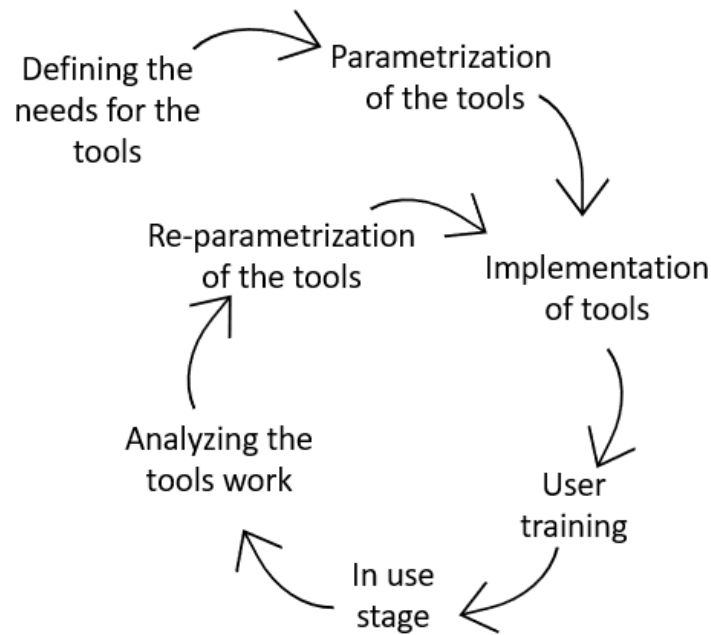


Figure 16. *Cycle of AI tool implementation based on Kot and Leszczyński (2022).*

In the case company, the possibilities of potential implementation of AI would need to be further investigated. First thing to do would be to map customer journeys of the customer base of the case company. This means that the case company should map and document both current, existing customer journeys and ideal customer journey which would be the aim of the case company. During customer journey mapping, the touchpoints of the customer journeys would also need to be identified, studied, and prioritized. With mapping of the touchpoints, the case company could get important information a not only on what kind of touchpoints the customer journeys include, but also on the important success factors of the touchpoints and priority of the certain touchpoints to the whole customer journey. In addition, investigation on customer journeys and the touchpoints of the customer journey will provide to the case company the base line into investigating how they could use AI tools in their processes, and what kind of AI tools would need to be implemented. Of course, the type of AI tools available to the case company affects to what type of tools they can implement.

9. CONCLUSIONS

The goal of this chapter is to conclude the research of the thesis, which started from interest in improving customer service in B2B markets, and whether AI could be utilized in this. This research set out to investigate what are the important touchpoints of B2B customer journey, whether AI tools can be useful during B2B customer journey, and how the AI tools could improve customer service during B2B customer journey. This research was done by using literature review to develop the theory frame of the research, which was then compared to empirical research data gathered by an intervention in the case organization. This means that this research was made as interventionist case study which combined literature review and theme interviews.

First, in the literature review, the topics of customer journey, AI, and tools of AI were explored. Customer journey can be seen as series of different touchpoints between the customer and the supplier during the purchase process. Successes or failures in the touchpoints lead to continuation or rejection of the customer journey. Successful customer journeys might lead to recurrences of the customer journeys, and when successful customer journeys cumulate, loyalty loop is formed between the supplier and the customer. While the concept of customer journey has been developed for B2C markets, it is also applicable to B2B markets. When discussing on customer journeys in B2B markets, it needs to be considered that, in the B2B markets, most of the purchases are straight or modified rebuys, and that, in B2B customer journey touchpoints, there might be multiple internal and external stakeholders involved in procurement process. Although every customer journey is somewhat unique, it has been found that, for the improvement of customer relationships, it is beneficial to analyze success of touchpoints, and work on standardizing customer journeys.

One possibility for customer journey and touchpoint improvement could be AI implementation. AI-based technologies are rational systems which aim to perform assigned tasks to achieve the best possible outcome. AI technologies are based on input-process-output model in which data is first input into the system, in which data is processed based on predetermined parameters, and afterwards processed data is exported from the system in predetermined form. AI systems can be divided into narrow operators which perform predetermined tasks and strong operators which independently solve wider tasks. Completely working AI systems might need different functions, such as machine learning, natural language processing, big data analytics, or conversational agents to work optimally. Overall, while AI will change information technology for good, usually AI is only

able to work side by side with human actor because usually both human intelligence and AI are needed to achieve optimal results.

At the end of the literature review, concepts explored were combined to formulate a model for AI tool use in B2B customer service. AI-based tools could be used in analyzing, engaging, designing, and guiding in customer service touchpoints, thus, value anchoring, consistency, internal integration, and individual control of touchpoints would increase, which in turn would lead to more successful customer service touchpoints, and therefore, to more successful customer journeys. With natural language processing and big data analytics, AI tools are able to analyze and find trends of customer journeys and touchpoints, which, for example, in B2B customer service can mean analyzing customer communication to improve customer service. Some AI tools with natural language processing can design and produce different customer service materials, such as different reports for customers. In addition, natural language processing can be used directly to engage with customers by scheduling customer service meetings and writing emails to customers. AI tools, like conversational agents or business virtual assistants, can also be used in guiding customers or internal stake holders of the company in the order handling process of the company. Compared to more traditional sales automation tools, when performing same task, AI-based tools provide better personalization and analysis results. To get a better understanding of which AI tools to use, and where in their customer service it could be used, companies should analyze their customer journeys and customer journey touchpoints. A good starting point for this would be first to map the customer journey to prepurchase, purchase, and post-purchase stages, and then map the touchpoints connected to those purchase stages. After the customer journey stages and the touchpoints are recognized, company can investigate what type of AI tools are available to them, and with cross tabulation try to select the optimal AI tools to be used in individual touchpoints.

Afterwards, this thesis progressed to the empirical research which started with description of the case company of the research and the typical customer service process of the case company. The case company was Finnish paper converter company which can be considered to operate fully in B2B markets. The product portfolio of the case company is quite wide, ranging from food packaging to construction membranes. Similarly, the role of the customer service in the case company is quite wide. In the case company, the customer service is involved throughout the full order-to-cash process, which means that they receive orders from the customers, monitor the order situation during the production,

and are often also responsible for processing deliveries for the customer orders. In addition to order related tasks, the customer service sometimes also creates data sheets for new items, handles customer claims, and processes different invoicing related tasks.

The empirical part continued with the intervention and theme interviews, which led to deeper discussion on the potential use of the AI tools in the customer service of the case company. In the theme interviews customer service team leaders and supply chain managers from the case company were interviewed regarding the role of customer service, customer service tasks, and the preparedness of the customer service for AI implementation. Regarding the role of customer service, the interviewees said that the most important tasks were order handling and taking care of customer requests promptly and professionally. The problem topics that the customer service of the case company is facing, according to the interviewees, are connected to order deviation and information availability. All the interviewees thought that AI implementation would benefit the customer service of the case company in order entry, invoicing, and customer communication. The interviewees also saw AI implementation as something that should be investigated in the case company, and estimated that the customer service of the case company would be interested in using AI in their daily work.

Finally, in the discussion chapter, the research findings and limitations were presented, and further research topics were highlighted. The literature review results highlighted that using concept of customer journeys and customer journey touchpoints could support success of B2B companies; thus it would be beneficial to B2B suppliers to improve customer journeys of their customers. Therefore, this thesis investigated how B2B supplier could improve their customer service touchpoints, and one possible way to this could be AI implementation. To help the companies to recognize the possible uses for AI tools to use in customer service touchpoints, this thesis suggested mapping customer service touchpoints and available AI tools, and cross tabulating them. This crosstabulation method was then applied to the customer service touchpoints of the case organization found through the empirical interviews and the participant observation data gathered via the researcher intervention. In the end, this research was estimated by the transferability, credibility, confirmability, and dependability of the research. As further research possibilities this thesis suggest themes such as customer journeys in B2B markets and use of AI tools in B2B supply chains. Finally, for the case company of the thesis, the researcher suggests concentrating into finding the important factors of their customer service touchpoints, and how could the AI tools available support the customer service process.

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ANNEX A: INTERVIEW OF INTERVIEWEE A

<p>How would you describe the role of customer service in the company's supply chain function?</p>	<p>I think the role of customer service is central and actually very central, because the customer service is the face of the company to the customers. I have sometimes described it as having tentacles in everywhere and in every department. Customer service gathers information and relays it to customers and other departments. I think that is very central and important role. Some departments may not understand that they take part in customer service also, because they do now work with customer. Customer service itself is only the tip of the iceberg.</p>
<p>What do you think are the most important responsibilities of customer service?</p>	<p>Clear and prompt communication with customers is essential. The communication must be clear, and the customer service must react and respond quickly, even if the final answer is not immediately available. To be able to communicate and communication skills are important. Customer service must relay information to right places also in internal communication. Customer wishes must be relayed. Customer service must prioritize things and understand what is important, and what impacts where. And one must understand the supply chain as a whole.</p>
<p>What are the most important things in customer service's contact to customers?</p>	<p>Quickly responding to customer inquiries. I think it is important that if you give negative information to customer, you need to offer alternative solutions. For example, if a material is out of stock, one must suggest an alternative. You don't say that the situation is this and that's it, but instead you need to have an alternative solution to give to the customer. You need to have problem solving skills. And of course, having a professional tone in written and verbal communication and recognizing when it is necessary to call a customer instead of sending an email. It is important to understand that customer feels that their business matter to our customer service. When giving information to customer you must anticipate things and not to wait for customer inquiries. But that is connected to what kind of tools the customer service has, because the customer service is only as good as the bottom of the iceberg, so to say. The whole supply chain effects to the service level.</p>
<p>What are the routine tasks of customer service?</p>	<p>Communicating with customers and communicating internally within the company. Ensuring that orders are entered into the system so that materials and capacity can be reserved. Of course there is different types of orders, but entering orders is important. In an individual production site, handling customer complaints promptly and ensuring they are entered into the system their processing can start. Invoicing is important. In invoicing the price needs to be correct, and the invoice needs to be sent to customer quickly after the delivery. And when entering order, one needs to be careful that you have correct data. I have said that if you don't know what you should do, then you first need to check that orders have been entered, you have invoiced and that you have confirmed the orders to the customer. Those aforementioned things are the basic structure of the process, if you don't know what to do.</p>
<p>Do you think that there are lot of repetitive tasks in customer service?</p>	<p>I think that we currently spend a significant amount of extra time because we don't have adequate system in place. Rather than using system, a lot of time is spent in creating our own supportive tools, like excels, to tasks such as following up orders. Updating and following up on things takes a lot of time because the current system is outdated and it is not used correctly, which leads to repetitive daily tasks. The presence of two systems that do not communicate effectively with each other further complicates the process, causing delays and additional work. The current system</p>

	<p>does not work sufficiently and does not support daily work. We also have a lot of data and information in the current system, but it is hard to get it out from the system. Also, we of course have some simple basic orders.</p>
<p>What are the common problem topics in customer service?</p>	<p>There is a challenge in maintaining adequate resources. Also ensuring that the team is well-trained, and to train the team also in basics too. We have some turnover so knowledge can be lost and it is crucial to ensure that information is passed on to new team members. Continuous training and clear communication about the basics would be important. Sometimes, the responsibilities of customer service can be unclear. It also depends on the individual, as some people can solve problems independently but need final approvals. Then there is some unclarities in basic tasks, such as handling pre-invoice credits that can also be problematic. Also, there is sometimes some problems in using the basic system.</p>
<p>Do you see that there are tasks in the customer service that could be automated?</p>	<p>Absolutely! I think that for example the weekly task of sending list of open orders and inventory status to customers could definitely be automated. Also, I think that we could automate invoicing, if provided that the prices and quantities would be correct. We could for example then once a day or once a week generate them. And when we have basic logistics bookings we need to do, that could be one thing that we could do in advance. The if we consider sales, they should of course be able to produce their reports themselves, but that does not always work, so we could also automate that. And then when we sometimes get repeat orders from customers, I wonder if we could automate that? If the customer is always ordering the same amount, could they input the new orders by themselves through some kind of portal.</p>
<p>Do you see that artificial intelligence could be used in that automatization?</p>	<p>I was just wondering if a chatbot or robot could be used to enter orders such like to this customer, a repeat order, with this new purchase order number. And then I think that if we could for example check logistics prices based on postal codes automatically. I am not sure if we have something like that. It would be good that the price of the logistics would be automatically fetched, because now we need to check them by ourselves from logistics price lists. It could be done so that a bot could tell us that by using this logistics company the cheapest price would be this. I am not sure if our new logistics system includes something like that. Then I wonder if customers could themselves check the status of their order. A bit like when checking postal delivery, that if the order is on delivery or in production. For example, in creating different reports we could use artificial intelligence. Furthermore, we do not always speak the same language with the customer, like German, so I wonder if we could use artificial intelligence to support communication. There are all types of translating apps nowadays. And that may not use artificial intelligence, but then I think that having different readymade forms for informing multiple customers in advance that they need to order in advance because we are closed. We could have readymade forms or predictive text input functions. I have also noticed that people today communicate kind of shortly, that they forget that they need to be polite. Not too much of course, but you cannot be rude to customers. And that is something I need to tell to summer trainees without prior experience from the field. I am not sure if that could be helped with artificial intelligence, because you need to sense the situation. But I have noticed that that kind of experience we are lacking.</p>
<p>How does the customer service usually take in possible IT changes?</p>	<p>I think the stance on IT changes in customer service varies among individuals. Some people may feel anxious about the introduction of new systems, while others see it as a nice challenge and see that it is positive thing that their tools are evolving. But is important</p>

	to have change management skills in place when introducing new tools. If changes are not managed properly, there can be a lot of resistance to adapt. It depends on person. If the new system is perceived as helpful and beneficial to their work, I think it is less likely to be resisted.
How do you think that the customer service would feel about implementation artificial intelligence?	It is hard to say. I was thinking that we would have a lot of resistance when introducing (redacted), that that change would be perceived as losing job opportunities, but I haven't heard anything like that. Maybe it is something that they don't tell me directly but are all thinking in some level. It could be perceived as losing job opportunities, but I don't think it would be. If system would remove easy tasks and customer service could concentrate onto harder tasks or into problem solving or something else that they lack time to properly do now. I think that the reception would rather be positive, if the change management would be properly done.
Do you see that using artificial intelligence could be helpful in customer service?	I believe that it could be useful and will be useful. If we could automate simple routine tasks and give them to artificial intelligence to perform, I see it as positive change. I think that we cannot slow down the development of artificial intelligence or that we will lose jobs to it. That said, when I had to use artificial intelligence based chatbot while being customer in (redacted), I thought that it would slow down the process even though in the end it solved the problem. But my first thought was that it cannot solve such a complex issue that I had. But simple things could for sure be handled by artificial intelligence.
Has the customer service already been testing artificial intelligence?	I don't believe we have tested it. Neither did I had the trainings when we had them (the Pilot process), which I am kind of sorry for that I missed it.
Do you think customer service would have resources for artificial intelligence implementation?	-

ANNEX B: INTERVIEW OF INTERVIEWEE B

<p>How would you describe the role of customer service in the company's supply chain function?</p>	<p>Customer service is the function where everything inside of the firm starts from. Customer service receives the sales order and requests from the customer and at the end sends delivery documents and invoices to the customer. This includes that customer service communicates the customer needs to the planning, production, and purchasing functions. And customer service also communicates things from production to customer.</p>
<p>What do you think are the most important responsibilities of customer service?</p>	<p>Communicating with customer, that customer is aware that when they will receive the goods they order and about possible changes. But it goes to other way too, because customer requirements need to be accurately communicated to the production so that they will produce correct products at the right time. For the company it is usually important that invoicing is done, but let's stay in supply chain topics. All in all, customer service relays information to both directions.</p>
<p>What are the most important things in customer service's contact to customers?</p>	<p>It differs. It depends what customer assumes, expects and wishes from their supplier. Some customers are expecting constant communication and then there is customers that only wish to receive order confirmation. For some customers it is enough that we shortly inform them about the change whereas some need very detailed explanation about what has been done to keep the schedule. In addition, the expected quickness of the response to the customer question differs a lot. Some customers understand better that confirmations for raw material orders take time and some might be confused about a delay of few hours in order confirmation. There is big cultural differences and customer service need to know their own customers. Some like quick reacting to their messages and other might even get agitated to constant messaging and prefer that only definite answers are given. So, you need to know your customers.</p>
<p>What are the routine tasks of customer service?</p>	<p>Communicating, receiving orders, entering orders to the ERP, following up orders, booking logistics deliveries and of course invoicing. And in addition, creating different types of documents.</p>
<p>Do you think that there are lot of repetitive tasks in customer service?</p>	<p>Re-entering order lines, which individually does not take a lot of time, but when it is a repeating task, the time used to them cumulates. Things connected to subcontracting are also repeating and time consuming at every stage of the process. In this site there is more logistics related communication that needs to be handled, because finalized orders need to leave the site as soon as possible. Often, we need to also take raw materials in just in time, so delays in raw material deliveries also directly lead to changes in outbound truck bookings. Following up production and re-scheduling logistics takes a lot of time.</p>
<p>What are the common problem topics in customer service?</p>	<p>Some new IT systems, but it is not constant issue, just issue connected to implementing new IT systems. Current system causes problems with subcontracting. Some order delays, but that is normal in this type of business. Customer service and supply chain functions are existing just because everything does not always go like planned. Of course we can always improve customer service, but that would require more working time so that customer service can overview situations and trigger changes. Previously, our resources have been tight, but it is always up to consideration if you can hire more resources and to where. And if you have time to onboard someone new or does it make the situation worse.</p>
<p>Do you see that there are tasks in the customer</p>	<p>I was just thinking that for some customers we know it could be good that we would automize a response message to them. Something like "We have received your message and are processing</p>

service that could be automated?	your request". We could even automate a message for every day. But you need to know your customers, because some customers would find it irritating and some require it. That could be easily automated. Then I am not sure if we could automate invoicing. Of course, price lists could be processed with artificial intelligence. Then I am not sure if we could automate fetching basic data from our IT systems to the sales personnel. For example, when the certain order for certain customer will be produced. Then we wouldn't need to use customer service's and planning's time for those requests. A sales person could use a chatbot instead.
Do you see that artificial intelligence could be used in that automatization?	Sales people could use chatbots to figure out when a certain customer gets their next order. And for sure we could use artificial intelligence in automation. Artificial intelligence could also be used to search previous messages and conversations from email. Customers sometimes send questions about the same things with multiple title lines and then the email's search tool cannot find all the connected emails. Artificial intelligence could combine emails to a short brief, because there is no time to read long email chains and long emails. Artificial intelligence could make processing emails faster and tell the user that which emails actually need their attention. And if user is sending email to customer, to avoid mixed communication, AI could remind or summarize what has been said to customer before. In addition, it of course would be nice that artificial intelligence would write up the emails so that user would just put their name under the message.
How does the customer service usually take in possible IT changes?	The last experience of big IT project still affects the attitudes in the customer service. But usually new IT things are not a problem, if they are easy to use and do not cause extra work.
How do you think that the customer service would feel about implementation artificial intelligence?	I think they would be OK with it. It depends on how easy the tool would be to use and what kind of tool it would be. And that customer service could stay in control which emails would be sent to customer. Mostly that there are not too many automatic situation updates sent to customer, because customer service knows the customers the best. Of course, it also depends on the person, because some people rather take new tools into use than others. But as the whole, I don't see that it would be opposed.
Do you see that using artificial intelligence could be helpful in customer service?	Yes, I think artificial would be useful. For myself it could work in analyzing. For example, artificial intelligence could export excels and analyze them for me.
Has the customer service already been testing artificial intelligence?	No, we haven't.
Do you think customer service would have resources for artificial intelligence implementation?	Currently it is not the right time, because we are doing so many changes already. We do not have any extra resources that would continue the normal work during the implementation of the new systems.

ANNEX C: INTERVIEW OF INTERVIEWEE C

<p>How would you describe the role of customer service in the company's supply chain function?</p>	<p>Customer service works differently in different organizations. In the case company we (customer service) have special role, which is quite broad. It requires a lot of technical knowledge and communication skills between the departments. If I would need to describe the role of customer service, I would say that the main function is the best service for the customer and make the customer satisfied with cooperation with the company. In some companies, customer service is only responding to customer questions and sending emails, while we need to be involved in many things; in processing orders, registering the claims, providing technical data to the system, item request, dept collections. There are plenty of things.</p>
<p>What do you think are the most important responsibilities of customer service?</p>	<p>The communication is the main task, and actually, it is so in our site, that every communication provided out, goes through the customer service. Meaning that planning department is not anymore answering to customers or the finance department, all that is done by customer service.</p>
<p>What are the most important things in customer service's contact to customers?</p>	<p>The most important part is to provide an answer to the customers. Whenever there is a question, customer service needs to come back to customer with an answer, and not ignore them. Even if we provide bad news, it is always important to provide news and not to ignore the customers. I think this is like in the normal life, it is always better to get the answer and not to be ignored.</p>
<p>What are the routine tasks of customer service?</p>	<p>Most often we work through emails, we are following up internal and external communication and process information. That is the biggest task. We have of course tasks which are done in the system like creating invoices and so on, but plenty of the tasks are outside of the system, like the communication.</p>
<p>Do you think that there are lot of repetitive tasks in customer service?</p>	<p>It bit depends. Order registration is often the same, but it only depends on what customer orders. The solutions, the questions and the problems we are facing are different, because of the different situations and cases we have. It is not boring, not every day is the same, we are not doing the same things every day. There is a lot of surprises. And that is beneficial, because the work is not boring, if we would only do same things over and over again, people would search for something else. Here we are processing different things so fast that we come into work in the morning and all of the sudden it is already time to go home.</p>
<p>What are the common problem topics in customer service?</p>	<p>We are quite much reliant on the information provided by the other departments and that is something that is sometimes holding up our work. There is a lot of technical things and technical data, which we cannot know ourselves, but that we need to clarify and check before we send it to customer. Especially item creation is currently difficult. The item creation is currently initiated by the customer service, and we lack technical knowledge, so we are all bit worried when creating new item requests. And, actually, there is no responsible person or clear official way and support for creating those. Also, the process of item creation is quite time consuming, which holds up our ordering process and production, to which customers are not satisfied to. We have our targeted order confirmation time, but because of this, we are sometimes very far from that.</p>
<p>Do you see that there are tasks in the customer service that could be automated?</p>	<p>Interesting question if something could be automated. Of course, we could use artificial intelligence to create emails, but I don't think it would be well liked if recognized by the customer that they are in contact with a computer and not a human person. So fully writing emails definitely not. But for example, maybe creating a new product could be bit automated, or we could create some ready solution to customer that they could themselves enter the data they need</p>

	<p>and then they could themselves enter and register their order to our system. And confirming orders could be automated, and in addition to that, checking the credit limit, because currently that takes quite a lot of time. And then automation could be used in invoicing. Maybe the reports creation, because now it is quite hard. We have some Power BIs and we use some basic reports for the customer, like stocks, open orders and these kinds of things. Currently, we need to spend time to re-doing the tables before sending them to the customer, but that could be automated. Debt collection is also one, now we have quite manual process of checking the credit limit for if we can send the goods, and debt collection emails that are currently handwritten by customer service could be automated.</p>
Do you see that artificial intelligence could be used in that automatization?	Artificial intelligence could be used in preparing emails to customer, maybe finding some information to the customer, but not copy paste. Just a tool to help to provide the best message.
How does the customer service usually take in possible IT changes?	We have the benefit in the team that it is quite young and open to the new tools, so the attitude is quite positive if the new tools would help us in our work. If we create additional task with new tools to them, well then it is maybe not very well welcomed. But if we would have tools that would help in current work then it is good. Rather new tools to limit their amount of work and not new tools to create more work to them.
How do you think that the customer service would feel about implementation artificial intelligence?	The team is interested in artificial intelligence and definitely not afraid of that. Because artificial intelligence is something new and they would like to find the best ways to utilize that.
Do you see that using artificial intelligence could be helpful in customer service?	Yes.
Has the customer service already been testing artificial intelligence?	The case company has project for Copilot, and we have two persons from our team in that.
Do you think customer service would have resources for artificial intelligence implementation?	This is depending how much work it would demand, and how early it is announced. It also depends on how the business is during the implementation.

ANNEX D: INTERVIEW OF INTERVIEWEE D

How would you describe the role of customer service in the company's supply chain function?	Customer service is the first contact point to customer in order to handle every order and inquiry or any request that the customer has. And they transfer all the request from the customer into internal inquiries to inside of the Case Company. I think that is the main role, and of course to deliverer the requested information to the customer, whatever is needed.
What do you think are the most important responsibilities of customer service?	Of course, order entry and order handing and deviation of management of orders and inquiry handling are at least quite big part in this site. I think that those are at least the main parts.
What are the most important things in customer service's contact to customers?	Important is that the customer gets fast answers, and this is something each person wants to have if they order something on their own on the Internet. You want to get really fast answer and really fast email. I think for communication flow it is really good if you can answer right away. At least that the customer has the feeling that someone is taking care of their request, and that is really important that they have feeling that someone has received their request and is taking care of it. Even better would be of course if we could directly give an answer. Of course, the communication to the customer needs to be reliable, and that is also one big point that makes the relationship somehow strong that the customer can count on what we offer and tell them.
What are the routine tasks of customer service?	Starting from the beginning; quotation handling, item request handing, customer request handling, order entry, invoicing and I think those are the main parts of the normal process that we are dealing with. And of course, when the process does not work as such it should be, then of course deviation handling.
Do you think that there are lot of repetitive tasks in customer service?	The order entry is always more or less the same, something that I can learn, and I have learned also, so it is not a huge task. Many things are some kind of repetition and of course there is some differences from customer to customer, but it is very much the same. And invoicing is also pretty straight forward.
What are the common problem topics in customer service?	I don't think we really have repeating common problems. Of course, if orders are late, that causes problems, and we need to deal with them. Inform the customer and other departments like the warehouse, which is currently quite difficult to involve them, and have the correct data in the system.
Do you see that there are task in the customer service that could be automated?	Invoicing could be automated. If we could just tell the system that "please do that and that", then there sure is many things that could be automated. It could work like (Amazon's) Alexa. For example, please archive this email, or please send the order to the customer, or please invoice to the customer. If they are not fully automated and we need to check manually, they could be supported by artificial intelligence. You tell the system that please check the order or please check the price, and please send out.
Do you see that artificial intelligence could be used in that automatization?	I think we for sure can automate with artificial intelligence. If you can always tell the system, please do this and this, please send this and please ask delivery time, whatever, I think that would save a lot of time during the day. Of course, this somehow exists somewhere, but if you wouldn't need to write your emails yourself but just to tell system that please write email to this customer and tell them this and this, it could make the things faster and easier. You could also say to system that please book an order to this customer for this item and configuration. We could also use artificial intelligence to create it-problem tickets. Artificial intelligence could help keep the data correctly and up the date in the system. System could compare the order confirmation for purchase order

	from the supplier to the order in the system and point out deviations or check if everything is ok.
How does the customer service usually take in possible IT changes?	In customer service everyone is more or less positive minded towards changes. People have their way of working from their background and from their experience, and it may be difficult to switch and that is something they have to learn. Generally, I would say that their attitude towards new things is OK, but new things need to be trained, and they need to take their time to learn them, and they need to see and recognize the benefit in it. They will not take it if it is just another way of working with no real benefit. Of course, if you save time, and that is at least to what we should aim for, they will use it quite fast. If they see real benefit, it is clear for them that it is pretty nice and then they will work with it.
How do you think that the customer service would feel about implementation artificial intelligence?	Of course, it would bit depend on what we talk about, if it would be like Alexa, they could be a bit afraid to out loud to talk to the system when others are in the same room. If you would be alone then there would be no problem, but in the office it could feel bit strange, because you are not used to it. If they are things in the system that you start by pressing a button, or whatever, of course, it will be no problem to use it.
Do you see that using artificial intelligence could be helpful in customer service?	In general, for sure, because like said, if it makes life easier and faster, and you have support in organizing yourself in better way, it is really beneficial. Customer service has a lot on their table and many things to think about and many things to remember and consider about, that I am sure that it would help in organizing themselves. And there must of course be some support from the system combined with artificial intelligence, that you react fast and answer fast and be proactive as always. It then needs to give reliable information. Of course, it can at least support.
Has the customer service already been testing artificial intelligence?	No, I don't think they have, or at least I am not aware of that.
Do you think customer service would have resources for artificial intelligence implementation?	The question is how much extra resources are needed and what it will cause in the end, meaning how big problems are expected during the implementation. And it is always changing, half yearly, yearly, so it is difficult to give clear picture of long-term resources. How much resources are needed, needs to be considered.